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EXCAVATIONS AT  
**KALIBANGAN**  
THE HARAPPANS  
(1960-69)

Part - II

**B.B. LAL**

**JAGAT PATI JOSHI  
MADHU BALA**

**A.K. SHARMA  
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APPENDIX  
**A. GHOSH**



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1. *Painted Potsherd*
2. *Human Skull with the Evidence of Shell Ring*
3. *Square Steatite Seal*
4. *Terracotta Human Head*

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## FOREWORD

I am immensely delighted to present before the academic community the report on the Excavations at Kalibangan, the Harappan site located in Rajasthan as a Memoirs of the Archaeological Survey of India. This publication is in sequel to the already published volumes of the same excavation, namely, Excavations at Kalibangan – The Early Harappans (1961-69) and Part I of the present Volume. These three volumes contain exhaustive details of the excavations carried out at Kalibangan, district Hanumangarh, Rajasthan from 1960-61 to 1968-69. Kalibangan is an important Harappan site on the Indian side and the excavations for nearly a decade helped in understanding several facets of Harappan culture including its genesis, growth and decline.

This publication is the outcome of the field investigations and subsequent analysis by the veterans in the field of Indian Archaeology like Prof. B.B. Lal, Shri Jagat Pati Joshi and Shri A. K. Sharma. I hope that this report will be an important reference collection for the researchers in the field of Harappan archaeology.

I would also like to place on record my appreciation for my colleagues, whose joint efforts have led to the completion of the report. In particular, my sincere thanks are due to Dr. Amarendra Nath who assisted in editing and proof reading of this publication. I also appreciate the assistance rendered by Shri T. R. Sharma, Dr. K. Lourdasamy, Dr. V.N. Prabhakar, Dr. Manuel Joseph, Shri Saurabh and Ms. Neha Pande in finalizing this publication.

Place: New Delhi  
Date: 06.03.2020

(Usha Sharma)  
Director General  
Archaeological Survey of India





## **PREFACE**

The first volume of the report on the excavations at Kalibangan was prepared in 2000 and published by the Archaeological Survey of India in 2003. In it we had given an account of the settlement in so far as it related to the Early Harappan times (Period I). In the present volume, which consists of two parts, we place before the reader an account of the Mature Harappan settlement (Period II). We once again deeply apologize for the inordinate delay in the publication of these two volumes, which has been due to reasons beyond our control, as mentioned in the Preface to earlier volume. However, "Better late than never" is the maxim which gives us some solace, and we earnestly hope that the archaeological fraternity will forgive us for the delay.

As in the case of the earlier volume, in the present one too the credit of organizing the work must go primarily to Shri Jagat Pati Joshi. He has taken pains to piece together the field-drawings, making them presentable. He has also analyzed the stratigraphy of the site, paying attention to each and every trench. Along with Ms Madhu Bala, he has examined the vast store of antiquities recovered from the site, selecting them for the purpose of this report and writing on them. Ms Madhu Bala has also written the chapters on small finds and pottery. Shri A.K. Sharma was in charge of the cemetery area and has contributed a detailed chapter on the burials, besides K.S. Ramachandran who has written on some of the pot-burials excavated by him. Prof. Bala Subramaniam of IIT and Jagat Pati Joshi have contributed a chapter on Harappan measuring instruments from Kalibangan. Way back, in 1950-51, the late Shri A. Ghosh had carried out explorations in certain parts of the Ghaggar and Drishadvati valleys and had duly recorded his findings in a diary. Since the material is related to the subject-matter of this Report, an opportunity is taken to include here his field-notes, along with a paper on the subject, which he presented at the All India History Congress, Jaipur, on December 29, 1951. Shri R.K. Sharma, has carried out detailed scientific studies of the fragments of the seals at the science laboratory of the Archaeological Survey of India, Dehradun (Uttarakhand).

Because of such a diverse authorship, it is but natural that the style of presentation and language vary from chapter to chapter. Further, since the report had to be submitted to the Director General, ASI, by the dead-line of May 2007 and most of the chapters poured in just before that, no worthwhile editing was possible. Thus, the reader is requested to look more for the contents of the chapters rather than go into the nuances of the style and language.

As the seniormost amongst the contributors, I have great pleasure in placing this report in the hands of the reader, hoping once again that we would be forgiven for the extraordinary delay.

**New Delhi:  
May 30, 2007**

**B.B. Lal**



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In the preparation of this report technical assistance has been received from many persons and the authors would like to record their deep sense of gratitude and appreciation to them.

In the field, Sarvashri N.C. Ghosh, M.D. Khare, C. Margbandhu, J.S. Nigam, B.M. Pande, K. Raghavachary, J.P. Srivastava, K.M. Srivastava and I.K. Sharma, provided field supervision during nine seasons of work, besides students of batches from 1960 to 1969 of the School of Archaeology (now elevated to the Institute of Archaeology) and students of Punjab University, Chandigarh. The survey maps were prepared by Sarvashri S.P.Jain, A.K. Roy and late Vidya Ram. The drawings were prepared by late Rambabu, J.S. Dubey, L. Dutt, Lalit Jain, Mahendra Singh Panesar and late Amir Singh. Late B.P. Asthana, late R. Chatterjee, late V.V. Dutta, late Ranjit Gupta, Late M.B. Limaye and Shri G. Lakshmi Narayan did all the photography in the various field seasons.

In the headquarters, the supervision of drawing work, including their digitization was done by Shri Vijay Kumar. The digital drawings were prepared by Adwin Incorporation, Delhi, Shri Jassuram finalized the sections and S.K. Sharma prepared drawings of distribution map and charts of seals, sealing and graffiti. Shri Puran Chand Mukhia finalized all the drawings and made them press-ready. He also prepared many other drawings of beads and cemetery incorporated in the report. Shri Ramakant Dwivedi, and Dr. Khushal Girhe, of Prehistory Branch, Nagpur prepared drawings of the lithic tools. The small finds were photographed by B.R. Rajput, Ravindra Kumar and R.K. Jatta. The prints and digital photography of the small finds has been done by Rajat Dilwali of Ms. Kinsay Brothers, New Delhi. Shri Vishnu Kant provided assistance in the analysis of inscribed material and preparation of list of figures. Smt. Anjali Negi typed out the entire manuscript with care and precision and made it press-ready on computer. Various services were provided by Smt. Ramkali. Shri Narendra Kumar Sharma has been of considerable assistance in the location and recording of antiquities and pottery which have been stored for years at Purana Qila.

The work could not have been completed if Smt. Kasturi Gupta Menon, IAS and Shri Babu Rajeev, IAS, and the successive Directors General of ASI, had not provided the facilities and infrastructure to the authors at Purana Qila for writing the report. Dr. R.S. Fonia provided infrastructural help to the project. Shri A.K. Sinha, Director (Publication), Dr. B.M. Pandey and Dr. P.K. Trivedi, former Directors (Publication), Dr. Arundhati Banerji (former Superintending Archaeologist), Dr. Madhulika Samanta (Superintending Archaeologist), Hoshiar Singh (Production Officer) and other officials of the Publication Section rendered valuable assistance. Finally we must say that this report is a joint effort of the entire team of technical hands who have put in combined effort for the completion of the project.



## CONTENTS

11. Lithic Tools	Jagat Pati Joshi	723-765
1. Introductory		
2. Typlogy		
3. Raw Material – Nodules		
4. Cores		
5. Crested Ridge Blades		
6. Parallel-sided Blades		
7. Serrated Blades		
8. Penknife Blades, Burins and Borers		
9. Side Scrapers		
10. Chisels		
11. Neolithic Tools		
12. Metal Objects	Jagat Pati Joshi	767-807
A. Copper Objects		
B. Gold Objects		
13. Ivory and Bone Objects	Jagat Pati Joshi	809-835
14. Kitchen Equipments	Jagat Pati Joshi	837-885
A. Terracotta		
B. Stone		
15. Bangles, <i>Kangans</i> and Rings	Madhu Bala	887-931
1. Alabaster Bangles		
2. Shell Bangles		
3. Stone <i>Kangans</i>		
4. Terracotta <i>Kangans</i> , Bangles and Rings		
5. Copper Bangles and Rings		
6. Faience Bangles		
7. Terracotta Rings		
16. Beads	Madhu Bala	933-994
1. Terracotta Beads and Spacers		
2. Semi-Precious Stone Beads		
3. Steatite Beads, Pendants, Inlay and Button		
4. Copper Beads and spacers		
5. Faience Beads		
6. Terracotta Beads for decorating Animals		
17. Harappan Measuring Instruments from Kalibangan	Jagat Pati Joshi and Balasubramaniam	995-1021
1. Terracotta Hour-glass		
2. Terracotta Scale		
3. Plumb-bobs		
4. Weights and Pans		

18. Shell Objects	Jagat Pati Joshi	1023-1034
19. Terracotta Spindle Whorls, Spools, Weaver's Tools and Weights	Jagat Pati Joshi	1035-1051
20. Terracotta Pulleys, Decorated Tiles, Pipes, Stone Door-Devices	Jagat Pati Joshi	1053-1074
21. Other Terracotta Objects	Madhu Bala	1075-1284
I. Play things for little children		
(i) Rattles		
(ii) Whistles		
(iii) Feeding Cups		
II. Play things for Children		
(i) Human Figures		
(ii) Animal Figures		
(iii) Bird Figures		
(iv) Toy cart Frames and Wheels		
(v) Hopscotches		
(vi) Decorated Balls		
III. Play things for adults		
(i) Stud-Shaped Gamesmen		
(ii) Pellet-Shaped Gamesmen		
(iii) Dice		
(iv) Gaming Board		
(v) Toy Bricks		
IV. Religious Objects		
(i) Cakes		
(ii) Shiva <i>Linga</i>		
(iii) Kernos		
V. Agricultural Tools		
VI. Furniture		
VII. Sharpeners		
VIII. Cones		
IX. <i>Takhti</i>		
X. Cradle		
XI. Diadem		
XII. Alabaster Pots		

XIII. Compartmental Pots

XIV. Cylindrical Objects

22. The Cemetery	A.K. Sharma	1285-1427
1. Locating the Burials		
2. Plotting the Burials		
3. Description of the Burials		
A. Extended Inhumation		
B. Rectangular Burials devoid of any Skeletal Material		
C. Paleo-Pathological Study		
23. Pot Burials	K.S. Ramachandran	1429-1465
1. Introductory		
2. Description of Pot Burials		
24. The Pottery from Cemetery	Madhu Bala	1467-1474
1. Introductory		
2. Pottery Types		
25. Small Finds from Cemetery	Jagat Pati Joshi	1475-1487
1. Copper Objects		
2. Faience Objects		
3. Shell Objects		
4. Agate, bone and terracotta Objects		
5. Semi-precious Stone Beads		
6. Gold Objects		
APPENDIX	A. Ghosh	1489-1574
Exploration in Bikaner, (1950-51)		
(i). Notes on Exploration in Bikaner, 1950		
(ii). Notes on Exploration in Bikaner, 1951		





## LIST OF FIGURES

### Chapter 11 Lithic tools

Fig. 11.1	:	Chert nodules	728
Fig. 11.2	:	Chert nodules	729
Fig. 11.3	:	Chert flake, point, side scrapers, end scraper and burin on flake	731
Fig. 11.4	:	Chert flake, point, side scrapers, end scraper and burin on flake	732
Fig. 11.5	:	Chert cores	734
Fig. 11.6	:	Chert cores	735
Fig. 11.7	:	Chert crested ridge blades	737
Fig. 11.8	:	Chert crested ridge blades	738
Fig. 11.9	:	Parallel sided chert blades	740
Fig. 11.10	:	Parallel sided chert blades	741
Fig. 11.11	:	Parallel sided chert blades	743
Fig. 11.12	:	Parallel sided chert blades	744
Fig. 11.13	:	Parallel sided chert blades	746
Fig. 11.14	:	Parallel sided chert blades	747
Fig. 11.15	:	Parallel sided chert blades	749
Fig. 11.16	:	Parallel sided chert blades	750
Fig. 11.17	:	Chert burins, borers, points, pointed blade, pen knife blade, etc.	752
Fig. 11.18	:	Chert burins, borers, points, pointed blade, pen knife blade, etc.	753
Fig. 11.19	:	Chert single shouldered and double shouldered burins, pen knife blades, etc.	755
Fig. 11.20	:	Chert single shouldered and double shouldered burins, pen knife blades, etc.	756
Fig. 11.21	:	Chert side scrapers, burins, blades and parallel sided blades	758
Fig. 11.22	:	Chert side scrapers, burins, blades and parallel sided blades	759
Fig. 11.23	:	Chert chisels, leaf-shaped tanged blades, blades, fan- shaped tanged knife, etc.	761
Fig. 11.24	:	Chert chisels, leaf-shaped tanged blades, blades, fan- shaped tanged knife, etc.	762
Fig. 11.25	:	Neolithic stone axes, celt and mace head	764
Fig. 11.26	:	Neolithic stone axes, celt and mace head	765

### Chapter 12 Metal Objects

Fig. 12.1	:	Inscribed copper blade axe	769
Fig. 12.2	:	Inscribed copper bar chisel	771
Fig. 12.3	:	Copper axes	773
Fig. 12.4	:	Copper chisels and nail parers	775
Fig. 12.5	:	Copper spearheads and knife	777
Fig. 12.6	:	Copper spearheads and dagger	779
Fig. 12.7	:	Copper spearheads, knives, dagger and blade	781
Fig. 12.8	:	Copper wire, antimony rods, nail, hairpins, blade, nail parers, awl, mirror, needle, ear-cleaner, etc.	783
Fig. 12.9	:	Copper rods, chisels, pin, needle, antimony rod, nail parers, etc.	785
Fig. 12.10	:	Copper hook, hatchet and arrow heads	787
Fig. 12.11	:	Copper spearheads, blades, etc.	789

Fig. 12.12	:	Copper blade, receptacle, saw, needle, antimony rods, nail parer, etc.	791
Fig. 12.13	:	Copper wire and rings	793
Fig. 12.14	:	Copper spear head (?), nail parer head piece	795
Fig. 12.15	:	Copper bull figure	797
Fig. 12.16	:	Copper antimony rod, pins, rod, wire, needles, awl, etc.	799
Fig. 12.17	:	Copper nails, antimony rods, pins, rod, rings, receptacle, sheet, etc.	801
Fig. 12.18	:	Copper celt, spear head, saw, chisel, arrow head, fish hooks, knife blade, etc.	803
Fig. 12.19	:	Gold beads, ear/nose ornaments, inlay, buttons, foil, spacer, etc.	805
Fig. 12.20	:	Gold pendant, beads, ear ornaments, inlay, etc.	807

### Chapter 13 Ivory and Bone Objects

Fig. 13.1	:	Ivory and bone objects	811
Fig. 13.2	:	Fragmentary ivory comb having three concentric circles	813
Fig. 13.3	:	Fragmentary ivory combs	815
Fig. 13.4	:	Bone scapulae, rod, long piece, polished pieces and ivory bangle	817
Fig. 13.5	:	Bone scapulae and ivory unfinished pointed object	819
Fig. 13.6	:	Bone arrow heads	821
Fig. 13.7	:	Antler, bone points and arrowhead	823
Fig. 13.8	:	Bone styli	825
Fig. 13.9	:	Bone and ivory needles	827
Fig. 13.10	:	Bone and ivory needles and bone arrowheads	829
Fig. 13.11	:	Bone bangle, conical objects and antlers	831
Fig. 13.12	:	Ivory tusks, fragmentary	833
Fig. 13.13	:	Ivory awl	835

### Chapter 14 Kitchen Equipments

Fig. 14.1	:	Fragmentary terracotta <i>chakla</i> with a ring base bearing Harappan script	840
Fig. 14.2	:	Terracotta <i>chakla</i> with a ring base bearing Harappan script	842
Fig. 14.3	:	Fragmentary terracotta <i>chakla</i> with footed base	844
Fig. 14.4	:	Fragmentary terracotta <i>chaklas</i> with ring base both bearing Harappan scripts	846
Fig. 14.4(a)	:	Plan and section of <i>chaklas</i>	848
Fig. 14.5	:	Another fragment of a terracotta <i>chakla</i> with a ring base	849
Fig. 14.6	:	Fragmentary terracotta <i>chaklas</i> with ring base bearing Harappan scripts	851
Fig. 14.6(a)	:	Fragmentary terracotta <i>tawas</i> (nos. 1 and 2) and <i>chaklas</i> (nos. 3 to 6)	852
Fig. 14.7	:	Terracotta <i>belans</i> , rolling-pins	854
Fig. 14.7(a)	:	Plan and section of a terracotta <i>belan</i> , fragmentary	855
Fig. 14.7(b)	:	Terracotta <i>chakla</i> and <i>belan</i> with wooden-handle (modern) showing their use	856
Fig. 14.7(c)	:	Fragmentary terracotta <i>chakla</i> and <i>belan</i> with a wooden-handle (modern) showing their use	857
Fig. 14.8	:	Terracotta <i>tawas</i>	859
Fig. 14.9	:	Terracotta <i>tawas</i> , fragmentary	861
Fig. 14.10	:	Terracotta frying pan (?) bearing finger impression, fragmentary	863
Fig. 14.11	:	<i>Thalis</i> , fragmentary	865

Fig. 14.12	:	Stone saddle querns, partly broken	867
Fig. 14.13	:	Stone saddle querns, fragmentary	869
Fig. 14.14	:	Stone saddle querns with raised ends, fragmentary	871
Fig. 14.15	:	Stone saddle querns, fragmentary	873
Fig. 14.16	:	Stone saddle querns, fragmentary	875
Fig. 14.17	:	Stone rotary querns, fragmentary	877
Fig. 14.18	:	Stone pestles	879
Fig. 14.19	:	Stone pestles, fragmentary	881
Fig. 14.20	:	Stone pounders	883
Fig. 14.21	:	Stone balls	885

## Chapter 15 Bangles, *Kangans* and Rings

Fig. 15.1	:	Terracotta bangles	888
Fig. 15.2	:	Terracotta bangles	889
Fig. 15.3	:	Alabaster bangles	891
Fig. 15.4	:	Alabaster bangles	893
Fig. 15.5	:	Shell bangles, fragmentary	895
Fig. 15.6	:	Shell bangles, fragmentary	897
Fig. 15.7	:	Shell bangles, fragmentary	899
Fig. 15.8	:	Shell bangles, fragmentary	901
Fig. 15.9	:	Stone <i>kangans</i> , fragmentary	903
Fig. 15.10	:	Terracotta <i>kangans</i> , fragmentary	905
Fig. 15.11	:	Segmented terracotta <i>kangans</i> , fragmentary	907
Fig. 15.12	:	Terracotta bangles	909
Fig. 15.13	:	Terracotta <i>kangans</i>	911
Fig. 15.14	:	Terracotta <i>kangans</i> , fragmentary	913
Fig. 15.15	:	Terracotta <i>kangans</i> , fragmentary	915
Fig. 15.16	:	Inscribed terracotta <i>kangan</i> , fragmentary	917
Fig. 15.17	:	Decorated terracotta bangles, fragmentary	919
Fig. 15.18	:	Terracotta bangles	921
Fig. 15.19	:	Copper rings and bangles	923
Fig. 15.20	:	Plain and decorated faience bangles, fragmentary	925
Fig. 15.21	:	Terracotta rings	927
Fig. 15.22	:	Terracotta rings	929
Fig. 15.23	:	Terracotta rings	931

## Chapter 16 Beads

Fig. 16.1	:	Discular steatite beads	935
Fig. 16.2	:	Tubular steatite beads	936
Fig. 16.3	:	Terracotta beads	937
Fig. 16.4	:	Reconstructed necklace of terracotta beads also showing the use of Spacers	938
Fig. 16.5	:	Terracotta short circular disc and bicone beads	940
Fig. 16.5(a)	:	Terracotta short circular disc and bicone beads, side and top views	941

Fig. 16.6	:	Terracotta, truncated cone, bicone circular and spacer beads	943
Fig. 16.6(a)	:	Cross-section and top views of terracotta truncated cone, bicone circular and spacer beads	944
Fig. 16.7	:	Various shapes of terracotta beads	946
Fig. 16.8	:	Long-barrel shaped terracotta beads	948
Fig. 16.8(a)	:	Side and front views of long-barrel and cylindrical shaped terracotta beads	949
Fig. 16.9	:	Long-barrel shaped terracotta beads	951
Fig. 16.9(a)	:	Side and front views of long-barrel shaped terracotta beads	952
Fig. 16.10	:	Terracotta bicone, crescent, triangular beads, etc.	954
Fig. 16.10(a)	:	Cross-section and different views of terracotta bicone, crescent, triangular beads, etc.	955
Fig. 16.11	:	Terracotta spacer beads	957
Fig. 16.11(a)	:	Terracotta spacer beads, cross-section and side views	958
Fig. 16.12	:	Semi-precious stone beads, surface collection	960
Fig. 16.13	:	Semi-precious stone beads	961
Fig. 16.13(a)	:	Front and side views of semi-precious stone beads	962
Fig. 16.14	:	Semi-precious stone beads	964
Fig. 16.14(a)	:	Front and side views of semi-precious stone beads	965
Fig. 16.15	:	Semi-precious stone beads	967
Fig. 16.15(a)	:	Front and side views of semi-precious stone beads	968
Fig. 16.16	:	Semi-precious stone beads	970
Fig. 16.16(a)	:	Front and side views of semi-precious stone beads	971
Fig. 16.17	:	Lapis lazuli beads	973
Fig. 16.18	:	Steatite beads	975
Fig. 16.18(a)	:	Front and side views of steatite beads	976
Fig. 16.19	:	Steatite beads	978
Fig. 16.19(a)	:	Front and side views of steatite beads	979
Fig. 16.20	:	Steatite, shell and faience beads- abliq-inlay	981
Fig. 16.20(a)	:	Front and side views of steatite, shell and faience beads- abliq inlay	982
Fig. 16.21	:	Steatite beads, pendants and button	984
Fig. 16.22	:	Copper spacer and beads	986
Fig. 16.22(a)	:	Front and side views of copper spacer and beads	987
Fig. 16.23	:	Faience beads	989
Fig. 16.23(a)	:	Front and side views of faience beads	990
Fig. 16.24	:	Terracotta beads for decorating animals	992
Fig. 16.25	:	Terracotta beads for decorating animals	994

## **Chapter 17 Harappan Measuring Instruments from Kalibangan**

Fig. 17.1	:	Terracotta hour-glass	996
Fig. 17.2	:	Inner view of upper bowl of terracotta hour-glass	997
Fig. 17.3	:	Top view of terracotta hour-glass	998
Fig. 17.4	:	Inner view of lower bowl of terracotta hour-glass	999
Fig. 17.5	:	Plan and sectional-elevation of terracotta hour-glass	1000
Fig. 17.6	:	Terracotta scale	1002

Fig. 17.7	:	Scales from Lothal, Mohenjodaro and Harappa	1003
Fig. 17.8	:	Faience, terracotta and shell plumb-bobs	1005
Fig. 17.8(a)	:	Faience plumb- bob hanging with the thread (modern) showing the proper use	1006
Fig. 17.9	:	Chert and agate cubical weights	1008
Fig. 17.10	:	Chert and agate cubical weights	1011
Fig. 17.11	:	Black jasper, agate, sand stone and terracotta conical weights	1015
Fig. 17.12	:	Black jasper and agate conical weights	1017
Fig. 17.13	:	Sand stone conical weight	1019
Fig. 17.14	:	Terracotta pan balance with wooden holding stick and string (both modern) showing the use	1021

## **Chapter 18 Shell Objects**

Fig. 18.1	:	Fragmentary ladles, cups, bowls and dish of shell	1024
Fig. 18.1(a)	:	Section and different views of ladles and bowls of shell	1025
Fig. 18.1(b)	:	Section and different views of a ladle of shell	1026
Fig. 18.2	:	Shell buttons, tortoise shaped pendant, scapula, etc.	1028
Fig. 18.2(a)	:	Section, side views and front views of shell buttons, tortoise-shaped pendant, scapula, etc.	1029
Fig. 18.3	:	Shell inlays	1031
Fig. 18.4	:	Fragmentary conch shells	1033
Fig. 18.4(a)	:	Section and side views of fragmentary conch shells	1034

## **Chapter 19 Terracotta Spindle Whorls, Spools, Weaver's Tools and Weights**

Fig. 19.1	:	Terracotta spindle whorls with a central hole	1036
Fig. 19.2	:	Terracotta spindle whorls with a hub and plano-convex spindle whorls	1038
Fig. 19.3	:	Terracotta spool with wooden sticks (modern) showing their use	1040
Fig. 19.4	:	Terracotta spool with wooden sticks (modern)	1042
Fig. 19.5	:	Terracotta animal- headed spool and other circular spool	1044
Fig. 19.5(a)	:	Conjectural drawing of animal- headed spool	1045
Fig. 19.6	:	Terracotta weavers biconcave weights	1047
Fig. 19.7	:	Terracotta weavers biconcave weights	1049
Fig. 19.8	:	Cloth impression on pottery	1051

## **Chapter 20 Terracotta Pulleys, Decorated Tiles, Pipes and Stone Door-devices**

Fig. 20.1	:	Terracotta pulleys	1055
Fig. 20.2	:	Decorated terracotta tiles	1057
Fig. 20.3	:	Decorated terracotta tiles	1059
Fig. 20.4	:	Terracotta pipe	1061
Fig. 20.4(a)	:	Another terracotta pipe	1062

Fig. 20.4(b)	:	A view of two terracotta pipes one upon other showing their setting and use	1063
Fig. 20.5	:	Chert, door-devices	1065
Fig. 20.6	:	Stone door-devices	1067
Fig. 20.6(a)	:	Himalayan Schist, door- device with a hole	1068
Fig. 20.7	:	Brick fragment of a door-device	1070
Fig. 20.8	:	Fragmentary bricks, with impressions of dogs' paw	1072
Fig. 20.9	:	Decorated hemispherical ball of chert with deep incised lines	1074

## Chapter 21 Other Terracotta Objects

Fig. 21.1	:	Terracotta rattles	1079
Fig. 21.2	:	Terracotta whistles	1081
Fig. 21.3	:	Terracotta whistles	1083
Fig. 21.4	:	Terracotta feeding cup and cow-faced feeding cup	1085
Fig. 21.5	:	Terracotta feeding cups	1087
Fig. 21.6	:	Terracotta feeding cups	1089
Fig. 21.7	:	Buffalo-faced terracotta feeding cup	1091
Fig. 21.8	:	Terracotta human and anthropomorphic figures	1093
Fig. 21.9	:	Decorated terracotta human figure	1095
Fig. 21.10	:	Terracotta anthropomorphic figures	1097
Fig. 21.11	:	Terracotta seated human figure	1099
Fig. 21.11(a)	:	Side and front view of a terracotta seated human figure	1100
Fig. 21.11(b)	:	Terracotta seated human figure (fragmentary) in <i>vajrasana</i> wearing decorated <i>dhoti</i>	1101
Fig. 21.11(c)	:	Side view showing decorated <i>dhoti</i> of seated human figure in <i>vajrasana</i>	1102
Fig. 21.12	:	Terracotta human heads	1104
Fig. 21.12(a)	:	Both side views of a terracotta human head, (Fig 21.12 no.1)	1105
Fig. 21.12(b)	:	Human head with parted hair, fragmentary	1106
Fig. 21.12(c)	:	Different views of double-headed human figure, (Fig. 21.12 no.4)	1107
Fig. 21.13	:	Terracotta bull	1109
Fig. 21.14	:	Terracotta mechanical bulls	1111
Fig. 21.14(a)	:	Close-up of a mechanical bull	1112
Fig. 21.14(b)	:	Conjectural views showing the movements	1113
Fig. 21.15	:	Terracotta rams, fragmentary	1115
Fig. 21.16	:	Terracotta charging bull	1117
Fig. 21.17	:	Terracotta humped bull	1119
Fig. 21.18	:	Terracotta humped bull	1121
Fig. 21.19	:	Terracotta moulded bull, fragmentary	1123
Fig. 21.20	:	Terracotta cat	1125
Fig. 21.21	:	Terracotta animal figures	1127
Fig. 21.22	:	Terracotta animal figures	1129
Fig. 21.23	:	Terracotta animal figures	1131
Fig. 21.24	:	Terracotta animal figures	1133



Fig. 21.25	:	Terracotta humped bulls	1135
Fig. 21.26	:	Terracotta bulls	1137
Fig. 21.26(a)	:	Side view of terracotta bulls	1138
Fig. 21.27	:	Terracotta humped bulls	1140
Fig. 21.28	:	Terracotta bulls and dog	1142
Fig. 21.29	:	Hind portion of a terracotta boar	1144
Fig. 21.30	:	Terracotta rhinoceros, elephant, dog and bulls	1146
Fig. 21.31	:	Terracotta camels, dog, tortoise, etc.	1148
Fig. 21.32	:	Terracotta dog, ram and bulls	1150
Fig. 21.33	:	Terracotta bull and dog	1152
Fig. 21.34	:	Terracotta ant eater	1154
Fig. 21.35	:	Terracotta dogs	1156
Fig. 21.36	:	Terracotta dogs	1158
Fig. 21.37	:	Terracotta seated beaver ( <i>udbilao</i> )	1160
Fig. 21.38	:	Terracotta dogs and buffalo	1162
Fig. 21.39	:	Terracotta dogs and bear	1164
Fig. 21.40	:	Terracotta head of a animal figure	1166
Fig. 21.41	:	Terracotta head of a ram	1168
Fig. 21.42	:	Terracotta birds	1170
Fig. 21.43	:	Terracotta birds	1172
Fig. 21.44	:	Terracotta toy cart frame with wheels and wooden sticks (modern) showing the conjectural view	1177
Fig. 21.44(a)	:	Conjectural drawings of terracotta toy-carts showing their types	1178
Fig. 21.44(b)	:	Conjectural drawings of terracotta toy-carts showing their types	1179
Fig. 21.44(c)	:	Conjectural drawings of terracotta toy-carts showing their types	1180
Fig. 21.45	:	Terracotta toy-cart frames	1182
Fig. 21.46	:	Terracotta toy-cart frames	1184
Fig. 21.47	:	Terracotta toy-cart frame	1186
Fig. 21.48	:	Terracotta toy-cart frames	1188
Fig. 21.49	:	Terracotta hubbed wheels	1192
Fig. 21.50	:	Terracotta hubbed wheels	1194
Fig. 21.51	:	Terracotta hubbed wheels	1196
Fig. 21.52	:	Terracotta hopscotches	1198
Fig. 21.53	:	Terracotta hopscotches	1200
Fig. 21.54	:	Terracotta decorated balls	1202
Fig. 21.55	:	Terracotta stud shaped gamesmen	1205
Fig. 21.56	:	Terracotta pellet-shaped gamesmen	1207
Fig. 21.57	:	Terracotta concave-sided gamesmen	1209
Fig. 21.58	:	Terracotta cone shaped gamesmen	1211
Fig. 21.59	:	Terracotta knobbed gamesmen	1213
Fig. 21.60	:	Terracotta knobbed gamesmen	1215
Fig. 21.61	:	Terracotta knobbed gamesmen	1217
Fig. 21.62	:	Terracotta animal-headed gamesmen	1219

Fig. 21.63	:	Inscribed terracotta gamesmen	1221
Fig. 21.64	:	Inscribed terracotta gamesmen	1223
Fig. 21.65	:	Terracotta dices	1225
Fig. 21.66	:	Terracotta brick bearing incised <i>chausar</i> design	1227
Fig. 21.67	:	Terracotta toy bricks	1229
Fig. 21.68	:	Terracotta cakes	1232
Fig. 21.69	:	Incised terracotta triangular cake, both side views	1234
Fig. 21.69(a)	:	Incised terracotta triangular cake, obverse view	1235
Fig. 21.69(b)	:	Incised terracotta triangular cake, reverse view	1236
Fig. 21.70	:	Terracotta cakes	1238
Fig. 21.71	:	Terracotta <i>mushtikas</i>	1240
Fig. 21.72	:	Terracotta cakes	1242
Fig. 21.73	:	Terracotta triangular and circular cakes	1244
Fig. 21.74	:	Terracotta cakes	1246
Fig. 21.75	:	Terracotta Shiva <i>Linga</i>	1248
Fig. 21.75(a)	:	Top view of terracotta Shiva <i>Linga</i>	1249
Fig. 21.76	:	Conjectural drawing of terracotta kernos	1251
Fig. 21.76(a)	:	A view of a plasticene made kernos (modern)	1252
Fig. 21.77	:	Fragmentary terracotta ploughs	1255
Fig. 21.78	:	Terracotta cots	1257
Fig. 21.78(a)	:	Conjectural views of terracotta cots	1258
Fig. 21.79	:	Terracotta cots	1260
Fig. 21.80	:	Terracotta cots	1262
Fig. 21.81	:	Terracotta sharpeners	1264
Fig. 21.82	:	Terracotta sharpeners	1266
Fig. 21.83	:	Terracotta cones	1268
Fig. 21.84	:	Terracotta cones	1270
Fig. 21.85	:	Terracotta <i>takhti</i>	1272
Fig. 21.86	:	Terracotta cradle	1274
Fig. 21.86(a)	:	Section, plan and conjectural view of a terracotta cradle	1275
Fig. 21.86(b)	:	A view of a cradle tied with a thread (modern)	1276
Fig. 21.87	:	Terracotta diadems	1278
Fig. 21.88	:	Alabaster pots	1280
Fig. 21.89	:	Terracotta compartmented pots	1282
Fig. 21.90	:	Terracotta cylindrical objects	1284

## Chapter 22 The Cemetery

Fig. 22.1	:	General view of the excavation	1287
Fig. 22.2	:	Location of Harappan Cemetery (KLB-8)	1288
Fig. 22.3	:	KLB-8 Harappan Cemetery	1290
Fig. 22.4	:	KLB-8 Burial nos. 4 and 5	1299
Fig. 22.5	:	KLB-8 Another view of Burial nos. 4 and 5	1300
Fig. 22.6	:	KLB-8 Sectional elevation and plan of Burial nos. 4 and 5	1301
Fig. 22.7	:	KLB-8 Extended Burials	1304



Fig. 22.8	:	KLB-8 Burial no. 8	1305
Fig. 22.9	:	KLB-8 Sectional elevation and plan of Burial no. 8	1306
Fig. 22.10	:	KLB-8 A frontal view of a skull of Burial no. 8	1307
Fig. 22.11	:	KLB-8 Views of left humerus of Burial no. 8	1308
Fig. 22.12	:	KLB-8 Views of right humerus of Burial no. 8	1309
Fig. 22.13	:	KLB-8 Views of right ulna of Burial no. 8	1310
Fig. 22.14	:	KLB-8 Burial no. 9	1315
Fig. 22.15	:	KLB-8 Sectional elevation and plan of Burial no. 9	1316
Fig. 22.16	:	KLB-8 Views of right humerus, Burial no. 9	1317
Fig. 22.17	:	KLB-8 Views of right ulna, Burial, no. 9	1318
Fig. 22.18	:	KLB-8 Views of right radius, Burial no. 9	1319
Fig. 22.19	:	KLB-8 Views of left humerus, Burial no. 9	1320
Fig. 22.20	:	KLB-8 View of left radius, Burial no. 9	1321
Fig. 22.21	:	KLB-8 Views of left ulna, Burial no. 9	1322
Fig. 22.22	:	KLB-8 Burial no. 10	1326
Fig. 22.23	:	KLB-8 Sectional elevation and plan of Burial no. 10	1327
Fig. 22.24	:	KLB-8 Views of right ulna, Burial no. 10	1328
Fig. 22.25	:	KLB-8 Views of right humerus of Burial no. 10	1329
Fig. 22.26	:	KLB-8 Burial nos. 11 and 12	1336
Fig. 22.27	:	KLB-8 Sectional elevation and plan of Burial nos. 11 and 12	1337
Fig. 22.28	:	KLB-8 Views of left radius of Burial no. 11	1338
Fig. 22.29	:	KLB-8 Views of right radius of Burial no. 11	1339
Fig. 22.30	:	KLB-8 Views of left ulna of Burial no. 11	1340
Fig. 22.31	:	KLB-8 Views of left humerus of Burial no. 11	1341
Fig. 22.32	:	KLB-8 Views of right ulna of Burial no. 11	1342
Fig. 22.33	:	KLB-8 Burial no. 12	1346
Fig. 22.34	:	KLB-8 Burial no. 26	1349
Fig. 22.35	:	KLB-8 Sectional elevation and plan of Burial no. 26	1350
Fig. 22.36	:	KLB-8 Burial no. 27	1355
Fig. 22.37	:	KLB-8 Sectional elevation and plan of Burial no. 27	1356
Fig. 22.38	:	KLB-8 Burial no. 28	1359
Fig. 22.39	:	KLB-8 Sectional elevation and plan of Burial no. 28	1360
Fig. 22.40	:	KLB-8 Burial no. 29	1363
Fig. 22.41	:	KLB-8 Close-up of Burial no. 29	1364
Fig. 22.42	:	KLB-8 Another view of Burial no. 29	1365
Fig. 22.43	:	KLB-8 Sectional elevation and plan of Burial no. 29	1366
Fig. 22.44	:	KLB-8 Burial no. 31	1371
Fig. 22.45	:	KLB-8 Close-up of Burial no. 31	1372
Fig. 22.46	:	KLB-8 Sectional elevation and plan of Burial nos. 31 and 35	1373
Fig. 22.47	:	KLB-8 Burial no. 32	1376
Fig. 22.48	:	KLB-8 Close-up of Burial no. 32	1377
Fig. 22.49	:	KLB-8 Sectional elevation and plan of Burial no. 32	1378
Fig. 22.50	:	KLB-8 Burial no. 34	1382
Fig. 22.51	:	KLB-8 Sectional elevation and plan of Burial no. 34	1383
Fig. 22.52	:	KLB-8 Burial no. 14	1387

Fig. 22.53	:	KLB-8 Burial no. 19	1389
Fig. 22.54	:	KLB-8 Burial no. 22	1391
Fig. 22.55	:	KLB-8 Sectional elevation and plan of Pot Burial no. 23	1392
Fig. 22.56	:	KLB-8 Burial no. 22 and Pot Burial no. 23	1393
Fig. 22.57	:	KLB-8 Sectional elevation and plan of Burial no. 22 and Pot Burial no.23	1394
Fig. 22.58	:	KLB-8 Pot Burial no. 30	1396
Fig. 22.59	:	KLB-8 Close-up of Pot Burial no. 30	1397
Fig. 22.60	:	KLB-8 Sectional elevation and plan of Pot Burial no. 30	1398
Fig. 22.61	:	KLB-8 Pot Burial no. 33	1400
Fig. 22.62	:	KLB-8 Sectional elevation and plan of Pot Burial no. 33	1401
Fig. 22.63	:	KLB-8 Close-up of case I – Trephination	1404
Fig. 22.64	:	KLB-8 Close-up of case II – Congenital perforation	1407
Fig. 22.65	:	KLB-8 Close-up of case III – Exostosis	1409
Fig. 22.66	:	KLB-8 Close-up of case IV – Sharp cut marks	1411
Fig. 22.67	:	KLB-8 Close-up of case V – Dental attrition	1413
Fig. 22.68	:	KLB-8 Close-up of case VI – Burning marks	1416
Fig. 22.69	:	KLB-8 Close-up of case VII – The Crippled man	1418
Fig. 22.70	:	KLB-8 Close-up of case VII – The Crippled man	1419
Fig. 22.71	:	KLB-8 Close-up of case VIII – A paralytic man	1421

## **Chapter 23 Pot Burials**

Fig. 23.1	:	KLB-8 Pot Burials	1430
Fig. 23.2	:	KLB-8 Plan of Pot Burial no. 1	1433
Fig. 23.3	:	KLB-8 Pot Burial no. 2	1435
Fig. 23.4	:	KLB-8 Plan of Pot Burial no. 2	1436
Fig. 23.5	:	KLB-8 Pot Burial no. 3	1438
Fig. 23.6	:	KLB-8 Plan of Pot Burial no. 3	1439
Fig. 23.7	:	KLB-8 Pot Burial nos. 6 and 7	1441
Fig. 23.8	:	KLB-8 Plan of Pot Burial nos. 6 and 7	1442
Fig. 23.9	:	KLB-8 Pot Burial no. 13	1445
Fig. 23.10	:	KLB-8 Plan of Pot Burial no. 13	1446
Fig. 23.11	:	KLB-8 Pot Burial no. 15	1448
Fig. 23.12	:	KLB-8 Plan of Pot Burial no. 15	1449
Fig. 23.13	:	KLB-8 Pot Burial no. 16	1451
Fig. 23.14	:	KLB-8 Sectional elevation and plan of Pot Burial no. 16	1452
Fig. 23.15	:	KLB-8 Plan of Pot Burial no. 17	1454
Fig. 23.16	:	KLB-8 Pot Burial no. 18	1456
Fig. 23.17	:	KLB-8 Pot Burial no. 20	1458
Fig. 23.18	:	KLB-8 Pot Burial no. 24	1461
Fig. 23.19	:	KLB-8 Sectional elevation and plan of Pot Burial no. 24	1462
Fig. 23.20	:	KLB-8 Pot Burial no. 25	1464
Fig. 23.21	:	KLB-8 Sectional elevation and plan of Pot Burial no. 25	1465

## Chapter 24 The Pottery from Cemetery

Fig. 24.1	:	KLB-8 Dish-on-stands	1467
Fig. 24.2	:	KLB-8 Cup-on-stands and cylindrical vases	1468
Fig. 24.3	:	KLB-8 Dishes, bowls and lids	1469
Fig. 24.4	:	KLB-8 Bowl and jars	1470
Fig. 24.5	:	KLB-8 Jars and elongated vessel	1471
Fig. 24.6	:	KLB-8 Vases and jars	1472
Fig. 24.7	:	KLB-8 Miniature vases and deep bowl with a lid	1473
Fig. 24.8	:	KLB-8 Oval and tall painted jars and deep basin	1474

## Chapter 25 Small finds from Cemetery

Fig. 25.1	:	KLB-8 Copper mirror, bangles and rings	1476
Fig. 25.2	:	KLB-8 Faience bangles, plumb-bob and ear ornament	1478
Fig. 25.3	:	KLB-8 Shell, shell bangles and ring	1480
Fig. 25.4	:	KLB-8 Agate weight, bone arrow head and terracotta marble	1482
Fig. 25.5	:	KLB-8 Semi-precious stone beads	1484
Fig. 25.6	:	KLB-8 Side and front views of semi-precious stone beads	1485
Fig. 25.7	:	KLB-8 Gold beads and a piece	1487

## Appendix Figures

Fig. 1	:	Exploration team headed by late A. Ghosh (centre first row)	1490
Fig. 2`	:	Sarasvati river valley near Suratgarh	1492
Fig. 3`	:	Explorations in Bikaner 1950	1494
Fig. 4`	:	Southern bank of Sarasvati river	1496
Fig. 5	:	Binjor Harappan Pottery	1502
Fig. 6	:	Painted Grey Ware ,1) DLT-1; 2) Chak 15/4; 3) BNJ-4; 4) DLT-1; 5) Chak 15/4; 6) BNJ-4; 7) BRK-4; 8) BNJ-4; 9) Chak-86	1504
Fig. 7	:	Binjor Matt- impressed design	1505
Fig. 8	:	Impressed Pottery : 1) Chak 15/4; 2) SDR-3; 4) DLT-5; 3, 5&6) BNJ-4	1507
Fig. 9	:	Matt-impressed ware: 1) Chak 77; 2) Chak-8; 3) Chak 87	1512
Fig. 10	:	Rer : Excavated section	1515
Fig. 11	:	Chak 40: View of the excavated trench	1519
Fig. 12	:	JTS : Rangmahal Pottery	1522
Fig. 13	:	1) JTS; 2) SDR-4; 3) SDR-4	1524
Fig. 14	:	1) PG-29; 2) BGA	1525
Fig. 15	:	Harappan Pottery : 1,5 and 7 ) BGA; 2-3) Chak 21; 4) TKWD;) 6) MTL	1526
Fig. 16	:	Impressed Pottery : 1) SDR-3; 2) SLM; 3) Rer; 4) Chak 72/2; 5) SDR-3	1527
Fig. 17	:	Impressed Pottery : 1) SDA-3; 2-3) BRK; 4) BNJ; 5) SRT	1529

Fig. 18	:	Manak Theri	1530
Fig. 19	:	Baman Theri	1532
Fig. 20		KRS-T : Harappan Pottery types	1533
Fig. 21	:	Rangmahal General view	1535
Fig. 22	:	Rangmahal Another general view	1536
Fig. 23		Harappan Pottery : 1) RMP-2; 2) RMP; 3) SDR-1; 4) SDR-4	1537
Fig. 24		Bhanwar Theri : General view	1538
Fig. 25	:	Kalibangan -1 : General view	1540
Fig. 26	:	Kalibangan -2 : General view	1541
Fig. 27	:	Kalibangan : Harappan Pottery	1542
Fig. 28	:	Pilibangan : General view	1544
Fig. 29		Painted Grey Ware : 1) BNJ-4; 2) Chak-72/1; 3) Chak-40; 4) Chak-8; 5) Chak 72/2; 6) SPA; 7) Chak 39/1; 8) Chak 15/4; 9) SRT, Chak-59; 10) Chak-59; 11) Chak-86; 12) Chak 15/4; 13) Chak-74; 14) SPA; 15) LKD-1; 16) BNJ 4;17) SDR-3	1546
Fig. 30	:	Tarkhanwala Dera : General view	1548
Fig. 31	:	TKW-D : Kiln	1549
Fig. 32	:	TKW-D : Cremation ground	1550
Fig. 33	:	Harappan seal, fragmentary	1551
Fig. 34	:	Nohar : Pottery types	1565
Fig. 35	:	Nohar : Other Pottery types	1566
Fig. 36	:	Nohar : Black-on-red ware	1567
Fig. 37	:	Nohar : Black-on-red ware	1568
Fig. 38	:	Sothi : General view	1570

## 1. INTRODUCTORY

**L**ike any other Harappan Site of mature period in the Sub-continent, Kalibangan also yielded a large number of lithic tools both in the Early Harappan and Mature Harappan periods. The lithic appendage started in the shape of a small blade industry of jasper, agate and chalcedony<sup>1</sup> having blades, points, side scrapers, notched blades and serrated blades along with chert parallel sided blades which were serrated, backed or notched. The small blade industry vanished later in Harappan times at Kalibangan. There was a prolific long blade industry in chert blades available at Mohenjo-daro, Harappa, Lothal, Surkotada, Allahdino, Dholavira and Kalibangan. Parallel-sided blades have become a diagnostic culture-trait of Harappa Civilization. At Surkotada and Bagesara a flourishing bone tool industry is also associated with the lithic tools. Though chert blade had made its appearance in the earlier period at Kalibangan but it is available in all centres of Harappan Civilization in the mature period. The tradition appears to be a hangover of the earlier technology. Soundara Rajan<sup>2</sup> has rightly said “the ancestry of Harappan lithic tools assemblage is naturally to be looked

for in earlier Sukkur Rohri Stone cultures which have been called as proto-neolithic by Paterson.”

In the Harappan period at Kalibangan, there has been a sudden rise in the making of chert blades as compared to other forms of lithic tools.

In R.V. Joshi's<sup>3</sup> classification in post Palaeolithic age, the blades are predominant and the geometric forms eg lunates, triangles and trapezes are very less in almost all the microlithic industries of the Chalcolithic period. This could be due to the fact that in a food producing economy, tools forming part of the hunting economy are much less. The utility of stone implements begins to decline with the gradual appearance of metal. Of all the earlier forms the blade remains to be most useful.

Chert is found from Rohri hills near Sukkur (upper Sindh) and is marked by the natural design of tree ring pattern or flesh of fish on its surface. Allchin has remarked:-

“In spite of the common use of metals, stone was not abandoned, and chert blades were prepared at the settlements from cores which in turn had been exported from great factories such as that at Sukkur. At Sukkur

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<sup>1</sup> Lal, B.B. 2003 et al. *Excavations at Kalibangan – The Early Harappans*, MASI No.98. New Delhi.

<sup>2</sup> Rajan, K.V.S. 1966. Lithic tools of Harappa Culture and allied issues. *Journal of the M.S. University, Baroda*.

<sup>3</sup> Joshi, R.V. 1973. The Significance of Microlithic tools in Post Palaeolithic Industries in India. In D.P. Agrawal and A. Ghosh (ed.), *Radio Carbon and Indian Archaeology* : 54-57, Bombay.

blades of the type found in Mohenjo-daro and other settlements were also made in large quantities at extensive working areas using the same sources of material as Palaeolithic craftsmen had done earlier. The Harappan craftsmen cleared the earliest materials and flint nodules that had suffered long exposure to the elements, and piled them up in long ridges, or threw them down the sides of convenient hills. They then used the freshly exposed nodules of flint for blade production. The craftsmen appear to have sat cross-legged at chosen spots in the cleared area, and the actual places where they sat could still be recognized when we visited the site in 1976 – some four thousand year later! Small kidney-shaped areas were completely cleared of flints down to the residual soil, and concentrations of waste materials, cores and blades could be seen beside them. Studies of the stone industries from settlements of the Mature Indus period show a distinct and probably rapid development and convergence from the more varied, individual assemblages recorded at Early Indus and all earlier settlements. The range of artifacts made from blades (in which the local and regional distinctions were seen), drops away almost entirely. What is left is an industry consisting of long, regular blades made from carefully prepared cores of very high quality material obtained from outstandingly good sources of supply. The blade industry of this period is highly professional and this crafts shows an effortless competence, without apparently

any desire to produce novel or special results. This is a clear example of the kind of craft specialization that took place at the beginning of the Mature Indus urban period”<sup>4</sup>

Chert is reported from Kirma Hills Punjab,<sup>5</sup> lime stones of Saurashtra and Kutch, Upper Krishna basin of north Karnataka, Chaibasa and Chakradharapur in Singhbhum Distt. of Bihar.<sup>6</sup> It was reported by Cockburn from Mirzapur region of U.P.<sup>7</sup> It is plausible that the Harappans were getting the raw material for their lithic tools from these areas in nodule form. It is brown and grey variety of chert which has been generally used. From the available nodules and flakes it appears that the tools are locally manufactured at Kalibangan. The parallel sided blades and cores are available from almost all the layers at Kalibangan. We would like to agree with Sankalia regarding Mohenjo-daro.<sup>8</sup>

Marshall said that “since the blades and cores were found in all the houses, the blades were made in every house, as and when required, probably by the servants of the house, till his statement is not supported by precise figures, but is an impression, based on long observation of the excavations at Mohenjo-daro. Moreover, we do not know whether the debitage was also found in every house. Hence the current view is that in these urban sites, the blades were imported from the factory sites like Rohri, as was done from Grand Pressigny, in France, during the Neolithic times in Western Europe (Subbarao in Sankalia *et al.* 1958;

<sup>4</sup> Allchin, R. and Allchin, B. 1982. *The Rise of Civilization in India and Pakistan*. pp 196-97. Cambridge.

<sup>5</sup> Posshel, G.L. 1999. *Indus Age The Beginnings.*, Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi.

<sup>6</sup> Narain, Basudeva. *Prehistoric Archaeology of Bihar*. Patna, KPJI.

<sup>7</sup> Cockburn, J. 1894. On flint implements from Kon Ravines South of Mirzapur, *Journal of Asiatic Society of Bengal, Proceedings* 3 :21-27.

<sup>8</sup> Sankalia, H.D. 1971. Chalcolithic Navdatoli, *Excavations at Navdatoli, 1957-59*. p. 270. Poona.



59; Gordon 1958; 70). However, since cores are reported from the excavations at all the sites, what is more likely was that cores were first prepared at the factory site and exported to the cities, where trained persons took out the blades as and when required.

So far the technique is concerned the Harappans at Kalibangan followed 'pressure flaking' and 'percussion flaking' techniques as revealed by cores and waste flakes available. The mass manufacture of blades was made from 'prismatic core'. Subba Rao has said that unlike the Mesolithic people, the Harappans adopted the Crested Guiding Ridge technique as it involves faster mass manufacture of blades. "Somewhere in the Neolithic Period in the Fertile Crescent this new technique of mass production of blades started amongst the incipient agricultural communities as per Braidwood and it continued to flourish right into the Bronze Age. It seems to have spread in either direction towards Europe and India." The Crested Ridge technique involves (1) dressing of the nodule and removal of outer cortex. Some nodules show the cortex, (2) Preparation of the ridge by removing a series of flakes and the ridge to control the length of flakes,

(3) Retouching of blades. Paddaya has brought to notice that Sankalia's experiment on Navdatoli material showed that blades were used for "scraping, cutting, slicing and paring of soft material wood and bone hafting".<sup>9</sup>

The excavations at Kalibangan, in the Harappan levels itself has yielded raw material in the form of chert nodules and pebbles, flakes, cores and tools. The flakes outnumber other tools. The core and debitage relationship is quite low suggesting input of chert nodules, blades and cores from the source but for urgent necessity and use local manufacture in a limited scale appears to be need based. Some of the unique types though their number is very few are tanged points, shouldered points, drills, notched points, arrow heads, burins, serrated blades and notched blades. It appears that the tanged points and the shouldered tools were used for boring or reaming wood. Besides the normal flakes a large number of blades appear unused. The small fragments of parallel sided blades were inserted diagonally into wooden sticks fixed with bitumen in wooden sickles as was done at Mehrgarh and were used in for harvesting cereals.<sup>10</sup> These tools were

<sup>9</sup> Braidwood, R. J. 1990. Prehistoric Man, Chicago Natural History Museum, Popular Series No. 37. Joshi, J.P. (ed.), *Excavations at Surkotada, 1971-72 and Exploration in Kutch*. pp 252-253. Archaeological Survey of India, New Delhi.

Subbarao, B. 1956. Chalcolithic Blade Industry of Maheshwar (Central India) - A Note on the History of the Technique, *Bulletin of Deccan College Research Institute*, Vol. XVII (1955-56) :124 ff.

Paddaya, K.1989. Stone Tools. In Ghosh, A. (ed.), *An Encyclopedia of Indian Archaeology* : 331-333. Munshiram Manohar Lal Publication, Delhi.

Hoffman, M. A. and Clelan, J. H. 1977. Excavation at Allahdino - The Lithic Industry, *Allahdino Expedition*, New York.

Thapar, B.K. 1957. Maski 1954 : A Chalcolithic site of the Southern Deccan, *Ancient India*, no. 13: 89-103.

Rao, S.R. 1985. Lothal - A Harappan Port Town, 1955-62, Vol. II, p. 558. Archaeological Survey of India, New Delhi.

Garrod, D.A.E. 1946. *Tools, Man and Environment*, Cambridge University Press, Cambridge.

<sup>10</sup> *Catalogue of Indus Civilization Exhibition*, Tokyo Metropolitan Museum, Japan, Tokyo 2000, p. 51

used for specific technological and subsistence activities.<sup>11</sup>

The blades are of various sizes. The biggest one has a maximum length of 12.5 cm and width 3.5 and the smallest has a length of 2.7 cm and width is .5 cm. Notching, serration, retouching is occasionally done on the blades as per the use. There are blades which are used as end-scrappers also. During the times

of trimming the nodule large flakes come out which have been used as scrapers of various types, points and burins. Some of the tools could be used in multipurpose ways. In some blades the bulbous ends are deliberately chipped off.

## **2. TYPOLOGY**

The following chart gives the frequency of typology of the lithic industry at Kalibangan.

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<sup>11</sup> Bhan, K.K., Vidale, M. and Kenoyer, J.M. 1994. Harappan Technology: Theoretical and Mythological Issues. *Man and Environment* Vol. XIX No. 1-2:145.'



### Typological analysis of chert lithic tools from Kalibangan

23		1	Core nodules
454	(a)	2	Debitage, flakes
1	(b)	3	Scrapers (Big flakes) resultant to trimming of nodules
	Side scrapers		
1	(c)		
	End scrapers		
1	(d)	3	Engravers
	Points		
4		4	Crested ridge flakes
21		5	Fluted cores
10		6	Retouched fluted cores
5		7	Retouched fluted cores with multiple ridge
1		8	Fluted core used as polisher
134		9	Notched blades
1		10	Asymmetrical flakes
1853		11	Parallel sided blades/fragments
78		12	Retouched Parallel sided blades
5		13	Arrow heads with tang
3		14	Chisels
6		15	Points
1		16	Tanged blades
5		17	Bifacial retouched points or flakes
7		17	Single blunt engraver
4		18	Burins
58		19	Micro blades



Fig. 11.1 Chert nodules

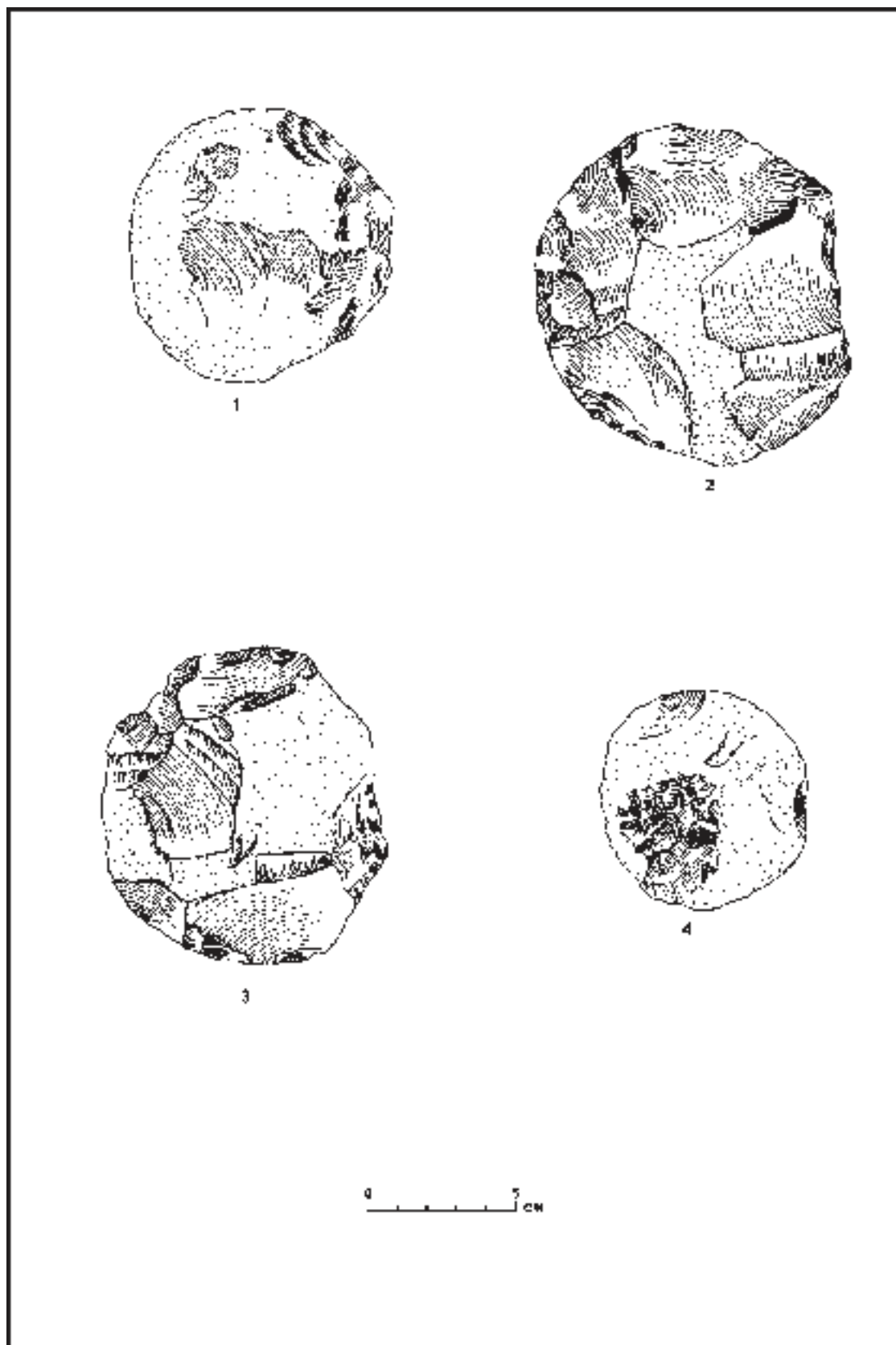


Fig. 11.2 *Chert nodules*

### **3. RAW MATERIAL NODULES**

#### **Figs. 11.1 and 11.2**

1. Chert; round nodules with a few flakes and chips taken out. Most of the cortex is available, dia. 10 cm. From surface. (KLB-2, Reg. No. 7283).
2. Chert; almost round nodule with very little cortex left. From a late level of Period II, dia. 12 cm. (KLB-2, Reg. No. 8026)
3. Chert; almost prepared round nodule with a prepared platform and wide flaked surface very little of remaining cortex, dia. 10 cm. From an early level of Period II. (KLB-2, Reg. No. 20659).
4. Chert; round nodule with a prepared platform, hardly few flakes have been taken out, dia. 7.5 cm. From middle level of Period II. (KLB-1, Reg. No. 4224).
3. Chert grey; side scraper on flake with working edge retouched, size 9 x 6 cm. From a middle level of Period II. (KLB-1, Reg. No. 7155).
4. Chert whitish; side scraper on flake left side slightly retouched, size 8 x 6.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 75717).
5. Chert grey; burin, the working end is obtained by removing one oblique spall against the thickness of the flake. From early level of Period II. (KLB-2, Reg. No. 18039).
6. Chert grey; end scraper on flake with retouched edge to make it sharp. Bulbous scar on the proximal end for holding, size 7 x 7 cm. From a middle level of Period II. (KLB-1, Reg. No. 6225).

#### **Figs. 11.3 and 11.4**

1. Chert brown; asymmetrical flake with a platform and bulb of percussion, size 7.5 cm x 2 cm). From surface. (KLB-2, Reg. No. 21839).
2. Chert brown; point on flake steeply trimmed on both sides and retouched, size 5.5 x 4.5 cm. From a middle level of Period II. (KLB-1, Reg. No. 14496).
7. Chert grey; side scraper on flake, the crescentic edge of the scraper has been retouched, size 9 x 7.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 15298).
8. Chert grey; side scraper with the working crescentic edge heavily retouched having a prominent bulbous scar at the back for holding, size 7.5 x 7.5 cm. From a late level of Period II. (KLB-1, Reg. No. 17143).

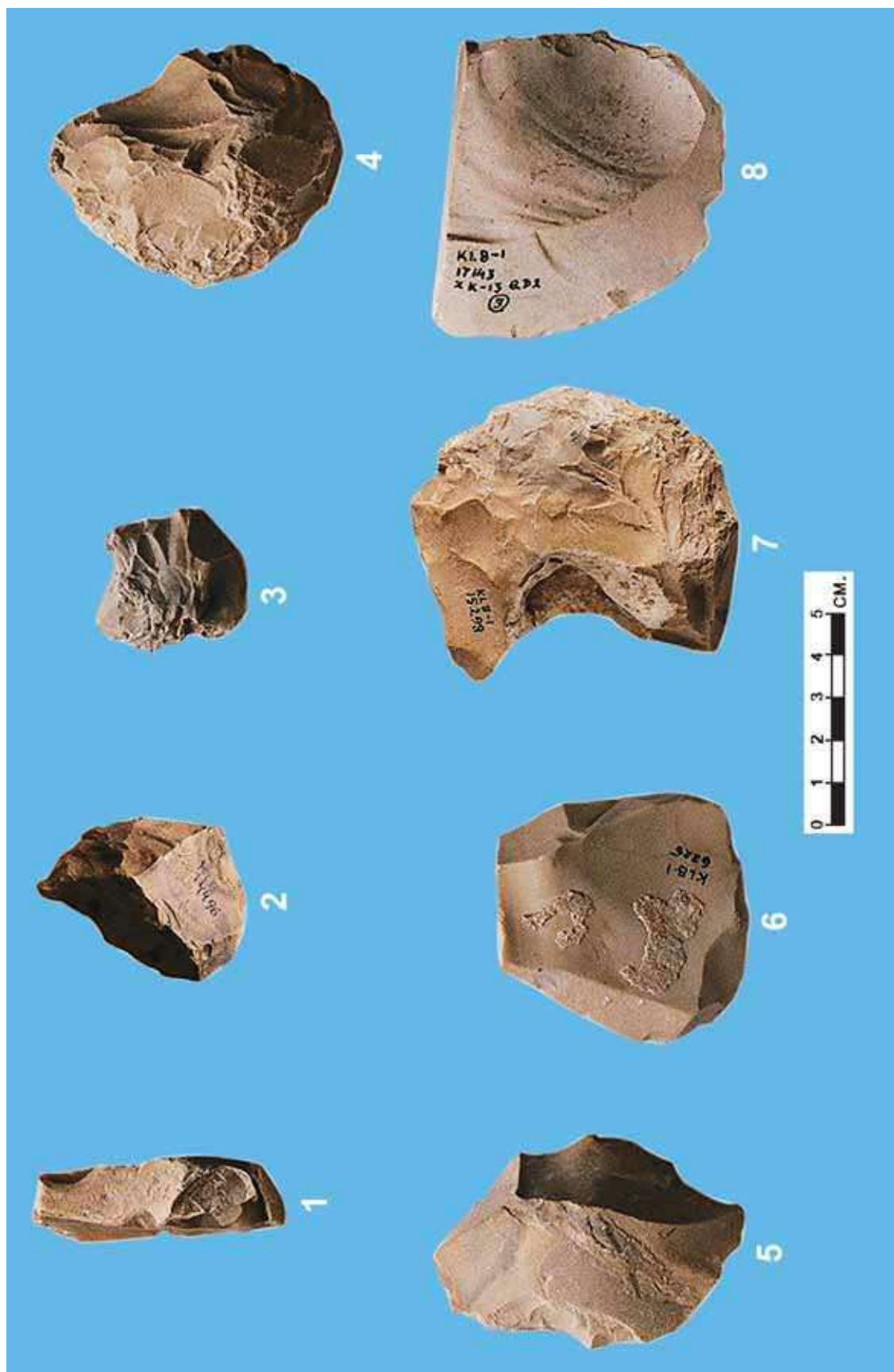


Fig. 11.3 Chert flake, point, side scrapers, end scraper and burin on flake



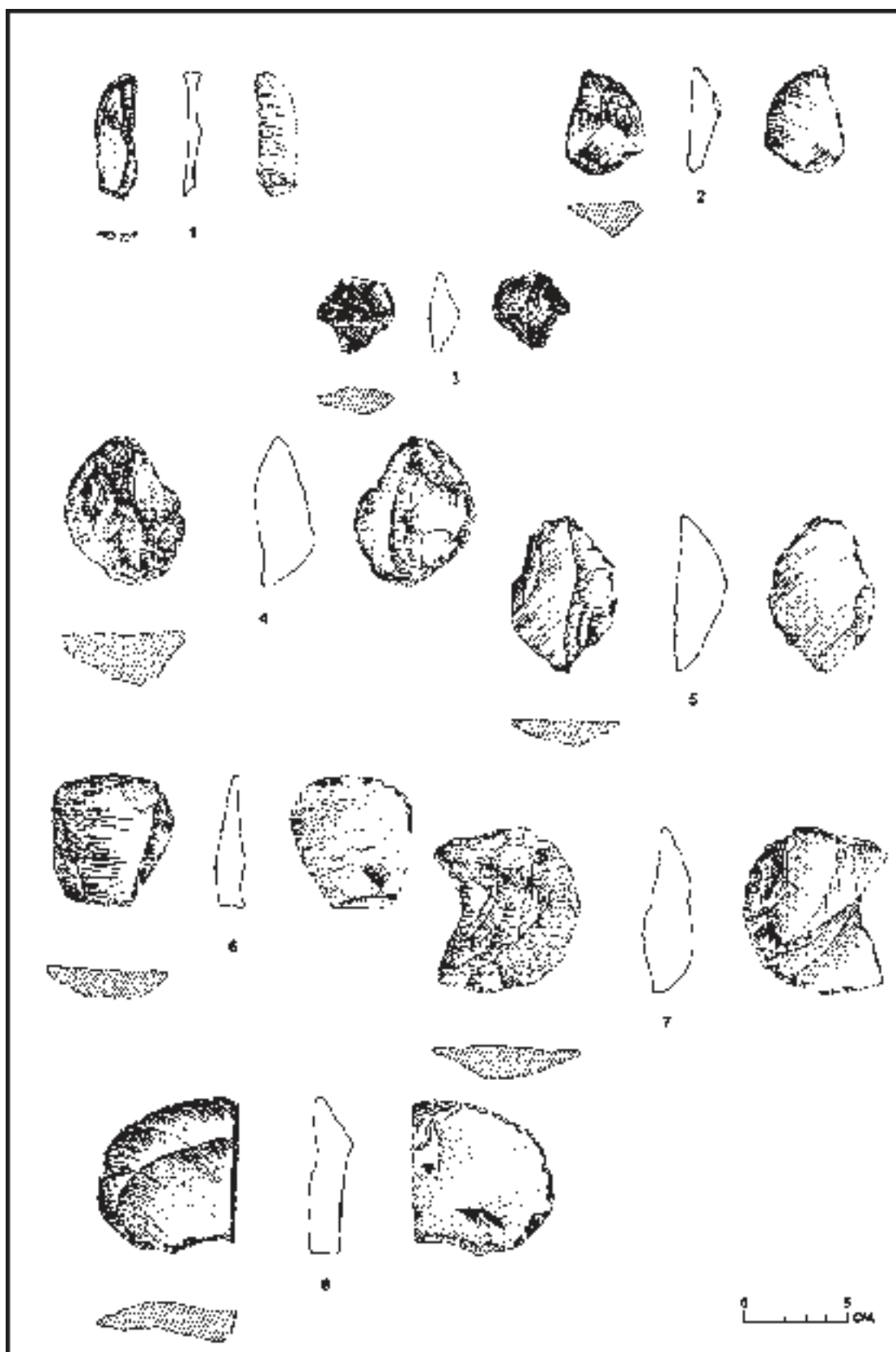


Fig. 11.4 Chert flake, point, side scrapers, end scraper and burin on flake

#### **4. CORES**

##### **Figs. 11.5 and 11.6**

1. Chert brown; cylindrical core, completely flaked and having an ovoid platform, size 7 x 6.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 16717).
2. Chert grey; discoidal core with flakes removed from all sides, could have been used as side scraper also, size 8.5 x 10 cm. From a middle level of Period II. (KLB-2, Reg. No. 14477).
3. Chert brownish grey variegated, cylindrical core with conical end and a flat ovoid platform. Blades have been taken out from all sides, size 7.5 x 5 cm. From a late level of Period II. (KLB-2, Reg. No. 469).
4. Chert grey; fluted core with an ovoid platform, blades taken out from all sides. Distal end retouched and made into a sharp edge. The shine in the core appears due to its use as a burnisher by the potter at a later stage, size 7.25 x 4 cm. From a late level of Period II. (KLB-2, Reg. No. 7400).
5. Chert grey; core with a flat platform and a tapering end, blades taken out from all around the core, size 7 x 3.5 cm. From an early level of Period II. (KLB-2, Reg. No. 17620).
6. Chert greyish; fluted core with a conical end and ovoid platform, size 7.5 x 4 cm. From unstratified level. (KLB-1, Reg. No. N.S. 21840).



Fig. 11.5 Chert cores



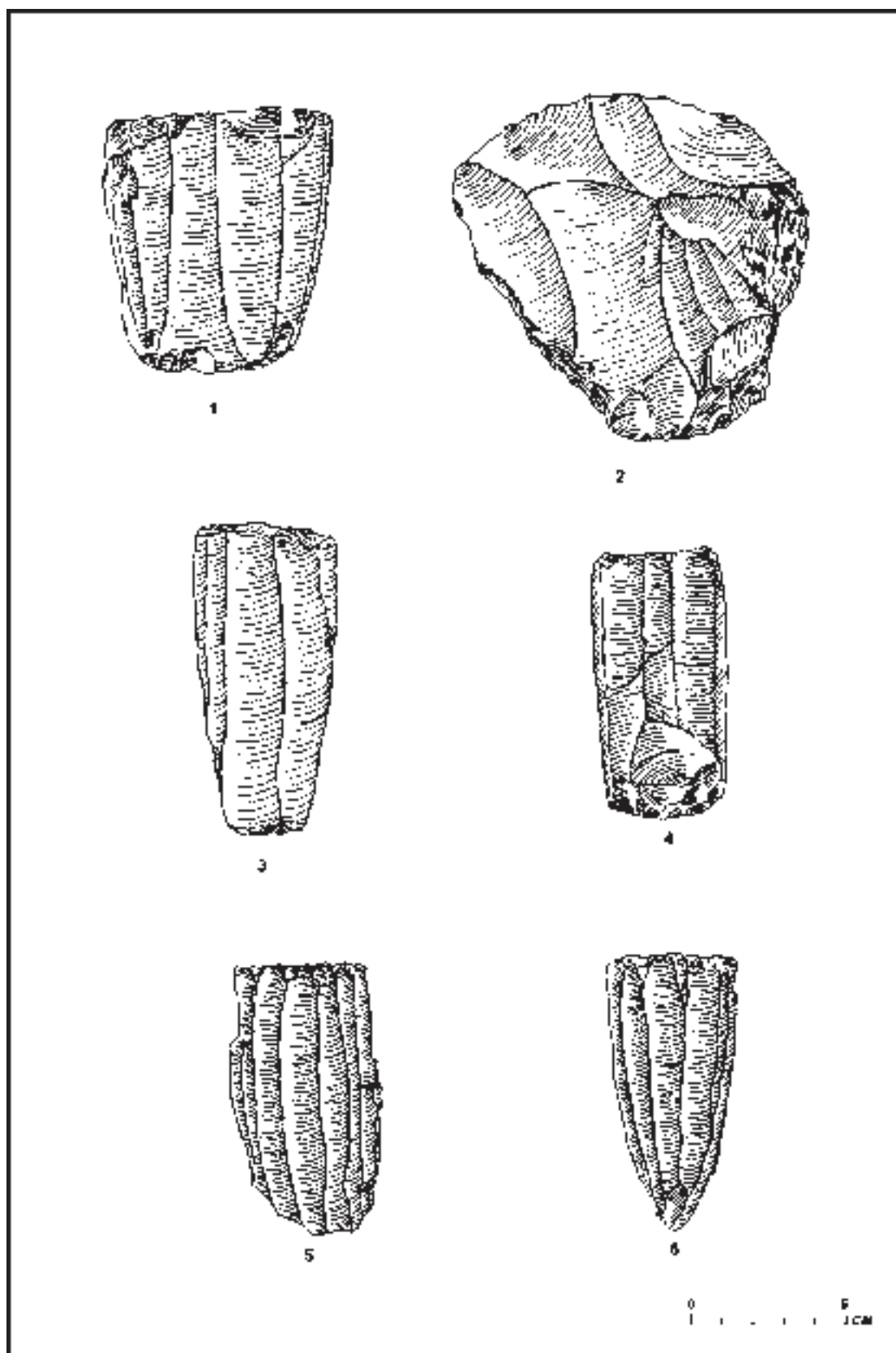


Fig. 11.6 *Chert cores*

## **5. CRESTED RIDGE BLADES**

6 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. 641).

### **Figs. 11.7 and 11.8**

1. Dark brownish chert; flake with crested ridge having alternate flaking on the ridge with negative scars having triangular section, size 5 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 81).
2. Chert grey; flake with median crested ridge with alternate flaking having negative scars on the ridge,
3. Chert grey; flake with a median crested ridge with alternate flaking having negative scars, size 8 x 4 cm. From an early level of Period II. (KLB-2, Reg. No. 19818).
4. Chert grey; flake with a median crested ridge with alternate flaking having scars of negative percussion, size 7 x 2 cm. From a late level of Period II. (KLB-2, Reg. No. 1123).

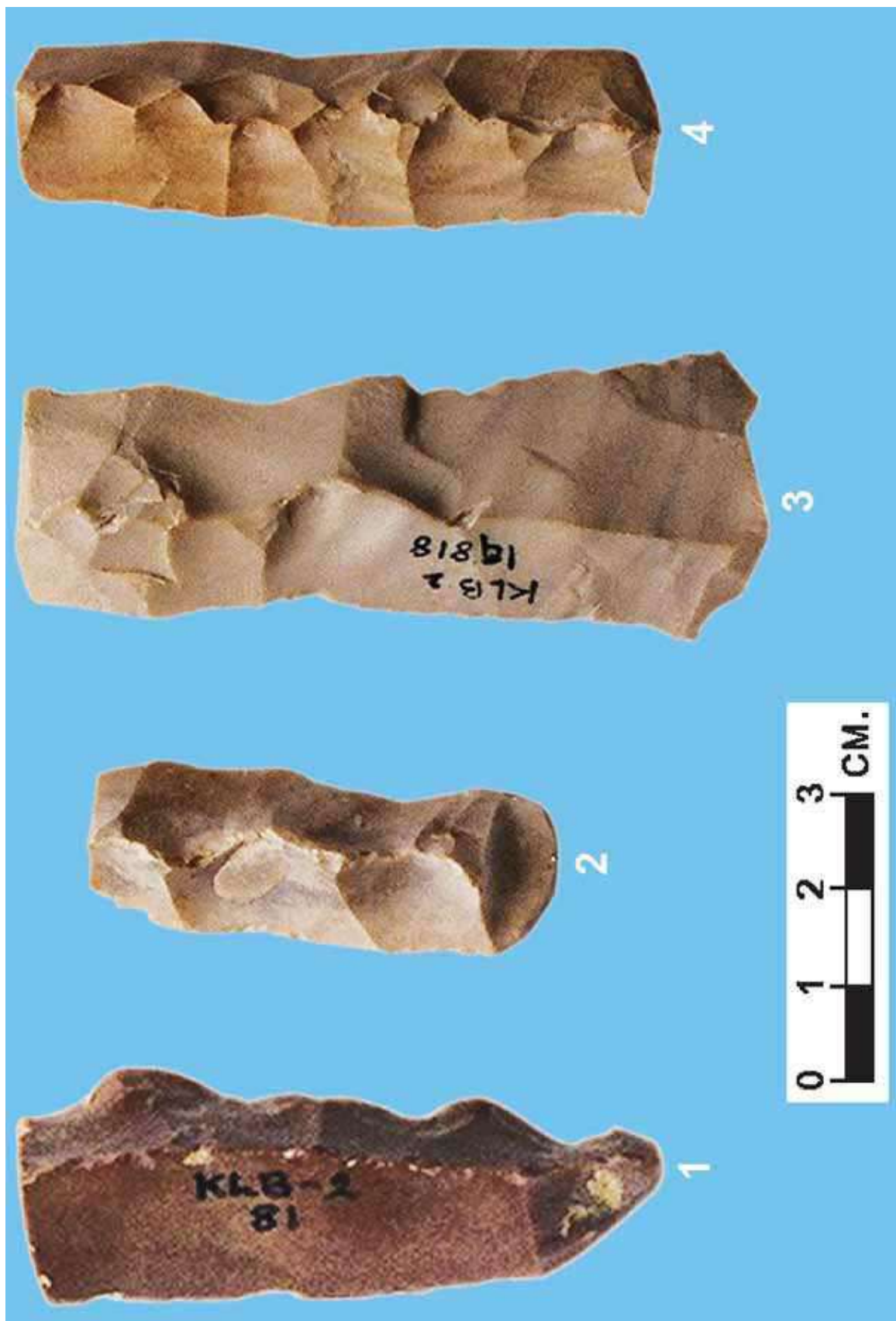


Fig. 11.7 Chert crested ridge blades

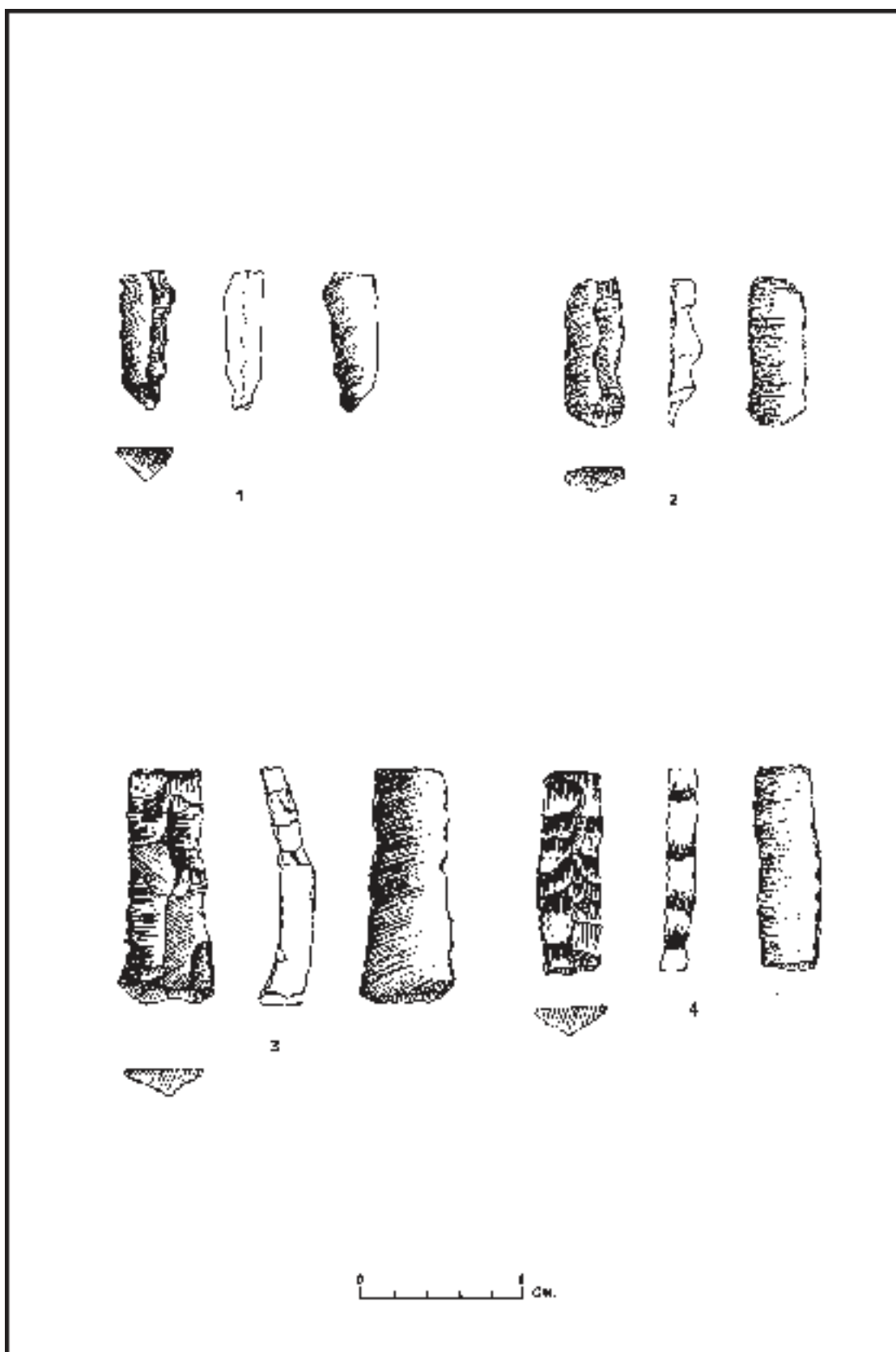


Fig. 11.8 Chert crested ridge blades

## **6. PARALLEL SIDED BLADES**

### **Figs. 11.9 and 11.10**

1. Chert brownish grey; parallel sided blade with both sides retouched, size 13.5 x 3.5 cm. From a late level of Period II (KLB-2, Reg. No. 5522).
2. Chert dark grey; parallel sided blade with both sides heavily retouched, size 12.5 x 2 cm. From a middle level of Period II. (KLB-1, Reg. No. 15045).
3. Chert grey variegated; parallel sided blade retouched on both margins, size 16 x 4 cm. It is one of the largest blades found at Kalibangan. From a middle level of Period II (KLB-1, Reg. No. 18815).
4. Chert brownish variegated; parallel sided blade, retouched on both sides, size 10.5 x 3 cm. From a late level of Period II. (KLB-1, Reg. No. 547).
5. Chert dark grey; parallel sided blade heavily retouched on both margins, size 10.5 x 2 cm. From a late level of Period II (KLB-1, Reg. No. 3162).
6. Chert brownish; parallel sided blade with retouching on both margins, size 10 x 2 cm. From a late level of Period I. (KLB-2, Reg. No. 10434).
7. Chert brown; parallel sided blade (broken) having bulb at the distal end. Both margins retouched, size 7 x 3 cm. From a middle level of Period II (KLB-2, Reg. No. 12540).



Fig. 11.9 Parallel sided chert blades



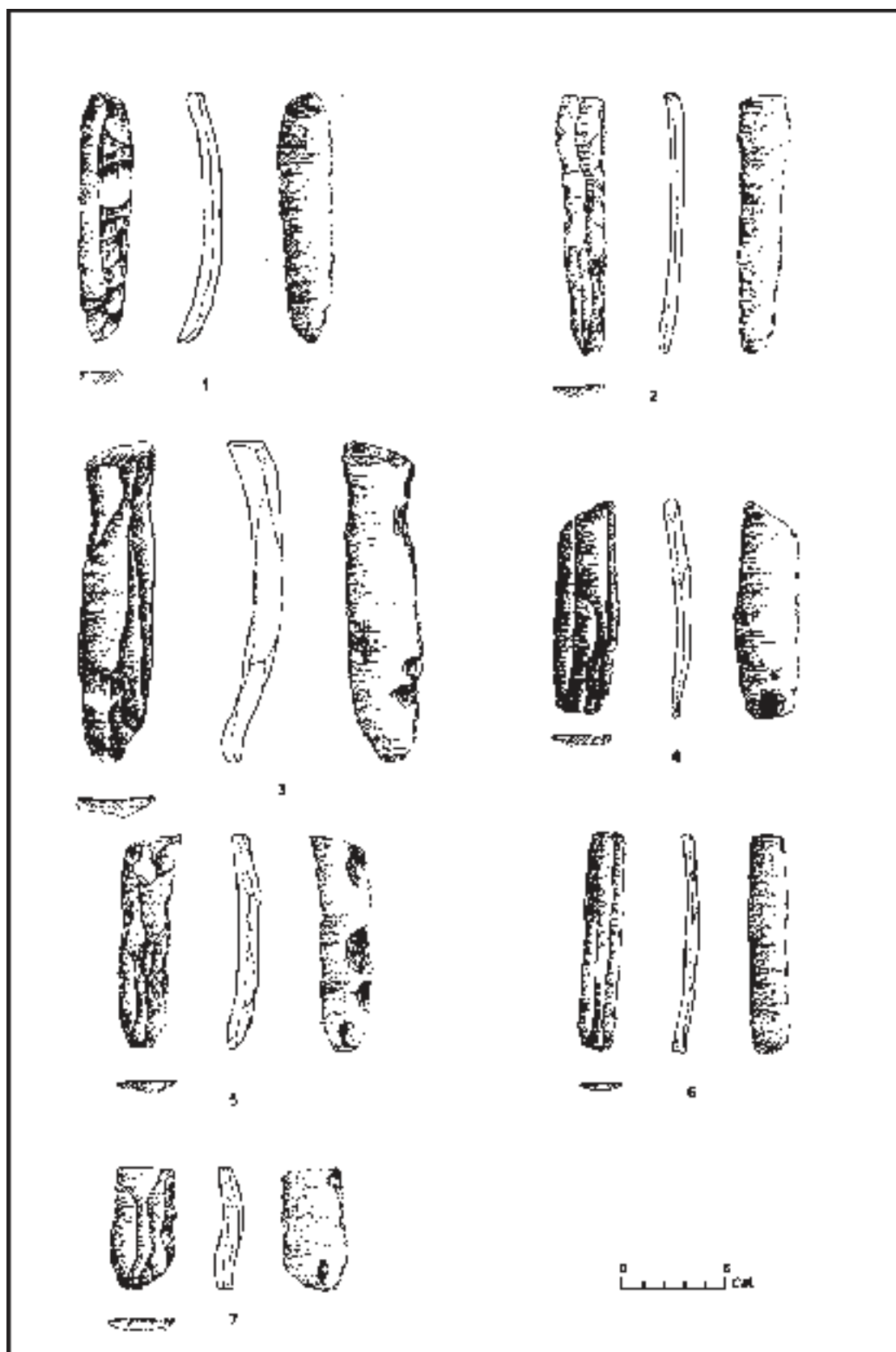


Fig. 11.10 *Parallel sided chert blades*

**Figs. 11.11 and 11.12**

1. Chert grey; parallel sided blade retouched heavily on both margins, size 8.5 x 2.5 cm. From an early level of Period II. (KLB-2, Reg. No. 21337).
2. Chert grey; parallel sided blade retouched on both margins, size 11.5 x 1.25 cm. From a late level of Period II. (KLB-2, Reg. No. 196).
3. Chert grey; parallel sided blade retouched heavily on both the margins, size 11 x 1.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 18311).
4. Chert grey; parallel sided blade retouched on both margins, both ends broken. From an unstratified level. (KLB-2, Reg. No. 21772).
5. Chert grey; parallel sided blade, mild serration on the left side, size 9 x 1.5 cm. From a late level of Period II (KLB-2, Reg. No. 10815).
6. Chert grey; parallel sided blade, both side heavily retouched, size 9 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 528).
7. Chert grey; parallel sided blade heavily retouched on both margins, size 8 x 1.5 cm. From a late level of Period II (KLB-2, Reg. No. 19766).
8. Chert grey; parallel sided blade, both margins retouched, size 10 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 9471).
9. Chert grey; parallel sided blade of ribbon flake type, both margins not retouched, size 6 x 1.5 cm. (KLB-2, Reg. No. 18266).
10. Chert grey; parallel sided blade broken, both sides heavily worked, size 6 x 1.5 cm. From a middle level of Period II (KLB-2, Reg. No. 17379).
11. Chert grey; parallel sided blade with a bulb. Both margins heavily worked, size 8 x 1 cm. From a middle level of Period II. (KLB-2, Reg. No. 12949)..
12. Chert grey; parallel sided blade, both ends broken and margins retouched, size 6.5 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 10388).
13. Chert grey; parallel sided blade with proximal end broken. Both margins heavily retouched, size 7.5 x 1.5 cm. From a late level of Period II (KLB-2, Reg. No. 16798).
14. Chert grey; parallel sided blade, both margins retouched, size 7.5 x 1.5 cm. From a late level of Period II (KLB-1, Reg. No. 19812).





Fig. 11.11 Parallel sided chert blades

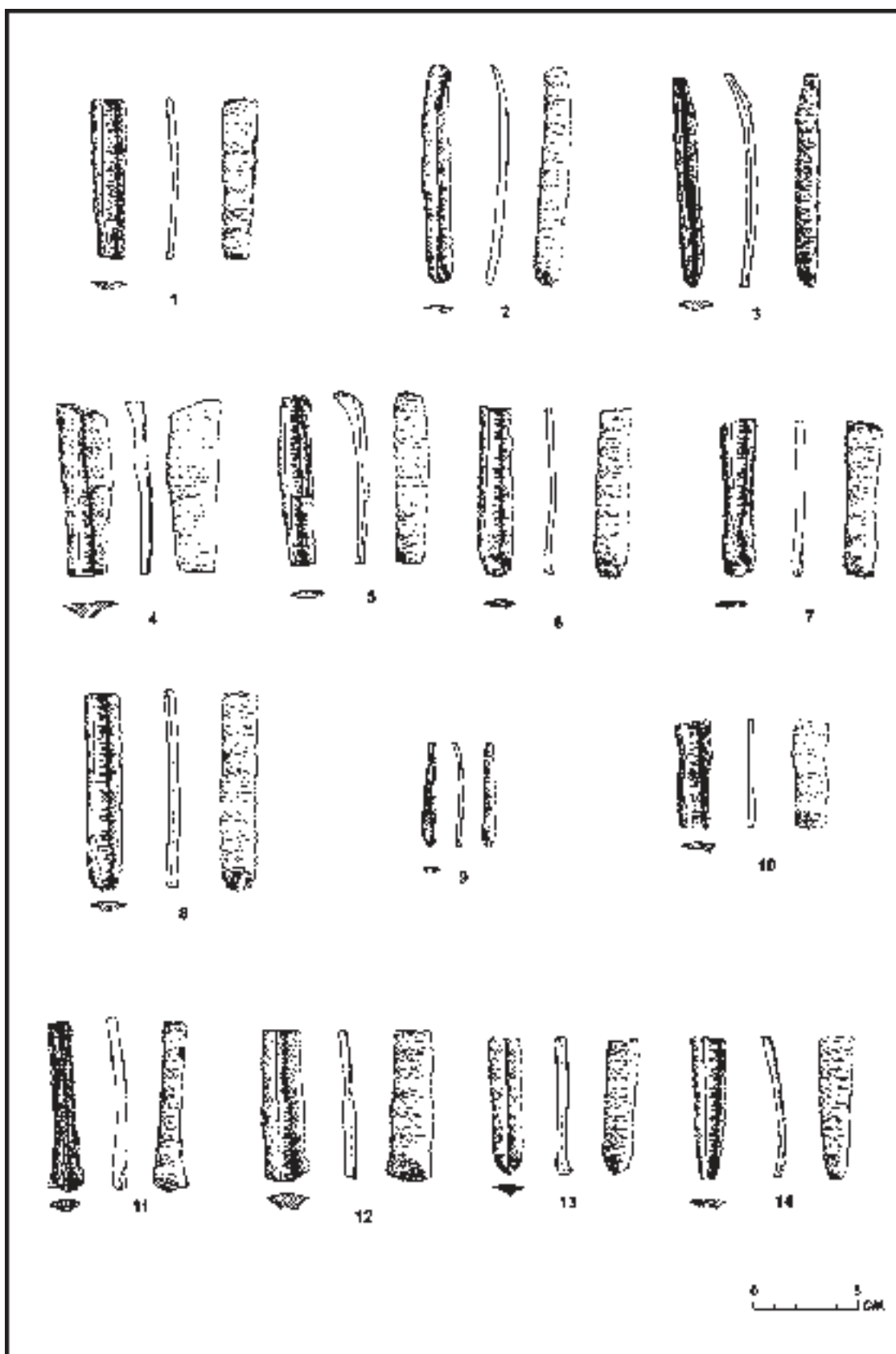


Fig. 11.12 *Parallel sided chert blades*

**Figs. 11.13 and 11.14**

1. Chert grey; parallel sided blade, both margins retouched, size 10.5 x 2 cm. From a middle level of Period II. (KLB-1, Reg. No. 11620).
2. Chert grey; parallel sided blade, both margins retouched, size 9.5 x 1.5 cm. From an early level of Period II. (KLB-2, Reg. No. 19648).
3. Chert grey; parallel sided blade, both margins retouched, size 10 x 1.5 cm. From a middle level of Period II (KLB-2, Reg. No. 14989).
4. Cherts grey; parallel sided blade, both margins heavily retouched, size 9.5 x 1 cm. From an unstratified level. (KLB-1, Reg. No. 7634).
5. Chert grey; parallel sided blade, both margins serrated with some retouching, size 12 x 1.75 cm. From an early level of Period II. (KLB-2, Reg. No. 20950).
6. Chert grey; parallel sided blade, both margins serrated, size 11.5 x 1.5 cm. From a late level of Period II. (KLB-1, Reg. No. 7470)
7. Chert grey; parallel sided blade, both margins heavily retouched, size 9.5 x 1.5 cm. From an early level of Period II. (KLB-2, Reg. No. 21359).
8. Chert grey; parallel sided blade, both sides retouched, size 9.5 x 1.5 cm. From a late level of Period II (KLB-2, Reg. No. 8668).
9. Chert grey; parallel sided blade, both sides heavily retouched, size 10 x 2 cm. From an early level of Period I. (KLB-1, Reg. No. 18753).
10. Chert grey; parallel sided blade, both margins serrated slight retouched, size 10.5 x 1 cm. From a late level of Period II (KLB-1, Reg. No. 7170).
11. Chert grey; parallel sided blade, heavily retouched on both sides, size 6 x 1 cm. From an unstratified level. (KLB-1, Reg. No. 11794).
12. Chert grey; parallel sided blade, heavily retouched on both margins, size 7 x 1.5 cm. From an early level of Period I. (KLB-2, Reg. No. 21082).



Fig. 11.13 Parallel sided chert blades

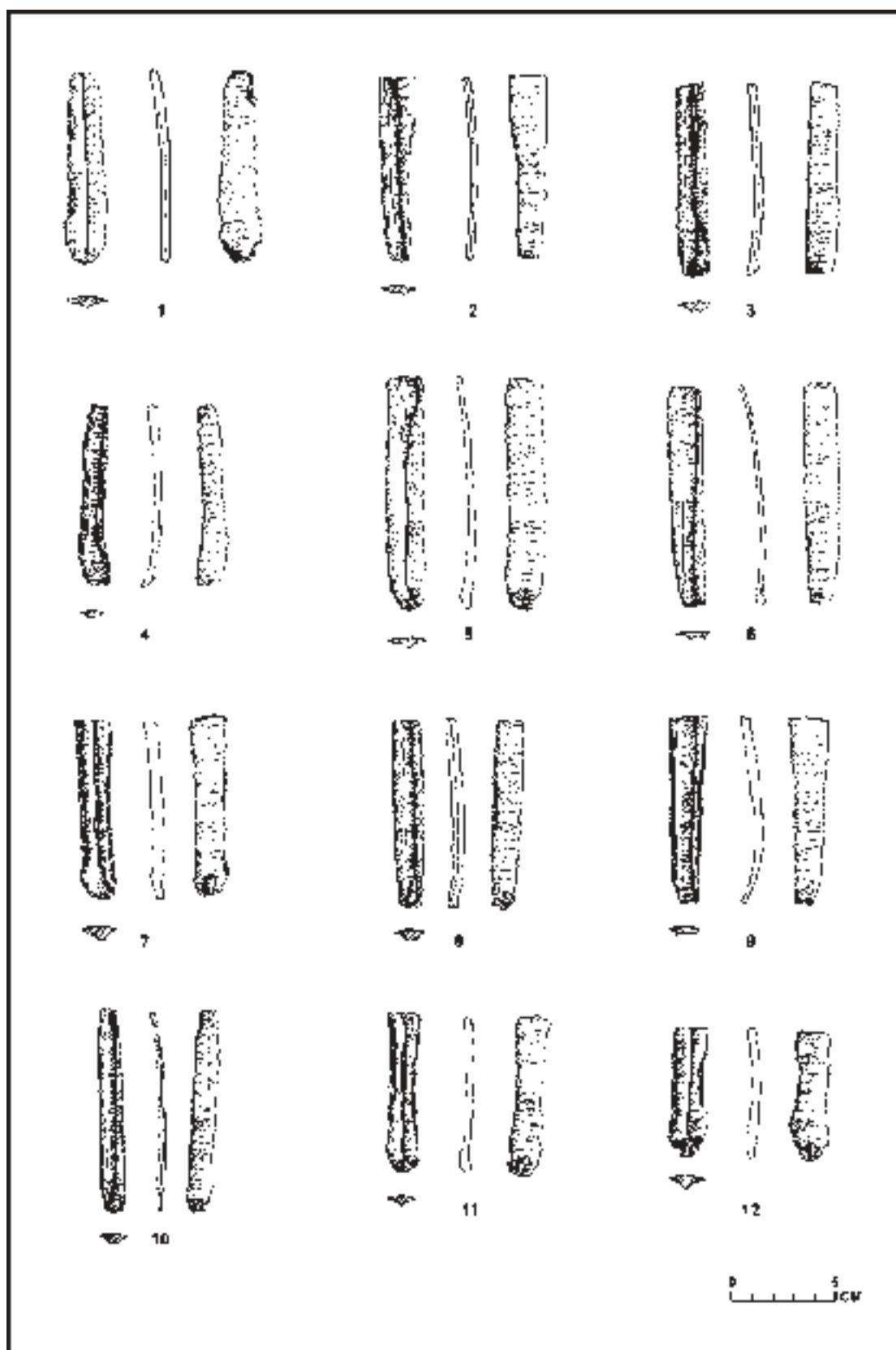


Fig. 11.14 *Parallel sided chert blades*

## **7. SERRATED BLADES**

### **Figs. 11.15 and 11.16**

1. Chert ashy grey; parallel sided blade with right margin retouched in such a way as to produce a prominent saw edge, size 9.5 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 15945).
2. Chert ashy grey; parallel sided blade, retouched on both sides to produce a saw edge, distal end for holding the blade, size 7 x 1 cm. From an early level of Period II. (KLB-1, Reg. No. 18020).
3. Chert grey; parallel sided blade broken on both ends. Both margins have been retouched heavily. Right margin has a sharp saw-like teeth and left is damaged probably due to use, size 5 x 1.5 cm. From a late level of Period II. (KLB-1-2, Reg. No. 444).
4. Chert grey; thin parallel sided blade with both margins heavily retouched to produce a saw edge, size 9.75 x 1 cm. From a late level of Period II. (KLB-1, Reg. No. 477).
5. Chert grey; parallel sided blade with both margins mildly serrated and one margin has a notch, size 7.5 x 1.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 11312).
6. Chert ashy grey; parallel sided blade, both ends broken, margins retouched to produce a saw-like edge, size 4.5 x 4.5 cm. From a late level of Period II. (KLB-1, Reg. No. 676).
7. Chert deep grey; parallel sided blade with both margins deeply retouched to produce saw-like edge, rest of the blade is serrated, size 9.5 x 2 cm. From a middle level of Period II. (KLB-1, Reg. No. 17249).
8. Chert ashy grey; fragment of a parallel sided blade with retouch mark on right margin and left having notch, size 4 x 1.5 cm. From an early level of Period II. (KLB-2, Reg. No. 20917).
9. Chert grey; parallel sided blade, retouched on both margins to produce saw like edge. From a late level of Period II. (KLB-1, Reg. No. 15819).
10. Chert grey; parallel sided blade, retouched heavily on both margins to produce saw-like edge, size 7.5 x 1 cm. From a late level of Period II. (KLB-1, Reg. No. 18957).
11. Chert grey; parallel sided blade with retouching on both the margins and a retouched notch on left side, size 6 x 1.5 cm. From an early level of Period II. (KLB-1, Reg. No. 18068).
12. Chert ashy grey; parallel sided blade with both margins retouched producing a sharp saw edge, size 6.5 x 1.5 cm. From an unstratified level. (KLB-1-2, Reg. No. 879).
13. Chert grey; parallel sided blade with both margins heavily retouched producing a sharp saw edge, size 6 x 1 cm. From a middle level of Period II. (KLB-1, Reg. No. 15635).
14. Chert dark grey; parallel sided blade fragment retouched on both margins, right margin has a notch, appears to be part of serrated blade, size 4 x 1 cm. From a middle level of Period II. (KLB-1, Reg. No. 11551).



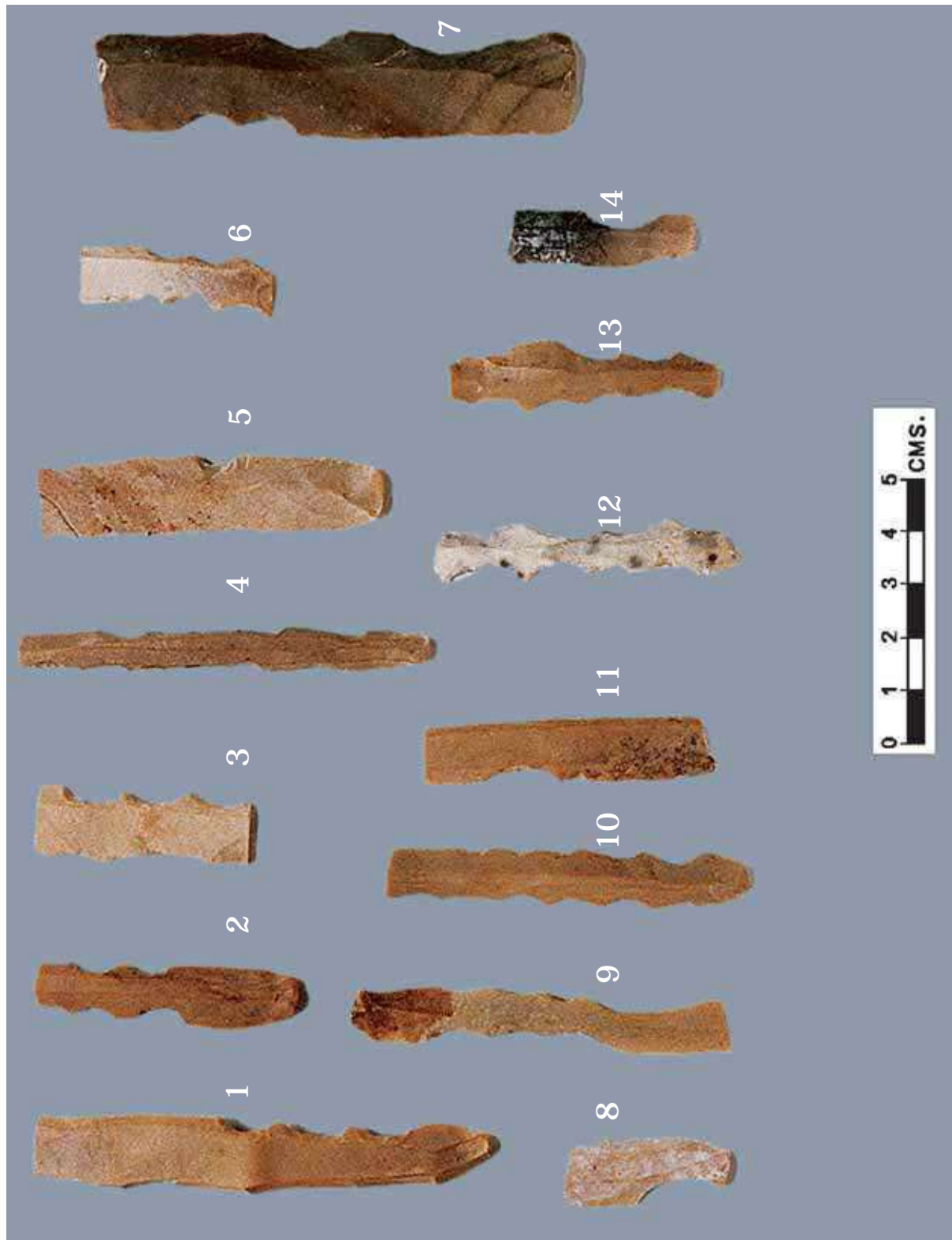


Fig. 11.15 Parallel sided, serrated chert blades

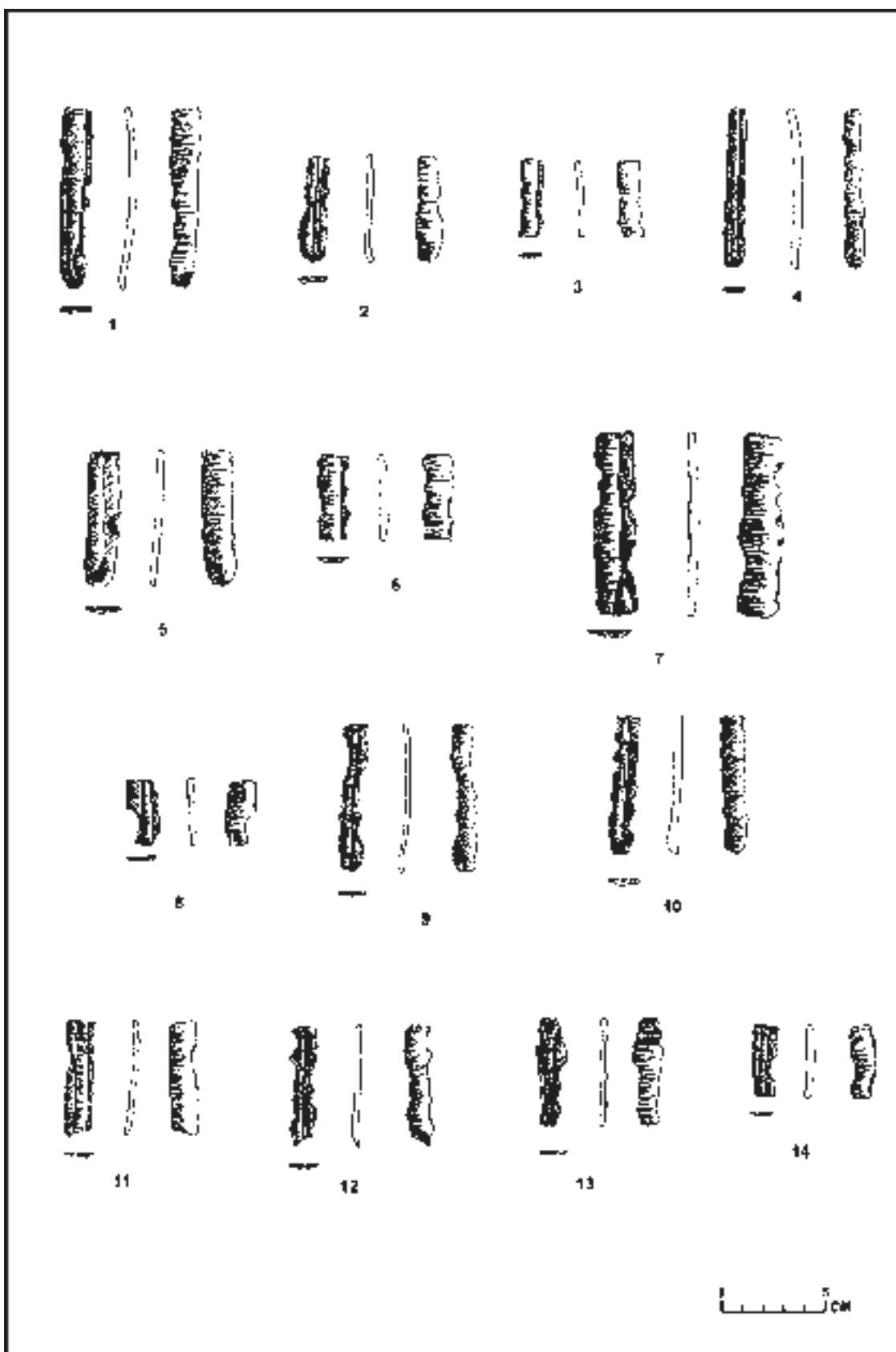


Fig. 11.16 Parallel sided, serrated chert blades



## **8. PEN KNIFE BLADES, BURINS, POINTS AND BORERS**

### **Figs. 11.17 and 11.18**

1. Chert grey; burin on parallel sided blade, the edge is obtained by taking out two oblique spalls from the thickness, both margins are retouched also, size 5.5 x 1 cm. From surface. (KLB-1, Reg. No. 17909).
2. Chert grey; burin on parallel sided blade, the edge is obtained by taking out two oblique spalls from the thickness, size 5.5 x 1.5 cm. From an early level of period II. (KLB-1, Reg. No. 14764).
3. Chert grey; borer obtained by retouching on both margins in oblique fashion. The sides are also retouched, size 4.5 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 8780).
4. Chert grey; borer on parallel sided blade, the point has been achieved by retouching both the margins, size 5.5 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 4603).
5. Chert grey; blade obtained by retouching margins ending in a point, size 3.5 x 1 cm. From a middle level of Period II. (KLB-2, Reg. No. 17597).
6. Chert whitish grey; pointed blade on parallel sided blade, serrated on both margins. From a middle level of Period II. (KLB-2, Reg. No. 19067).
7. Chert grey; pointed blade, the mid point is achieved by retouching both the margins. Lower end broken, size 4 x 1.5 cm. From surface. (KLB-1-2, Reg. No. 278).
8. Chert grey; pen knife blade with blunted oblique right tip, size 3.5 x 1 cm. From a middle level of Period II. (KLB-2, Reg. No. 16524).
9. Chert grey; borer on parallel sided blade with retouched margins ending in a point, (size 3.25 x 0.5 cm. From a late level of Period II. (KLB-1, Reg. No. 6188).
10. Chert grey; borer or drill point achieved by retouching entire both sides, size 3 x 0.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18570).
11. Chert grey; borer-cum-drill achieved by retouching a parallel sided blade, size 2.5 x 0.5 cm. From a late level of Period II. (KLB-1, Reg. No. N.S. 21841).
12. Chert grey; point or borer achieved by retouching both margins terminating into a sharp point, size 2.5 x 1 cm. From a late level of Period II (KLB-1, Reg. No. 18020).
13. Chert grey; burin on parallel sided blade. The edge is obtained by taking out two spalls obliquely from thickness of the blade, one side has been retouched also, size 3.5 x 1 cm. From a late level of Period II. (KLB-1, Reg. No. 4339).

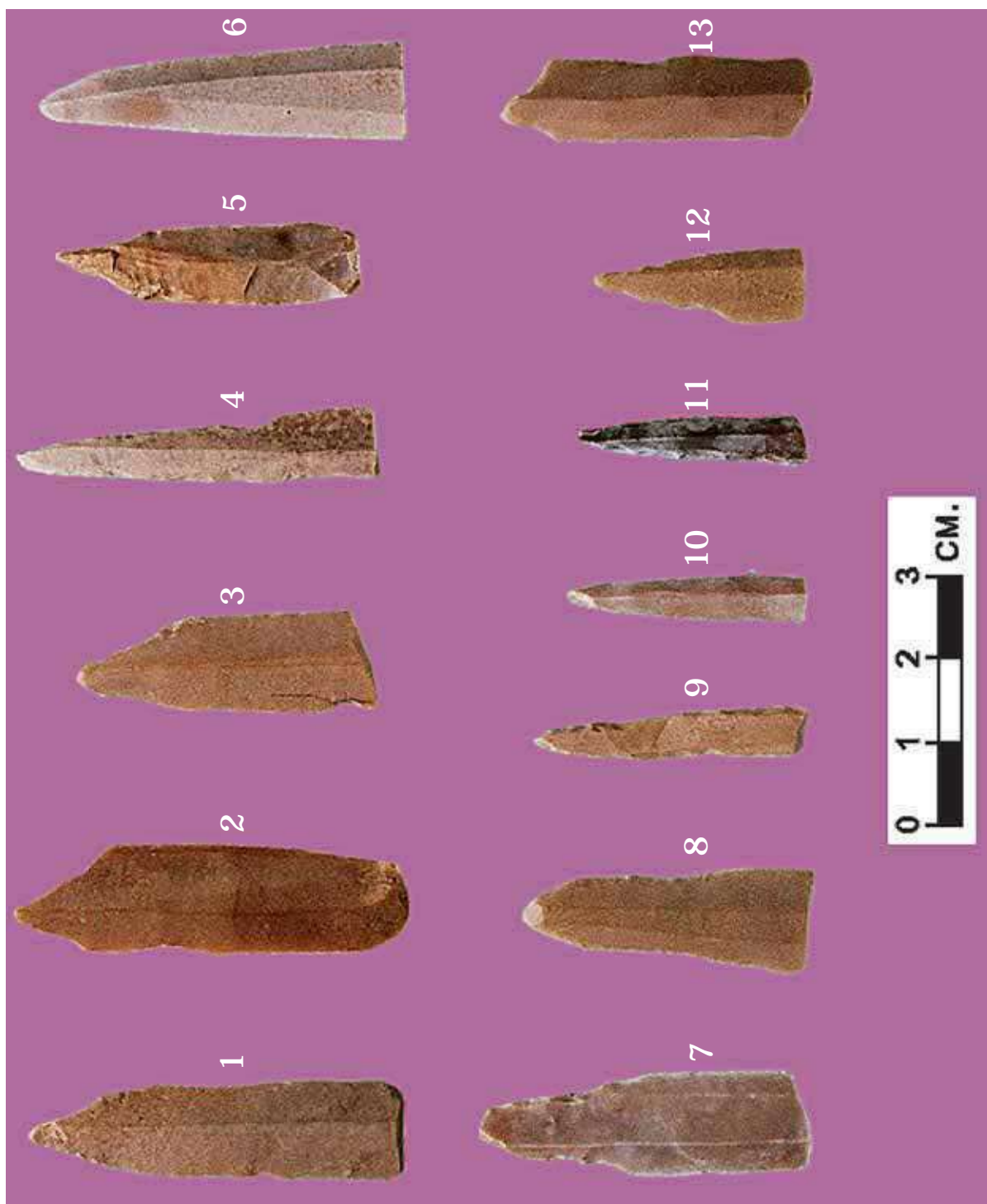


Fig. 11.17 Chert burins, borers, points, pointed blade, pen knife blade, etc.

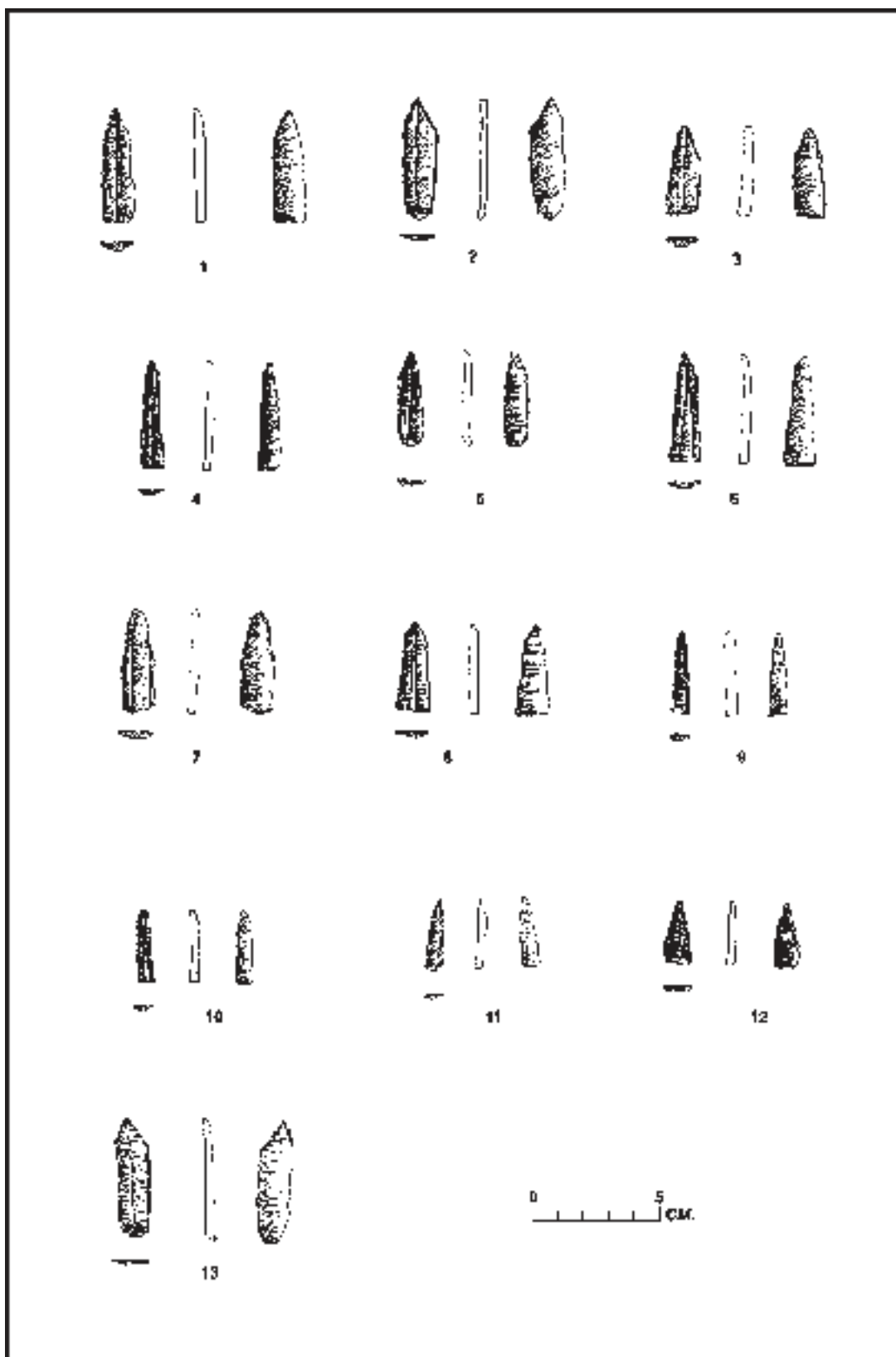


Fig. 11.18 Chert burins, borers, points, pointed blade, pen knife blade, etc.

**Figs. 11.19 and 11.20**

1. Chert grey; parallel sided blade, obliquely cut upper left margin, right margin retouched, size 2.5x1 cm. (KLB-1, Reg. No. 6152).
2. Chert grey; single shouldered burin on parallel sided blade, size 3 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 16813).
3. Chert blackish; double shouldered burin on parallel sided blade, point achieved by taking out two obliquely cut flakes on both margins, one margin is also retouched, lower end broken. From a late level of Period II. (KLB-1, Reg. No. 8453).
4. Chert whitish; pen knife parallel sided blade with obliquely blunted right tip, size 5.5 x 1.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 13388).
5. Chert grey; pen knife blade on parallel sided blade, left side retouched, size 5 x 1.5 cm. From a middle level of Period II. (KLB-1, Reg. No. 14492).
6. Chert darkish grey; single shouldered burin on parallel sided blade with left shoulder retouched and entire right margin heavily retouched making a saw-like edge, size 3.5 x 1.5 cm. From surface. (KLB-1, Reg. No. 14699).
7. Chert grey; double shouldered burin on parallel sided blade, edge achieved by oblique spalls on both margins which are also retouched, size 2.5 x 1.25 cm. From a middle level of Period II. (KLB-1, Reg. No. 14877 A).
8. Chert grey; pen knife blade right shoulder obliquely blunted, both margins finely serrated, size 4.5 x 1.5 cm. From a late level of Period II. (KLB-1, Reg. No. 7951).
9. Chert grey; pen knife blade broken left side obliquely blunted, both margins retouched, size 2.5 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 4416).
10. Chert grey; double shouldered burin on parallel sided blade, point achieved by taking two spalls on both the margins of the thickness which are retouched, size 2 x 1.5 cm. From an early level of Period II. (KLB-2, Reg. No. 19719).



Fig. 11.19 Chert single shouldered and double shoulderd burins, pen knife blades, etc.

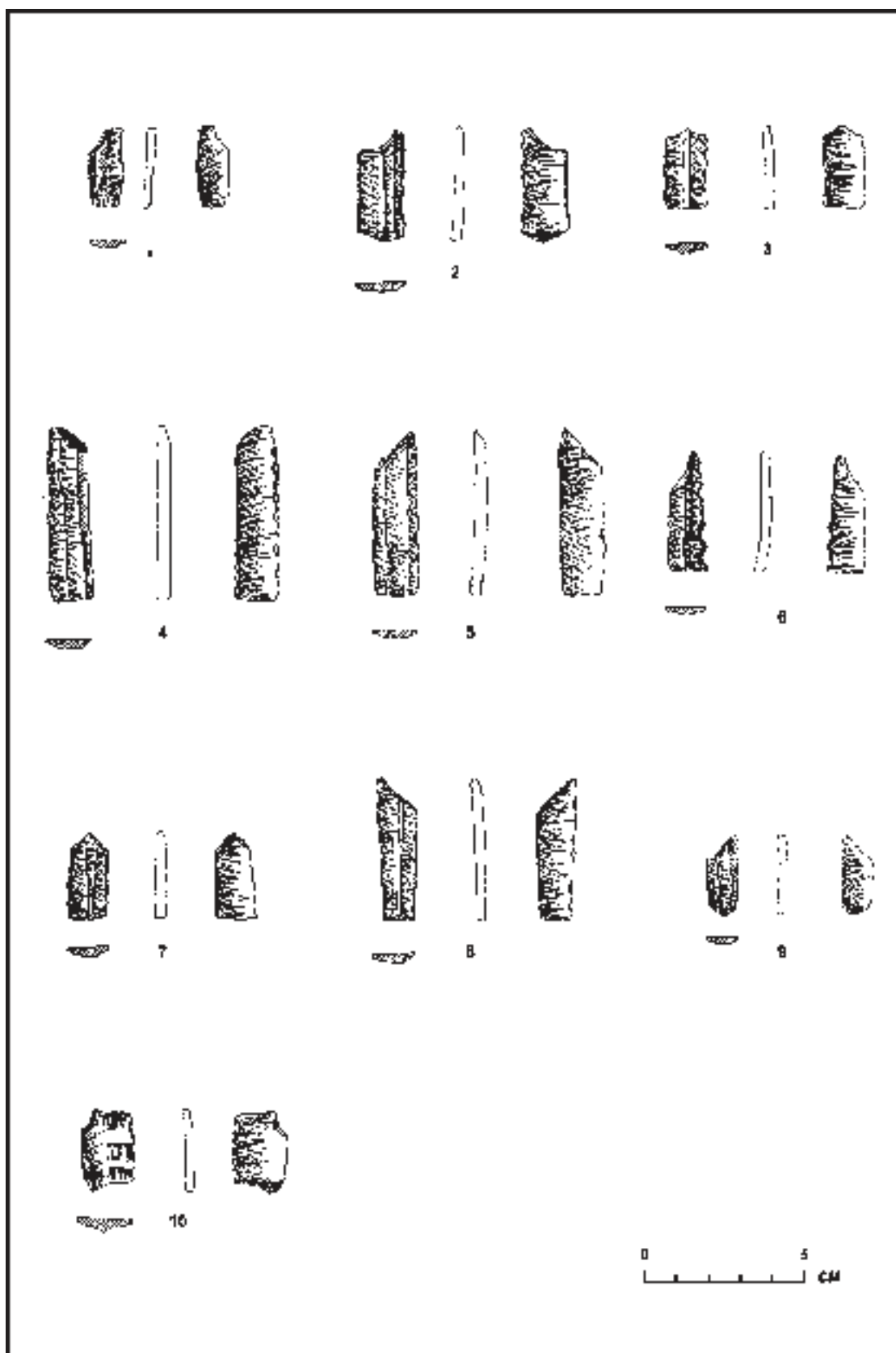


Fig. 11.20 Chert single shouldered and double shouldered burins, pen knife blades, etc.

## **9. SIDE SCRAPERS**

### **Figs. 11.21 and 11.22**

1. Chert dark grey; side scraper on flake with a prominent positive bulb. The crescentric side is retouched, size 5 x 2.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 4842).
2. Chert dark grey; single shouldered burin on fluted core-flake, right margin retouched, size 4.5 x 2.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 9065).
3. Chert dark grey; side scraper on fluted core flake. The left side is retouched, size 5 x 3 cm. From a middle level of Period II. (KLB-2, Reg. No. 6964).
4. Chert dark brown; blade with a finely retouched lower portion for hafting. From a late level of Period II. (KLB-1, Reg. No. 533).
5. Chert whitish; parallel sided blade heavily retouched on both margins producing sharp saw-edge with a thin lower portion for hafting. From a late level of Period II. (KLB-1, Reg. No. 5379).
6. Chert grey; parallel sided blade with retouched sides, handle for hafting. Could be used as reamer. From a late level of Period II. (KLB-2, Reg. No. 295).
7. Chert grey; parallel sided blade with a tang produced by heavy retouching, could be used as reamer or borer, size 3.5 x 1 cm. From a middle level of Period II. (KLB-1, Reg. No. 14954).
8. Chert grey; blade with a thin long tang, could be used as reamer. From a late level of Period II. (KLB-1, Reg. No. 3000).
9. Chert grey; blade with a tang, size 4 x 1.5 cm. From a late level of Period II. (KLB-1, Reg. No. 4008).



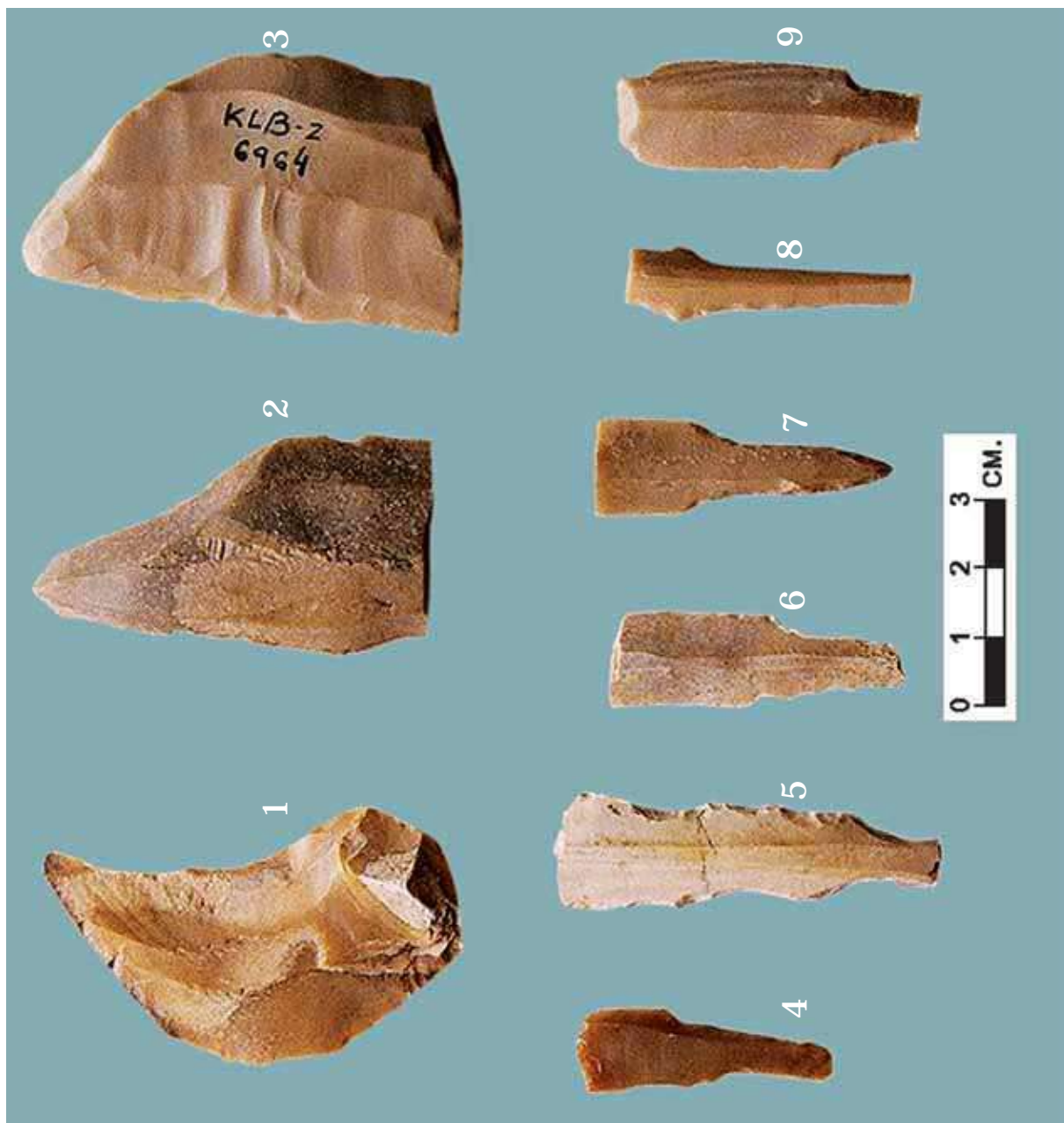


Fig. 11.21 Chert side scrapers, burins, blades and parallel sided blades

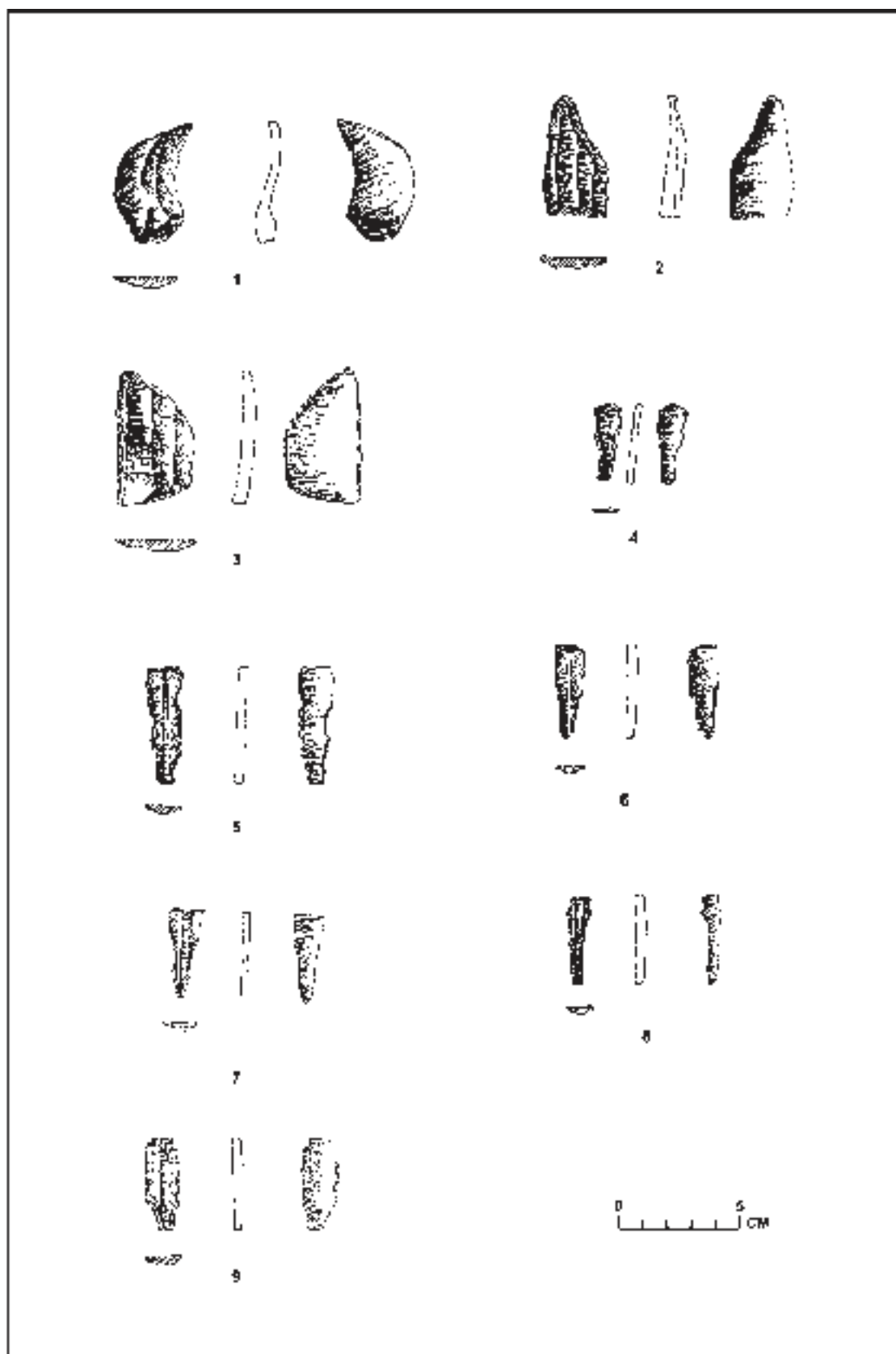


Fig. 11.22 Chert side scrapers, burins, blades and parallel sided blades

## **10. CHISELS**

### **Figs. 11.23 and 11.24**

1. Chert grey; chisel, fragment, size 4.5 x 2 cm. From a late level of Period II. (KLB-1, Reg. No. 17866).
2. Chert blackish; chisel, upper portion broken, size 5 x 1.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 13380).
3. Chert blackish; chisel, upper portion broken, size 4.5 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 14990).
4. Chert grey; leaf-shaped tanged blade, stapula used by potter for removing extra clay from the pot, long tang has been made by retouching both the margins, size 5 x 1 cm. From a late level of Period II. (KLB-1 & 2, Reg. No. 840).
5. Chert grey; leaf-shaped tanged blade, stapula used by potter for removing extra clay from the pot, tang has been made by retouching both the margins. From a late level of Period II. (KLB-1, Reg. No. 18945).
6. Chert grey; leaf-shaped tanged stapula margins have been retouched, size 4 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21274).
7. Chert brownish; fluted flake used as a burnisher, size 5.5 x 1.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18243).
8. Chert grey; blade with a notch, could be used as an awl by the cobbler, size 4.5 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 514).
9. Chert dark grey; blade with two notches, could be used as an awl by a cobbler, size 3 x 1.5 cm. From a late level of Period II. (KLB-1, Reg. No. 2432).
10. Chert; fan-shaped tanged knife, edge carefully retouched, (Ranfi) used by cobblers for cutting skin. From a middle level of Period II. (KLB-2, Reg. No. 14877).
11. Chert; fan-shaped tanged knife (Ranfi) with retouched edge and shoulders, size 5.5 x 4.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 9147).



Fig. 11.23 Chert chisels, leaf-shaped tanged blades, blades, fan-shaped tanged knife, etc.

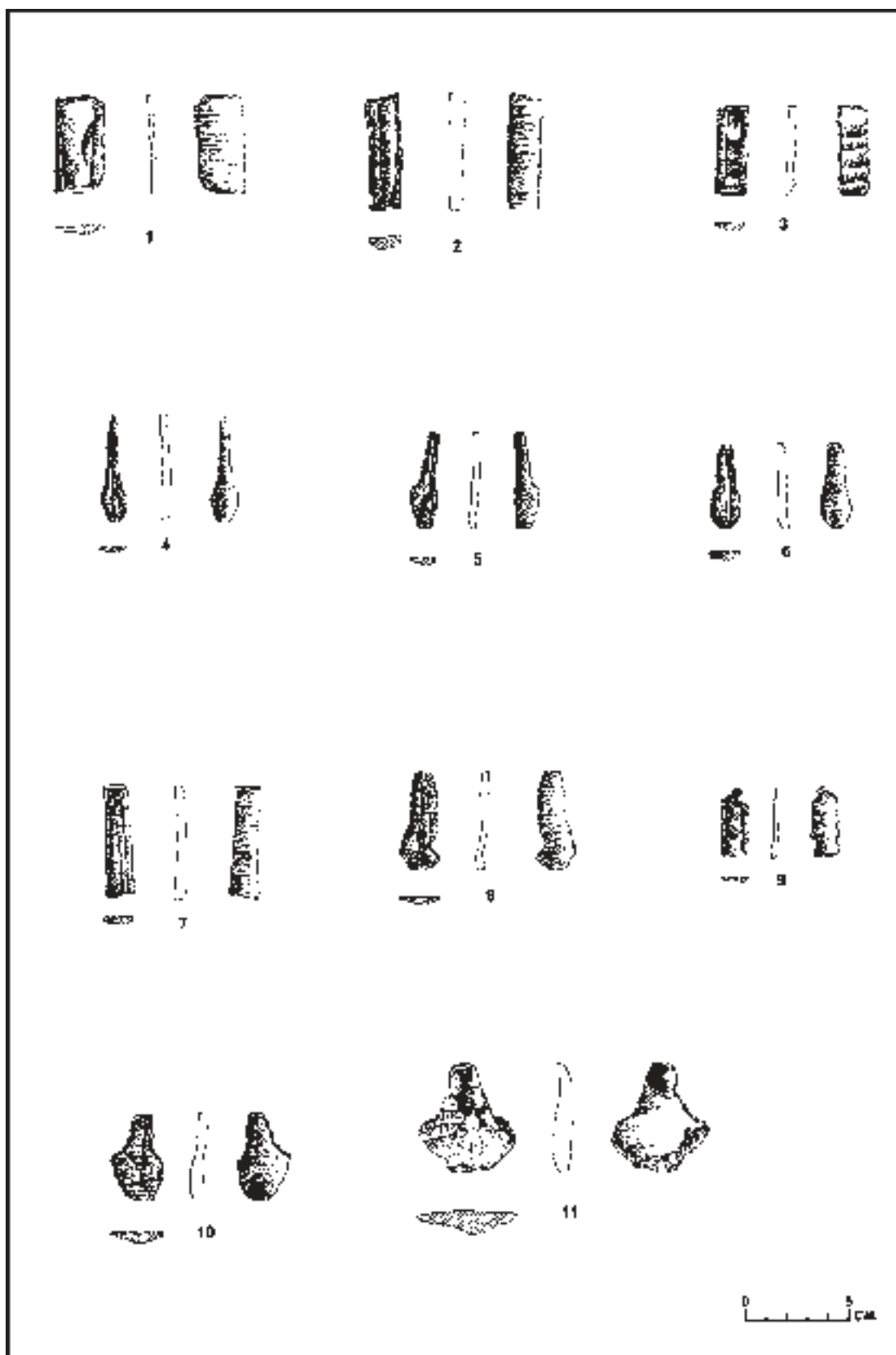


Fig. 11.24 Chert chisel, leaf-shaped tanged blades, blades, fan-shaped tanged knife, etc.

## **11. NEOLITHIC TOOLS**

### **Figs. 11.25 and 11.26**

1. Himalayan trap; a round axe with an ovoid section. Edge portion tapering, size 7 x 5 cm. From a late level of Period II. (KLB-2, Reg. No. 17843).
2. Black stone; polished celt, edge has been made by transverse flaking, size 11 x 2.5 cm. From a late level of Period II. (KLB-2, Reg. No. 9247).
3. Reddish sandstone; fragment of a mace head or weight for digging stick concavo-convex in section having an hour glass perforation. From a late level of Period II. (KLB-2, Reg. No. 3924).<sup>12</sup>
4. Himalayan trap; ground axe with an ovoid section, edge portion polished, size 5 x 2.5 cm. From a late level of Period II. (KLB-2, Reg. No. 2453).

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<sup>12</sup> Two mace heads have already been reported from the early Harappan levels, Lal, B.B. et al. 2003. *Excavations at Kalibangan – The Early Harappans, MASI No.98*. p. 23. Archaeological Survey of India, New Delhi.





Fig. 11.25 Neolithic stone axes, celt and mace head



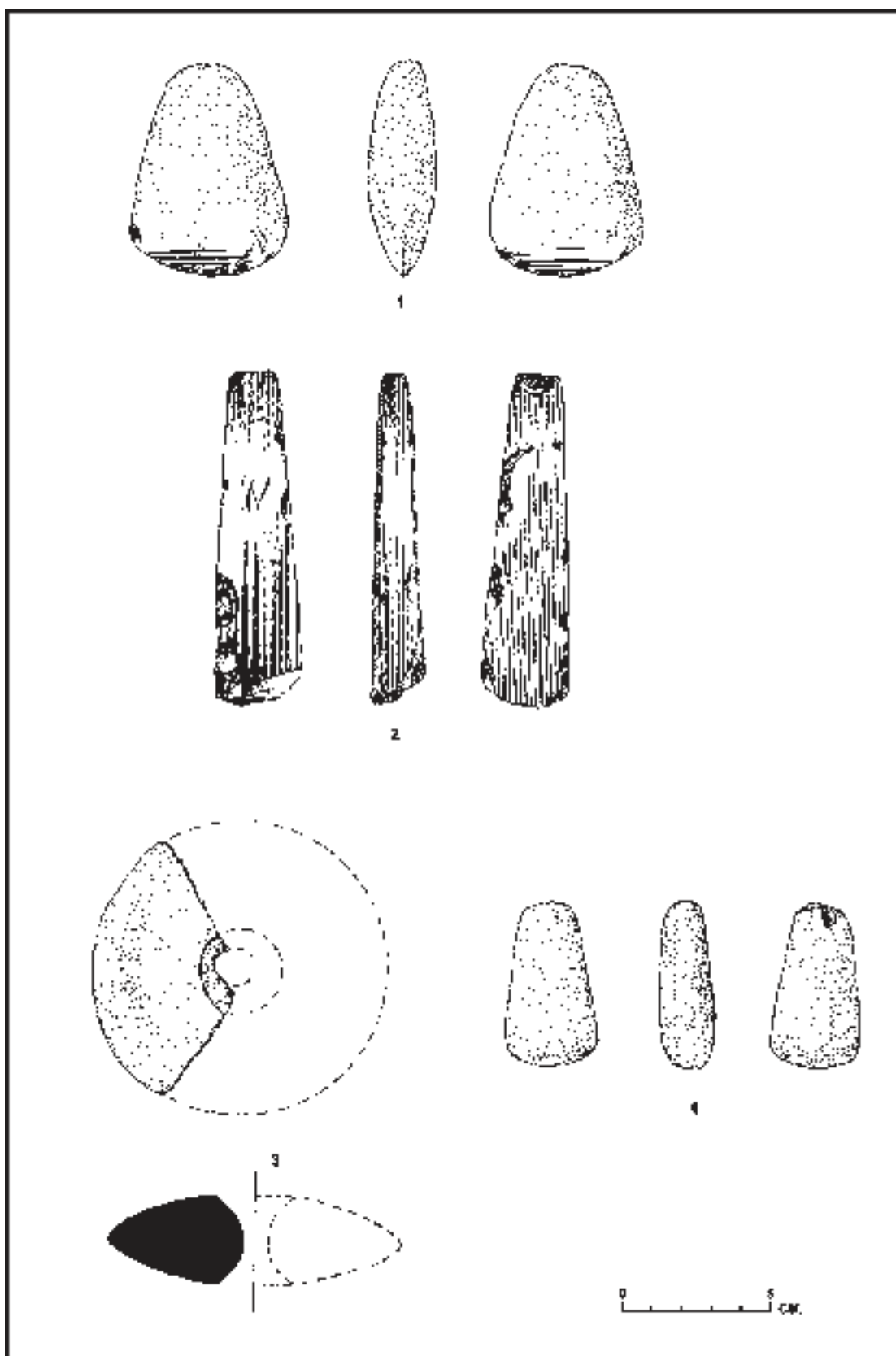
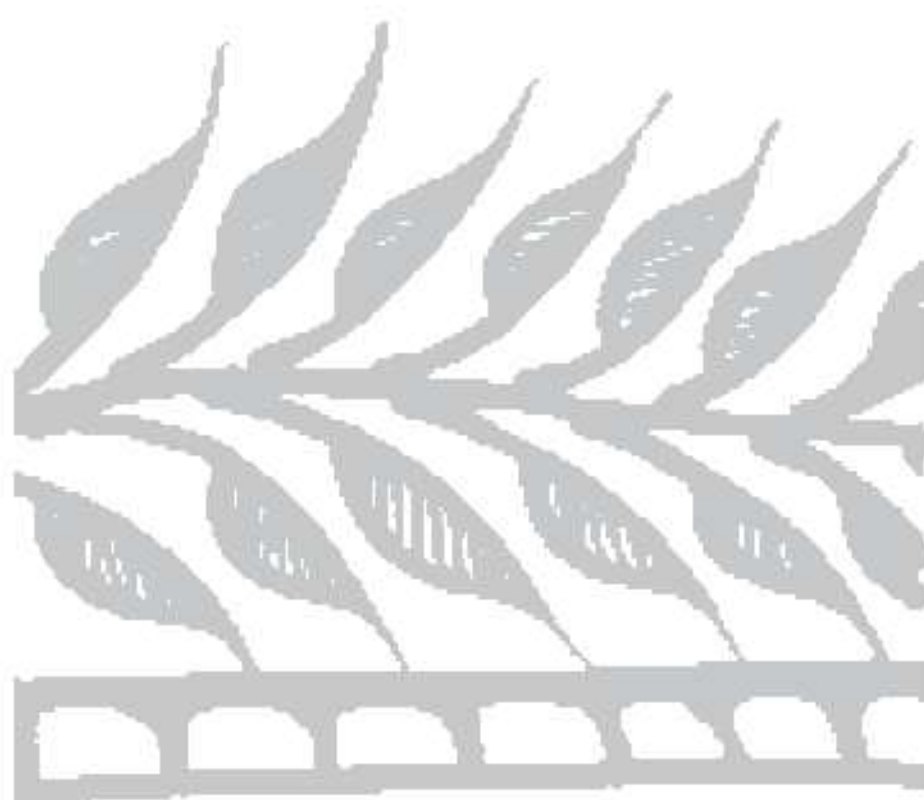


Fig. 11.26 Neolithic stone axes, celt and mace head



# METAL OBJECTS

## CHAPTER

# 12

JAGAT PATI JOSHI

## A. COPPER OBJECTS

### 1. INCIDENCE AND TYPOLOGY

Excavations at Kalibangan has yielded in all about 1485 pieces of copper objects which includes large number of unidentifiable copper pieces and small powdery greenish corroded nodules showing only the popular use of this metal.

A variety of objects numbering 143 are identifiable and the following chart shows the incidence of these objects which have been studied and described.

Copper was introduced to the site during the early Harappan times. It

**CHART**  
**Kalibangan : Typology of Copper Objects**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Beads	Bangles	Rings	Arrow heads	Spear head	Knife blades	Chisel	Wire	Blade	Hair pin	Pins	Fish hook	Nail	Needle with eye	Needle
21	12	6	7	16	2	9	2	6	2	5	4	2	3	2
16	17	18	19	20	21	22	23	24	25	26				
Celts/axes	Parasu type	Bull	Mirror	Antimony rods	Nail parers	Rods with square/rectangular section	Inscribed objects	Saw	Unidentifiable pieces	Inscribed pieces				
8	1	1	2	8	10	3	2	1	2	4				

appears that the finished products were brought from different sources. The site has not provided any industrial input to

claim it as production centre. However, a few lumps of copper and one or two small furnaces show the local engagement for repair of the metallic items.

Copper axes were perhaps used for cutting wood or as weapons of offence as has been testified by the wounded knee of a skeleton where the axe could exactly be fixed in the cavity (Fig 22.66). The other objects of copper which could be used for offence and defence are arrowheads and spearheads. Hooks were used for fishing. Copper tools of different types were artisan's and carpenter's important tools for shaping the stones and wood respectively. Copper pins, nail parers, and antimony rods, beads, rings and bangles were used by ladies. Sickles and *parasu* type used for agricultural operations. Eyed needles for stitching and saws are unique. Nails were used for doors. The objects are utilitarian. These artifacts are product of simple mouldings. The lost-wax method has been employed in its manufacture. The copper bull is a unique art object decorating the drawing room. It is a solid sculpture which has been beautifully made by lost-wax method.

## 2. SOURCE

The close proximity of Khetri could have been an easy source of the metal.

On the basis of metallurgical analysis conducted by Dr. B.B. Lal on the Early Harappan and Harappan copper objects from Kalibangan, it was found that the samples do not contain arsenic whereas the copper objects from Mohenjodaro and Harappa do contain arsenic. On the basis of metallurgical analysis carried out by Dr. B.B. Lal on nineteen Early Harappan copper

objects from Kalibangan excavations, it was found that the samples do not contain arsenic but out of eight samples from the same site analysed by Dr. D.P. Agarwal, he found arsenic in six samples. He also did not find arsenic in two samples. The stratigraphical levels are not available but Agrawal has reported arsenic in his papers.<sup>1</sup> Arsenic is reported in the copper objects from Mohenjodaro and Harappa, whereas Lothal has arsenic-free copper. Thus it is evident that Harappan copper objects are with arsenic and also without it indicating two sources of copper ore. In view of the availability of copper celt and 'V' shaped arrowhead of the Ganeshwar-Khetri type (*circa* 3000-2800 BC) from Kalibangan, one would like to agree with R.C. Agrawala's suggestion that Ganeshwar-Khetri region was the supplier of copper tools to the Early Harappan and Mature Harappan of Kalibangan which was only 250 km away. Incidentally, Khetri has the copper ore with arsenic. The arsenic-free copper objects might have been imported from elsewhere. Rangpur and Lothal have also arsenic-free copper. As only finished goods of copper have been found from the Early Harappan levels it appears that they were importing finished copper objects and not manufacturing themselves.

### Fig. 12.1

1. Copper; tapering blade axe with a rounded cutting edge, rectangular in section, margins are tapering, both sides have inscription, length 14 cm. width 5-6 cm. 5 cm. From a late level

<sup>1</sup> Agrawal, D.P. 1981. Arsenical Coppers in the Indian Bronze Age. In Nagaraja Rao, M.S. (ed.), *Recent Archaeological Reserches in Indian Archaeology and Art History* : 9-16. Delhi. ; Agrawal, D.P. 1971. Copper Bronze Age in India. Munshiram Manoharlal Publishers, Delhi.; Agrawal, D. P. 2000. *Ancient Metal Technology and Archaeology of South Asia*. Aryan Books International, Delhi. ; Agrawala, R.C. Aravalli, the major source of copper for the Indus Civilisation and Indus related cultures", In Lal, B.B. and Gupta, S.P. (ed.), 1984. *Frontiers of the Indus Civilisation*:157-62. Books and Books. Delhi.





Fig. 12.1 *Inscribed copper blade axe*

of Period II. (KLB-1, Reg. No. 14983).

**Fig. 12.2**

1. Copper; bar chisel, square in section tapering towards the butt with a

sharp cutting tongue slopped from both sides. Inscribed on both sides, size 23 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 16948).



Fig. 12.2 *Inscribed copper bar chisel*



**Fig. 12.3**

1. Copper; thin axe with cutting edge and butt crescentric in shape and sharp, the cutting edge tapers towards butt end, size 13 cm x 5.5 cm. From an early level of Period II. (KLB-1, Reg. No. 9040).
2. Copper fragmentary axe with rectangular section, size 7 x 4 cm. From a late level of Period II. (KLB-2, Reg. No. 11472).
3. Copper; axe with a crescentric cutting edge and tapering sides to the butt end, rectangular in section, size 11 x 5 cm. From an early level of Period II. (KLB-1 Reg. No. 19404).
4. Copper; small axe with both ends sharp, could have been used by the carpenter, cutting edge sharp, butt end is rounded. From a late level of Period II. (KLB-1, Reg. No. 16729).
5. Copper; broad axe (fragment middle to butt portion), rectangular in section, size 8.5 x 6.5 cm. From an unstratified level of Period II. (KLB-2, Reg. No. 21704).
6. Copper; fragmentary axe cutting edge portion, butt broken, rectangular in section. (KLB-1-2, Reg. No. 19930).

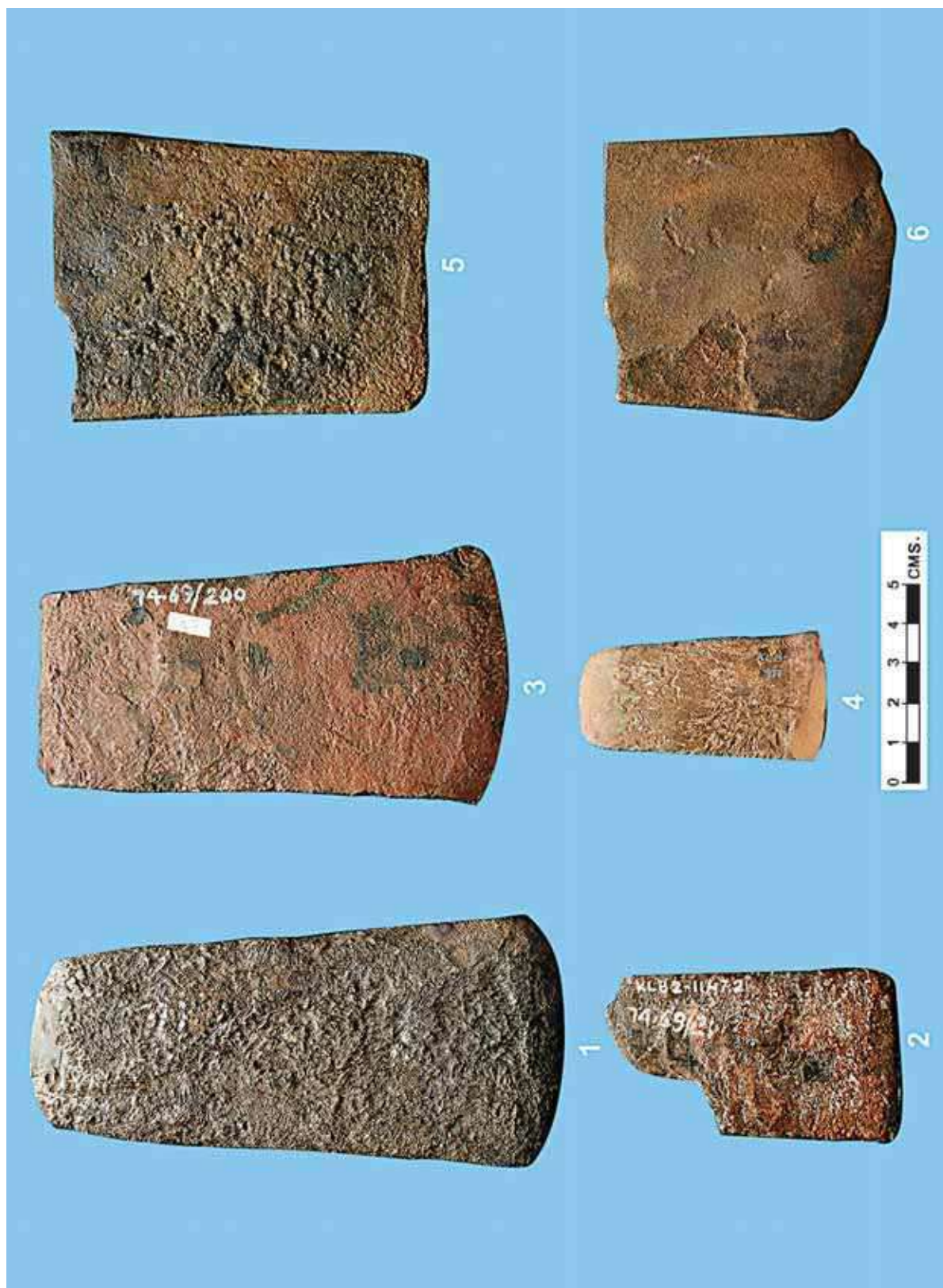


Fig. 12.3 Copper axes

**Fig. 12.4**

As with other Harappan sites, Kalibangan also has three types of chisels i e (1) tanged (2) long flattened shanks (3) small and strong chisels with blurred butts used for cutting metal and stone.

1. Copper; chisel, cutting edge broken, long tang, rectangular in section, size 15.25 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 8216).
2. Copper; long chisel, rectangular in section, cutting edge slopped from both sides, butt end flat, size 13 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 14502).
3. Copper; nail parer with a tang, rectangular in section, cutting edge sharp but damaged, size 8.5 x .75 cm. From an early level of Period II. (KLB-1, Reg. No. 16721).
4. Copper; fragment, chisel middle portion. Cutting edge blunt, size 4.5 x 1 cm. from a late level of Period II. (KLB-1, Reg. No. 74 69/58).
5. Copper; chisel, rectangular in section butt portion has incipient tang, size 10.5 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 18216).
6. Copper; nail parer with a sharp cutting edge with a square section, upper end ovoid, size 12 x .5 cm. From a late level of Period II. (KLB-2, Reg. No. 74.69/310).
7. Copper; chisel, rectangular in section slightly tapering towards the butt end which is blunt. Sharp edge achieved by sloping both sides, size 11 x .75 cm. From a late level of Period II. (KLB-2, Reg. No. 16930).
8. Copper; nail parer, rectangular in section, cutting edge damaged, size 9 x .5 cm. From a late level of Period II. (KLB-2, Reg. No. 8093).
9. Copper; tanged chisel with blunt rounded cutting edge, size 15.5 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 13861).



Fig. 12.4 Copper chisels and nail parers

**Fig. 12.5**

1. Copper; long leaf-shaped spearhead with no median ridge. The tang has three holes for hafting to a wooden pole, size 27 x 6.5 cm. From a late level of Period II. (KLB-2, Reg. No. 20708).
2. Copper; leaf-shaped spearhead with a tang, size 12 x 4 cm. From a middle level of Period II. (KLB-2, Reg. No. 19141).
3. Copper; knife with right margin sloping and forming an edge, size 20.5 x 2 cm. From a late level of Period II. (KLB-2, Reg. No. 1392).
4. Copper; leaf-shaped spearhead, with two holes, one in the lower portion of the leaf and other in the tang to hold it strongly, size 19 x 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 20896).





Fig. 12.5 Copper spearheads and knife

**Fig. 12.6**

1. Copper; long spearhead with slight medial ridge having two holes in the tanged portion for riveting. It has an inscription of five vertical lines, size 3.5 x 4 cm. From a mid level of Period II. (KLB-2, Reg. No. 20319).
2. Copper; dagger with a tang inscribed with two edges, size 14 x 5.5 cm. From a middle level of Period II. (KLB-1, Reg. No. 17575).
3. Copper; long haft shaped spearhead with a tang. From a middle level of Period II. (KLB-1, Reg. No. 19627).
4. Copper; leaf-shaped spearhead with two holes in the body and one in the tang portion for rivetting, size 16 x 5 cm. From a late level of Period II. (KLB-2, Reg. No. 20320).
5. Copper; long spearhead with a tang, size 21 x 4 cm. From a middle level of Period II. (KLB-2, Reg. No. 19790).





Fig. 12.6 Copper spearheads and dagger

**Fig. 12.7**

1. Copper; leaf-shaped spearhead with a tang, size 15 x 4 cm. From middle level of Period II. (KLB-2, Reg. No. 19626).
2. Copper; leaf-shaped spearhead with a tang. From a mid level of period II. (KLB-1, Reg. No. 18840).
3. Copper; damaged leaf-shaped spearhead, size 12 x 3 cm. From a mid level of Period II. (KLB-1, Reg. No. 20751).
4. Copper; spear head with a tang, size 13 x 3 cm. From a late level of Period II. (KLB-1, Reg. No. 2332).
5. Copper; knife with tang, one margin sharp, size 11.5 x 2.5 cm. From a late level of Period II. (KLB-2, Reg. No. 19141).
6. Copper; blade-like knife, lower portion corroded and damaged, size 14.5 x 2 cm. From a middle level of Period II. (KLB-2, Reg. No. 20987).
7. Copper; lower portion of a dagger, retaining blade and tang with a hole for reveting, inscribed with four oblique lines. From a middle level of Period II. (KLB-1, Reg. No. 16113).
8. Copper; blade with a tang (used for cutting grass), size 11x 4 cm. From a late level of Period II. (KLB-2, Reg. No. 13925).



Fig. 12.7 Copper spearheads, knives, dagger and blade

**Fig. 12.8**

1. Copper; wire, round in section, size 12 cm length. From an early level of Period II. (KLB-1, Reg. No. 15354).
2. Copper; antimony rod, roughly round in section, size 6.5 cm. From an early level of Period II. (KLB-1, Reg. No. 16721).
3. Copper; nail, round in section. From a middle level of Period II. (KLB-2, Reg. No. 9905).
4. Copper; hairpin, square in section on one side and round in the other, size 17.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18188).
5. Copper; blade of a knife, both margins sharp, size 11 x 2 cm. From a late level of Period II. (KLB-1, Reg. No. 15615).
6. Copper; nail parer, cutting edge, size 7x 1 cm. From a late level of Period II. (KLB-2, 4852).
7. Copper; nail parer, size 6 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 7777).
8. Copper; awl with a sharp end, round in section, size 8.5 cm length. From a middle level of Period II. (KLB-1, Reg. No. 16987).
9. Copper; nail parer, flat, size 9 cm. From a late level of Period II. (KLB-1, Reg. No. 15188).
10. Copper; nail parer, flattish in section, size 9 cm. From surface. (KLB-1, Reg. No. 19213).
11. Copper; mirror, damaged, size 4 cm dia. From a late level of Period II. (KLB-2, Reg. No. 18060).
12. Copper; needle with an eye, round in section, size 7.5 cm. From a late level of Period II. (KLB-2, Reg. No. 1331).
13. Copper; fragmentary antimony rod, round in section. From a late level of Period II. (KLB-2, Reg. No. 15615).
14. Copper; fragmentary antimony rod, round in section. From surface. (KLB-1, Reg. No. 21426).
15. Copper; hairpin, square in section, size 11 cm. From a late level of Period II. (KLB-1, Reg. No. 19434).
16. Copper; ear-cleaner with two buds on both sides, size 8.5 cm. From a late level of Period II. (KLB-2, Reg. No. 8692).



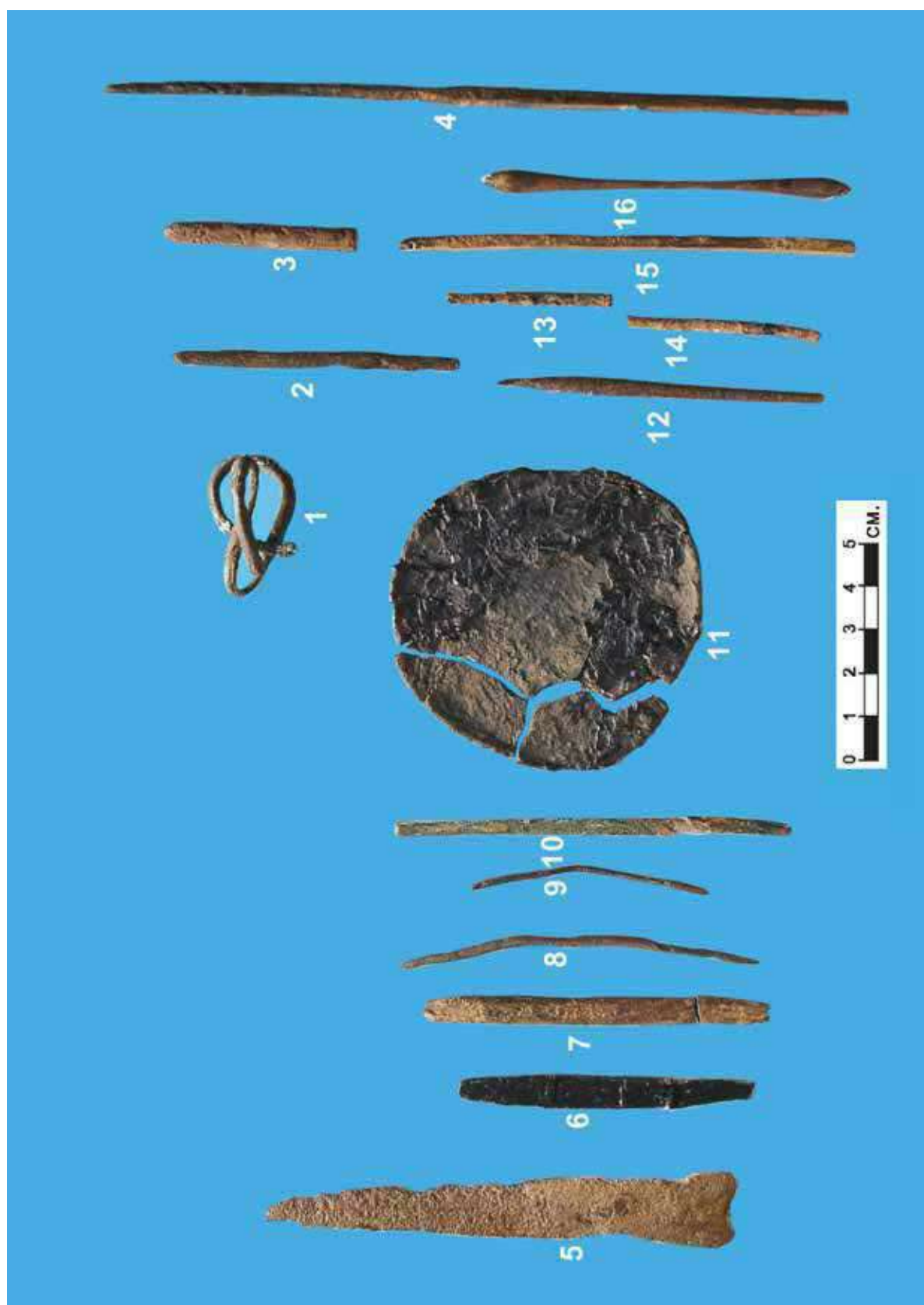


Fig. 12.8 Copper wire, antimony rods, nail, hairpins, blade, nail parers, awl, mirror, needle, ear-cleaner, etc.

**Fig. 12.9**

1. Copper; rod with square section, size 15 x .5 cm. From a late level of period II. (KLB-2, Reg. No. 9905)
2. Copper; small chisel with a sharp end, size 7.5 x 0.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 18813).
3. Copper; pin, ovoid in section, size 10.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 12309).
4. Copper; needle, eye portion broken, sharp ends, size 9 cm. From a late level of Period II. (KLB-2, Reg. No. 104).
5. Copper; antimony rod, square in section, size 10.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 20785).
6. Copper; nail parer (?) rod with square section in butt portion and flattish in the other end, size 8.5 cm. From a late level of Period II. (KLB-2, Reg. No. 104).
7. Copper; rod, ovoid in section, size 9 cm. From a late level of Period II. (KLB-2, Reg. No. 8692).
8. Copper; rod, could be used for widening the cavities by carpenters, size 7 x 2.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18540).
9. Copper; small chisel, cutting edge blunt, size 6.5 x 1 cm. From a middle level of Period II. (KLB-2, Reg. No. 14029).
10. Copper; nail parer, flat, rectangular in section, size 7.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21015).
11. Copper; chisel, size 7 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 4649).
12. Copper; rod, size 7.5 x .5 cm. From a late level of Period II. (KLB-2, Reg. No. 20090).



Fig. 12.9 Copper rods, chisels, pin, needle, antimony rod, nail parers, etc.



**Fig. 12.10**

1. Copper; arrowhead, broken, barbed. From a late level of Period II. (KLB-2, Reg. No. 21376).
2. Copper; *parasu*-type hatchet, with two semi-circular heads on both sides, length 3 cm (broken) with a handle, length 4.5 cm. From a late level of Period II. (KLB-2, Reg. No. 9244).
3. Copper; hook, upper portion section rectangular, hook portion round, size 6 cm. From a late level of Period II. (KLB-2, Reg. No. 21193).
4. Copper; arrowhead, thick, barbed. From surface. (KLB-2, Reg. No. 21423).
5. Copper; arrowhead, barbed, complete. From a late level of Period II. (KLB-1, Reg. No. 1479).
6. Copper; arrowhead, barbed, complete. From a late level of Period II. (KLB-2, Reg. No. 20052).
7. Copper; arrowhead, thick, barbed. From a late level of Period II. (KLB-1, Reg. No. 19543).

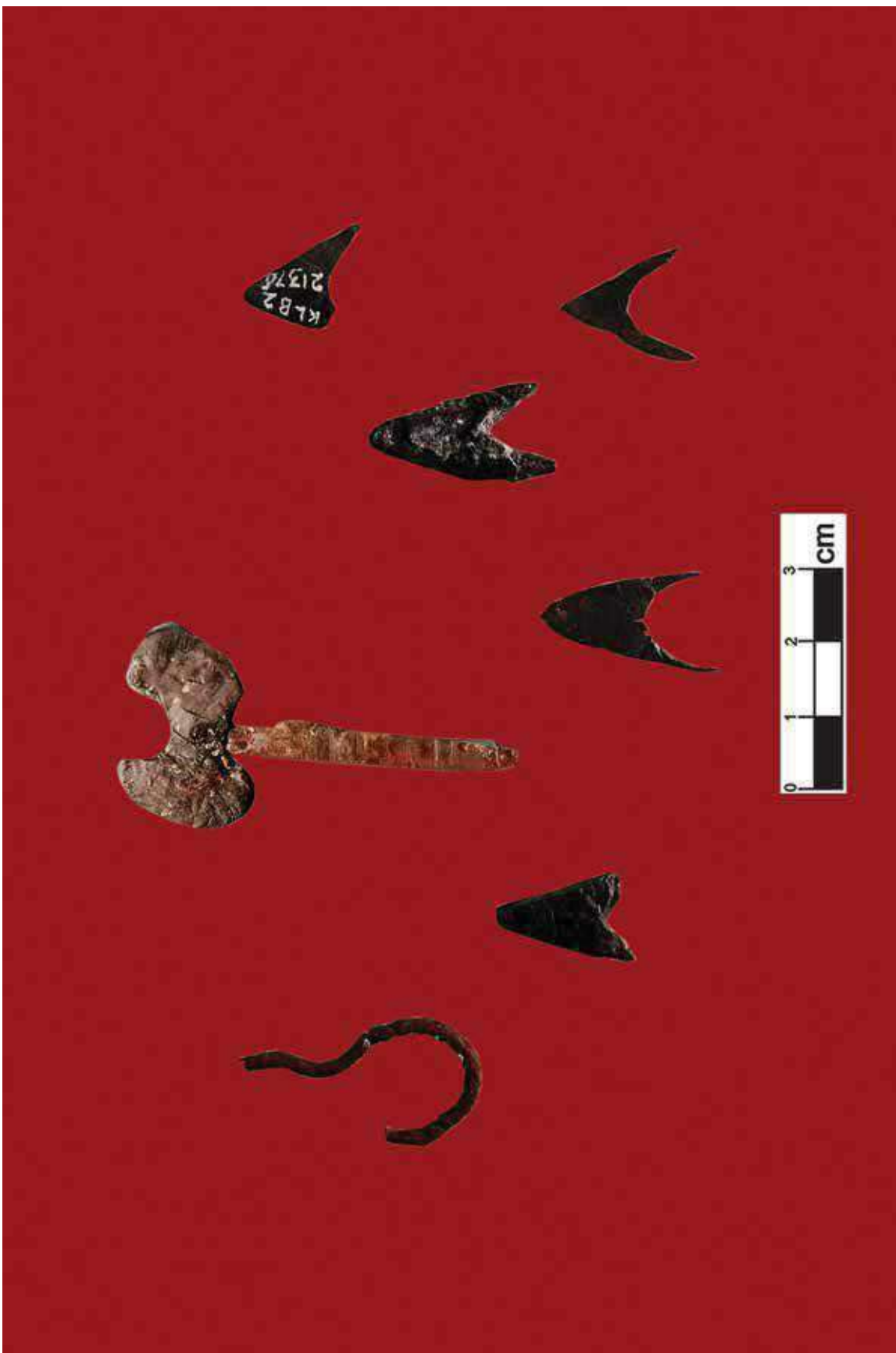


Fig. 12.10 Copper hook, hatchet and arrow heads

**Fig. 12.11**

1. Copper; spearhead, head and lower portion of tang broken, size 8.5 cm, blade 3.5 cm. From a late level of Period II. (KLB-2, Reg. No. 9196)
2. Copper; blade, blade with a pointed end. From a late level of Period II. (KLB-2, Reg. No. 20308).
3. Copper; spearhead, small, size 8 cm. From a late level of Period II. (KLB-2, Reg. No. 10824).
4. Copper; blade with a long tang. From a late level of Period II. (KLB-2, Reg. No. 18437).
5. Copper; spearhead, blade broken, size 7 cm. From an early level of Period II. (KLB-1, Reg. No. 16415).
6. Copper; fragment of an indeterminate object. From a late level of Period II. (KLB-1, Reg. No. 1469).
7. Copper; spearhead, broken, size 12.5 cm. From a late level of Period II. (KLB-2, Reg. No. 13861).



Fig. 12.11 Copper spear heads, blades, etc.

**Fig. 12.12**

II. (KLB-2, Reg. No. 14206).

1. Copper; blade with a tang, 4.5 in length, width of the blade 1 cm. From a late level of Period II. (KLB-2, Reg. No. 14206).
2. Copper; small receptacle, *katori* type crucible used by goldsmiths, dia. 2 cm. From a late level of Period II. (KLB-2, Reg. No. 13079).
3. Copper; saw, fragment with three teeth. From a late level of Period
4. Copper; needle, eye broken, length 4 cm. From a late level of Period II. (KLB-2, Reg. No. 8680).
5. Copper; antimony rod, 6.9 cm in length. From a late level of Period II. (KLB-2, Reg. No. 21026).
6. Copper; nail parer, length 6.7, lenticular section. From a late level of Period II. (KLB-2, Reg. No. 7777).



Fig. 12.12 Copper blade, receptacle, saw, needle, antimony rods, nail parer, etc.

**Fig. 12.13**

1. Copper; coiled wire, folded. From a late level of Period II. (KLB-1, Reg. No. 20443).
2. Copper; ring, dia. 1.8 cm. From a late level of Period II. (KLB-1, Reg. No. 19281).
3. Copper; ring, signet, dia. 2 cm. From a late level of Period II. (KLB-3, Reg. No. 15548).
4. Copper; ring, signet, dia. 1 cm. From an early level of Period II. (KLB-1, Reg. No. 15075).





Fig. 12.13 Copper wire and rings

**Fig. 12.14**

1. Copper; blade, spear head (?), broken. From a late level of Period II. (KLB-1, Reg. No. 8200).
2. Copper; blade (?). From a late level of Period II. (KLB-2, Reg. No. 18707).
3. Copper; an indeterminate, plano convex object. From a late level of Period II. (KLB-1, Reg. No. 11000).
4. Lead fragment; indeterminate. From a middle level of Period II. (KLB-1, Reg. No. 16492).
5. Copper; nail parer, length 7 cm. From a late level of Period II. (KLB-2, Reg. No. 12775).



Fig. 12.14 Copper spear head (?), nail parer lead piece

**Fig. 12.15**

1. Copper; bull with low hump, small flatish horns and a dewlap. The

entire figure is well proportioned. size, length 7 cm, thickness 2.4 cm, height 4 cm. Unstratified (KLB-2, Reg. No. 21703).



Fig. 12.15 Copper bull figure

**Fig. 12.16**

1. Copper; antimony rod, broken, round in section, length 3 cm. From a late level of Period II. (KLB-2, Reg. No. 1959).
2. Copper; pin, 5 cm in length. From a middle level of Period II. (KLB-1, Reg. No. 16987).
3. Copper; U-shaped pin, made of wire. From a late level of Period II. (KLB-2, Reg. No. 17024).
4. Copper; fragment of a flat rod, length 10 cm. From a late level of Period II. (KLB-2, Reg. No. 8600).
5. Copper; pin, sharp end on both sides, length 8 cm. From a late level of Period II. (KLB-2, Reg. No. 17026).
6. Copper; wire, length 10.5 cm. From a late level of Period II. (KLB-2, Reg. No. 1904).
7. Copper; needle, with a broken eye. From a late level of Period II. (KLB-1, Reg. No. 9298).
8. Copper; pin, From a middle level of Period II. (KLB-1, Reg. No. 8373).
9. Copper; needle, flat with a sharp point. From a middle level of Period II. (KLB-1, Reg. No. 15156).
10. Copper; pin, with one end pointed, length 6 cm. From a late level of Period II. (KLB-2, Reg. No. 10541).
11. Copper; antimony rod, length 9 cm. From a late level of Period II. (KLB-2, Reg. No. 21054).
12. Copper; awl, 10 cm in length. From a middle level of Period II. (KLB-2, Reg. No. 11200).



Fig. 12.16 Copper antimony rod, pins, rod, wire, needle, awl, etc.



**Fig. 12.17**

1. Copper; nail, with square section and platform on the top, length 4 cm. From a middle level of Period II. (KLB-2, Reg. No. 13226).
2. Copper; nail, with square section platform on the top and pointed end, length 4.1 cm. From a late level of Period II. (KLB-2, Reg. No. 257).
3. Copper; nail, with square section, length 4.3 cm. From a late level of Period II. (KLB-1, Reg. No. 5069).
4. Copper; antimony rod, ovoid in section. From an early level of Period II. (KLB-1, Reg. No. 18928).
5. Copper; antimony rod, square in section. From a middle level of Period II. (KLB-2, Reg. No. 13552).
6. Copper; pin, with both ends pointed, length 6.5 cm. From a late level of Period II. (KLB-2, Reg. No. 15616).
7. Copper; rod, with square section, one end round. From an early level of Period II. (KLB-1, Reg. No. 19261).
8. Copper; ring, round in section, dia. 2 cm. From a middle level of Period II. (KLB-2, Reg. No. 10742).
9. Copper; broken arrowhead, tanged, length 3.2 cm. From an early level of Period II. (KLB-2, Reg. No. 18773).
10. Copper; ring, round in section, dia. 2.5 cm. From an unstratified level of Period II. (KLB-2, Reg. No. 21500).
11. Copper; receptacle, very small in size, used as crucible by goldsmiths. From a late level of Period II. (KLB-2, Reg. No. 16415).
12. Copper; sheet, folded. From a late level of Period II. (KLB-1, Reg. No. 701).



Fig. 12.17 Copper nails, antimony rods, pins, rod, rings, receptacle, sheet, etc.

**FIG. 12.18**

1. Copper; celt, fragmentary, size 5 x 3 cm. From an unstratified level of Period II. (KLB-1, Reg. No. 18695).
2. Copper; celt, fragmentary, size 3 x 3.4 cm. From a middle level of Period II. (KLB-1, Reg. No. 16482).
3. Copper; spearhead, broken, tanged, length 8 cm. From a late level of Period II. (KLB-1, Reg. No. 4787).
4. Copper; saw, with teeth, length 3.5 cm. From a late level of Period II. (KLB-2, Reg. No. 10638).
5. Copper; chisel, with a sharp end, length 4 cm. From a late level of Period II. (KLB-2, Reg. No. 1212).
6. Copper; arrowhead, broken, barbed length 2.8 cm. From a late level of Period II. (KLB-2, Reg. No. 18764).
7. Copper; fish hook, from a late level of Period II. (KLB-1, Reg. No. 16656).
8. Copper; fish hook, from an early level of Period II. (KLB-1, Reg. No. 17412).
9. Copper; knife blade, broken, 5 cm. From a late level of Period II. (KLB-2, Reg. No. 18752).



Fig. 12.18 *Copper celt, spear head, saw, chisel, arrow head, fish hooks, knife blade, etc.*

## B. GOLD OBJECTS

Excavations and surface exploration at Kalibangan have yielded fifty-four objects of gold including gold gilded on copper from the habitation area. The objects belong to two type of metals: (i) Gold object (ii) Gold gilded copper objects. The typology of objects consists of beads, pendants, foils, nose and ear ornaments and domical buttons with tiny transverse hole inside for passing the thread. This is a unique example. One bead of blood stone (a variegated agate variety) has been possibly reused as a pendant. It has an attachment of a vertical gold rod encircled with a band around it. The nose or ear ornaments have studs either on one or both sides.

### Typological Distribution of Gold Objects

1	2	3	4	5	6	7
Foil	Ear or nose ornaments	Buttons	Beads	Inlay	Spacer	Pendant reused bead
2	5	4	16	2	1	1

The objects are described as below :-

**Fig. 12.19**

- Gold; bead, long, cylindrical, triangular. From a late level of Period II. (KLB-2, Reg. No. 16676).
- Gold; ear (?) ornament, long, cylindrical, circular with stud on one side. From a middle level of Period II. (KLB-2, Reg. No. 15896).
- Gold; gilded on copper, ear or nose ornament, with a flower-like shaped stud on one side. From a late level of Period II. (KLB-2, Reg. No. 16957).
- Gold; inlay, tiny round. From surface. (KLB-2, Reg. No. 19611).
- Gold; disc bead, short, circular. From surface. (KLB-2, Reg. No. 19822).
- Gold; gilded on copper, nose ornament, with studs on both sides. From a middle level of Period II. (KLB-2, Reg. No. 10291).
- Gold; bead, short, bicone, lenticular. From a late level of Period II. (KLB-2, Reg. No. 19878).
- Blood stone (?); long, barrel, circular, later reused as a pendant with a gold bar fixed vertically along with a band at its base joining the bead. From a middle level of Period II. (KLB-2, Reg. No. 10004).<sup>2</sup>
- Gold; bead, long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 18056).
- Gold; bead, standard, circular. From an early level of Period II. (KLB-1, Reg. No. 19831).
- Gold; button, domical in shape with a small transverse hole inside for passing the thread. From an early level of Period II. (KLB-2, Reg. No. 19832).
- Gold; button, domical in shape with a transverse hole inside the button for passing the thread. From a late level of Period II. (KLB-2, Reg. No. 13800).
- Gold; bead, long, cylindrical, circular. From a late level of Period II. (KLB-1, Reg. No. 14457).
- Gold; foil, long, with a hole at one end and cut obliquely at the other end. From a late level of Period II. (Reg. No. 70/KLB-1).
- Gold; bead, short, circular, disc-bead. From a late level of Period II. (KLB-2, Reg. No. 19878).
- Gold; spacer, with four holes. From surface. (Reg. No. 70/KLB-3)

<sup>2</sup> Pendants of this variety have been reported from Mohenjodaro, item no. 425, *Indus Civilization, Exhibition NHK*, Tokyo Metropolitan Museum and Nagoya City Museum 2000-2001, p. 102.

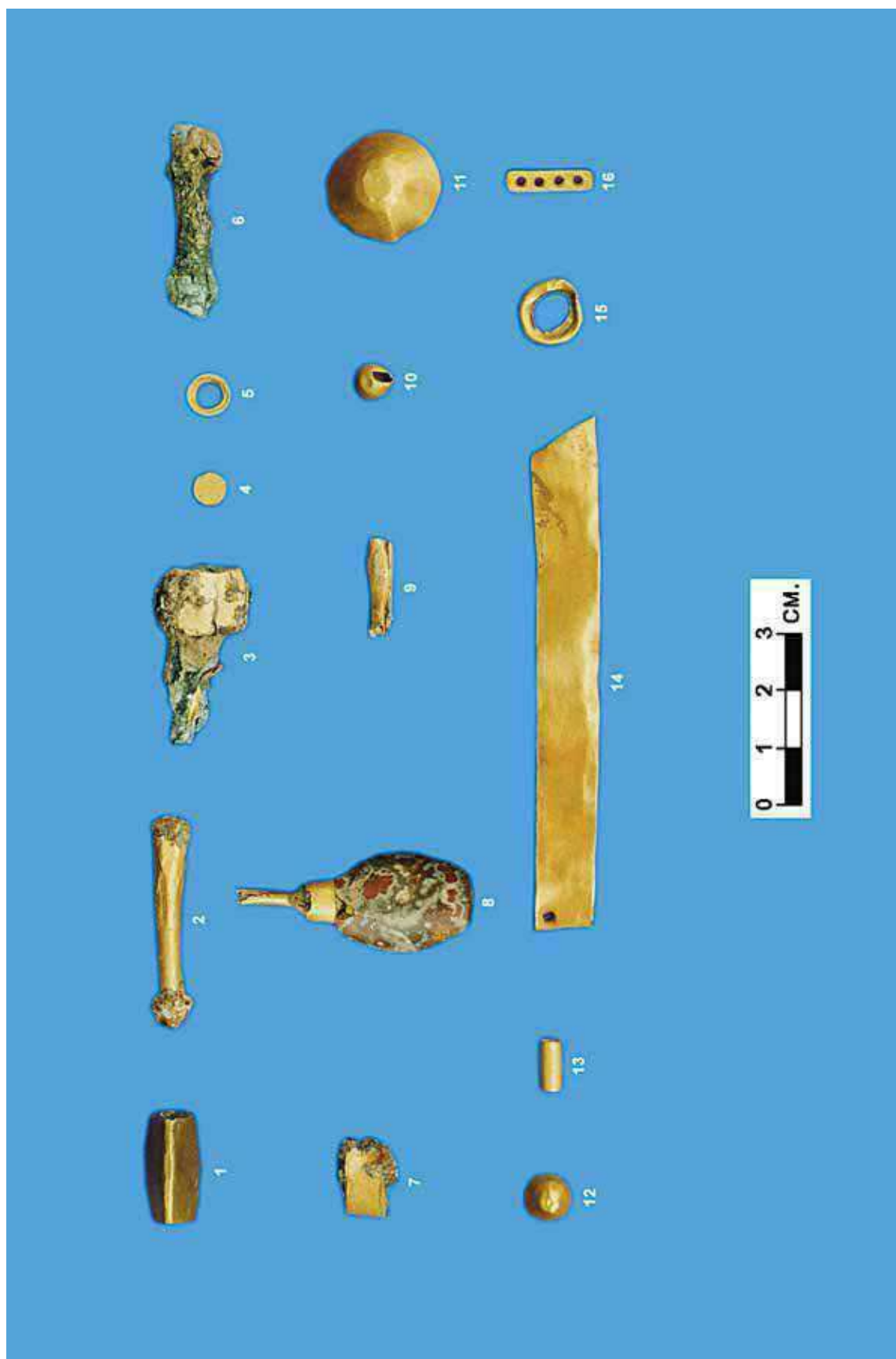


Fig. 12.19 Gold beads, ear/nose ornaments, inlay, buttons, foil, spacer, etc.



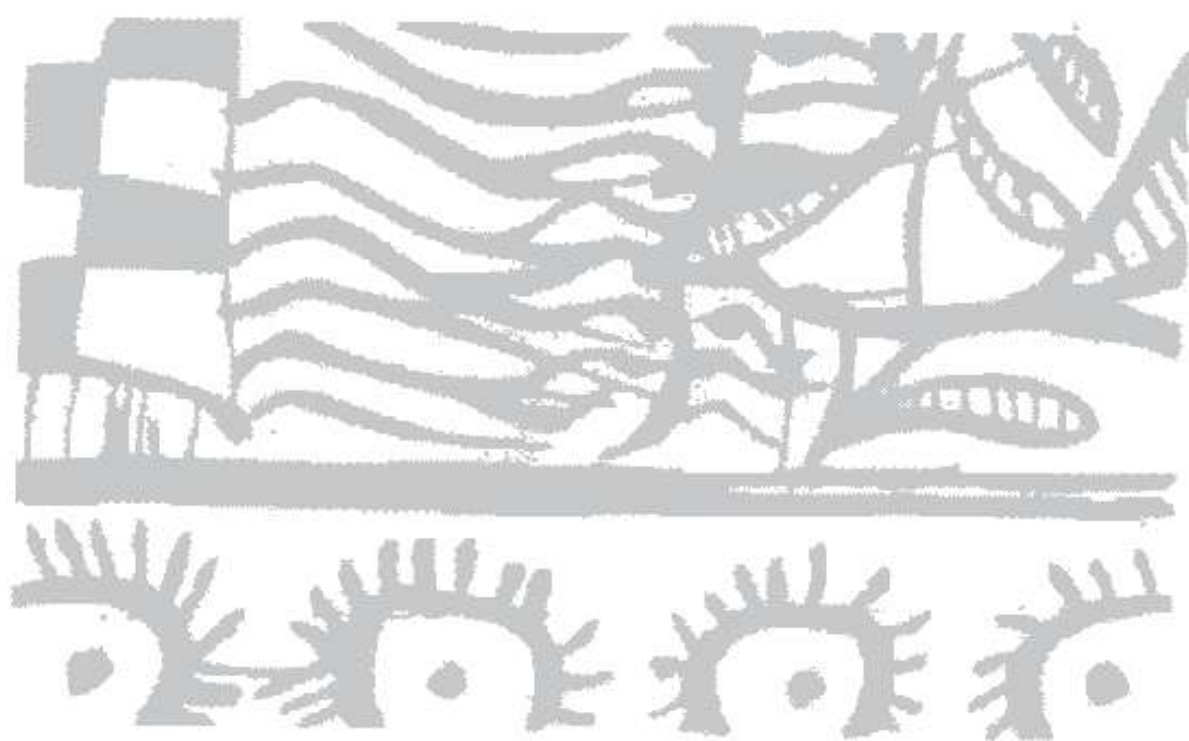
**Fig. 12.20**

1. Gold; pendant, circular-deorated with incised concentric circles with a central hole and two side holes. From a late level of Period II. (KLB-2, Reg. No. 6744).
2. Gold; gilded copper, bead, long, cylindrical, circular. From surface. (KLB-2, Reg. No. 17659).
3. Gold; bead, short, cylindrical, circular. From surface. (KLB-2, Reg. No. 14783).
4. Gold; bead, long, tubular, circular. From a late level of Period II. (KLB-1, Reg. No. 521).
5. Gold; gilded on copper, bead, long, tubular, circular. From surface. (KLB-1, Reg. No. 8120).
6. Gold; bead, disc, circular. From a late level of Period II. (KLB-1, Reg. No. 19010).
7. Gold; bead, standard, bicone, circular. From a late level of Period II. (KLB-2, Reg. No. 14458).
8. Gold; bead, damaged, bicone, circular. From surface. (KLB-2, Reg. No. 14459).
9. Gold; bead, disc, circular. From a late level of Period II. (KLB-1, Reg. No. 135).
10. Gold; bead, disc, circular. From an unstratified level of Period II. (KLB-2, Reg. No. 9830).
11. Gold; bead, disc, circular with central channel. From a late level of Period II (KLB-1, Reg. No. 70/KLB/1)
12. Gold; gilded on copper, ear ornament, with a long stud. From a late level of Period II. (KLB-2, Reg. No. 8969).
13. Gold; inlay, circular piece. From a late level of Period II. (KLB-2, Reg. No. 522).
14. Gold; bead, standard, cylindrical, circular. From a late level of Period II. (KLB- 1 and 2, Reg. No. 70/KLB-55).
15. Gold; bead, standard, bicone, circular. From a late level of Period II. (KLB-2, Reg. No. 70/KLB-42).





Fig. 12.20 Gold pendant, beads, ear ornaments, inlay, etc.



# IVORY AND BONE OBJECTS

## CHAPTER

# 13

JAGAT PATI JOSHI

In all three hundred ninety two objects including small fragments, pieces of raw material and waste of ivory and bone have been found in Harappan levels at Kalibangan.

It appears that ivory and bone objects were locally made. The raw ivory and bone pieces are available. The bigger pieces were cut by saws perhaps made of chert blades or copper. The objects can be divided typologically into the following categories.

1. Combs
2. Scapulae
3. Stylus
4. Arrowheads
5. Needles
6. Kohl-sticks
7. Conical objects
8. Ivory tusk pieces
9. Antlers/horns

Bone and ivory objects have been reported from the Harappan sites e g Mohenjodaro, Harappa, Chanhudaro,

Lothal. At Surkotada<sup>1</sup> and Bagesra the full-fledged bone industries are available in the Harappan levels.

The ivory objects are few because of the rare nature of the raw material. It is generally used for combs. In bone a variety of objects is available. Large number of bone and ivory scapulae are available. Their sizes vary from 23 x 3.50 cm to 1.50 x 1 cm. Some of the scapulae have one conical end and the others have a semi-circular end. It appears that these were used from both sides, as a multi-purpose tool for taking out material e g ghee, butter etc. or used by the potters for taking out extra mud-paste or used for inspection of throat as is being done now-a-days by medical practitioners. The bone arrowheads have tangs and their number is very small. One of the arrowheads has a burnt point due to

### TYPOLOGICAL DISTRIBUTION OF IVORY AND BONE OBJECTS

1		2	3	4	5	6	7	8	9	10	11	12	13
Ivory	Raw material	Ivory Combs	Scapulae	Points	Bone Arrow head	Stylus	Bone needles	Ivory needles	Ivory Bangles	Conical Objects	Antler	Awl	Miscellaneous
	Bone												
8	7	4	15	5	2	5	22	2	1	2	2	1	3

<sup>1</sup> Sharma, A.K. 1990. Bone Tools, In Joshi, J.P. (ed.) *Excavations at Surkotada and Exploration in Kutch*, MASI No. 87, Archaeological Survey of India, New Delhi.

tempering. Most of the needles could be used for knitting and some of these could have been used as engravers or stylus or kohl-sticks. The use of conical objects, though these look like plumb-bob but do not have any hole and hence their exact use could not be determined. Two of the objects have holes perhaps for hanging of the objects. The objects were finely chipped, flaked and polished.

The following assemblage consists of bone and ivory raw material and semi-finished objects indicating their local manufacture:

**Fig. 13.1**

1. Ivory; the oblique saw-marks clearly suggest that it had been cut from a bigger piece. It has a rectangular section, size 10 x 1 cm. From a middle level of Period II. (KLB-1, Reg. No. 18237).
2. Ivory piece; saw-marks on both sides, it has a curvature. Half finished object without any polish. From a middle level of Period II. (KLB-1, Reg. No. 9).
3. Ivory piece; burnt, rectangular in section, size 9 x 1 cm. From an unstratified level. (KLB-2, Reg. No. 19889).
4. Bone round piece; one end broken, other end has oblique flaking, dia. 0.50 cm, length 4.5 cm. (KLB-1, Reg. No. 14583).
5. Ivory; roughly rectangular piece, with a half finished hole, size 3 x 1 cm. From an unstratified level. (KLB-1, Reg. No. 21842).
6. Bone; roughly tapering object, flakes taken out from all sides, round in section. From a middle level of Period II. (KLB-1, Reg. No. 14266).
7. Bone; square piece, size 4.2 x 1 cm. From a late level of Period II. (KLB-1, Reg. No. 756).
8. Bone; split piece, size 5.5 cm in length. From a late level of Period II. (KLB-1, Reg. No. 1072).
9. Bone; rectangular piece, size 4 x 2 cm. From a late level of Period II. (KLB-2, Reg. No. 20981).
10. Ivory; round piece, length 2 cm, dia. 1 cm. From a late level of Period II. (KLB-1, Reg. No. 20410).
13. Bone; fragmentary round object, dia. 2 cm, length 4 cm. Saw-marks are visible. From an early level of Period II. (KLB-1, Reg. No. 16069).



Fig. 13.1 Ivory and bone objects

## COMBS

### Fig. 13.2

Four combs have been found at Kalibangan, which are made of ivory. Out of these, three are less damaged and fourth one is having broken tooth and hence not described and illustrated<sup>2</sup>.

1. Ivory; comb with pinched up sides, having three concentric circles engraved on it. Tooth only one side, size 9.50 x 4.50 cm. From a late level of Period II. (KLB-2, Reg. No. 17872).

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<sup>2</sup> Combs have been reported from Mohenjodaro, Harappa, Chanhudaro, Lothal and Surkotada. Ghosh, A. 1989. 18.3. Combs, *Encyclopaedia of Indian Archaeology*, p. 343. Munshiram Manohar Lal Publication, Delhi.

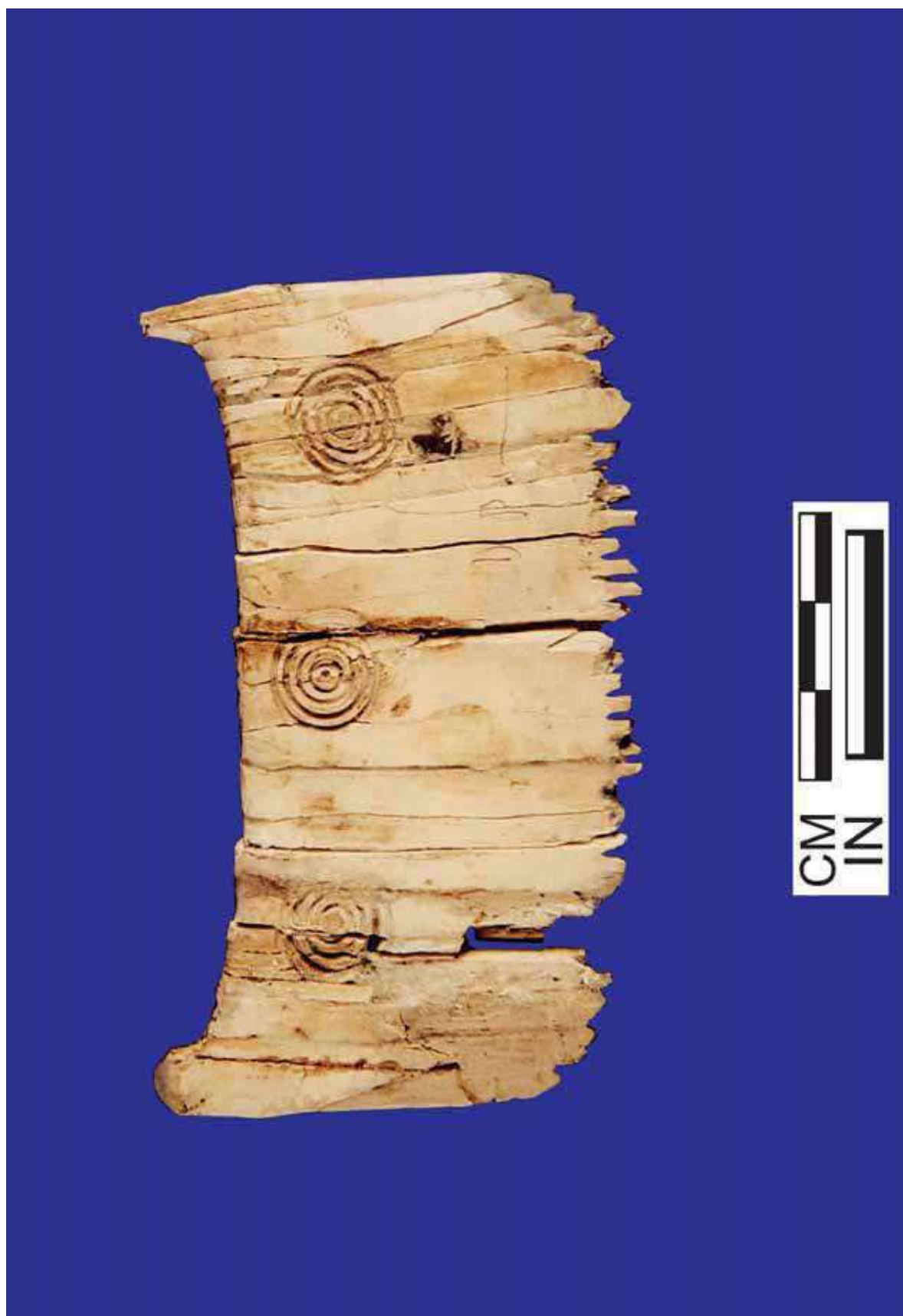


Fig. 13.2 Fragmentary ivory comb having three concentric circles



**Fig. 13.3**

1. Ivory; comb with tooth on both sides. It is blackish in colour, size 6 x 5 cm. From a middle level of Period II. (KLB-1, Reg. No. 20139).
2. Ivory; comb with tooth only on one edge. Both ends are pinched up, size, 5 x 2 cm. From a late level of Period II. (KLB-2, Reg. No. 15436).



Fig. 13.3 *Fragmentary ivory combs*

**Fig. 13.4**

1. Bone; scapula, black in colour with pointed edge and a rounded butt end, polished, size 8 x 2 cm. From a middle level of Period II. (KLB-1, Reg. No. 18814).
2. Bone; rod, polished, size 6.5 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 5434).
3. Ivory; long piece with rectangular section, one side has three deep parallel lines, sides have incised circlets with a dot, size 4.5 x 0.75 cm. From an unstratified level. (KLB-2, Reg. No. 21843).
4. Bone; fragment of a scapula, with a rounded end, size 5 x 2.5 cm. From a late level of Period II. (KLB-2, Reg. No. 20954).
5. Bone; scapula, broken with a sharp end, polished due to use, length 3.5 cm. From an unstratified level. (KLB-1, Reg. No. 21844).
6. Bone; fragment a scapula, with a rounded edge, length 3.5 cm. From a late level of Period II. (KLB-2, Reg. No. 4650).
7. Bone; an unfinished scapula with one end prepared by obliquely cutting the side margins, size 4 x 1 cm. From an unstratified level. (KLB-2, Reg. No. 21845).
8. Bone; piece with a hole for hanging, broken while making the hole, size 3 x 1.25 cm. From a late level of Period II. (KLB-2, Reg. No. 2093).
9. Bone; fragment of scapula with a pointed end. From a late level of Period II. (KLB-1, Reg. No. 6).
10. Bone; fragment of a polished bone piece, size 3 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 1528).
11. Bone; fragment of polished bone piece with a rounded end, size 3.5 x 0.75 cm. From a late level of Period II. (KLB-1, Reg. No. 18681).
12. Bone; piece with a sharp point, size 4.5 x 1 cm. From a middle level of Period II. (KLB-1, Reg. No. 18855).
13. Bone; fragment of a pointed end of a scapula, size 3 x 1 cm. From a late level of Period II. (KLB-1, Reg. No. 2626).
14. Bone; fragment of a polished bone piece with rounded end. From a late level of Period II. (KLB-1, Reg. No. 4543).
15. Bone; fragment of polished sharp point, size 3 x 1 cm. From an early level of Period I. (KLB-1, Reg. No. 19398).
16. Ivory; bangle fragment, convex in section. From a late level of Period II. (KLB-, Reg. No. 17736).

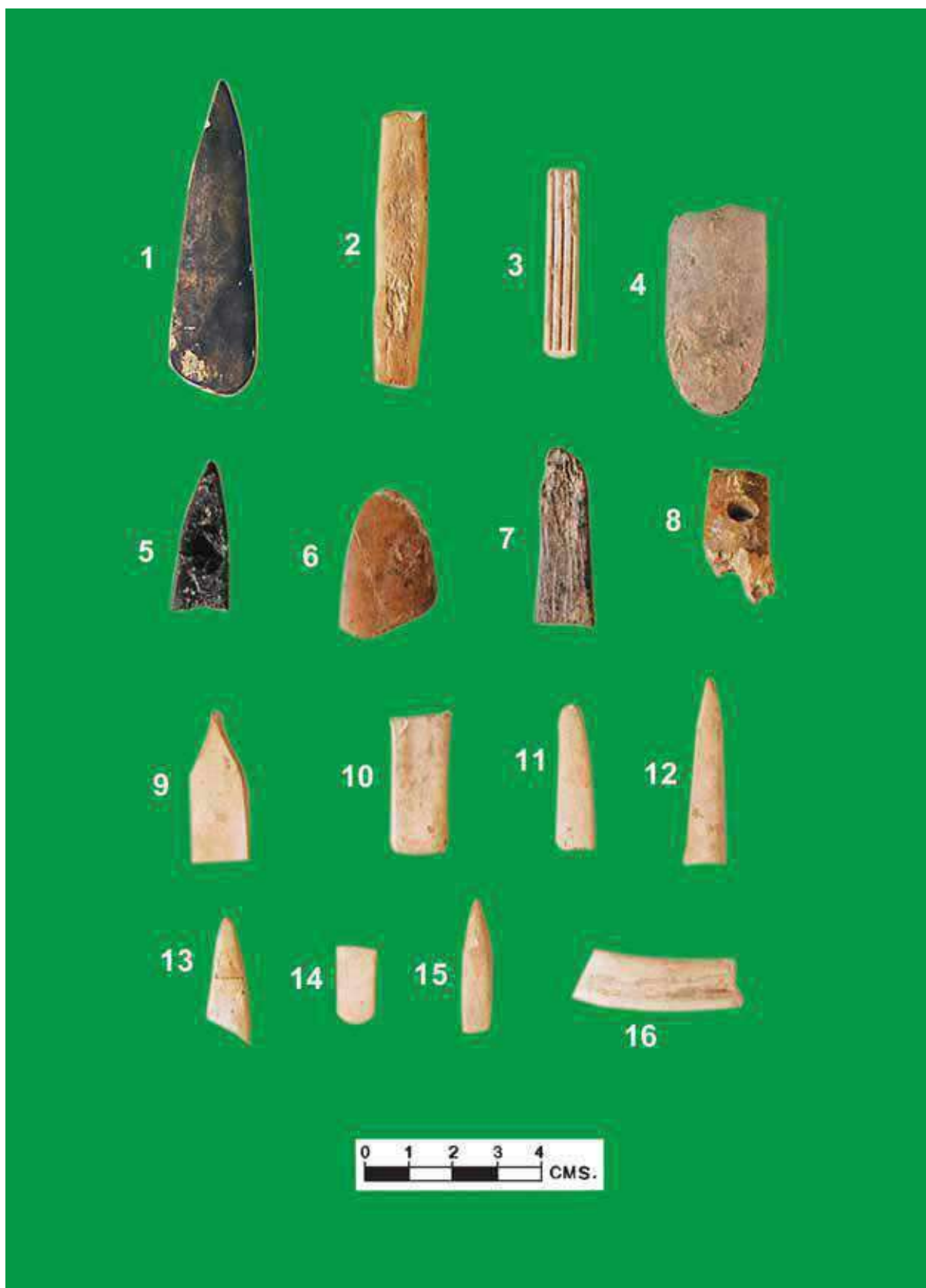


Fig. 13.4 *Bone scapulae, rod, long piece, polished pieces and ivory bangle*

**Fig. 13.5**

1. Bone; scapula, size 11.5 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21422).
2. Bone; scapula, size 23 x 5 cm. From a middle level of Period II. (KLB-2, Reg. No. 14380).
3. Bone; scapula, size 8 x 1 cm. From a late level of Period II. (KLB-, Reg. No. 20102).
4. Ivory; pointed unfinished object, size 16 x 2 cm. From a late level of Period II. (KLB-2, Reg. No. 14408).
5. Bone; scapula, with one pointed end and other rounded, size 6.5 x 2 cm. From a late level of Period II. (KLB-2, Reg. No. 15441).
6. Bone; fragment of a scapula, size 6.5 x 2.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 20150).
7. Bone; fragment of a scapula, broader end with rounded edge, size 7.5 x 2.5 cm. From a middle level of Period II. (KLB-2, Reg. No. 21199).
8. Bone; conical end of a scapula, size 3 x 1 cm. From a middle level of Period II. (KLB-2, Reg. No. 20150).
9. Bone; scapula, with a rounded end. From a middle level of Period II. (KLB-1, Reg. No. 18499).



Fig. 13.5 Bone scapulae and ivory unfinished pointed object

**Fig. 13.6**

1. Bone; arrowhead, with a tang, polished, length 5 cm. From a late level of Period II. (KLB-1, Reg. No. 3554).
2. Bone; arrowhead, with a tang, polished, length 7 cm. From a late level of Period II. (KLB-2, Reg. No. 9757).
3. Bone; arrowhead, with a tang, polished, length 6 cm. From an early level of Period II. (KLB-1, Reg. No. 19402).
4. Bone; arrowhead, with a tang, polished, length 7 cm. From a late level of Period II. (KLB-2, Reg. No. 9757).





Fig. 13.6 Bone arrow heads

**Fig. 13.7**

1. Antler; ground and made into a sharp point, size 8 x 2 cm. From a middle level of Period II. (KLB-2, Reg. No. 20343).
2. Bone; point, with a groove at the tang end, size 9 x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 1615).
3. Bone; point by grinding distal end. The proximal end is rounded, margins grounded, size 9 x 2 cm. From a middle level of Period II. (KLB-2, Reg. No. 19981).
4. Bone; point, grounded, slightly burnt. From a late level of Period II. (KLB-2, Reg. No. 20432).
5. Bone; point, sharp point achieved by grinding of margins, polished, size 5.5 x 1 cm. From a late level of Period II. (KLB-2, Reg. No. 4434).
6. Bone; arrowhead, unfinished tang, margins achieved by chipping and grinding. From a middle level of Period II. (KLB-1, Reg. No. 10448).



Fig. 13.7 Antler, bone points and arrow head

**Fig. 13.8**

1. Bone; stylus, one end sharp the other end blunt, length 9 cm, dia. 0.75 cm. From a late level of Period II. (KLB-2, Reg. No. 9443).
2. Bone; stylus, tempered with fire, broken, size 4.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21846).
3. Bone; stylus, one end sharp and other is damaged. From a middle level of Period II. ( KLB-1, Reg. No. 16767).
4. Bone; stylus, damaged, only one end available sharp, tempered with fire. From a late level of Period II. (KLB-2, Reg. No. 1365).
5. Bone; stylus, only one end sharp, size 10 cm long. From a middle level of Period II. (KLB-2, Reg. No. 19718).

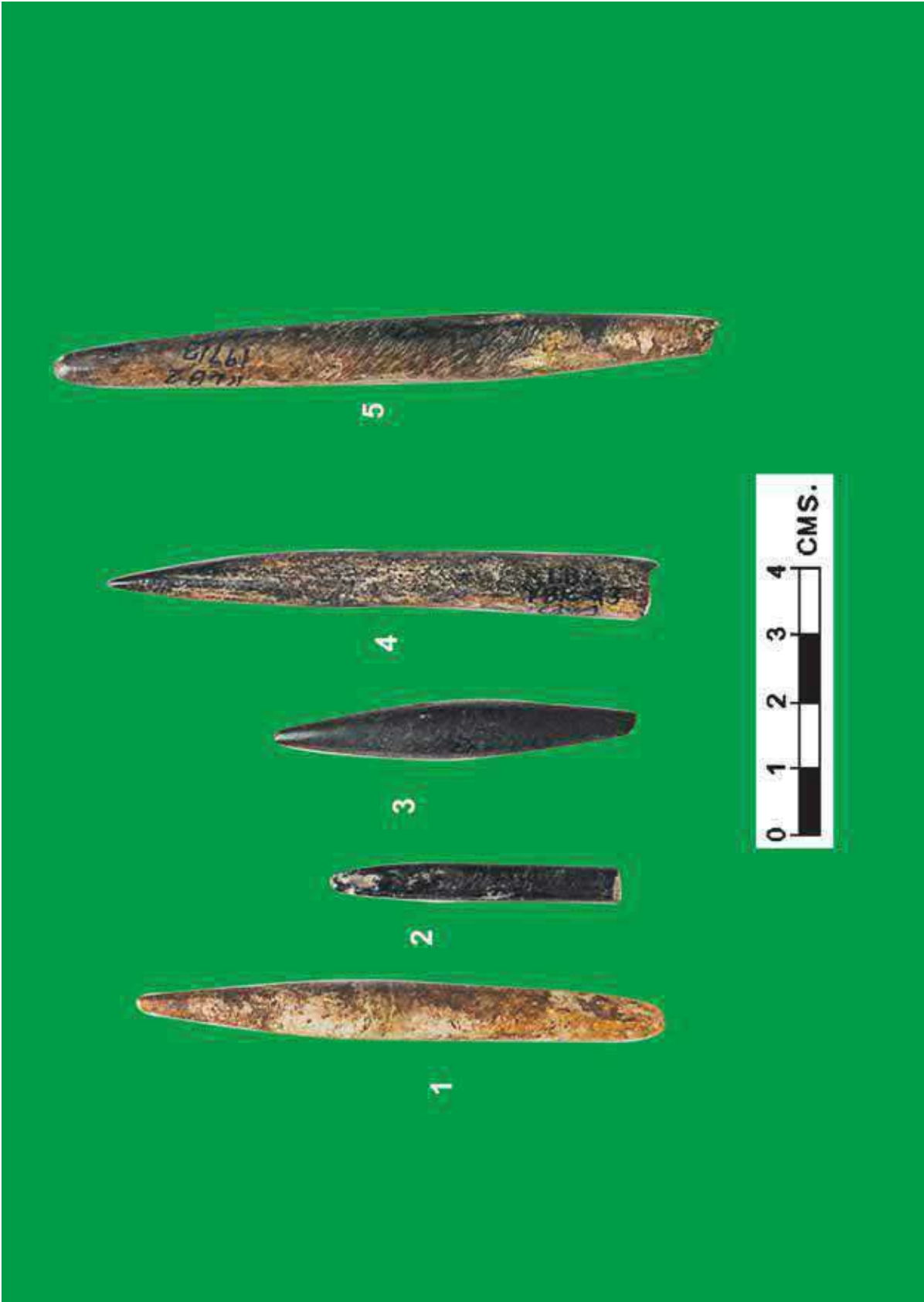


Fig. 13.8 Bone styli

**Fig. 13.9**

1. Bone; needle, both sides pointed, length 8.5 cm. From a late level of Period II. (KLB-2, Reg. No. 5029).
2. Bone; needle, both sides pointed, length 10 cm. From a late level of Period II. (KLB-2, Reg. No. 19216).
3. Ivory; needle, one side pointed other flattish length 12 cm. From a middle level of Period II. (KLB-1, Reg. No. 14508).
4. Bone; needle, both sides pointed, length 10 cm. From a middle level of Period II. (KLB-2, Reg. No. 19262).
5. Bone; needle, with one end pointed, other flattish. From a late level of Period II. (KLB-2, Reg. No. 12759).
6. Bone; needle, with one end sharp, other portion broken, length 7 cm. From a late level of Period II. (KLB-2, Reg. No. 15247).
7. Bone; needle, with one end broken other sharp, length 9.5 cm. From an early level of Period II. (KLB-1, Reg. No. 18347).
8. Bone; knitting needle, only one end available, size 9.5 cm. From a middle level of Period II. (KLB-1, Reg. No. 15185).
9. Bone; needle, both ends broken, length 9.5 cm. From a middle level of Period II. (KLB-1, 14768).

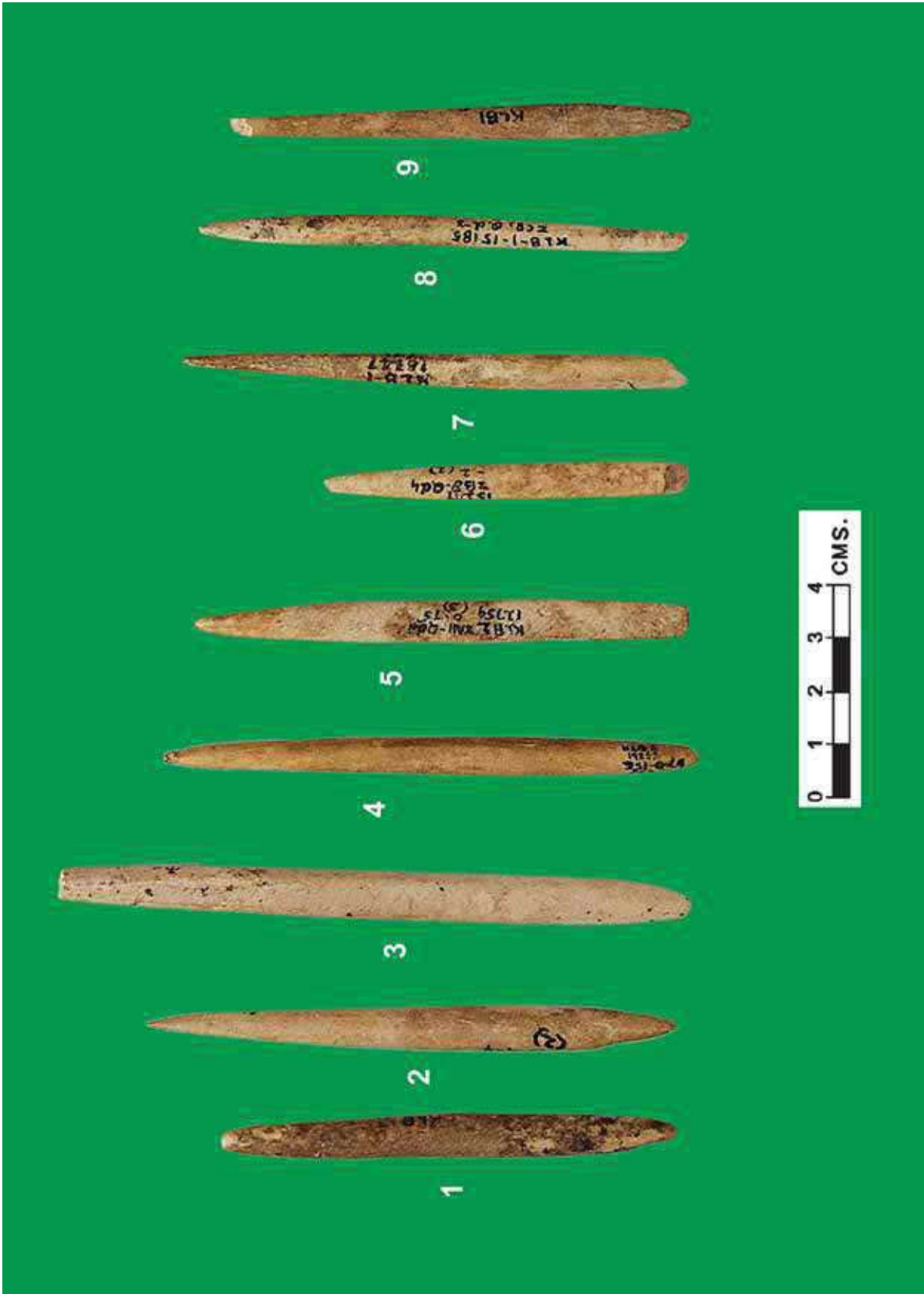


Fig. 13.9 Bone and ivory needles



**Fig. 13.10**

1. Bone; needle, both ends pointed, size 9.5 cm. From a late level of Period II. (KLB-1, Reg. No. 5736).
2. Ivory; needle, one end printed other broken, size 7 cm in length. From a late level of Period II. (KLB-2, Reg. No. 16437).
3. Bone; needle, both ends, pointed length 7 cm. From a late level of Period II. (KLB-1, Reg. No. 12761).
4. Ivory; needle, both ends pointed, length 6 cm. From a late level of Period II (KLB-2, Reg. No. 3884).
5. Bone; needle, one end pointed other blunt, length 7 cm. From an early level of Period II. (KLB-2, Reg. No. 18808).
6. Bone; fragment of a needle, only one pointed side available, length 6.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18846).
7. Bone; fragment of an arrowhead, length 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 19138).
8. Bone; arrowhead with a tang, length 5 cm, tang broken, tip burnt. From a late level of Period II. (KLB-2, Reg. No. 8217).
9. Bone; double pointed needle, length 5 cm. From a late level of Period II. (KLB-2, Reg. No. 17470).
10. Bone; double pointed needle, length 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 1278).
11. Bone; double-pointed needle, length 5 cm. From a late level of Period II. (KLB-2, Reg. No. 5221).
12. Bone; double-headed needle, length 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 5798).
13. Bone; double-headed needle, length 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 17221).
14. Bone; fragment of a long needle, only one end available, length 4 cm. From a late level of Period II. (Reg. No. 12910).
15. Bone; double-headed needle, length 7 cm. From an early level of Period II. (KLB-2, Reg. No. 18816).

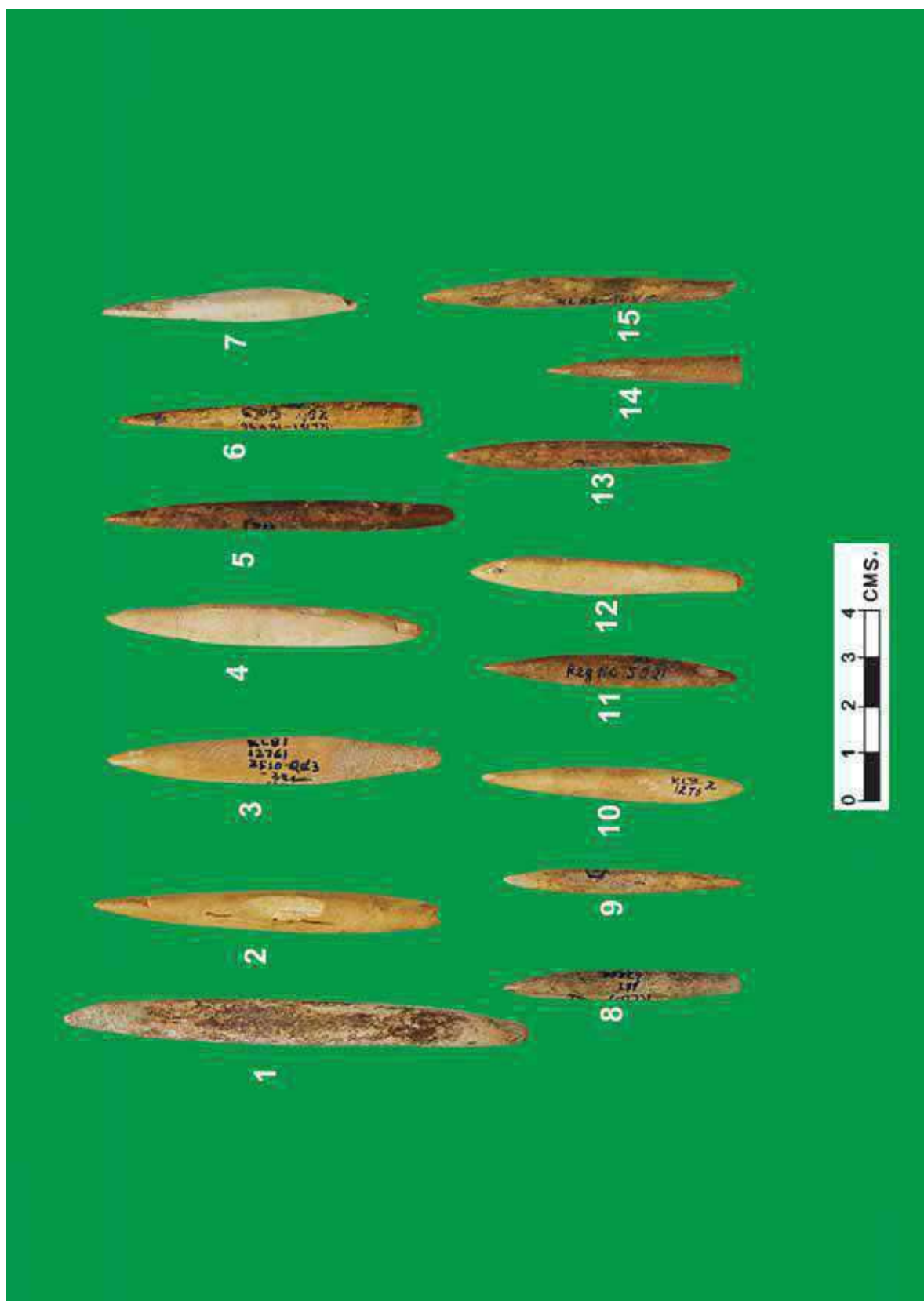


Fig. 13.10 Bone and ivory needles and bone arrowheads

**Fig. 13.11**

1. Bone; bangle piece, plano-concave in section with a hole for rivetting. From a late level of Period II. (KLB-2, Reg. No. 461).
2. Bone; conical object, length 5.5 cm, dia. 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 14112).
3. Antler; conical horn which is polished, length 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 18376).
4. Bone; conical object, size 6 cm, dia. 1.5 cm. From a late level of Period II. (KLB-1, Reg. No. 9720).
5. Antler; conical horn polished with slight curvature, size length 6 cm x 1.5 cm. From a late level of Period II. (KLB-2, Reg. No. 8432).



Fig. 13.11 Bone bangle, conical objects and antlers

**Fig. 13.12**

1. Ivory; Portion of an ivory tusk, length 45 cm, well shaped, circular, dia. 4 cm, broken. From a late level of Period II. (KLB-2, Reg. No. 18643).
2. Ivory; Portion of an ivory tusk, length 38 cm, circular, dia. 4 cm, broken. From a late level of Period II. (KLB-2, Reg. No. 18644).



Fig. 13.12 Ivory tusks, fragmentary

**Fig. 13.13**

1. Ivory; fragment of an awl. From a

middle level of Period II. (KLB-1, Reg.  
No. 4172).



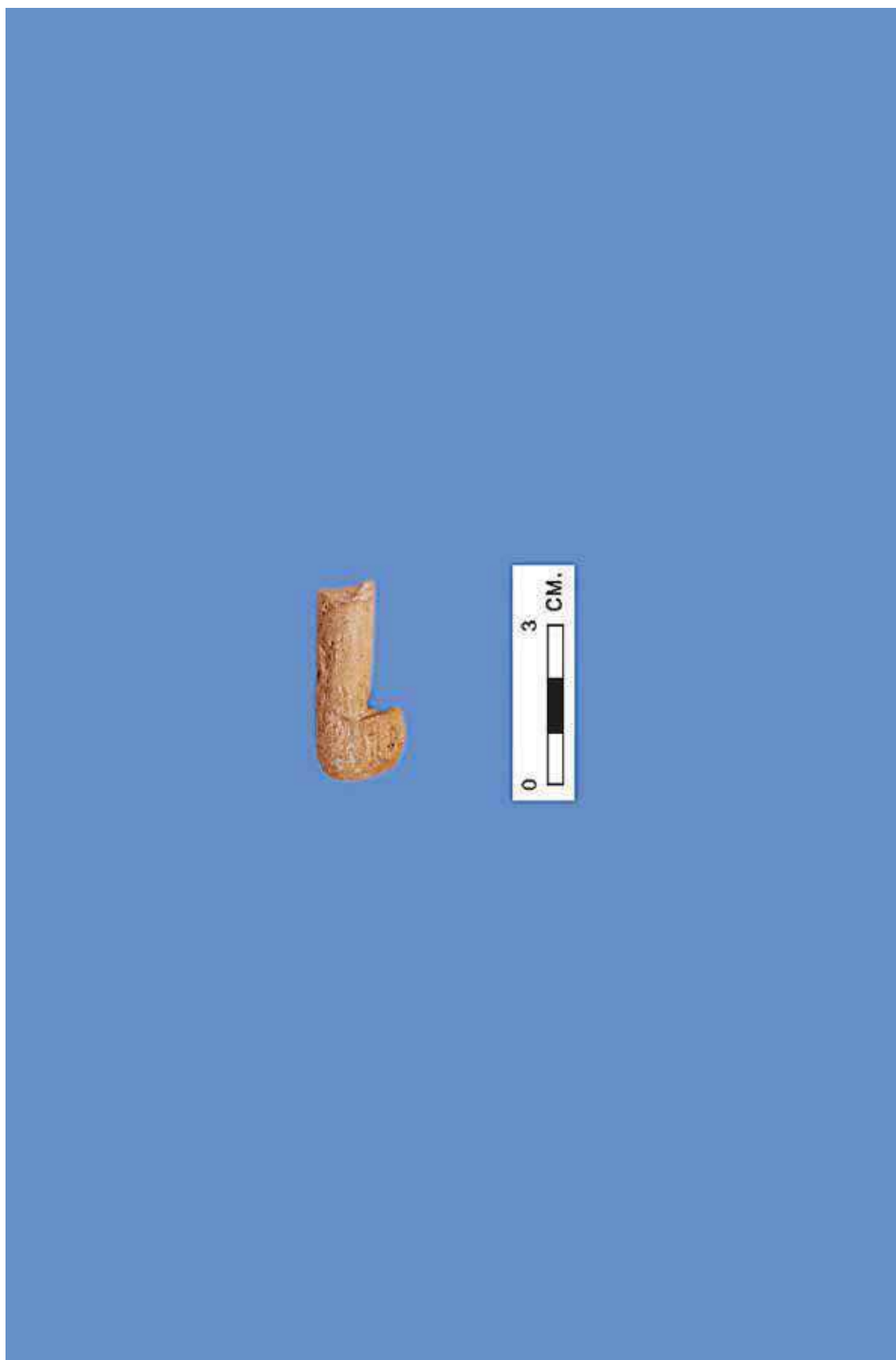
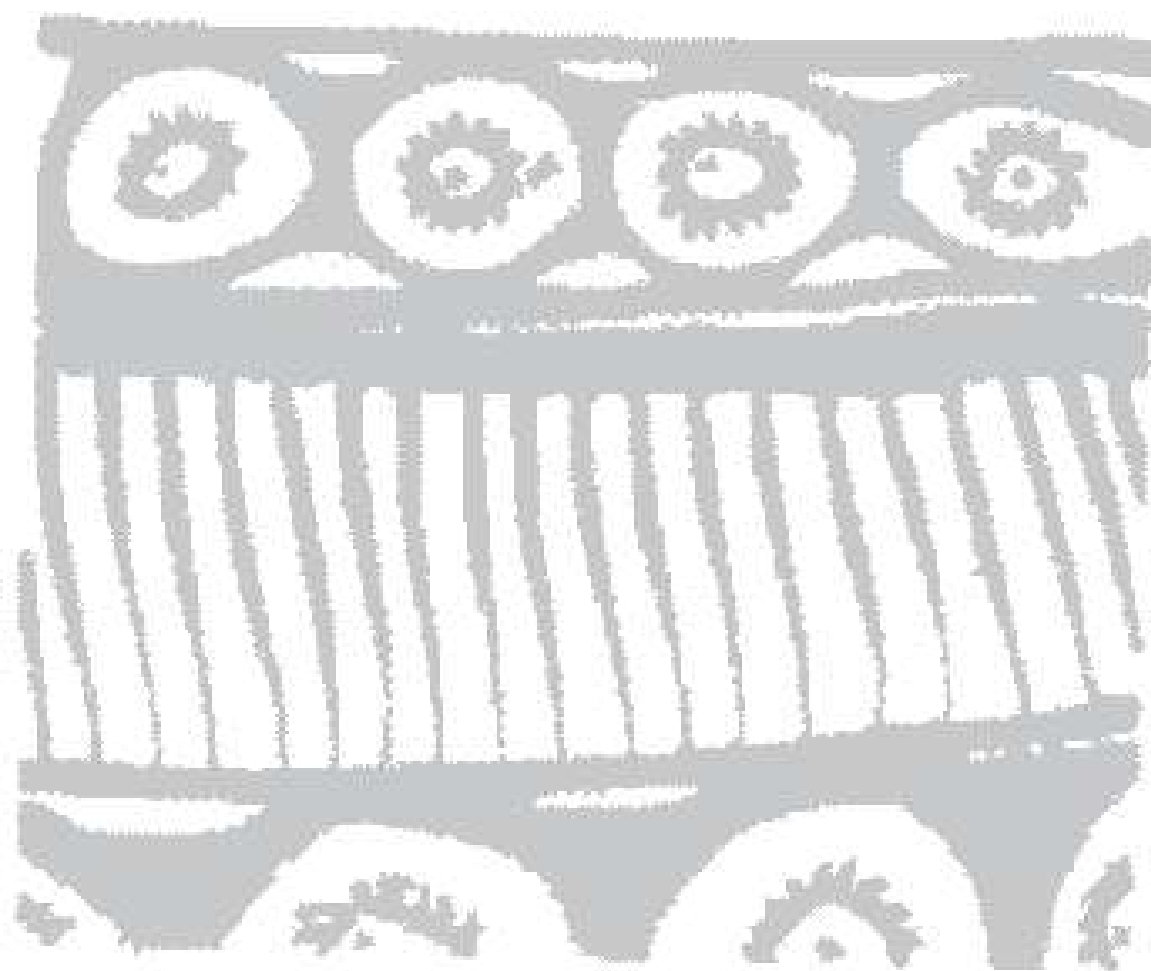


Fig. 13.13 Ivory awl



The subsistence pattern at Kalibangan consisted of raising of livestock coupled with agriculture as evidenced by the furrowed field surface having two rows of furrow marks in two directions cutting at right angles to each other closely spaced furrows in one direction crossing widely spaced furrows which indicates 'mixed crop cultivation. It has great similarity to such sowing of double crops even in modern times during the winter season in Rajasthan. The terracotta model of ploughshares of the Harappan period from Kalibangan and Banawali could give the idea of the ploughshare in the Harappan culture and *Tectona grandis* (Teak), *Dalbergia* (Shisham) of which charcoal remains are available in excavations could have been used for making strong ploughshares. Large number of bones of *Bos indicus* found during the excavations suggest the use of bullocks for agricultural activities. The occasional flooding of Sarasvati which brought rich alluvial soil added to the productivity and fertility status of the soil.

From Kalibangan both mono and dicotyledonous grains have been recovered which the former wheat (*Triticum sphaerococcum*) and barely (*Hordeum vulgare*) was used for staple diet and whereas the latter i.e. pea was used as a cereal. The use of barley, a more popular

grain indicates their awareness of its high nutritious value in the dietary. They grew wheat and barley, *Pisum (matar)* and *Cicerarientinum* (*Chana*, black gram). Incidentally apart from wheat flour being exclusively used for making *roti* the mixture of flour of barley, wheat and gram was also possibly used as it is even today in widely used individually also. "Since cultivation during that period seems to have depended on flood, irrigation, supplemented by seasonal precipitation, it is reasonable to infer that only the winter crop viz., the *rabi*, was grown. The sowing being done in the autumn after the river flood resulting from tropical monsoon had subsided".<sup>1</sup>

It is perhaps during the Early Harappan times that the artificial system of irrigation was evolved which was further advanced during the Mature Harappan times. The availability of canals of the Early Harappan and Harappan period in Haryana by Francfort and Gentile, the existence of a well where the rope marks suggest lifting of water at Dholavira and well at a central higher place at Allahdino suggest irrigation during the Harappan times besides damming of Mansar and Manhar nalas at Dholavira at four points and providing check dams. The find of gypsum in a pot sherd from Early Harappan levels is a

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<sup>1</sup> Examination of grain from Kunal has given the evidence of wheat, barley and rice, chickpea, horse-gram, lentil and cotton from Early and Mature Harappan levels which is very significant. The Harappans at Banawali also ate rice, wheat and barley. The find of gypsum in a potsherd from Early Harappan levels at Kalibangan is a pointer that the Early Harappans perhaps used gypsum as a fertilizer 'to reclaim saline lands and render them productive'.

pointer that the Early Harappans perhaps used gypsum as a fertilizer 'to reclaim saline lands and render them productive'. It is perhaps during the Early Harappan times that the artificial system of irrigation was evolved which was further advanced during the Mature Harappan times. Allahdino's evidence of well-irrigation appears to be a good example. Saddle querns, mullers and pestles were used for grinding and making paste and powder of these cereals.

The large extra produce was kept in granaries as evidenced at Mohenjodaro and Harappa. Grains were also kept in large jars at Kalibangan and in underground lime plastered pits. Interesting evidence regarding cooking practices was revealed by the presence, inside the houses, of ovens both of the underground and above-ground variety closely resembling the present day *tandoors* in the region. The former has mud-plastered wall with a light overhang near the mouth and the latter, also made of mud walls with bridged side opening for feeding fuel, seem to have been periodically plastered. The innovation of this advanced technology of baking wherein thick *roti* is baked in almost closed *tandoor* (a barrel shaped furnace with an open mouth) of which evidence has come to light from Early Harappan levels and suddenly disappeared in Mature Harappan levels and reappears in the early historical period. It is an enigma as why this superior technology of baking *roti* was not continued and discarded during the Harappan times innovated and used the terracotta *chaklas* for preparing *phulka roti*. A large number of *chaklas* with Harappan inscriptions at their back have been found at Kalibangan which perhaps indicates the name of the owner. Besides these, *tawas* circular in shape with soot marks at the lower portion have been found.

Alamgirpur has also given inscribed *chaklas*. The presence of roughened lower surface of the small globular bodied jars (*handi* like with open mouth) are clear indicative of boiling of barley and wheat coarse particles for making porridge or *dalia*. The husking troughs of fabric 'D' though heavy were perhaps used for cleaning the grains of different cereals having husk in the early Harappan period. Later perhaps they were using bamboo husking trays '*soop*'. Besides, meat of fowl, pig and goat was also possibly part of dietary. Saddle querns, mullers, pestles and rotary querns (with upper and lower parts) were used for making flour or paste. It is interesting to note that at Kalibangan one of the street has six platforms as we find in the bazaar and as well as a room opening to the main street along with two fire places and some pottery. At the corner of the street also there is a platform with a fire place could it be a *Dhaba* and other a shop for making popcorns! Along the other street there is a platform with post holes for over hanging shade and a heap of bones with cut marks. Was it a butcher's shop! The evidence makes one think like that. For cutting the agricultural crop chert blades fixed on wooden or bone pieces were used for harvesting. The long blades were used as knives in the household for cutting vegetables, etc. Besides these copper-knives were also used in the kitchen for cutting vegetable and meat (these have been dealt in chapter 11 and 12 of Lithic tools and Copper objects). Vegetables and meat for daily use possibly were brought from the bazar-platforms along the streets.

The *tawas* basically are the earthen ware discs. These are made of coarse clay, hand made with a mixture of chaff in it. These are first dried in the sun and then lightly baked and used for cooking

*chapatis* which were prepared round and flattened on large earthen ware discs i.e., *chaklas*. Some of these are inscribed also being a prized possession of the house hold. Except Alamgirpur no such *chaklas* are reported from any of the Harappan sites. The *chaklas* have either ring base or footed base.

A *tawa* has been reported from early levels of Period I C at Surkotada.<sup>2</sup>

Besides *tawa* and *chaklas* ladles of shell and scapulae of bone were also used. A terracotta triangular piece of pottery with finger marks has also been found. This could be perhaps used as a frying pan. A few hand made *thalis* are also found which

might have been used in the kitchen for keeping prepared *chapatis*. These have I-shaped rim and serving all around. These are thick ones so that the *chapatis* remain hot for some time. The *tawas*, *chaklas* and *belans* are described as below:-

### A. Terracotta

#### CHAKLA/ PATA

##### Figs. 14.1 and 14.4(a), no. 4

1. Hand made, fragmentary, circular *chakla/pata* having a ring base, inside the ring on the bottom, there is a Harappan inscription, thickness 2-3 cm. dia. 36 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21626)

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<sup>2</sup> Joshi, J.P. 1990. *Excavations at Surkotada and Explorations in Kutch*. p. 302. Archaeological Survey of India, Delhi.

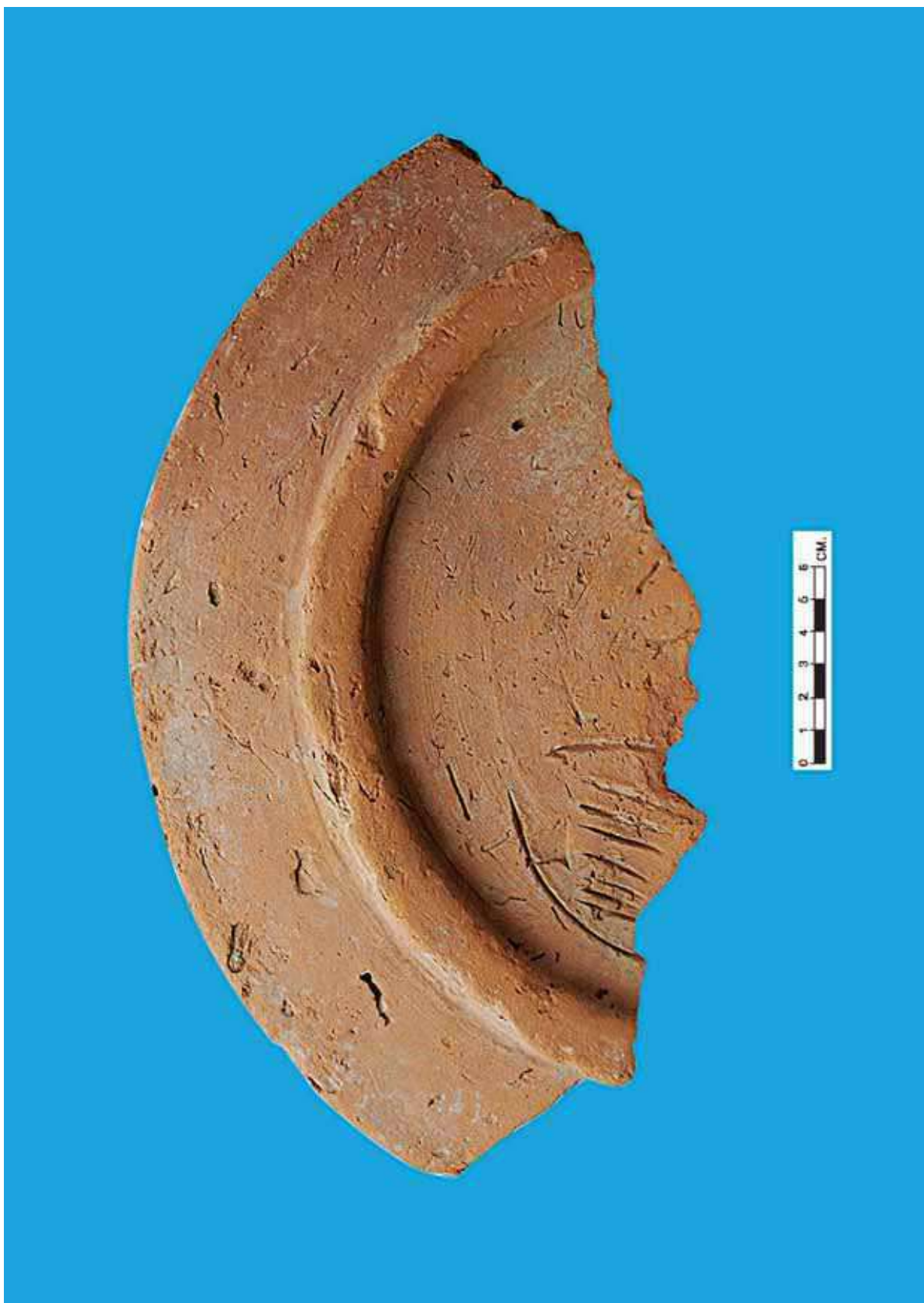


Fig. 14.1 Fragmentary terracotta chakla with a ring base bearing Harappan scripts

**Figs 14.2 (a and b) and 14.4 (a), no. 2**

1. Hand made complete *chakla/pata*,  
having a ring base, dia. 24.5 cm, basal

ring 18.5 cm. Inside the ring on the bottom, there is a complete inscription. From surface. (Mus Acc No. 78)



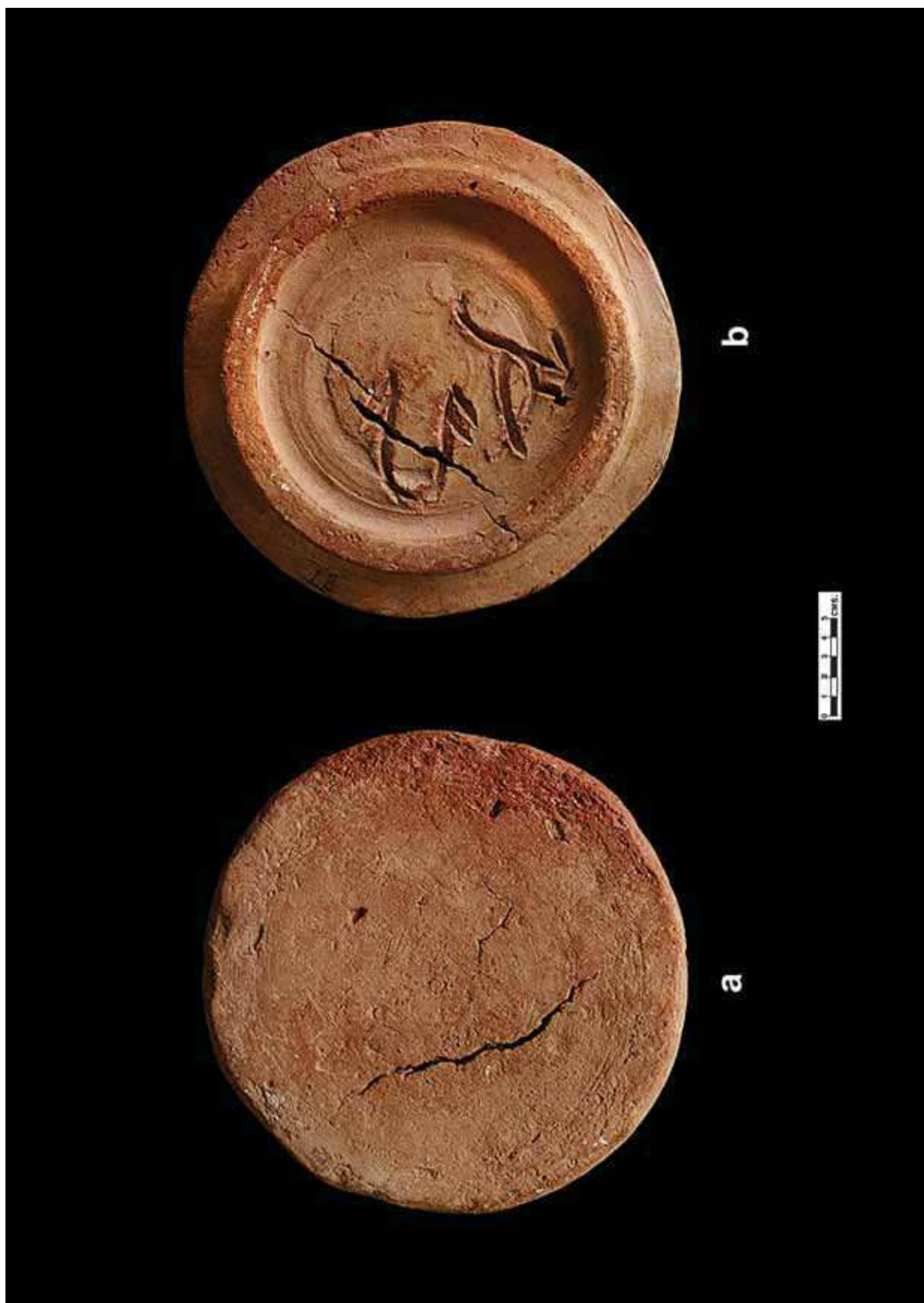


Fig. 14.2 Terracotta chakla with a ring base bearing Harappan scripts

**Figs. 14.3 (a and b) and 14.4 (a),  
no. 6**

1. Hand made fragmentary (two

pieces) *chakla /pata* with footed base,  
dia. 13 cm, thickness 1.50 cm. From an  
unstratified level of Period II. (KLB-1 & 2,  
Reg. No. 21947).



Fig. 14.3 Fragmentary terracotta chakla with footed base

**Figs. 14.4 (1 and 2) and 14.4(a), nos. 1 and 3**

1. Hand made, fragmentary, *chakla/pata*, dia. 15 cm, inside the ring at the bottom, there is a Harappan inscription. From a late level of Period II. (KLB-2, Reg. No. 21533).
2. Hand made fragmentary, *chakla/pata*, dia. 34 cm, inside the ring at the base, there is a Harappan inscription. From a late level of Period II. (KLB-2, Reg. No. N.S. 21625).

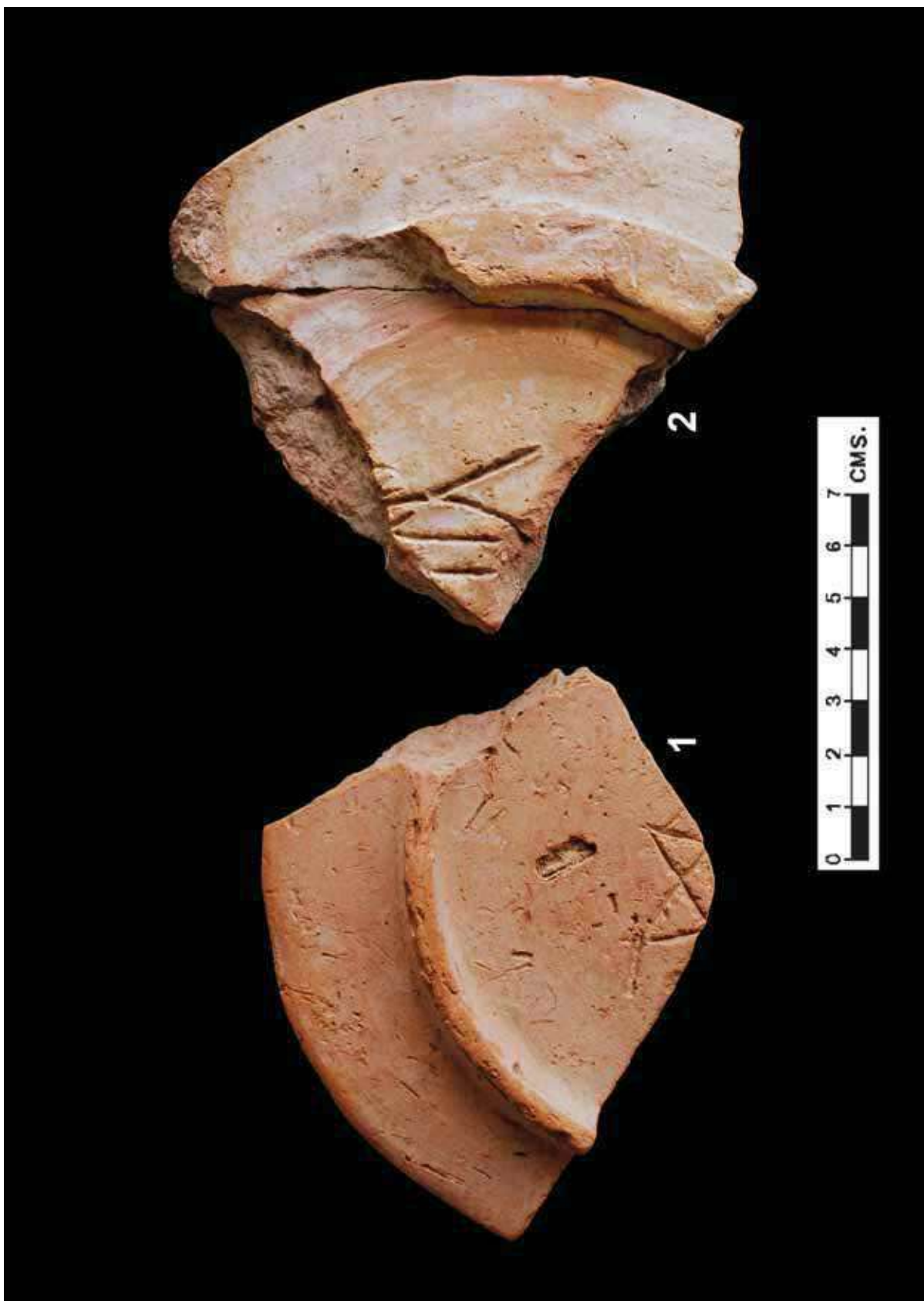


Fig. 14.4 Fragmentary terracotta chaklas with ring base both bearing Harappan scripts

- Figs. 14.5 (a and b) and 14.4(a), no. 5** base, dia. 12 cm, thickness 2.50 cm.  
From an early level of Period II. (KLB-2,  
1. Hand made, *chakla/pata* with a ring Reg. No. 21948).

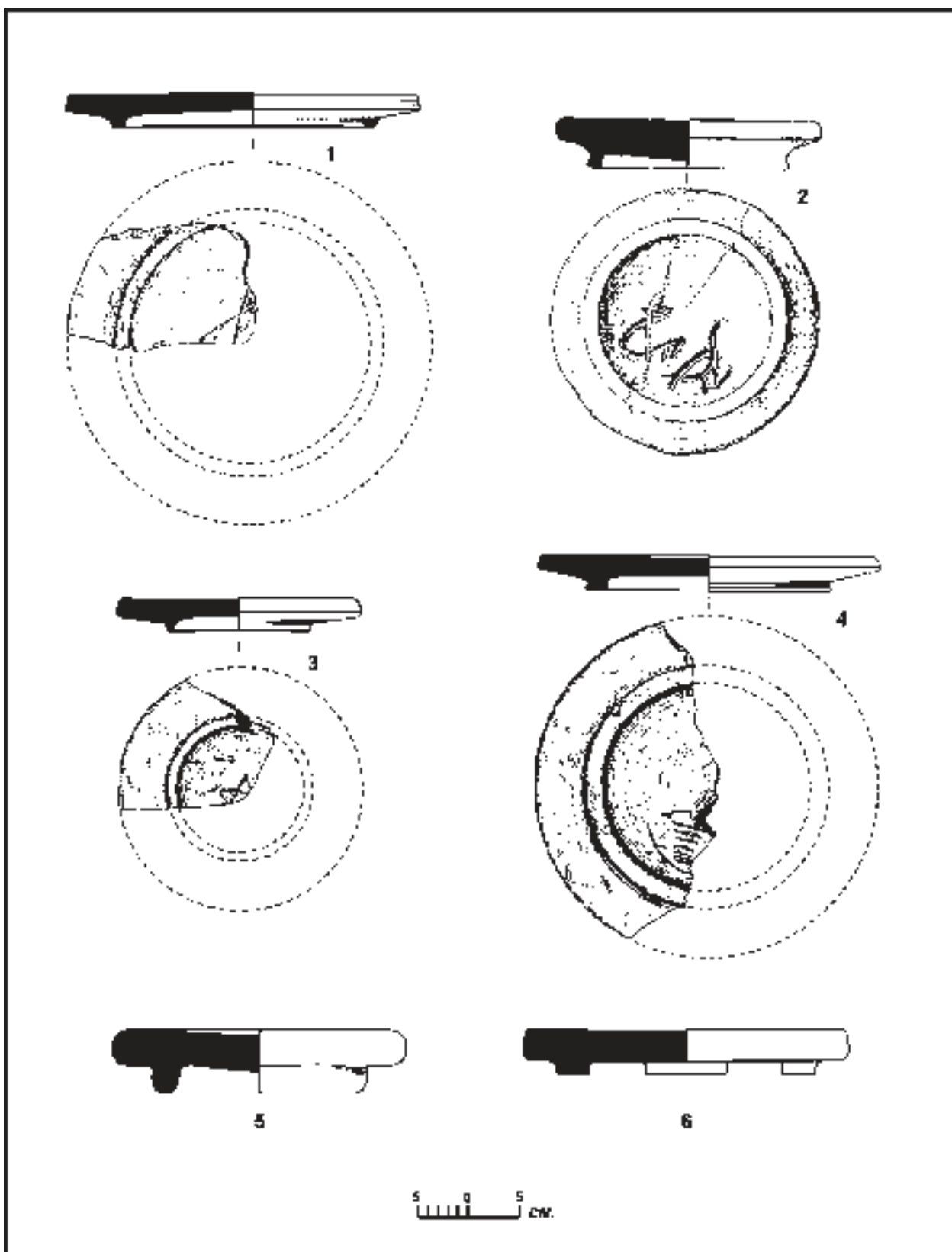


Fig. 14.4(a) *Plan and section of chakras*





Fig. 14.5 Another fragment of a terracotta chakla with a ring base

**Figs. 14.6 and 14.6 (a) nos. 3, 4, 5 and 6**

1. Hand made, fragmentary, *chakla/pata* with a ring base, dia. 34 cm, inside the ring base, an inscription or incised design has been made. From a late level of Period II. (KLB-1, Reg. No. 21624).
2. Hand made, fragmentary, *chakla/pata* with a ring base, dia. 24 cm, inside the ring on the basal surface, there is a fragmentary incised inscription. From a late level of Period II. (KLB-2, Reg. No. 21651).
3. Hand made, fragmentary, *chakla/pata* with a ring base, dia. 24 cm, there is an incised design of square inset portion. From a late level of Period II. (KLB-2, Reg. No. 21623(a)).
4. Handmade, fragmentary, *chakla/pata* with a ring base, dia. 12 cm, thickness 1.5 cm. unidentified incised design/inscription within the ring base. From a late level of Period II. (KLB-2, Reg. No. 21623(b)).



Fig. 14.6 *Fragmentary terracotta chaklas with ring base bearing Harappan scripts*

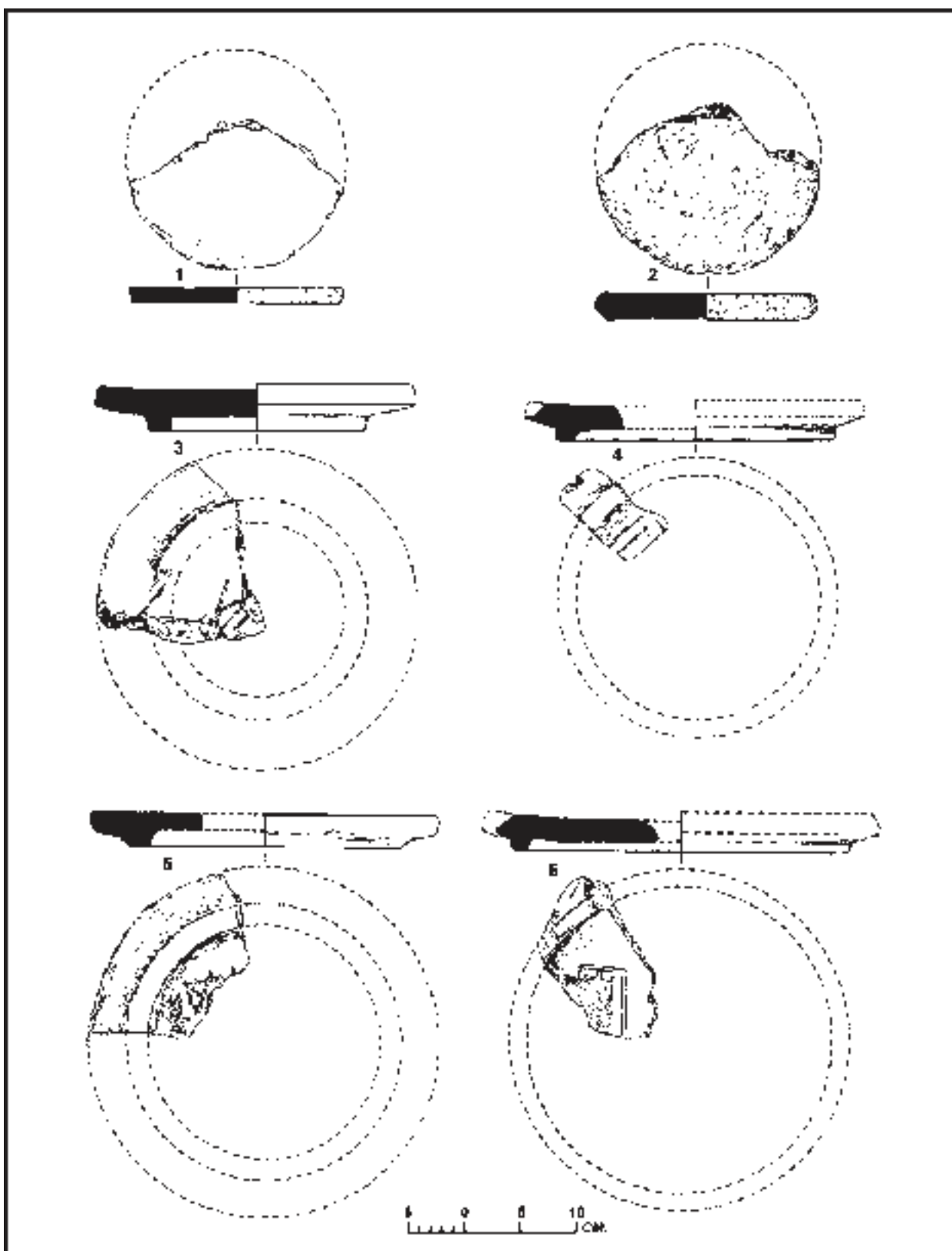


Fig. 14.6 (a) *Fragmentary terracotta tawas (nos. 1 and 2) and chaklas (nos. 3 to 6)*

**BELAN/ROLLING-PIN**

**Figs. 14.7, 14.7(a), 14.7(b) and 14.7(c)**

1. Terracotta, fragmentary, cylindrical rolling-pin/*belan*; used for shaping *chapatis*. Barrel-shaped with a longitudinal hole for inserting straight length of wood for rolling out dough etc, size 13 cm, dia. 5.5 cm. From a late level of Period II. (KLB-1, Reg. No. 19725). [Fig. 14.7(a)].
2. Terracotta, fragmentary cylindrical rolling-pin/*belan*; used for shaping *chapatis*. Barrel-shaped with a longitudinal hole for fixing the handle, size 11.5 x 7.5 cm. From a late level of Period II. (KLB-2, Reg. No. 75).



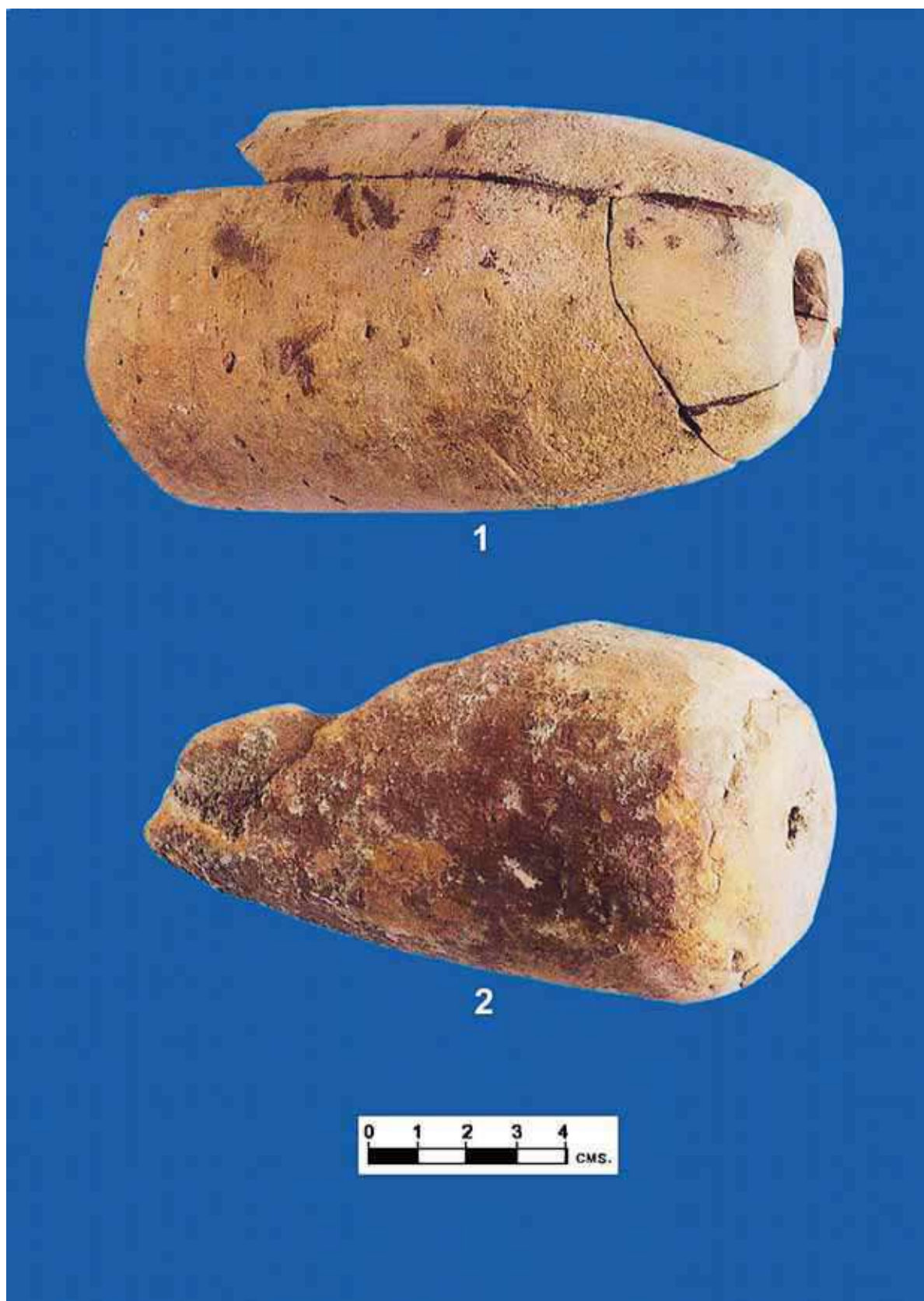


Fig. 14.7 *Terracotta belans / rolling-pin*

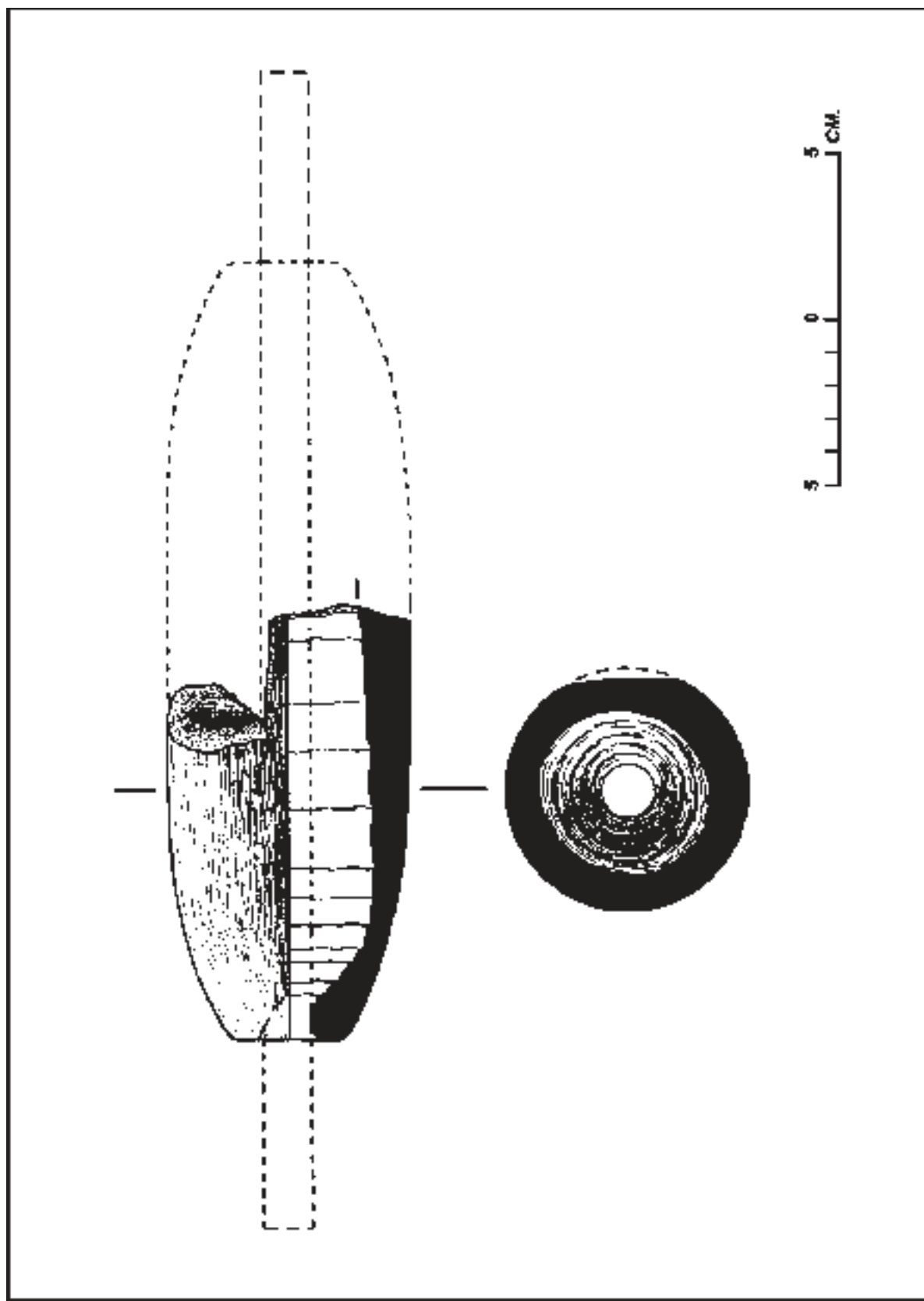


Fig. 14.7(a) Plan and section of a terracotta belan, fragmentary





Fig. 14.7(b) Terracotta chakla and belan with wooden-handle (modern) showing their use

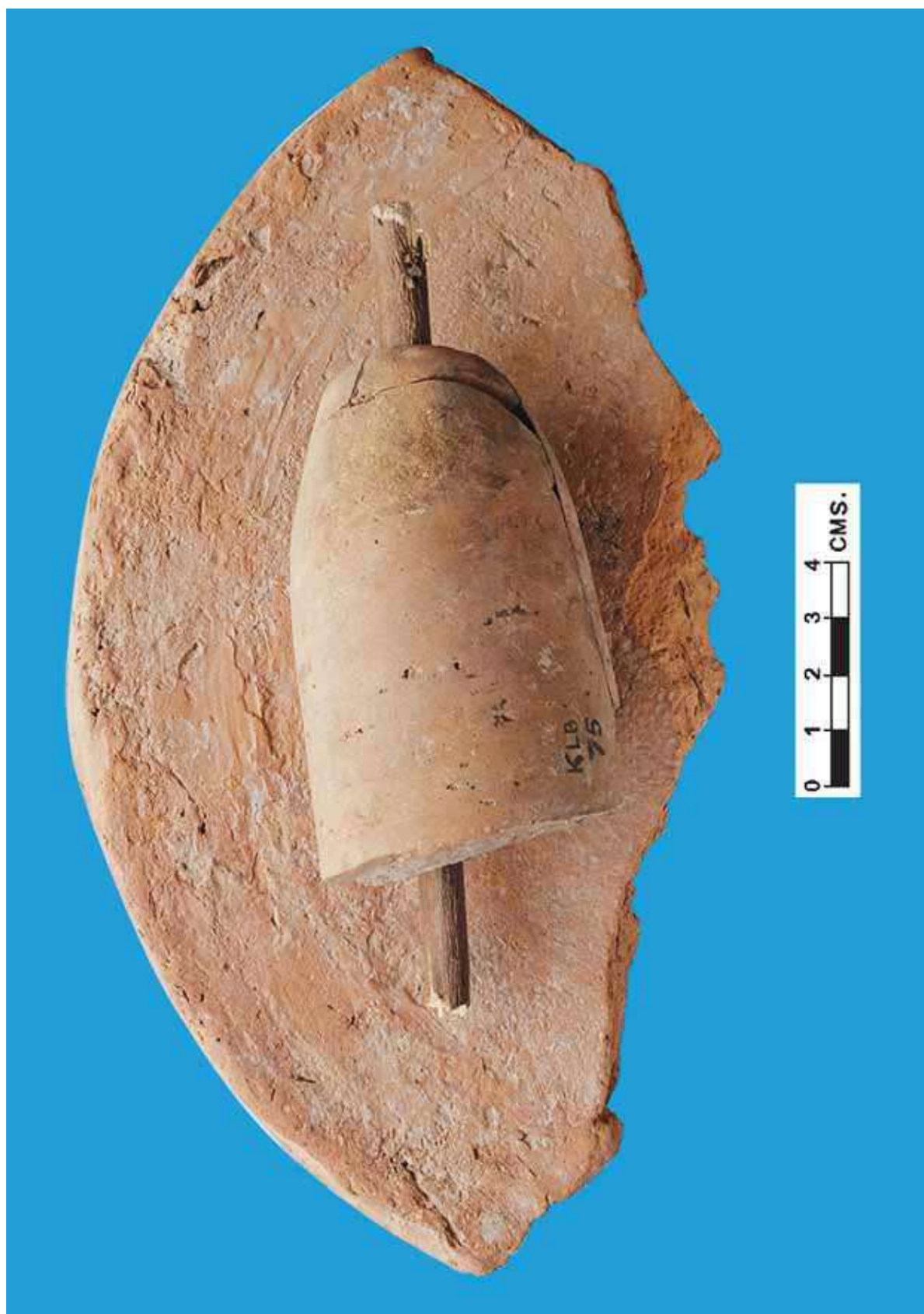


Fig. 14.7(c) Fragmentary terracotta chakla and belan with a wooden-handle (modern) showing their use

**TAWA**

**Fig. 14.8**

1. Terracotta, *tawa*; fragmentary, hand made, slow fired, dia. 11 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21796).
2. Terracotta, *tawa*; complete, hand made, dia. 16 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21797).
3. Terracotta, *tawa*; fragmentary, hand made, dia. 22 cm. From a late level of Period II. (KLB-1, Reg. No. N.S. 21798).
4. Terracotta, *tawa*; fragmentary, hand made, dia. 22 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21799). [Fig. 14.6(a) No. 1].



Fig. 14.8 *Terracotta tawas*

**Fig. 14.9**

1. *Tawa*; fragmentary, hand made, dia. 24 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21794).
2. *Tawa*; fragmentary, hand made dia. 24 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21795). [Fig. 14.6(a) No. 2].





Fig. 14.9 Terracotta tawas, fragmentary

**Fig. 14.10**

1. Terracotta, frying pan (?) fragmentary, hand made, bears finger impression. From a late level of Period II. (KLB-2, Reg. No. 13370).





Fig. 14.10 Terracotta frying pan (?) bearing finger impression, fragmentary

**Fig. 14.11**

1. Pottery, *thali*; fragmentary, hand made *circular thali* with a convex rim, dia. 22 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21789).
2. Pottery, *thali*; fragmentary, hand made with a convex rim having finger impression all around for giving a round shape. From a late level of Period II. (KLB-1, Reg. No. N.S. 21790).
3. Pottery, *thali*; fragmentary, hand made with convex rim and flat base, dia. 22 cm. From a late level of Period II. (KLB-1, Reg. No. N.S. 21791).
4. Pottery, *thali*; fragmentary, hand made with convex rim and flat base, dia. 32 cm. From a late level of Period II. (KLB-1, Reg. No. N.S. 21792).
5. Pottery, *thali*; fragmentary, hand made with convex rim and flat base, dia. 20 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21793).



Fig. 14.11 *Thalis*, fragmentary

## B. STONE

A large number of stone objects have been recovered from various levels of Harappan period at Kalibangan. These are classified and few of the types are described as below :-

- (1) Saddle querns
- (2) Rotary querns
- (3) Round, plano-convex, pestles and pounders
- (4) Sling balls
- (5) Stone tools (see Lithic Tools)
- (6) Miscellaneous objects

### TYPOLOGICAL DISTRIBUTION OF STONE OBJECTS

1	2	3	4	5
Saddle querns	Rotary querns	Pestles, round, plano-convex, ovoid, pounder	Miscellaneous objects	Sling balls
337	2	132	11	72

**(1) Saddle querns :** These are generally made of hard granite or sand stone and mostly show signs of usage and could be for grinding cereals. As their bases are usually convex, these must have been set in the earthen surface or floor to prevent their rocking. These are ovoid on plan and vary from concavo-convex to plano-convex in section. Due to regular use the shorter axes of querns show raised feature whereas the central portion a concavity.

Fig. 14.12

1. Granite, saddle quern; ovoid on plan with both ends rounded and central area flat, length 21 cm x width 8 cm. From a late level of Period II. (KLB-2, Reg. No. 18913).
2. Granite, saddle quern; ovoid on plan with raised rounded ends and slightly concave central area, bottom roughly made flat, length 35.5 x width 14 cm. From a late level of Period II. (KLB-2, Reg. No. 5162).



Fig. 14.12 Stone saddle querns, partly broken

**Fig. 14.13**

1. Granite, saddle quern; with a deep central portion and raised rounded ends, ovoid on plan, length 17 cm, width 11 cm. From a late level of Period II. (KLB-2, Reg. No. 21779).
2. Granite, saddle quern; with deep upper surface and lower convex for fixing it in the ground, length 14 cm and width 13 cm. From a middle level of Period II. (KLB-, Reg. No. 1282)





Fig. 14.13 Stone saddle querns, fragmentary



**Fig. 14.14**

1. Granite, saddle quern; fragmentary, with one end raised other missing, length 15 cm and width 8.5 cm. From a late level of Period II. (KLB-1, Reg. No. 6655).
2. Granite, saddle quern; fragmentary, with deep central portion, length 20 cm and width 19.5 cm. From a late level of Period II. (KLB-2, Reg. No. 19746).



Fig. 14.14 Stone saddle querns with raised ends , fragmentary

**Fig. 14.15**

1. Sandstone, saddle quern; fragmentary, rounded end, central portion concave due to use, length. 14.5 cm width 20 cm From a late level of Period II. (KLB-2, Reg. No. 5161).
2. Sandstone, saddle quern; fragmentary, raised end, length 15 cm width 22 cm From a late level of Period II. (KLB-2, Reg. No. 21142).



Fig. 14.15 Stone saddle querns, fragmentary

**Fig. 14.16**

1. Sandstone, saddle quern; fragmentary with raised rounded end central area concave, length 16 cm width 18 cm, From an early level of Period II. (KLB-2, Reg. No. 20609).
2. Sandstone, saddle quern; fragmentary rounded end central portion concave, length 17 cm x width 13.5 cm, From a late level of Period II. (KLB-2, Reg. No. 21429).
3. Sandstone, saddle quern; fragmentary with rounded end and concave central area, length 15 cm and width 20 cm, From a late level of Period II. (KLB-2, Reg. No. 20596).



Fig. 14.16 Stone saddle querns, fragmentary

**Fig. 14.17**

1. Sandstone, rotary quern; fragmentary *pata* (round plate), dia. 16 cm, From a late level of Period II. (KLB-2, Reg. No. 21777).
2. Sandstone, rotary quern; fragmentary *pata* (round plate). length 12 cm, From a late level of Period II. (KLB-2, Reg. No. 21778).





Fig. 14.17 Stone rotary querns, fragmentary

**PESTLES**

**Fig. 14.18**

1. Granite, pestle; roughly square in section, upper and lower surface polished due to use, size length 11.5 cm. width 6.5 cm, From a late level of Period II. (KLB-2, Reg. No. 20678).
2. Granite, pestle; ovoid with pecked surface polished due to use, size 1.5 cm x 0.75 cm, From a middle level of Period II. (KLB-2, Reg. No. 20676).
3. Sandstone, pestle; ovoid, polished on one side due to use other portion roughened, size 19.5 cm x 5 cm, From a late level of Period II. (KLB-2, Reg. No. 11480).



Fig. 14.18 Stone pestles

## **SMALL PESTLES/POUNDERS**

**Fig. 14.19**

1. Sandstone, small pestle/pounder; ovoid in section, size 6 cm x 4.5 cm, From a middle level of Period II. (KLB-1, Reg. No. 13231).
2. Sandstone, pounder/pestle; ovoid in section, size 6.5 cm x 5 cm, From a late level of Period II. (KLB-2, Reg. No. 9736).
3. Sandstone, pounder/pestle; trepezoid in section, only one surface flat and polished, 8 cm x 5.5 cm, From a middle level of Period II. (KLB-2, Reg. No. 20625).
4. White marble, pestle/fragmentary; length 7 cm, dia. 8 cm, From a late level of Period II. (KLB-2, Reg. No. 10177).



Fig. 14.19 Stone pestles, fragmentary

**POUNDERS**

**Fig. 14.20**

1. Sandstone, small pounder; plano-convex in section, round, dia. 5 cm, From Period II. (KLB-1, Reg. No. 3678).
2. Sandstone, pounder; spheroid with upper and lower sides flat, dia. 8.5 cm, From a late level of Period II. (KLB-2, Reg. No. 9628).
3. Granite, pounder; plano-convex base flat, dia. 6.5 cm, From a late level of Period II. (KLB-2, Reg. No. 19475).
4. Sandstone, pounder; elliptical with flat upper and lower portion, dia. 6 cm, From a middle level of Period II. (KLB-1, Reg. No. 18912).



Fig. 14.20 Stone pounders



## **STONE BALLS**

### **Fig. 14.21**

A large number of granite and sandstone balls have been found from various levels of excavation at Kalibangan. These vary in diameter from 3.5 to 8 cm. Larger ones could have been used as missiles, while the smaller ones used in the game of marbles.

1. KLB-1, Reg. No. 5119
2. KLB-1, Reg. No. 13572
3. KLB-1, Reg. No. 18290
4. KLB-1, Reg. No. 20655
5. KLB-2, Reg. No. 8175
6. KLB-2, Reg. No. 21780
7. KLB-2, Reg. No. 17798
8. KLB-1, Reg. No. 5594
9. KLB-1, Reg. No. 19388

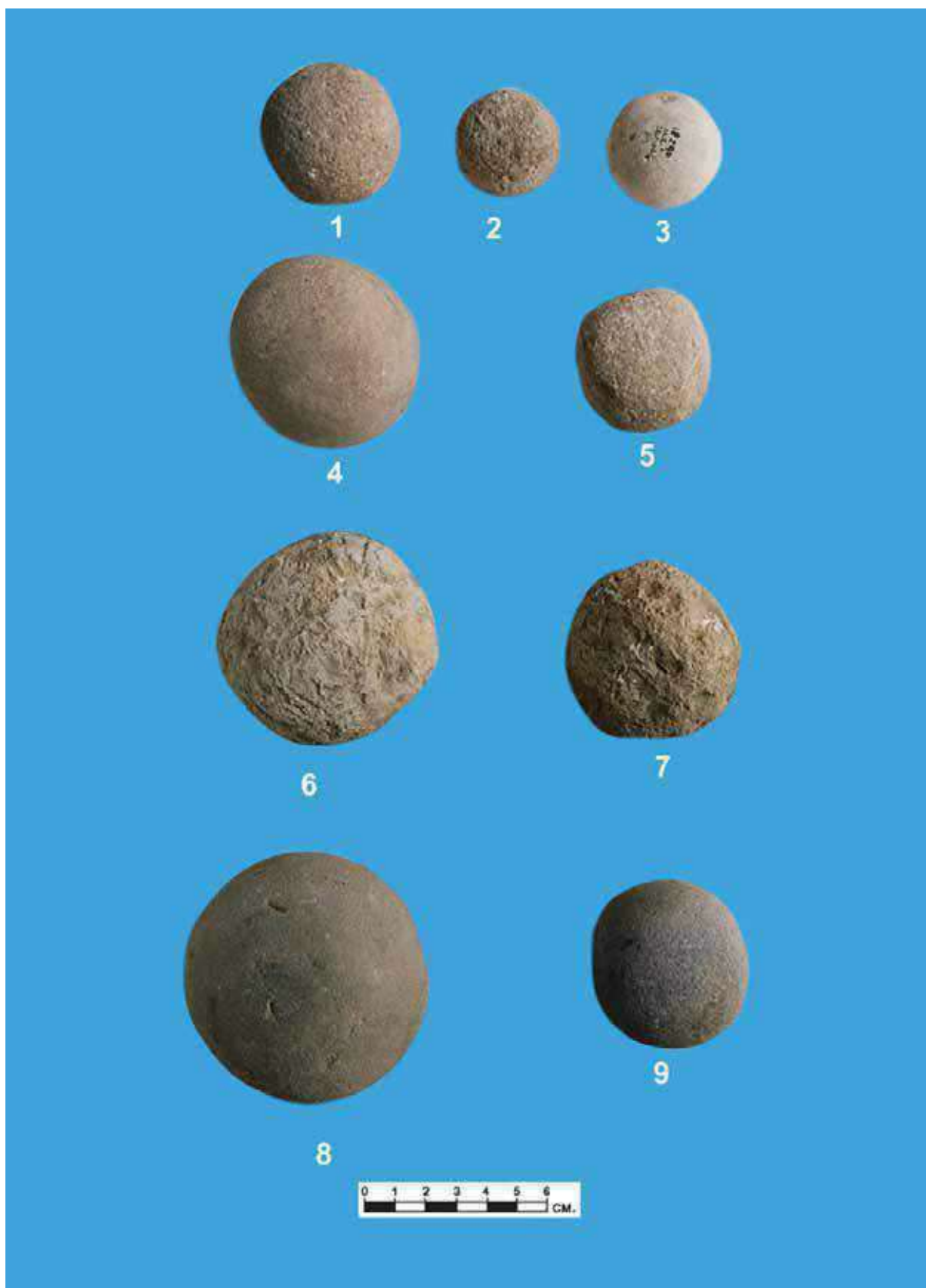
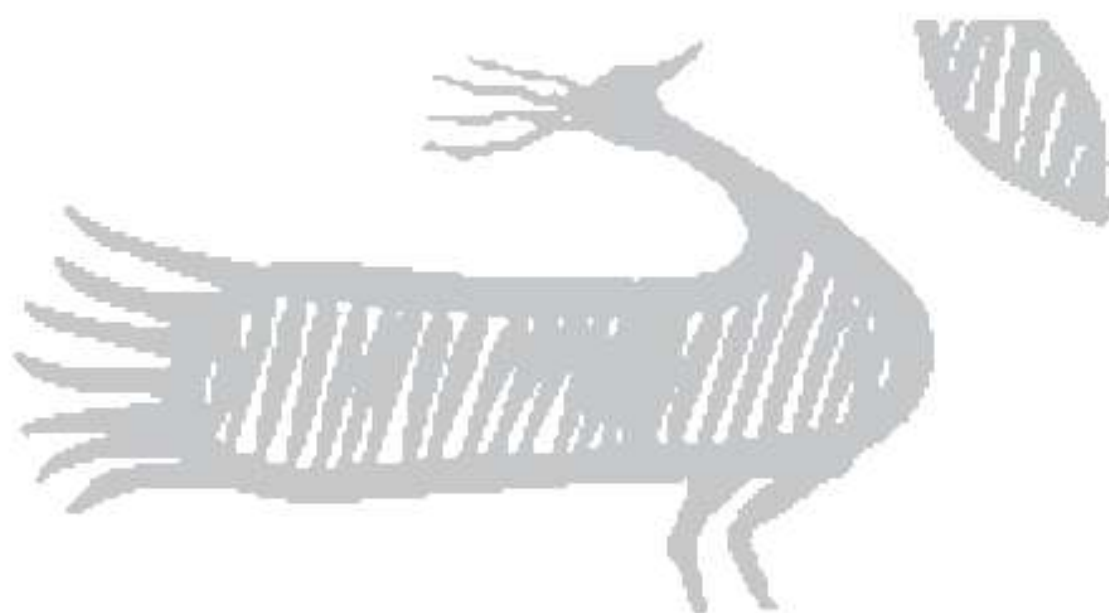


Fig. 14.21 *Stone balls*



# BANGLES, KANGANS AND RINGS

MADHU BALA

CHAPTER

# 15

**K**alibangan derives its name from thousands of bangles, which are found scattered over its mounds. Anybody can even today collect a handful of bangles from the surface. In the excavation thousands of terracotta bangles were retrieved from various levels of the excavated trenches (Figs. 15.1 and 15.2). Besides terracotta, bangles of copper, alabaster, faience and shell are available. It appears that the bangle was a very popular ornament worn by the ladies. The lower and upper arms were also covered by armlets or *kangans*. The popularity of wearing the bangles is reflected from the hands of the bronze dancing figure from Mohenjodaro. In material wise frequency the terracotta tops the list followed by shell, alabaster, copper and faience. The bangles and *kangans* varied in diameter from 2 cm to 11 cm. The terracotta bangles are with 2 to

5 bands and some times painted also. The faience bangles have incised oblique lines and herring-bone designs. A terracotta bangle has a Harappan inscription also (See Chapter 9). Rajasthan might have supplied alabaster as it is available in the districts of Ajmer, Alwar, Jaipur, Jodhpur, Kishangarh and Udaipur.

Shell bangles are few as compared to terracotta ones. It appears that it was an imported item. Pieces of bangles with holes either suggest that these were revetted by a copper wire showing its rareness in availability or using studs for decoration. However, two columella and few flakes of chank shells suggests its local manufacture or repair in a limited scale. The diameter of bangles varies from 2 to 11 cm. The cross section of bangles is rectangular, square, circular or triangular.

**Distribution of Bangles**

No.	Material	Total	Section	Measurments
1.	Terracotta Bangles	18716	Circular, square, rectangular, triangular, oval, semi-circular	Min. dia. 2 cm Max. dia. 11 cm Min.thickness.0.45 cm Max. thickness 2.40 cm
2.	Shell Bangles	1411	Square, rectangular, circular, semi-circular, triangular, irregular,	Min. dia. 2 cm Max. dia. 11 cm Min.thickness.0.15 cm Max. thickness 1.6 cm
3.	Alabaster Bangles	13	Rectangular, circular, triangular,	Min. dia. 3 cm Max. dia. 8 cm Min. thickness. 0.4 cm Max. thickness 1.15 cm
4.	Copper Bangles	15	Circular, square, rectangular, elliptical, ovoid	Min. dia. 2 cm Max. dia. 5.50 cm Min. thickness. 0.50 cm Max. thickness 1 cm
5.	Faience Bangle	19	Circular, elliptical	Min. dia. 4 cm Max. dia. 7 cm Min. thickness. 0.6 cm Max. thickness 0.9 cm



Fig. 15.1 *Terracotta bangles*



Fig. 15.2 Terracotta bangles



### **ALABASTER BANGLES**

**Fig. 15.3**

1. Alabaster bangle; rectangular in section, dia. 8 cm. From a late level of Period II. (KLB- 2, Reg. No. 13737).
2. Alabaster bangle; rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 5874).
3. Alabaster bangle; rectangular in section, dia. 8.3 cm. From a late level of Period II (KLB-2, Reg. No. 19572).
4. Alabaster bangle; rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 14364).





Fig. 15.3 *Alabaster bangles*

**Fig. 15.4**

1. Alabaster bangle; rectangular in section, dia 8.5 cm. From a late level of Period II. (KLB-1, Reg. No. 17053).
2. Alabaster bangle; rectangular in section, dia. 7.5 cm. From a mid level of Period II. (KLB-2, Reg. No. 13766).
3. Alabaster bangle; rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 5524).
4. Alabaster bangle; rectangular in section, dia. 8.5 cm. From a late level of Period II. (KLB-2, Reg. No. 1822).

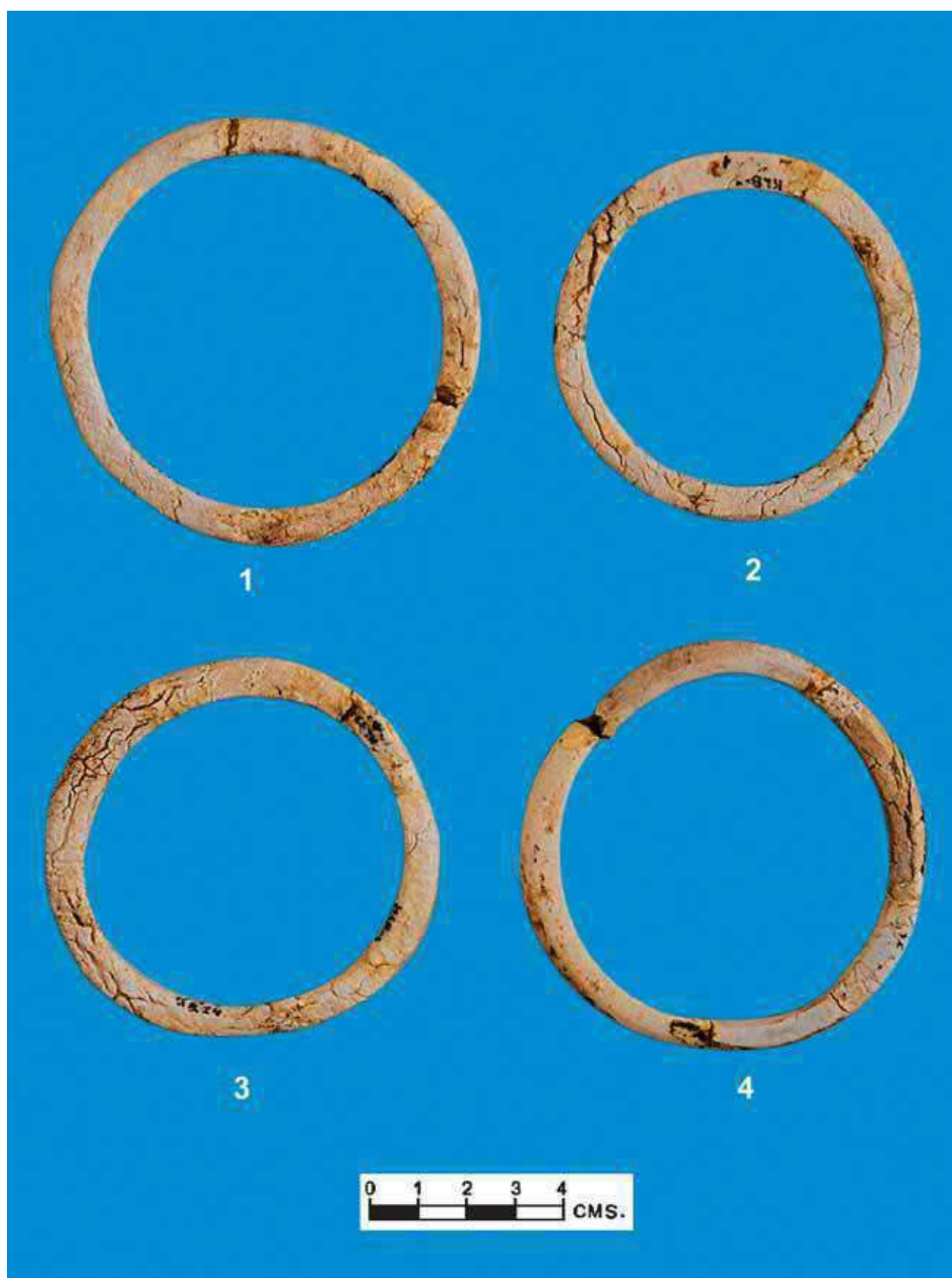


Fig. 15.4 *Alabaster bangles*

## **2. SHELL BANGLES**

**Fig. 15.5**

1. Shell bangle; fragmentary, rectangular in section, showing mark of rivet, dia. 8 cm. From a late level of Period II. (KLB-1, Reg. No. 601).
2. Shell bangle; fragmentary, rectangular in section, dia. 8.5 cm. From a late level of Period II. (KLB-2, Reg. No. 14464).
3. Shell bangle; fragmentary, rectangular in section, dia. 8.5 cm. From a late level of Period II. (KLB-1, Reg. No. 15944).
4. Shell bangle; fragmentary, thin, rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-1, Reg. No. 921).
5. Shell bangle; fragmentary, rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 18280).
6. Shell bangle; fragmentary, rectangular in section, dia. 7 cm. From a late level of Period II. (KLB-2, Reg. No. 21272).
7. Shell bangle; fragmentary, thin, square in section, dia. 7 cm. From a late level of Period II. (KLB-2, Reg. No. 17704).
8. Shell bangle; fragmentary, rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 18093).
9. Shell bangle; fragmentary, square in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 1333).

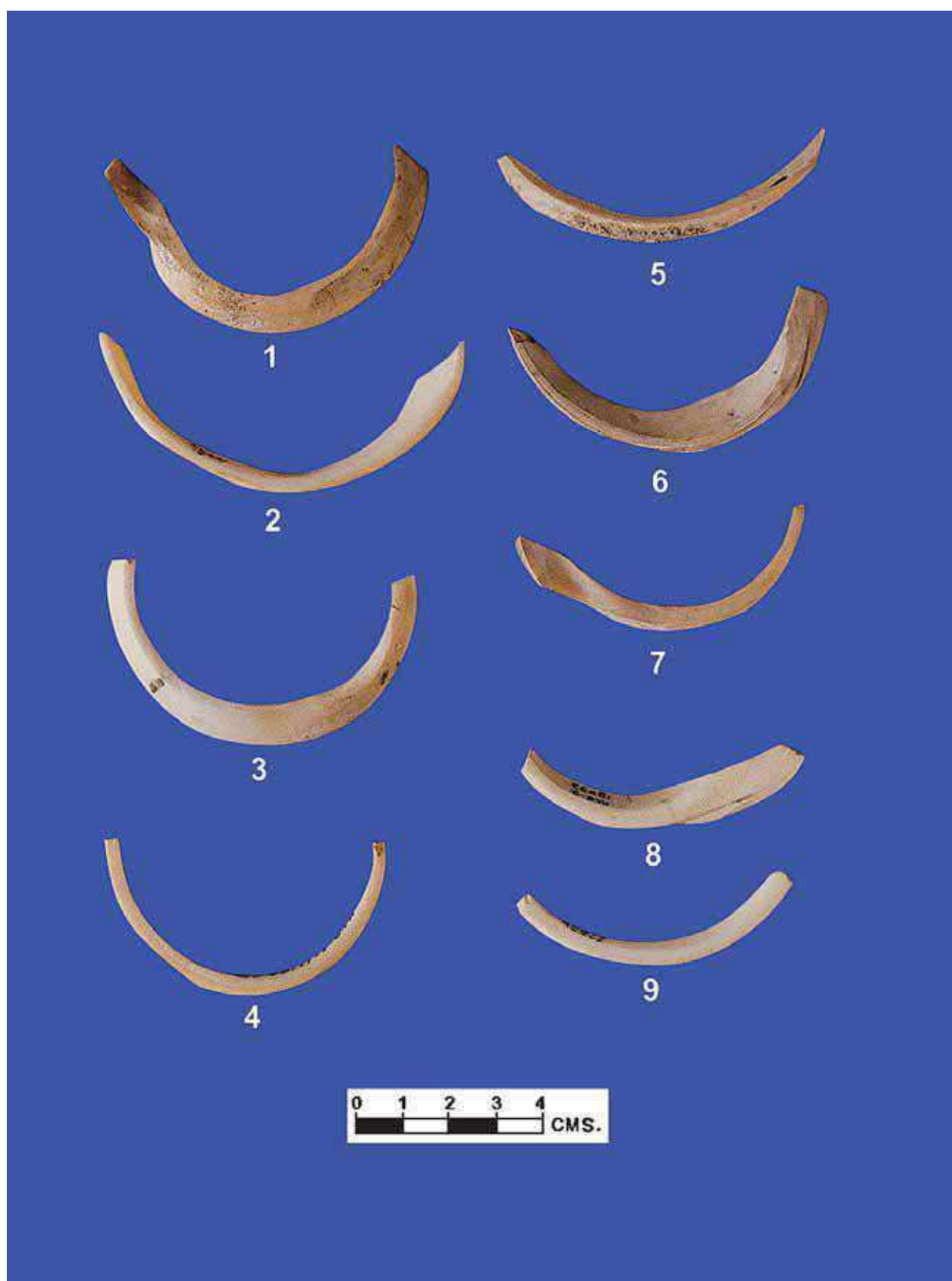


Fig. 15.5 *Shell bangles, fragmentary*

**Fig. 15.6**

1. Shell bangle; fragmentary, thin, square in section dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 18787).
2. Shell bangle; fragmentary, square in section dia. 6 cm. From a late level of Period II. (KLB-2, Reg. No. 15681).
3. Shell bangle; fragmentary, rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 21885).
4. Shell bangle; fragmentary, rectangular in section, with evidence of two perforation for studs. dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 21886).
5. Shell bangle; fragmentary, square in section, with the evidence of two perforation for studs, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 11140).
6. Shell bangle; fragmentary, thin, rectangular in section, dia. 7 cm. From a late level of Period II, (KLB-2, Reg. No. 19993).
7. Shell bangle; fragmentary, rectangular in section showing riveting on both broken ends, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 16267).
8. Shell bangle; fragmentary, rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 18754).
9. Shell bangle; fragmentary, rectangular in section showing riveting on one end, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 20356).
10. Shell bangle; fragmentary, rectangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 11791).

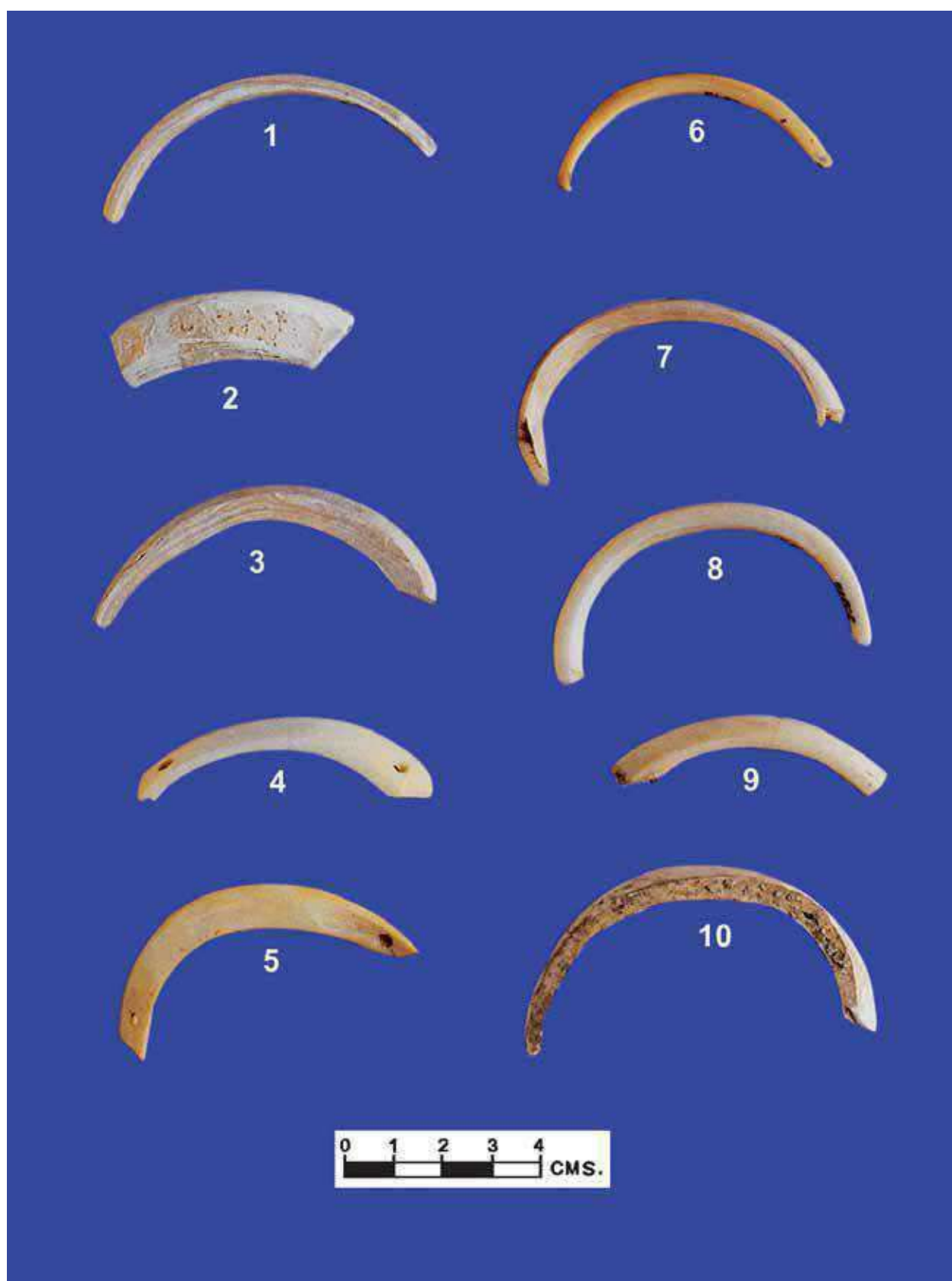


Fig. 15.6 *Shell bangles, fragmentary*



**Fig. 15.7**

These shell bangle fragments are extremely worn out due to use and keeping in view the rare availability of shell at Kalibangan, these fragments appear to have been reused after riveting by copper wire as the holes have been traced on some of the bangles. This evidence suggests that the studs were fixed in these holes for decoration. The diameter is not correctly available due to worn out condition.

1. Shell, bangle; fragment, triangular in section with a hole for riveting. From a late level of Period II. (KLB-1, Reg. No. 18967).
2. Shell, bangle; fragment, rectangular in section with a hole for riveting. From a late level of Period II. (KLB-2, Reg. No. 9755).
3. Shell, bangle; fragment, rectangular in section with a complete hole and another incomplete (blind) hole for riveting. From a middle level of Period II. (KLB-1, Reg. No. 16268).
4. Shell, bangle; fragment, rectangular in section, with, a hole for riveting. From a late level of Period II. (KLB-1, Reg. No. 20083).
5. Shell, bangle; fragment, lenticular in section, with a hole for riveting. From a middle level of Period II. (KLB-1, Reg. No. 16267).
6. Shell, bangle; fragment, rectangular in section, with a hole of riveting. From a middle level of Period II. (KLB-1, Reg. No. 16267).
7. Shell, bangle; small, fragment, concavo-convex in section with a hole of riveting. From an unstratified level (KLB-2, Reg. No. 21820).

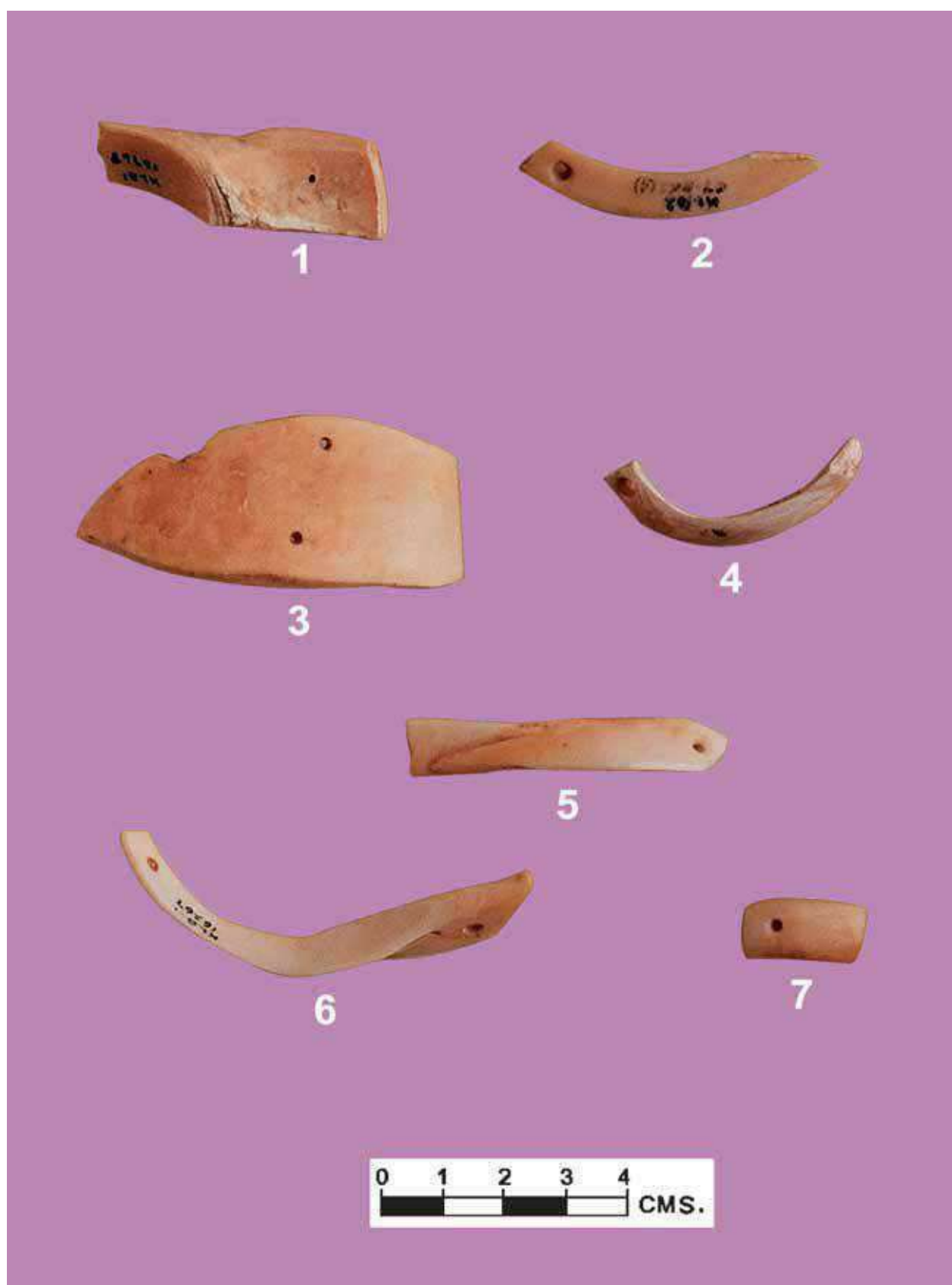


Fig. 15.7 *Shell bangles, fragmentary*

**Fig. 15.8**

1. Shell bangle; fragment, plano-convex in section, dia. 6 cm. From a late level of Period II. (KLB-1, Reg. No. 5957).
2. Shell ring; fragment, rectangular in section, dia. 4 cm. From a late level of Period II. (KLB-2, Reg. No. 10098).
3. Shell bangle; fragment, plano-convex in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 13258).
4. Shell bangle; fragment, plano-convex in section, dia. 9 cm. From a late level of Period II. (KLB-1, Reg. No. 5096).
5. Shell bangle; rectangular in section, dia. 6 cm. From a middle level of Period II. (KLB-1, Reg. No. 16254).
6. Shell bangle; fragment, plano-convex in section, dia. 8 cm. From a late level of Period II. (KLB-1, Reg. No. 15710).
7. Shell bangle; fragment, plano-convex in section. From a late level of Period II. (KLB-1, Reg. No. 15857).
8. Shell bangle; fragment, lenticular in section. From surface. (KLB-1, Reg. No. 10950).

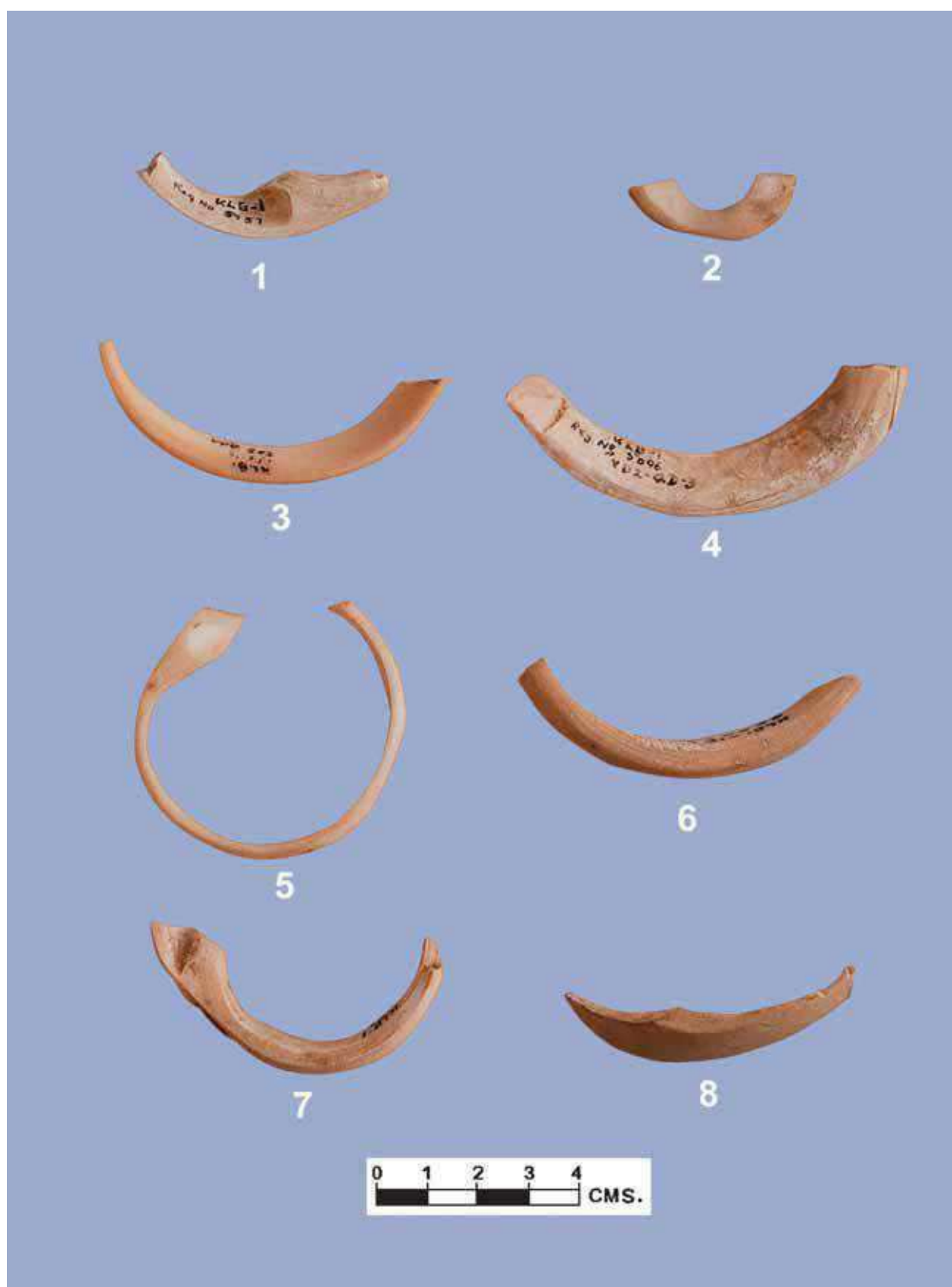


Fig. 15.8 *Shell bangles, fragmentary*

### 3. STONE *KANGANS*

**Fig. 15.9**

1. Stone *kangan*; fragment, white, triangular in section, dia. 4.5 cm. From a late level of Period II. (KLB-1, Reg. No. 20031).
2. Stone *kangan*; fragment, black, triangular in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 21887).
3. Stone(?), *kangan*; fragment, triangular in section, dia. 9.8 cm. From a late level of Period II. (KLB-1, Reg. No. 12697).
4. Stone *kangan*; fragment, triangular in section, dia. 8.5 cm. From a late level of Period II. (KLB-1, Reg. No. 844).
5. Stone *kangan*; fragment, triangular in section, dia. 10 cm. From a late level of Period II. (KLB-2, Reg. No. 21888).
6. Stone(?) *kangan* ; fragment, triangular in section, dia. 12 cm. From a late level of Period II. (KLB-1, Reg. No. 18757).
7. Stone(?) *kangan* ; fragment, triangular in section, dia. 10 cm. From a late level of Period II. (KLB-1, Reg. No. 5838).
8. Stone *kangan*; fragment, circular in section, dia. 8.8 cm. From a late level of Period II. (KLB-2, Reg. No. 21039).



Fig. 15.9 *Stone kangans, fragmentary*

**4. TERRACOTTA KANGANS, BANGLES AND RINGS**

**Fig. 15.10**

- |   |   |   |   |
|---|---|---|---|
| 1 | Terracotta <i>kangan</i> ; fragmentary, circular in section, dia. 8.8 cm. From a late level of Period II. (KLB-2, Reg. No. 8731). | 2 | Terracotta <i>kangan</i> ; fragmentary, circular in section, dia. 10 cm. From a late level of Period II. (KLB-2, Reg. No. 12698). |
| 3 | Terracotta <i>kangan</i> ; fragmentary, circular in section, dia. 10 cm. From a late level of Period II. (KLB-2, Reg. No. 12089). |   |   |





Fig. 15.10 Terracotta kangans, fragmentary

**TERRACOTTA, SEGMENTED KANGANS****Fig. 15.11**

1. Terracotta *kangan*, double; fragmentary, circular in section. From a middle level of Period II. (KLB-1, Reg. No. 19126).
2. Terracotta *kangan*, double; fragmentary, rectangular in section. From a late level of Period II (KLB-1, Reg. No. 10530).
3. Terracotta *kangan*, multiple (four), fragmentary, rectangular in section. From a late level of Period II (KLB-2, Reg. No. 19841).
4. Terracotta *kangan*, double; fragmentary, rectangular in section. From a late level of Period II. (KLB-1, Reg. No. 4665).
5. Terracotta *kangan*, multiple (five); fragmentary, circular in section. From a middle level of Period II. (KLB-1, Reg. No. 21949)
6. Terracotta *kangan*, double; fragmentary, rectangular in section. From a late level of Period II. (KLB-2, Reg. No. 10997).
7. Terracotta *kangan*, triple; fragmentary, circular in section. From a late level of Period II. (KLB-1, Reg. No. 19816).
8. Terracotta *kangan*, triple; fragmentary, circular in section. From a late level of Period II. (KLB-1, Reg. No. 67).
9. Terracotta *kangan*, triple; fragmentary, circular in section. From a middle level of Period II. (KLB-1, 16580).

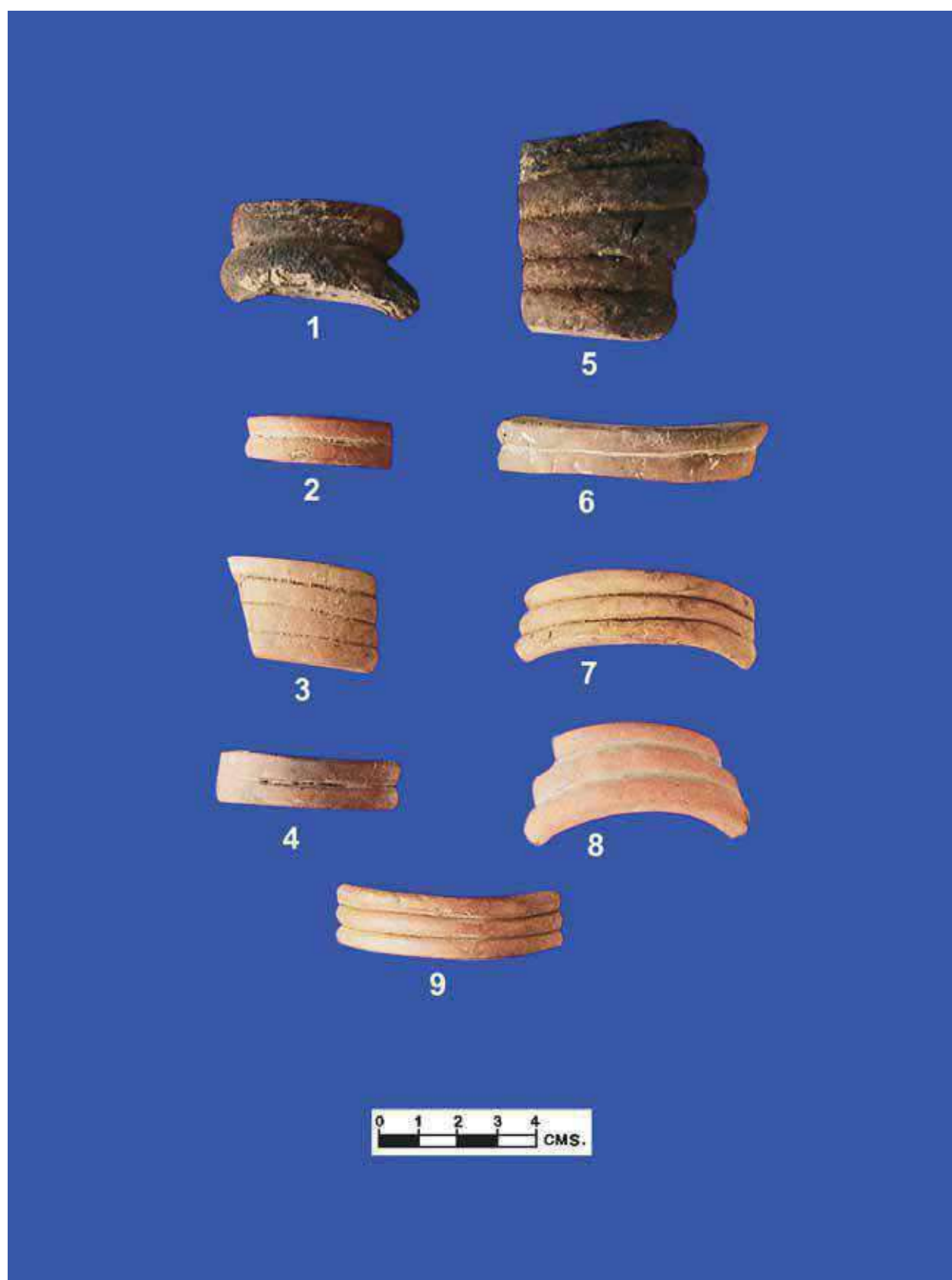


Fig. 15.11 *Segmented terracotta kangans, fragmentary*

**TERRACOTTA BANGLES**

**Fig. 15.12**

1. Terracotta bangle; circular in section, dia. 7.5 cm. From a late level of Period II. (KLB-1, Reg. No. 12527).
2. Terracotta bangle; circular in section, dia. 6.5 cm. From a late level of Period II. (KLB-1, Reg. No. 7951).
3. Terracotta bangle; circular in section, dia. 7.7 cm. From a late level of Period II. (KLB-2, Reg. No. 6702).
4. Terracotta bangle; circular in section, dia. 6.5 cm. From a late level of Period II. (KLB-2, Reg. No. 12888).
5. Terracotta bangle circular in section, dia. 6.5 cm. From a late level of Period II. (KLB-2, Reg. No. 12463).
6. Terracotta bangle circular in section, dia. 6 cm. From a late level of Period II. (KLB-2, Reg. No. 6706).
7. Terracotta bangle circular in section, dia. 7.5 cm. From a late level of Period II. (KLB-2, Reg. No. 20389).
8. Terracotta bangle; circular in section, dia. 7.7 cm. From a late level of Period II. (KLB-1 & 2, Reg. No. 127).

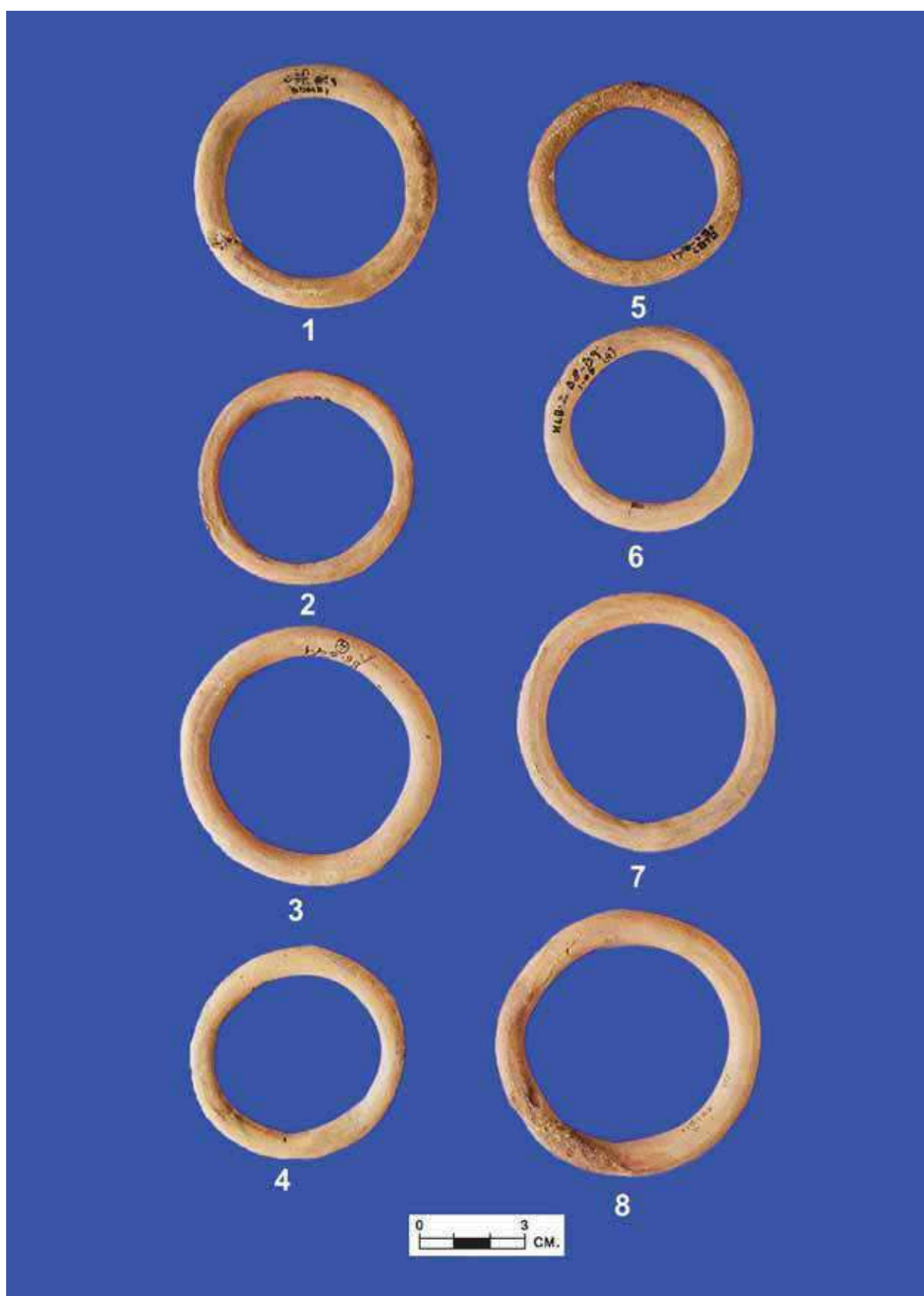


Fig. 15.12 *Terracotta bangles*

**TERRACOTTA *KANGANS***

level of Period II. (KLB-1, Reg. No. 5942).

**Fig. 15.13**

1. Terracotta *kangan*; thick, triangular in section, dia. 8.2 cm. From a late level of Period II. (KLB-2, Reg. No. 5110).
2. Terracotta *kangan*; thick, circular in section, dia. 7 cm. From a late level of Period II. (KLB-2, Reg. No. 21889).
3. Terracotta *kangan*; triangular in section, dia. 6.4 cm. From a late
4. Terracotta *kangan*; triangular in section, dia. 7.8 cm. From a late level of Period II. (KLB-1, Reg. No. 5942).
5. Terracotta *kangan*; circular in section, dia. 8.2 cm. From a late level of Period II. (KLB-2, Reg. No. 13631).
6. Terracotta *kangan*; circular in section, dia. 6.7 cm. From a late level of Period II. (KLB-1, Reg. No. 14747).

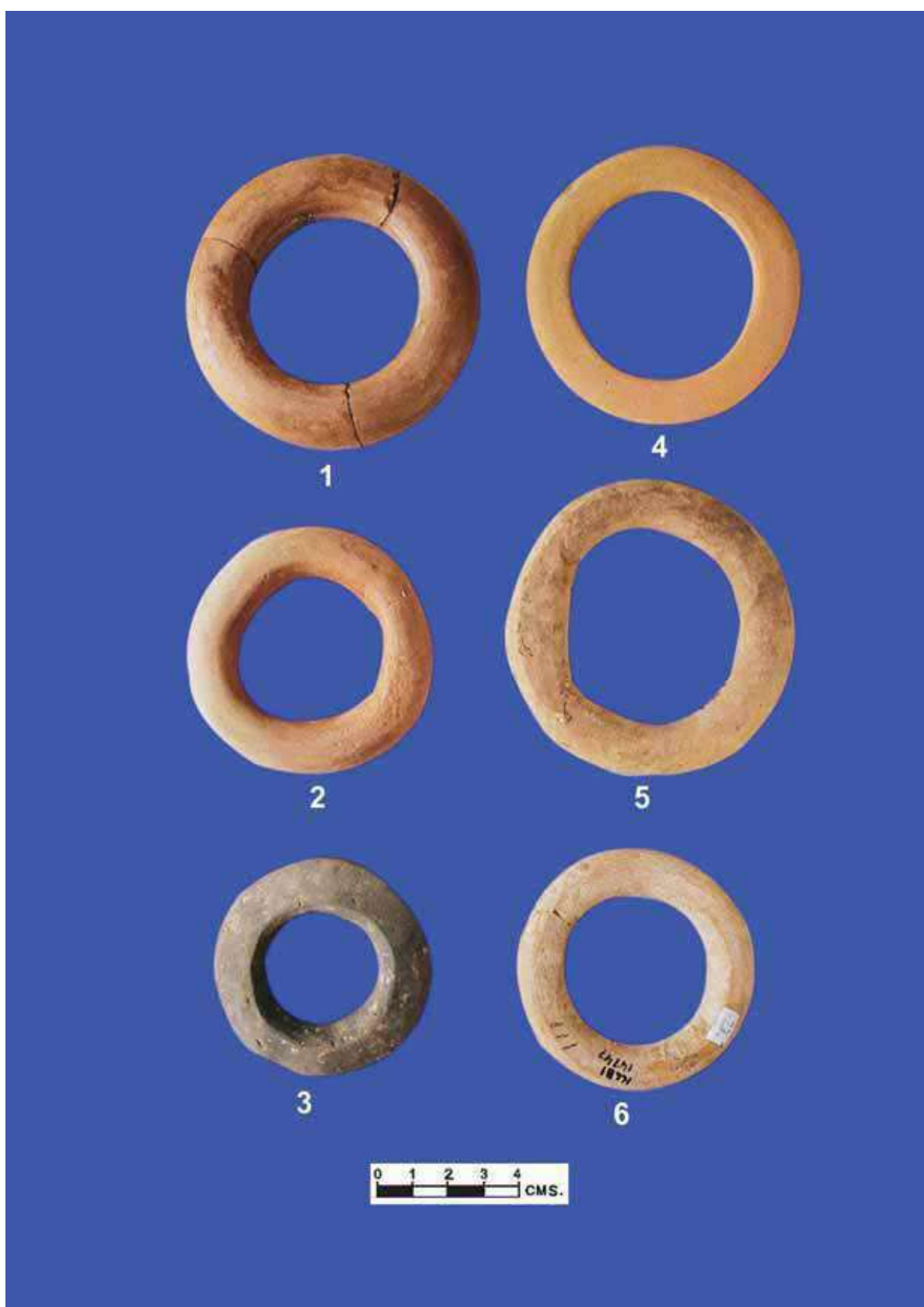


Fig. 15.13 *Terracotta kangans*



**Fig. 15.14**

1. Terracotta *kangan*; fragmentary, thick, circular in section. From a late level of Period II. (KLB-2, Reg. No. 3677).
2. Terracotta *kangan*; fragmentary, circular in section, dia. 11 cm. From a late level of Period II. (KLB-2, Reg. No. 17010).
3. Terracotta *kangan*; fragmentary, oval in section, dia. 10 cm. From a late level of Period II. (KLB-1, Reg. No. 5528).
4. Terracotta *kangan*; fragmentary, circular in section, dia. 8 cm. From an early level of Period II. (KLB-2, Reg. No. 21890).
5. Terracotta *kangan*; fragmentary, oval in section, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 6935).
6. Terracotta *kangan*; fragmentary, circular in section, dia. 10 cm. From a late level of Period II. (KLB-2, Reg. No. 16921).

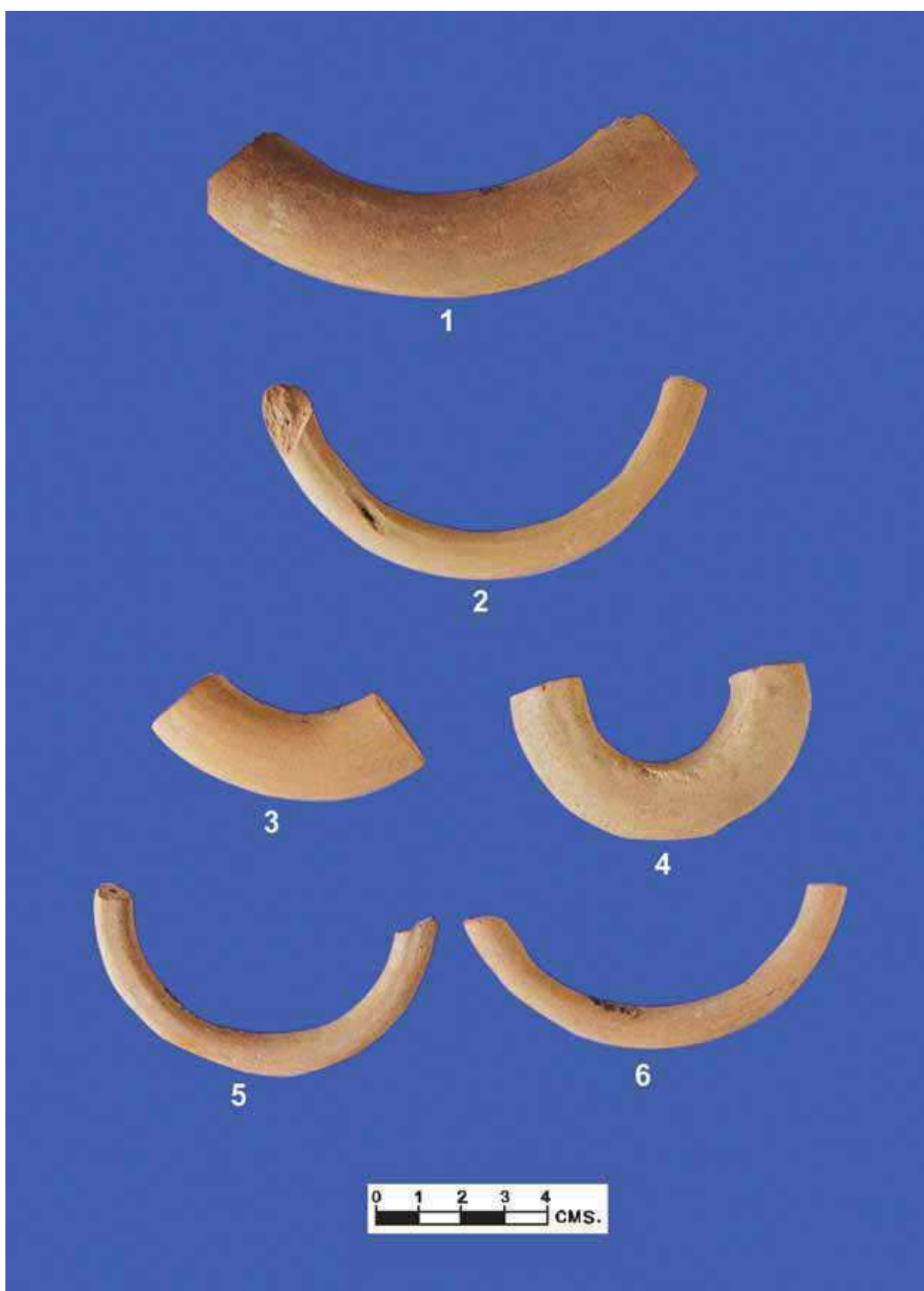


Fig. 15.14 *Terracotta kangans, fragmentary*

**Fig. 15.15**

1. Terracotta *kangan*; thick, fragmentary, circular in section, dia. 10 cm. From a late level of Period II. (KLB-2, Reg. No. 21891).
2. Terracotta *kangan*; thick, fragmentary, circular in section, dia. 11.8 cm. From a late level of Period II. (KLB-2, Reg. No. 21892).
3. Terracotta *kangan*; fragmentary, triangular in section, dia. 12 cm. From a late level of Period II. (KLB-1, Reg. No. 69).
4. Terracotta *kangan*; fragmentary, circular in section, dia. 9.8 cm. From a late level of Period II. (KLB-2, Reg. No. 1617).
5. Terracotta *kangan*; fragmentary, circular in section, dia. 8.5 cm. From a late level of Period II. (KLB-1, Reg. No. 9369).
6. Terracotta *kangan*; fragmentary, flattened, triangular in section, dia. 10 cm. From a late level of Period II. (KLB-1, Reg. No. 15132).



Fig. 15.15 *Terracotta kangans, fragmentary*

**INSCRIBED TERRACOTTA *KANGAN***

**Fig. 15.16**

1. Terracotta *Kangan* ; fragmentary,

triangular in section, inscribed with three letters of Harappan script, dia. inner 6.20 cm outer 7.85 cm, thickness 1.65 cm. From a late level of Period II. (KLB-2, Reg. No. 3011).



Fig. 15.16 Inscribed terracotta kangan, fragmentary

**DECORATED TERRACOTTA BANGLES**

level of Period II. (KLB-2, Reg. No. 21893).

**Fig. 15.17**

1. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 8 cm. From a late level of Period II. (KLB-1, Reg. No. 13874).
2. Terracotta bangle; fragmentary, decorated with nail design, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 20163).
3. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 10 cm. From a late level of Period II. (KLB-1, Reg. No. 11830).
4. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 8 cm. From a late level of Period II. (KLB-2, Reg. No. 8350).
5. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 9 cm. From a late level of Period II. (KLB-2, Reg. No. 5099).
6. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 5.7 cm. From an early level of Period II. (KLB-2, Reg. No. 21893).
7. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 8.5 cm. From a late level of Period II. (KLB-2, Reg. No. 13010).
8. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 10.4 cm. From a late level of Period II. (KLB-2, Reg. No. 19764).
9. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 8.5 cm. From a late level of Period II. (KLB-1, Reg. No. 7633).
10. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 10 cm. From a late level of Period II. (KLB-2, Reg. No. 4404).
11. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 8.5 cm. From a late level of Period II. (KLB-2, Reg. No. 7633).
12. Terracotta bangle; fragmentary, decorated with finger impressed design, dia. 8.5 cm. From a late level of Period II. (KLB-2, Reg. No. 3379).



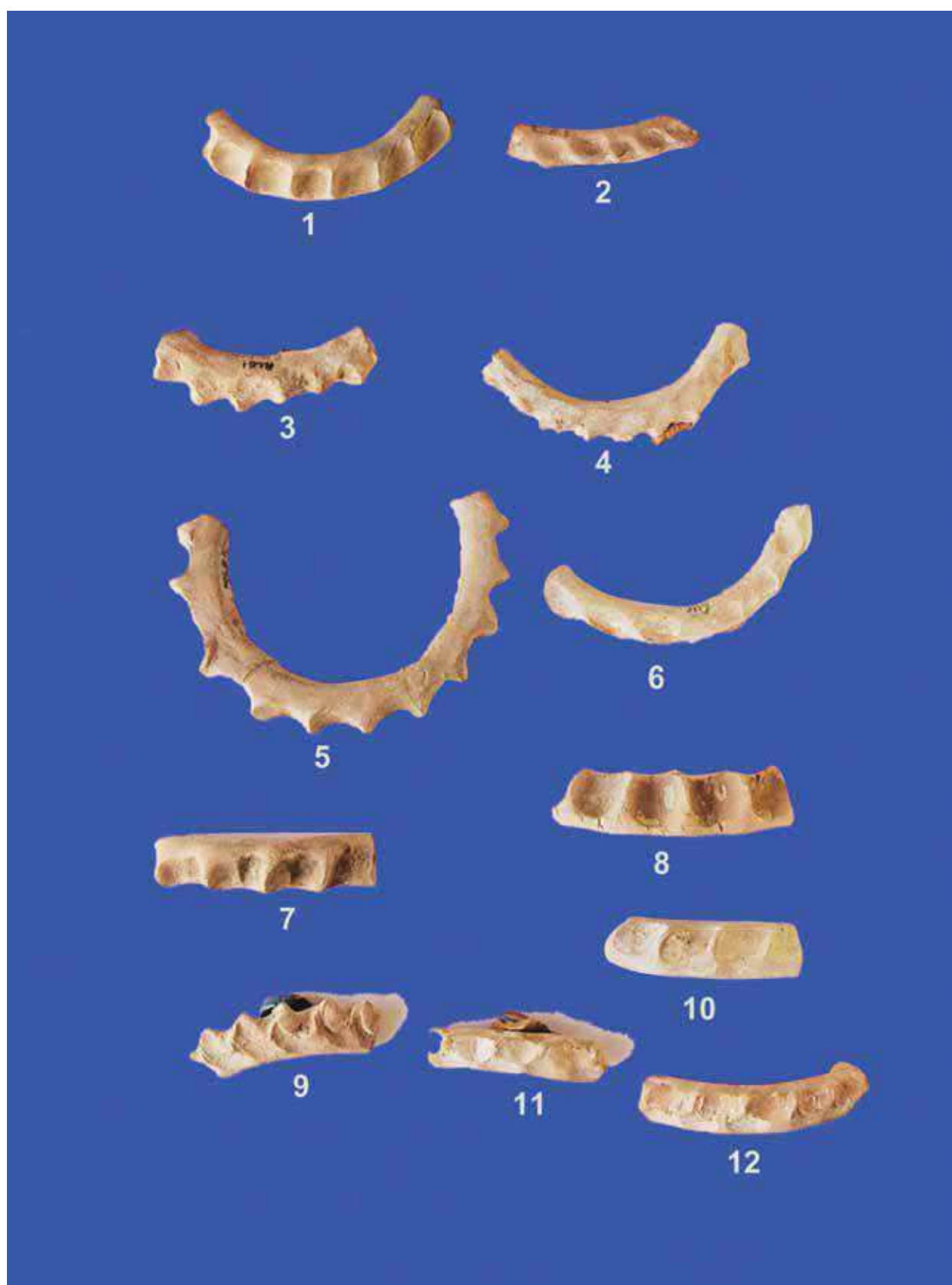


Fig. 15.17 *Decorated terracotta bangles, fragmentary*

**TERRACOTTA BANGLES AND RINGS**

**Fig. 15.18**

1. Terracotta bangle; dia. 6 cm. From a late level of Period II. (KLB-2, Reg. No. 21894).
2. Terracotta bangle; dia. 6.2 cm. From a late level of Period II. (KLB-1, Reg. No. 16200).
3. Terracotta bangle; dia. 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 20316).
4. Terracotta bangle; dia. 5.2 cm. From a late level of Period II. (KLB-2, Reg. No. 18262).
5. Terracotta bangle; dia. 6.5 cm. From a late level of Period II. (KLB-2, Reg. No. 4735).
6. Terracotta bangle; dia. 5.3 cm. From a middle level of Period II. (KLB-2, Reg. No. 18730).
7. Terracotta ring; dia. 4.5 cm. From a late level of Period II. (KLB-2, Reg. No. 18636).
8. Terracotta bangle; dia. 6.7 cm. From a late level of Period II. (KLB-2, Reg. No. 18732).
9. Terracotta bangle; dia. 5.6 cm. From a late level of Period II. (KLB-1, Reg. No. 19853).
10. Terracotta bangle; dia. 5.7 cm. From a late level of Period II. (KLB-2, Reg. No. 18209).
11. Terracotta ring; dia. 5 cm. From a late level of Period II. (KLB-2, Reg. No. 20115).
12. Terracotta bangle; dia. 5.2 cm. From a late level of Period II. (KLB-2, Reg. No. 3212).

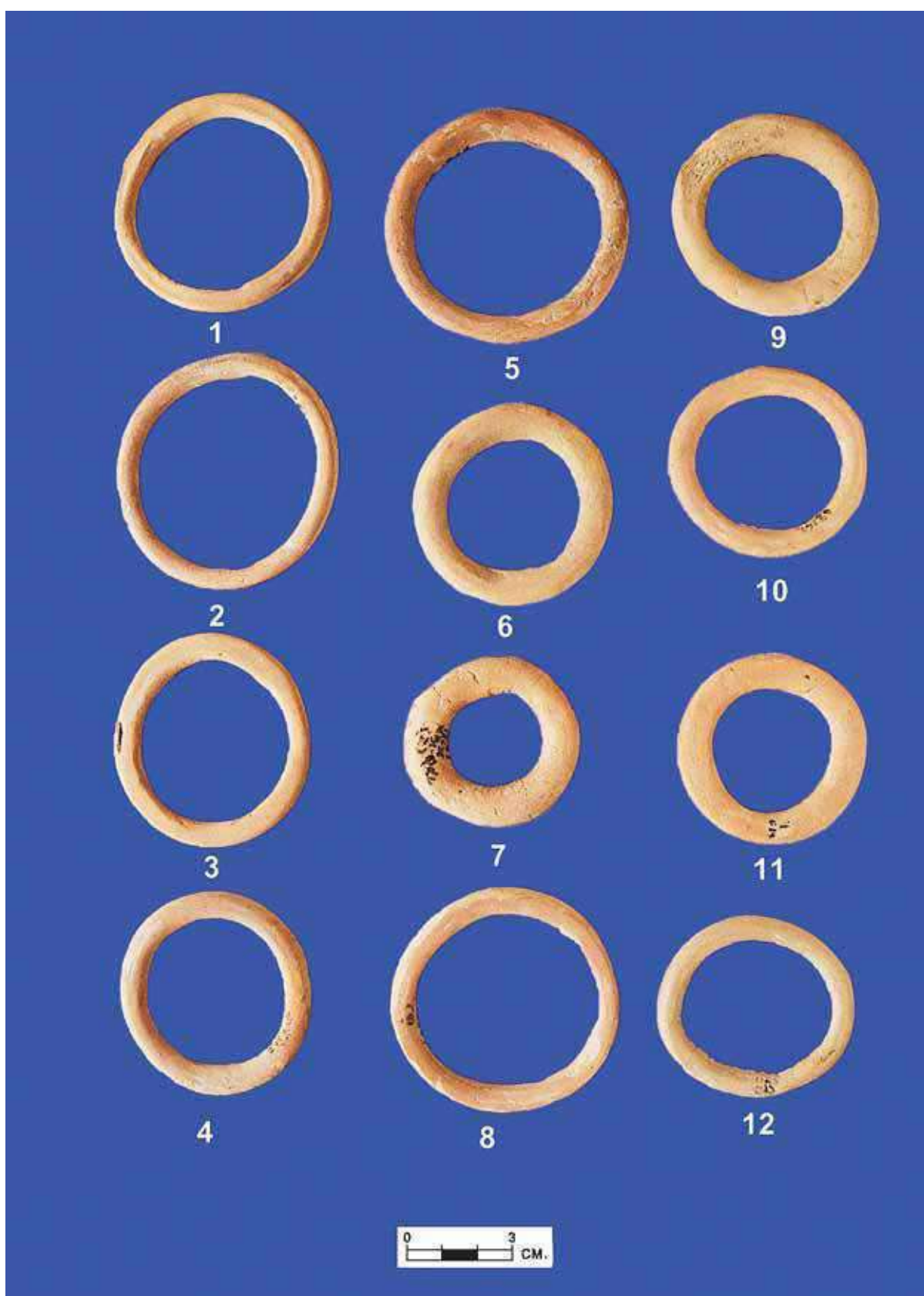


Fig. 15.18 *Terracotta bangles*

## **5. COPPER BANGLES AND RINGS**

### **Fig. 15.19**

1. Copper ring; round in section, dia. outer 2.5 cm, inner 2 cm. From a late level of Period II. (KLB-2, Reg. No. 15259).
2. Copper ring; round in section dia. 2.5 cm. From surface. (KLB-2, Reg. No. 1980).
3. Copper bangle; round in section, with open ends, dia. 5 cm. From a late level of Period II. KLB-2, Reg. No. 21273).
4. Copper bangle; fragmentary, elliptical in section, dia. 5 cm. From a late level of Period II. (KLB-2, Reg. No. 16690).
5. Copper ring; ovoid in section, with open ends, dia. 2.5 cm. From a late level of Period II. (KLB-2, Reg. No. 18586).
6. Copper bangle; fragmentary, elliptical in section, dia. 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 14108).
7. Copper bangle; of Kangan type fragmentary, 5.5 cm. plano-convex in section. From a late level of Period II. (KLB-2, Reg. No. 7911).
8. Copper bangle; fragmentary, ovoid in section, dia. 5 cm. From a middle level of Period II. (KLB-2, Reg. No. 21220).
9. Copper bangle; fragmentary, in section ovoid dia. 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 16729).
10. Copper bangle; fragmentary, round in section dia. 5 cm. From a late level of Period II. (KLB-2, Reg. No. 21220).
11. Copper bangle; fragmentary, round in section, dia. 5 cm. From a late level of Period II. (KLB-2, Reg. No. 10742 ).
12. Copper bangle; piece, round in section, dia. 4.5 cm. From a late level of Period II. (KLB-2, Reg. No. 438).
13. Copper; full bangle with open ends, round in section, 5.5 cm. From a late level of Period II. (KLB-2. Reg. No. 18796).

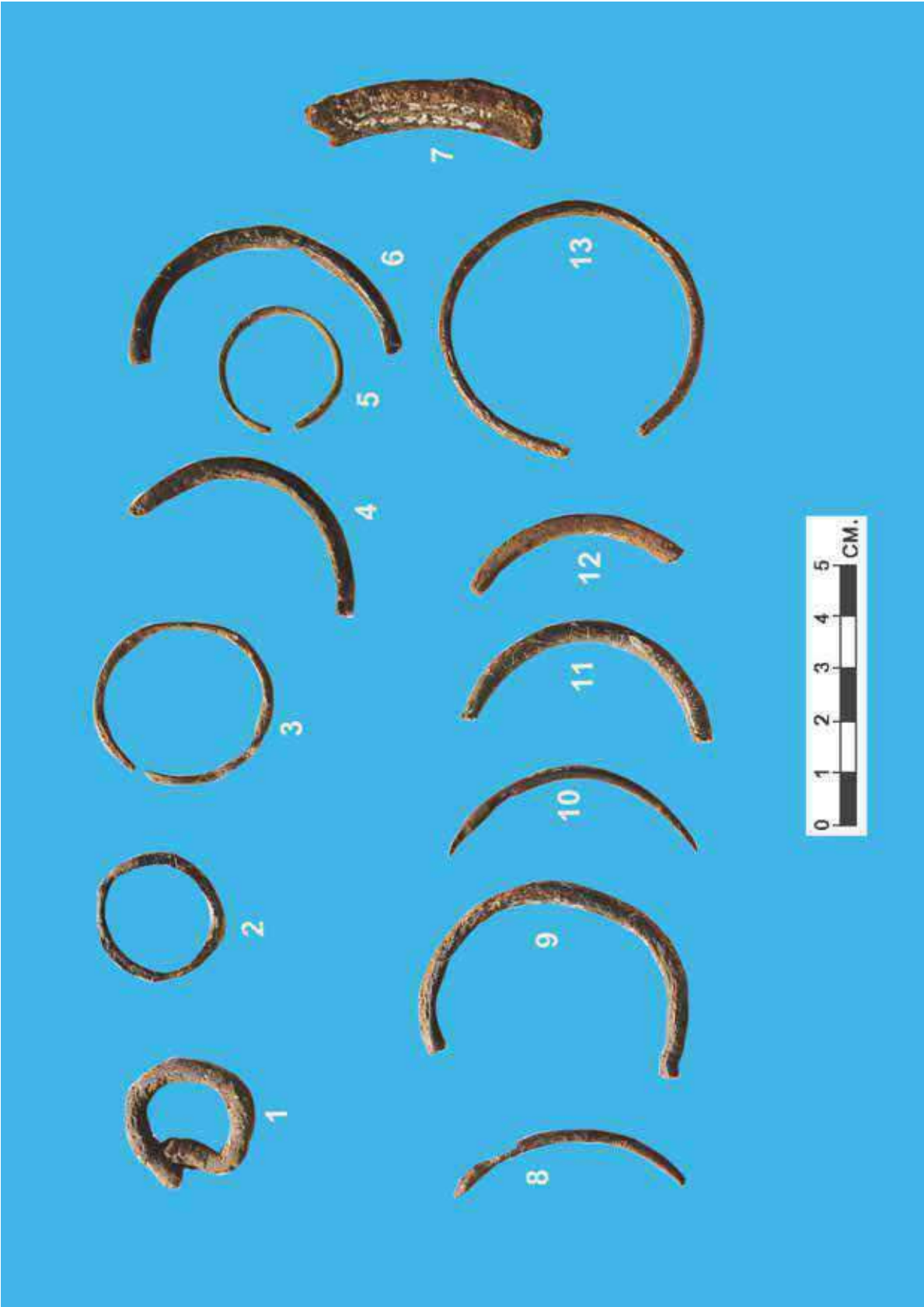


Fig. 15.19 Copper rings and bangles

## **6. FAIENCE BANGLES**

### **Fig. 15.20**

1. Faience bangle; fragmentary, circular in section with incised herring bone design, dia. 3 cm. From a late level of Period II. (KLB-1, Reg. No. 534).
2. Faience bangle; fragmentary, ovoid in section with incised oblique lines, dia. 4 cm. From a late level of Period II. (KLB-1, Reg. No. 163).
3. Faience bangle; fragmentary, ovoid in section, dia. 4 cm. From an early level of Period II. (KLB-1, Reg. No. 19529).
4. Faience bangle; fragmentary, plano-convex in section with incised criss cross design, dia. 4 cm. From a late level of Period II. (KLB-1 & 2, Reg. No. 688).
5. Faience bangle; fragmentary, circular, dia. 5 cm. From a late level of Period II. (KLB-1, Reg. No. 2094).
6. Faience bangle; fragmentary, circular in section with incised herring bone design, dia. 5 cm. From a late level of Period II. (KLB-1, Reg. No. 17641).
7. Faience bangle; fragmentary, ovoid in section with incised oblique lines, dia. 4 cm. From a late level of Period II. (KLB-1, Reg. No. 16351).
8. Faience bangle; fragmentary, circular in section, dia. 6 cm. From a late level of Period II. (KLB-2, Reg. No. 132).
9. Faience bangle; fragmentary, circular in section, dia. 5 cm. From a middle level of Period II. (KLB-1, Reg. No. 12604).
10. Faience bangle; fragmentary, ovoid in section without any decoration, dia. 5 cm. From a late level of Period II. (KLB-1, Reg. No. 2899).
11. Faience bangle; fragmentary, circular in section with incised herring bone design, dia. 6 cm. From a late level of Period II. (KLB-2, Reg. No. 687).
12. Faience bangle; fragmentary, circular in section, dia. 5 cm. From a late level of Period II. (KLB-2, Reg. No. 20811).
13. Faience bangle; fragmentary, biconvex, dia. 6 cm. From a late level of Period II. (KLB-1, Reg. No. 162).
14. Faience bangle; fragmentary, ovoid in section, dia. 4 cm. From an early level of Period II. (KLB-1, Reg. No. 18623).
15. Faience bangle; fragmentary, plano-convex in section with incised oblique lines, dia. 4 cm. From a late level of Period II. (KLB-1, Reg. No. 15321).
16. Faience bangle; fragmentary, plano-convex in section with incised lines, dia. 4 cm. From an early level of Period II. (KLB-1, Reg. No. 11256).
17. Faience bangle; fragmentary, plano-convex in section with incised festoons, dia. 5 cm. From a late level of Period II. (KLB-2, Reg. No. 7276).
18. Faience bangle; circular in section with incised herring bone design, dia. 4 cm. From a late level of Period II. (KLB-1, Reg. No. 2761).
19. Faience bangle; ovoid in section with incised oblique lines, dia. 5 cm. From a late level of Period II. (KLB-2, Reg. No. 8542).



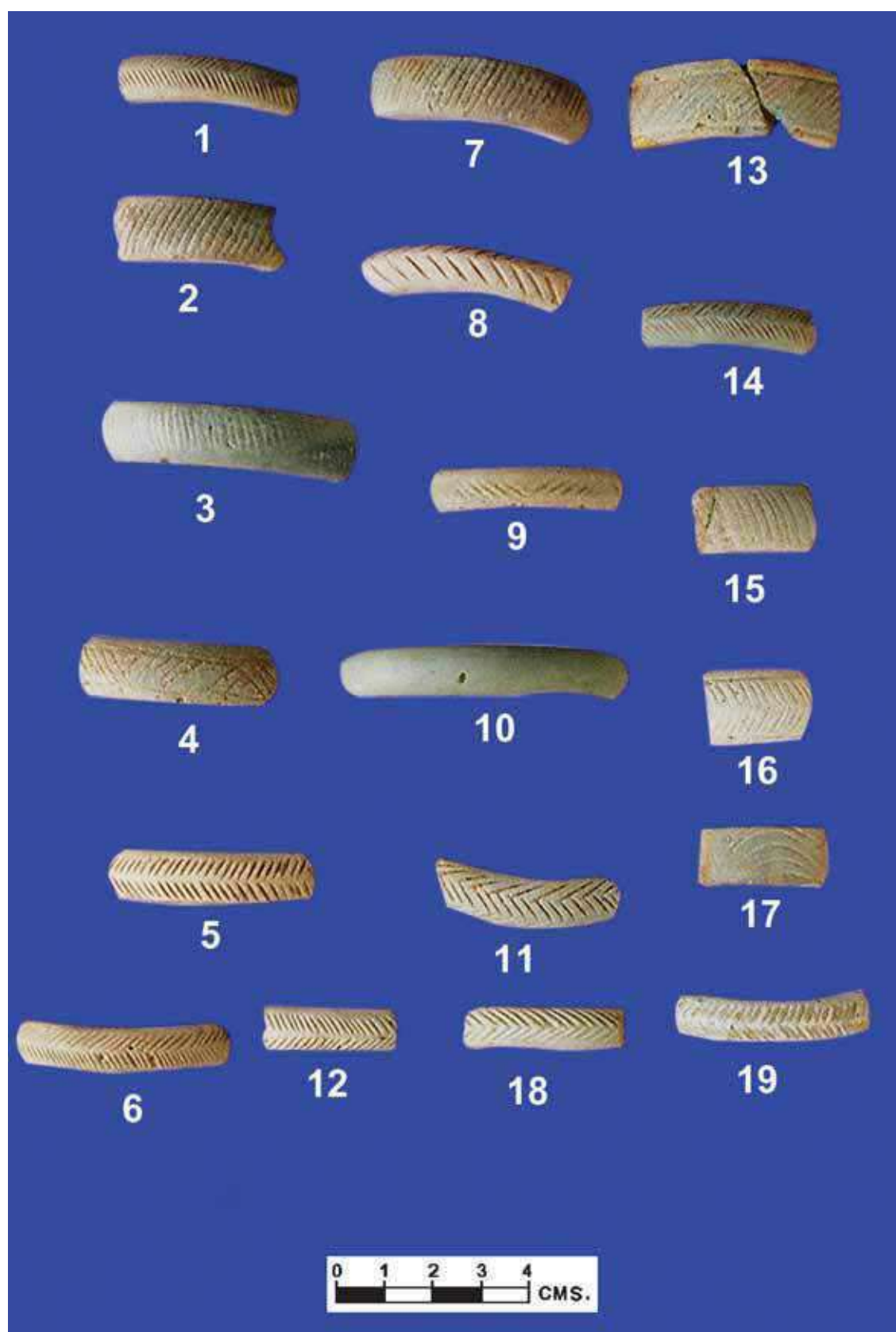


Fig. 15.20 Plain and decorated faience bangles, fragmentary



## **TERRACOTTA RINGS**

**Fig. 15.21**

1. Terracotta ring; dia. 4.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21990).
2. Terracotta ring; dia. 4.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21991).
3. Terracotta ring; dia. 4 cm. From a late level of Period II. (KLB-2, Reg. No. 8697).
4. Terracotta ring; dia. 4.2 cm. From a late level of Period II. (KLB-2, Reg. No. 21992).
5. Terracotta ring; dia. 2.7 cm. From a late level of Period II. (KLB-2, Reg. No. 19963).
6. Terracotta ring; dia. 4.7 cm. From a late level of Period II. (KLB-1, Reg. No. 8451).
7. Terracotta ring; dia. 4.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18813).
8. Terracotta ring; dia. 4.8 cm. From a late level of Period II. (KLB-2, Reg. No. 13039).
9. Terracotta ring; tiny, dia. 1.7 cm. From a late level of Period II. (KLB-1, Reg. No. 15689).
10. Terracotta ring; dia. 3.5 cm. From a late level of Period II. (KLB-1, Reg. No. 12813).

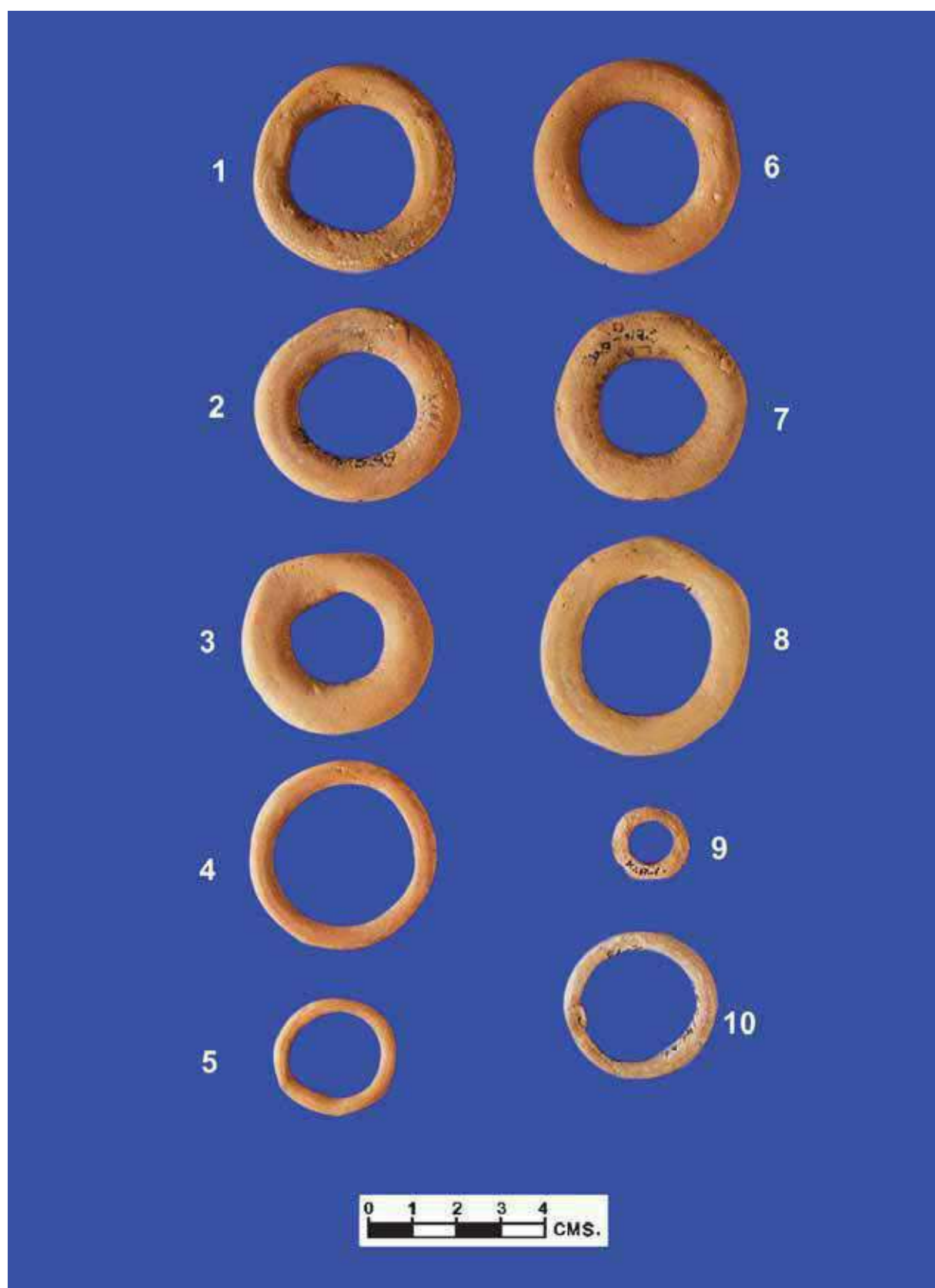


Fig. 15.21 *Terracotta rings*

**Fig. 15.22**

1. Terracotta ring; round in section, dia. 4.5 cm, having hole. From a late level of Period II. (KLB-2, Reg. No. 22016).
2. Terracotta ring; round in section dia 4 cm. From a late level of Period II. (KLB-2, Reg. No. 18636).
3. Terracotta ring; partly broken, round in section, dia. 4.7 cm. From a late level of Period II. (KLB-2, Reg. No. 5845).
4. Terracotta ring; round in section, dia. 4.6 cm. From a late level of Period II. (KLB-2, Reg. No. 17795).
5. Terracotta ring; round in section, dia. 3.8 cm. From a late level of Period II. (KLB-2, Reg. No. 19541).
6. Terracotta ring; round in section, dia. 3.2 cm. From a late level of Period II. (KLB-, Reg. No. 171).
7. Terracotta ring; round in section, dia. 4 cm. From a middle level of Period II. (KLB-, Reg. No. 12143).



Fig. 15.22 Terracotta rings

**Fig. 15.23**

1. Terracotta ring; disculer, dia. 4.3 cm. From a late level of Period II. (KLB-2, Reg. No. 20499).
2. Terracotta ring; disculer, dia. 4.3 cm. From a late level of Period II. (KLB-2, Reg. No. 15255).
3. Terracotta ring; disculer decorated on sides, broken, dia. 4 cm. From a late level of Period II. (KLB-1, Reg. No. 21861).
4. Terracotta ring; disculer, dia. 3.5 cm. From a late level of Period II. (KLB-1, Reg. No. 16334).
5. Terracotta ring; disculer, dia. 3.7 cm. From a late level of Period II. (KLB-1, Reg. No. 12983).
6. Terracotta ring; disculer, dia. 3.5 cm. From a late level of Period II. (KLB-1, Reg. No. 14920).

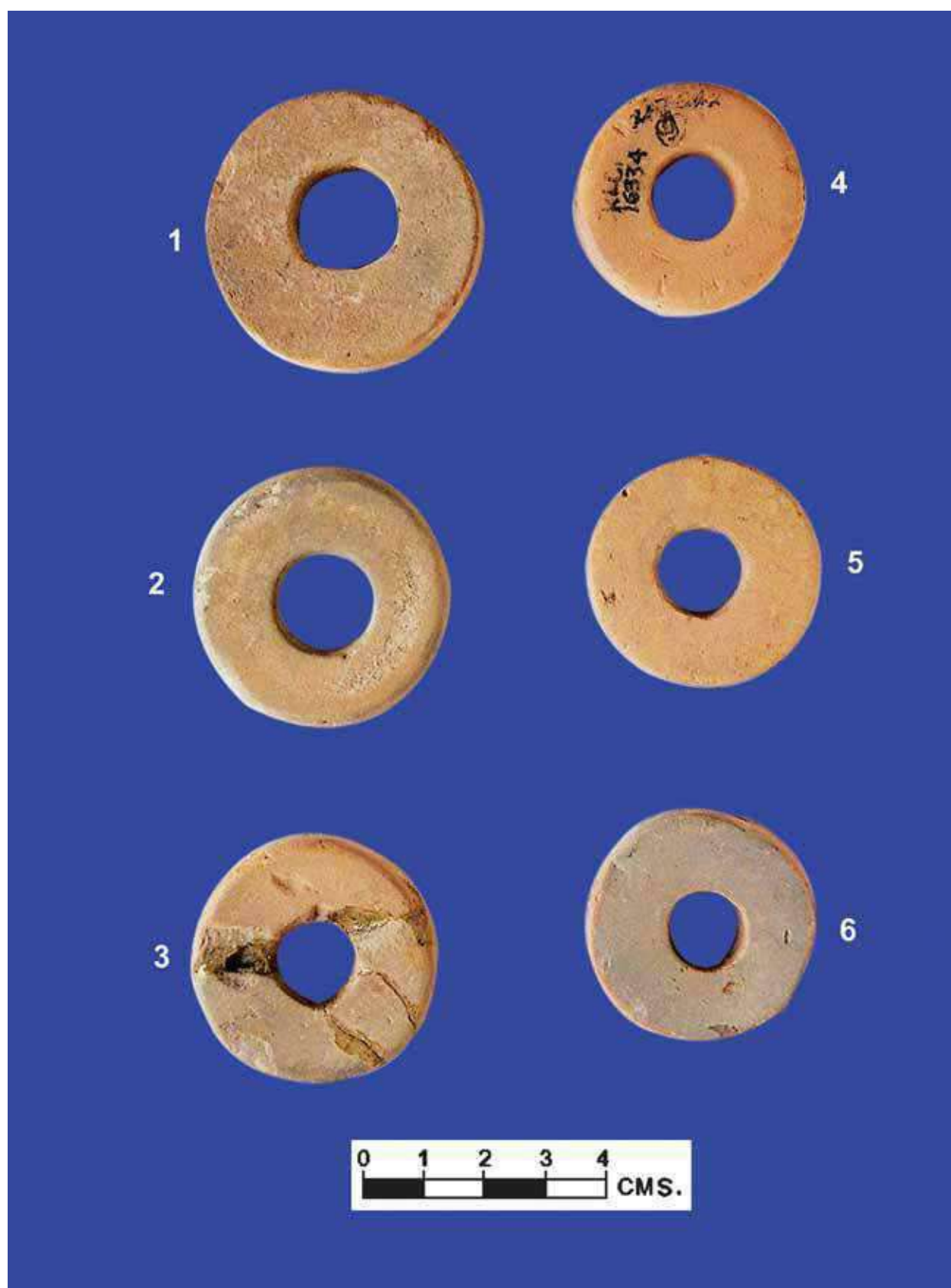


Fig. 15.23 *Terracotta rings*





# BEADS

## CHAPTER

### MADHU BALA

# 16

A large number of beads have been found from Kalibangan. The collection consists of beads collected from surface, unstratified levels and stratified levels of excavations. The entire collection is very rich and has a variety of shapes and material. The material consists of semi-precious beads made of agate, jasper, carnelian, serpentine and coral. Beads of lapis are rare and a variety of shapes is available. A large number of beads of steatite have been found which outnumber all materials (Figs. 16.1 and 16.2). Steatite is available in Rajasthan in the districts of Ajmer, Alwar, Banswara, Dungarpur, Jaipur, Jodhpur and Udaipur.<sup>1</sup> Hundreds of beads of steatite, a soft massive variety of talc have been found. It was a flourishing industry. Terracotta spacers with one to six holes indicating necklaces of one to six strings are available in a large quantity (Fig. 16.4). Such spacers are also available in gold and

copper but only one each. Tubular and other bicone variety of beads (Fig. 16.3) of terracotta are found in profusion. Few beads of faience, a synthetic product by amalgamation of lime with quartz at a very high temperature are also recorded. Beads of copper and gold were also in use. Beads of bone and shell are also recovered. A tortoise shaped bead of shell is a unique work of craftsmanship. Etched carnelian beads made by use of a paste of sodium hydroxide or some herbal alkaline paste and fired at a high temperature for absorbing the alkali into the stone, were in fashion. As compared to agate, which has a greater frequency, carnelian beads are less. So far shapes in beads are concerned these consist of tubular, bicone, barrel, disc, cylinder, gadrooned, faceted convex, spiralled and spacers with one to six holes. Availability of five unfinished beads of banded agate suggests local manufacture of beads of agate.

#### MATERIAL WISE DISTRIBUTION OF BEADS

1	2	3	4	5	6	7	8	9	10	11	12
Agate	Steatite	Faience	Copper	Carnelian	Shell	Bone	Gold	Gold gilded copper	Terracotta	Jasper	Lapis
69	52	28	21	8	6	1	16	1	72	2	10

Note : Amongst the semiprecious material serpentine, crystal and coral are also in the collection. Amongst the shapes long cylindrical, barrel, tubular beads outnumber other shapes. Hundreds of steatite beads having wafer, disc, barrel cylindrical types are represented.

<sup>1</sup> Possehl, G.L. 1999. *Indus Age, The Beginnings*, Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi.

**DISTRIBUTION OF TERRACOTTA BEADS, SPACERS AND PENDANTS**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Long tubular	Big bicone	Small bicone	Circular rectangular in section	Globular	Elliptical	Cone	Spherical	Areca nut	Truncated spherical	Vase shaped	Dome shaped plano - convex	Discular	Rectangular	Ear ornament	Crescent shaped pendant	Nail pendent	Pendant with groove on the top	Dumb bell shaped	Spacers	Animal beads	Total
1491	156	178	175	17	15	6	1	1	1	1	4	8	1	14	5	1	1	1	54	42	2173

Note : As compared to other material the frequency of occurrence of terracotta beads is highest.

**RECONSTRUCTED TERRACOTTA NECKLACE****Fig. 16.4**

1. Reconstructed necklace of terracotta beads has three rows of bicone

circular beads (143) with three spacers in between three rows. From a late level of Period II. (KLB-1, Reg. No. 2301).



Fig. 16.1 *Discular steatite beads*



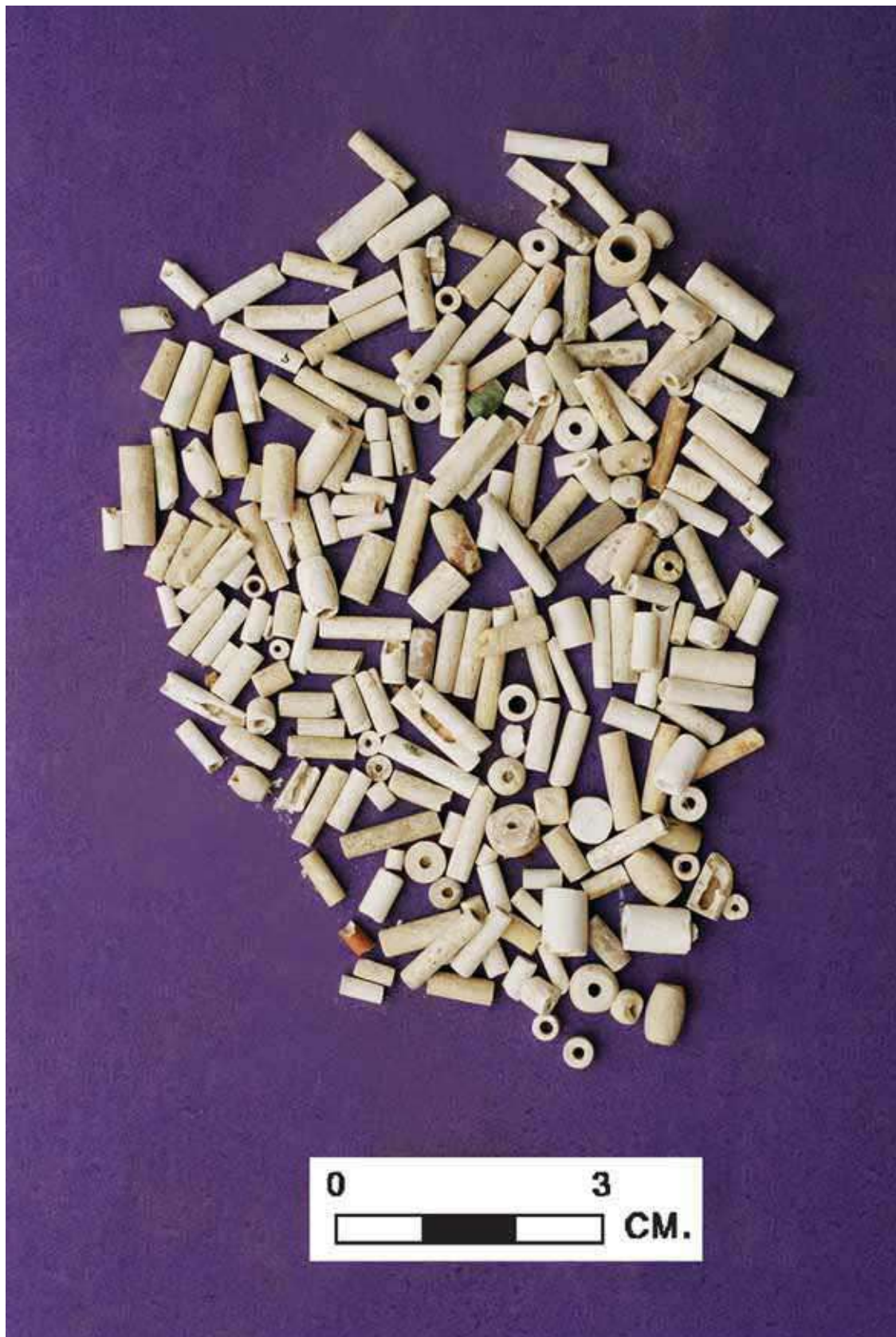


Fig. 16.2 *Tubular steatite beads*



Fig. 16.3 *Terracotta beads*



Fig. 16.4 *Reconstructed necklace of terracotta beads, also showing the use of spacers*

**TERRACOTTA BEADS AND SPACERS**  
**Figs. 16.5 and 16.5(a)**

1. Terracotta bead; short circular disc. From a late level of Period II. (KLB-2, Reg. No. 21847).
2. Terracotta bead; short circular bicone. From a late level of Period II. (KLB-1, Reg. No. 16655).
3. Terracotta bead; short circular bicone. From a late level of Period II. (KLB-1, Reg. No. 17287).
4. Terracotta bead; short circular bicone. From a late level of Period II. (KLB-1, Reg. No. 12583).
5. Terracotta bead; short circular bicone. From a late level of Period II. (KLB-1, Reg. No. 18694).
6. Terracotta bead; short circular bicone. From a late level of Period II. (KLB-1, Reg. No. 19050).
7. Terracotta bead; short circular truncated bicone. From a late level of Period II. (KLB-1, Reg. No. 17778).
8. Terracotta bead; truncated bicone. From a late level of Period II. (KLB-2, Reg. No. 15442).
9. Terracotta bead; short circular truncated bicone. From a late level of Period II. (KLB-2, Reg. No. 21848).
10. Terracotta bead; short circular bicone, decorated with incised dots. From a late level of Period II. (KLB-1, Reg. No. 2554).
11. Terracotta bead; short circular bicone, decorated with incised lines. From a late level of Period II. (KLB-1, Reg. No. 2964).
12. Terracotta bead; short circular bicone. From a late level of Period II. (KLB-2, Reg. No. 21849).



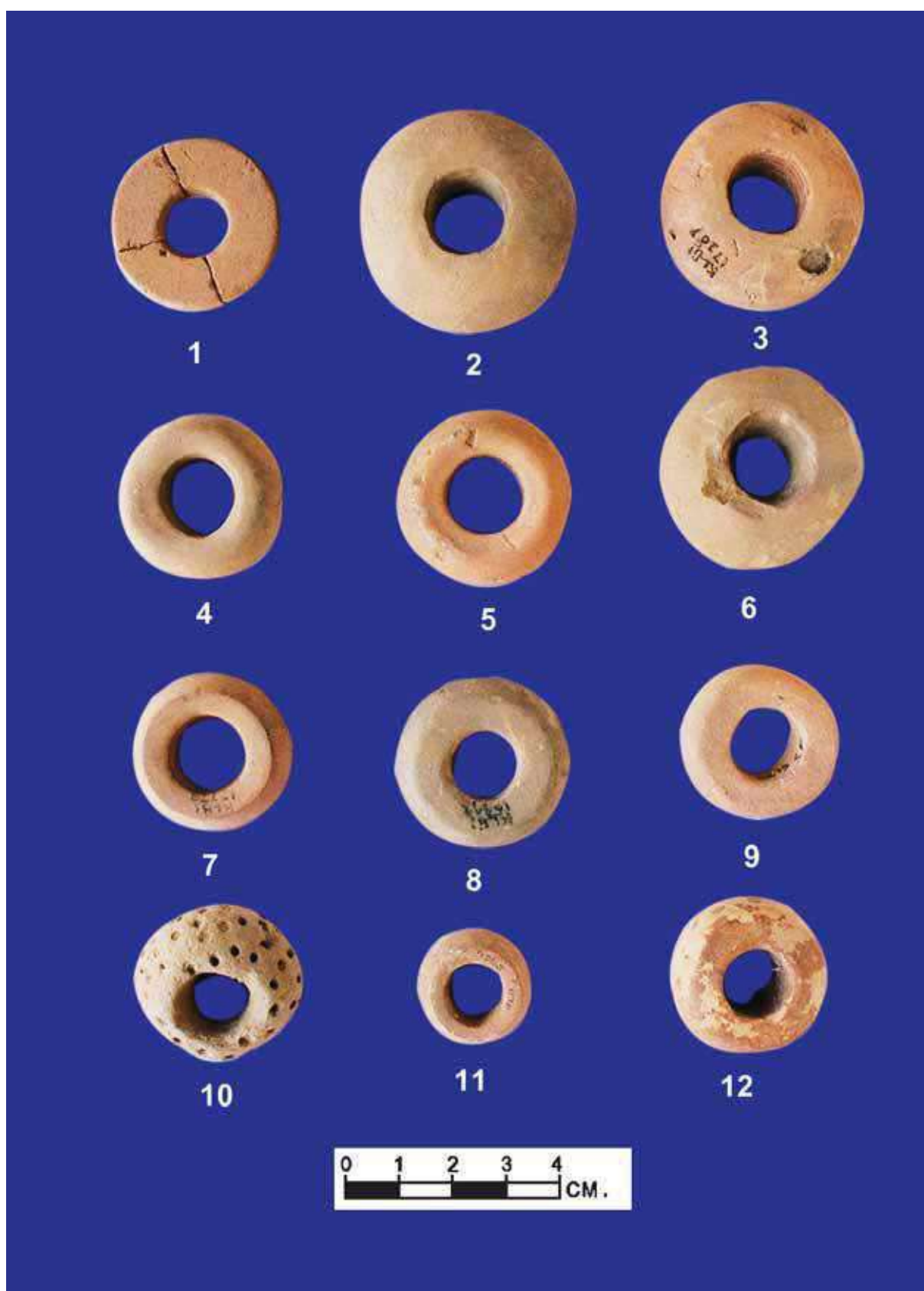


Fig. 16.5 *Terracotta short circular disc and bicone beads*

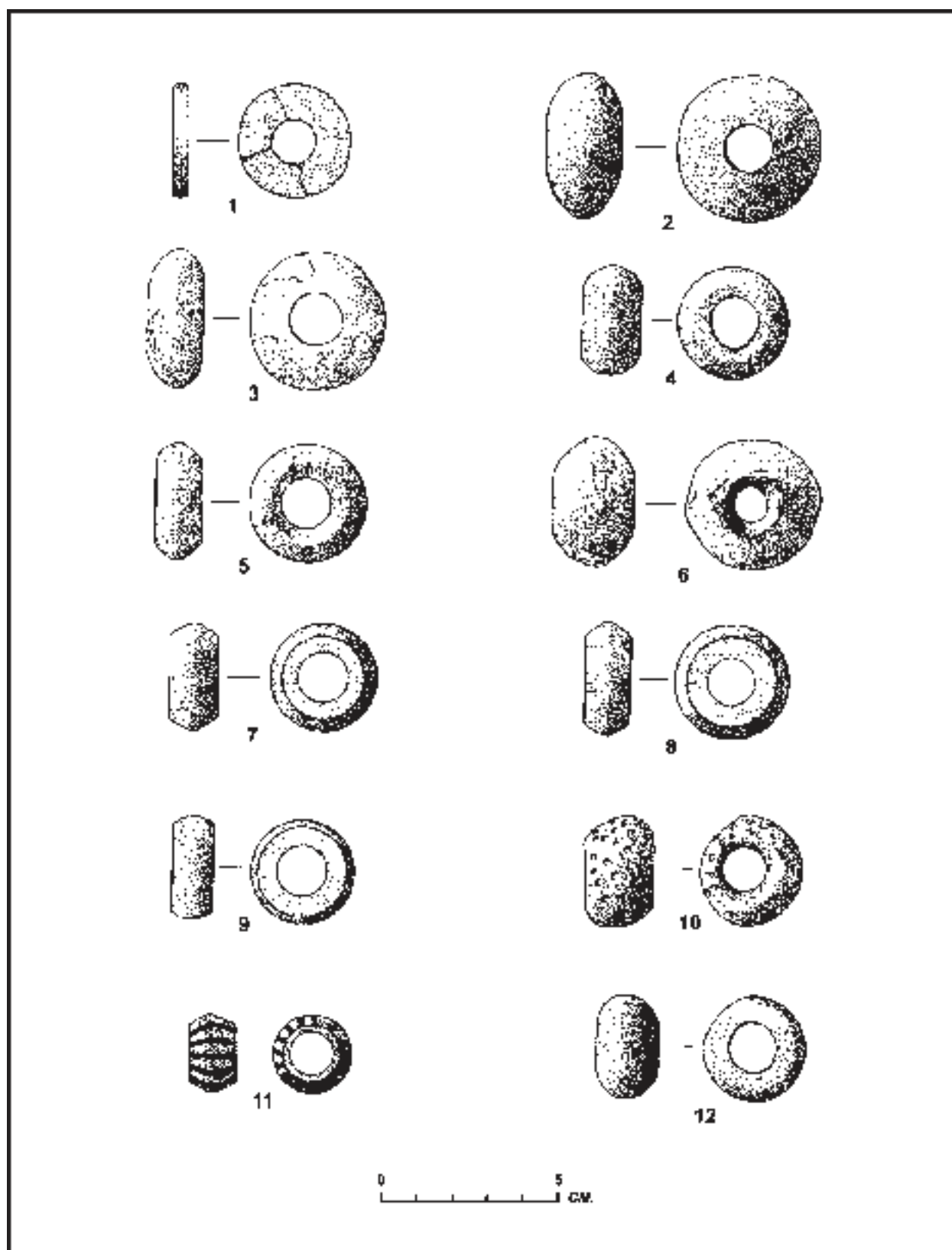


Fig. 16.5(a) *Terracotta short circular disc and bicone beads, side and top views*

**Figs. 16.6 and 16.6(a)**

1. Terracotta bead; circular truncated cone. From a late level of Period II. (KLB-1, Reg. No. 199).
2. Terracotta bead; short, circular, bicone. From a late level of Period II. (KLB-1, Reg. No. 15270).
3. Terracotta bead; long, bicone, lenticular flat. From a late level of Period II. (KLB-2, Reg. No. 7880)
4. Terracotta bead; short, bicone, circular flat. From a late level of Period II. (KLB-2, Reg. No. 1253).
5. Terracotta bead; standard, bicone, flat. From a late level of Period II. (KLB-1, Reg. No. 18302).
6. Terracotta bead; standard, bicone, flat. From a late level of Period II. (KLB-, Reg. No. 8047).
7. Terracotta spacer; rectangular in shape, has two holes for the double string. From a late level of Period II. (KLB-2, Reg. No. 11196).
8. Terracotta bead; short, bicone, circular. From a late level of Period II. (KLB-1, Reg. No. 1944).
9. Terracotta bead; long, lenticular convex. From a late level of Period II. (KLB-2, Reg. No. 10228).
10. Terracotta bead; short, bicone, circular. From a late level of Period II. (KLB-1, Reg. No. 6826).
11. Terracotta bead; short, bicone, circular. From a late level of Period II. (KLB-2, Reg. No. 9083).
12. Terracotta bead; short, circular, globular. From a late level of Period II. (KLB-1, Reg. No. 2158).

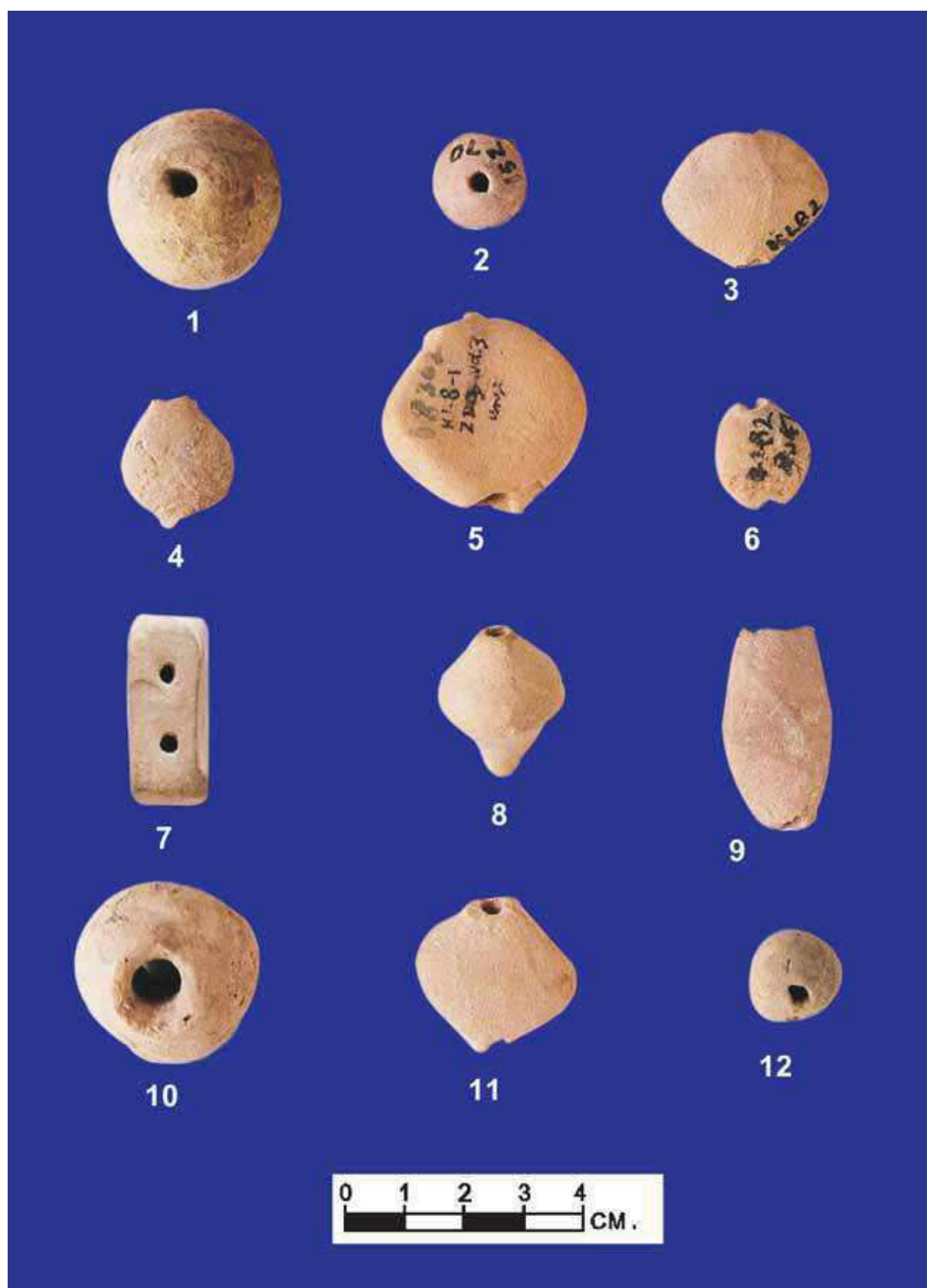


Fig. 16.6 Terracotta, truncated cone, bicone circular and spacer beads

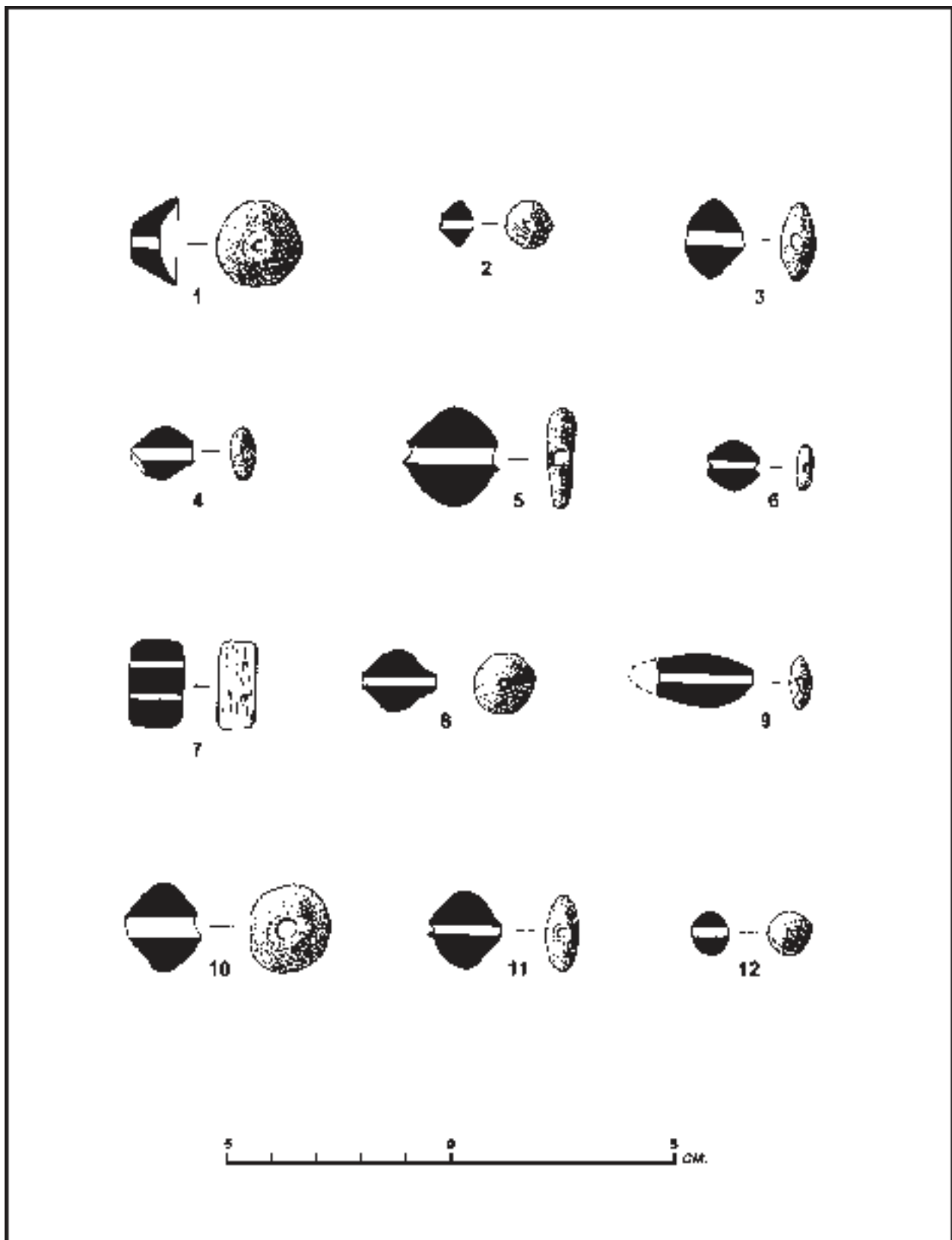


Fig. 16.6(a) Cross-section and top views of terracotta truncated cone, bicone circular beads and spacer

**Fig. 16.7**

1. Terracotta, bead; short, circular. From a late level of Period II. (KLB-1, Reg. No. 13137).
2. Terracotta, bead; short, circular, bicone. From a late level of Period II. (KLB-1, Reg. No. 1212).
3. Terracotta, bead ; long, circular, bicone. From a middle level of Period II. (KLB-1, Reg. No. 14926).
4. Terracotta, bead; long, circular, spiral. From a late level of Period II. (KLB-1, Reg. No. 866).
5. Terracotta, bead; short, circular. From a late level of Period II. (KLB-1, Reg. No. 812).
6. Terracotta, bead; short, circular, unicone. From an early level of Period II. (KLB-1, Reg. No. 18588).
7. Terracotta, bead; long, circular, bicone. From a late level of Period II. (KLB-1, Reg. No. 3553).
8. Terracotta, bead; long, circular, bicone. From a late level of Period II. (KLB-1, Reg. No. 18573).
9. Terracotta, bead; short circular, unicone. From a late level of Period II. (KLB-1, Reg. No. 14611).
10. Terracotta, bead; long, circular, barrel. From a late level of Period II. (KLB-1, Reg. No. 2901).
11. Faience, bead; short, circular, gadrooned. From a late level of Period II. (KLB-1, Reg. No. 5374).
12. Terracotta, bead; short, circular, bicone. From a late level of Period II. (KLB-1, Reg. No. 22024).
13. Terracotta, bead; short, circular, bicone. From a late level of Period II. (KLB-1, Reg. No. 18611).
14. Terracotta, bead; short, circular, unicone. From a late level of Period II. (KLB-1, Reg. No. 22025).
15. Terracotta, bead; short circular, unicone. From a late level of Period II. (KLB-1, Reg. No. 22026).
16. Terracotta, bead; short, circular, unicone. From a late level of Period II. (KLB-1, Reg. No. 22027).

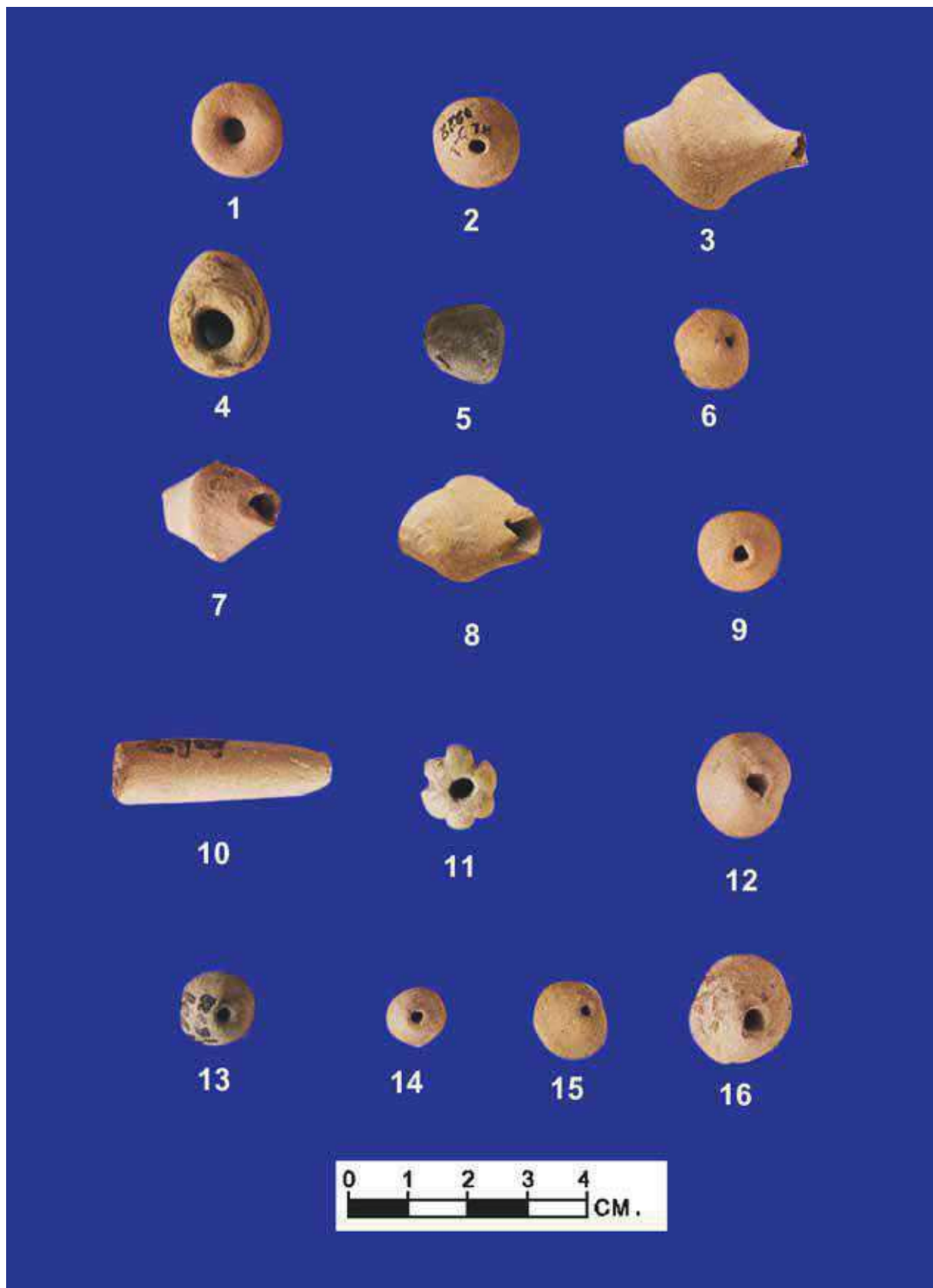


Fig. 16.7 *Various shapes of terracotta beads*



**Fig. 16.8 and 16.8(a)**

A very large number of terracotta tubular beads have been found at Kalibangan which appear to be most popular ornament of the woman folk. Generally there are of three types i e (1) long cylindrical tubular circular (2) long barrel circular (3) long tubular circular with incised spiral design.

1. Terracotta bead; long, tubular, circular. From a late level of Period II. (KLB-2, Reg. No. 12408).
2. Terracotta bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 20003).
3. Terracotta bead; long, tubular, circular. From a late level of Period II. (KLB-2, Reg. No. 8746).
4. Terracotta bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 16169).
5. Terracotta bead; long, cylindrical. From a late level of Period II. (KLB-2, Reg. No. 13424).
6. Terracotta bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 10020).
7. Terracotta bead; long, tubular, circular. From a late level of Period II. (KLB-2, Reg. No. 13298).
8. Terracotta bead; short, barrel, circular. From a late level of Period II. (KLB-, Reg. No. 21850).
9. Terracotta bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 18698).
10. Terracotta bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 19593).
11. Terracotta bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 21950).
12. Terracotta bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 15087).
13. Terracotta bead; long tubular, circular. From a late level of Period II. (KLB-2, Reg. No. 20006).
14. Terracotta bead; long, cylindrical, circular. From a late level of Period II. (KLB-1 & 2, Reg. No. 404).

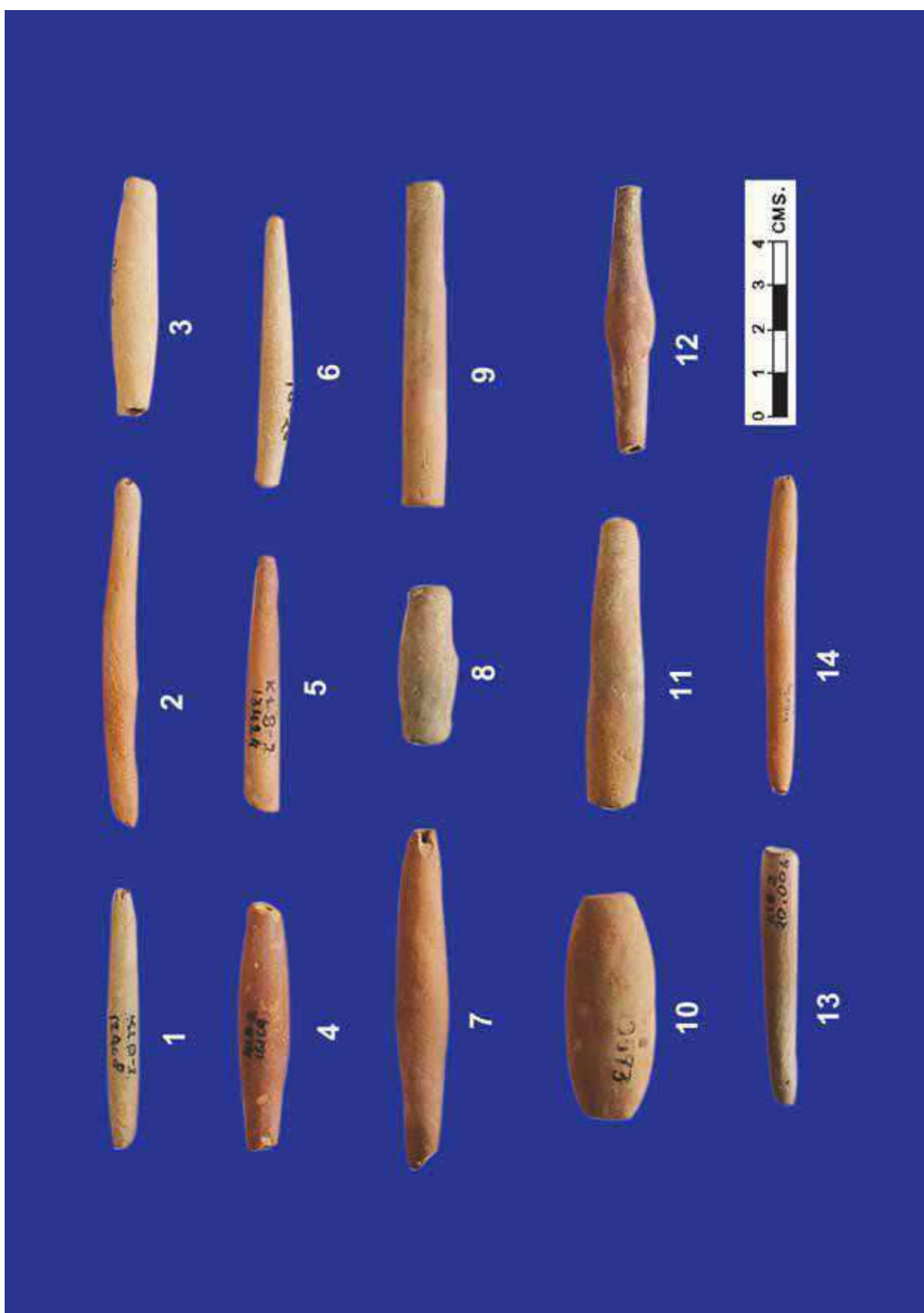


Fig. 16.8 Long-barrel shaped terracotta beads

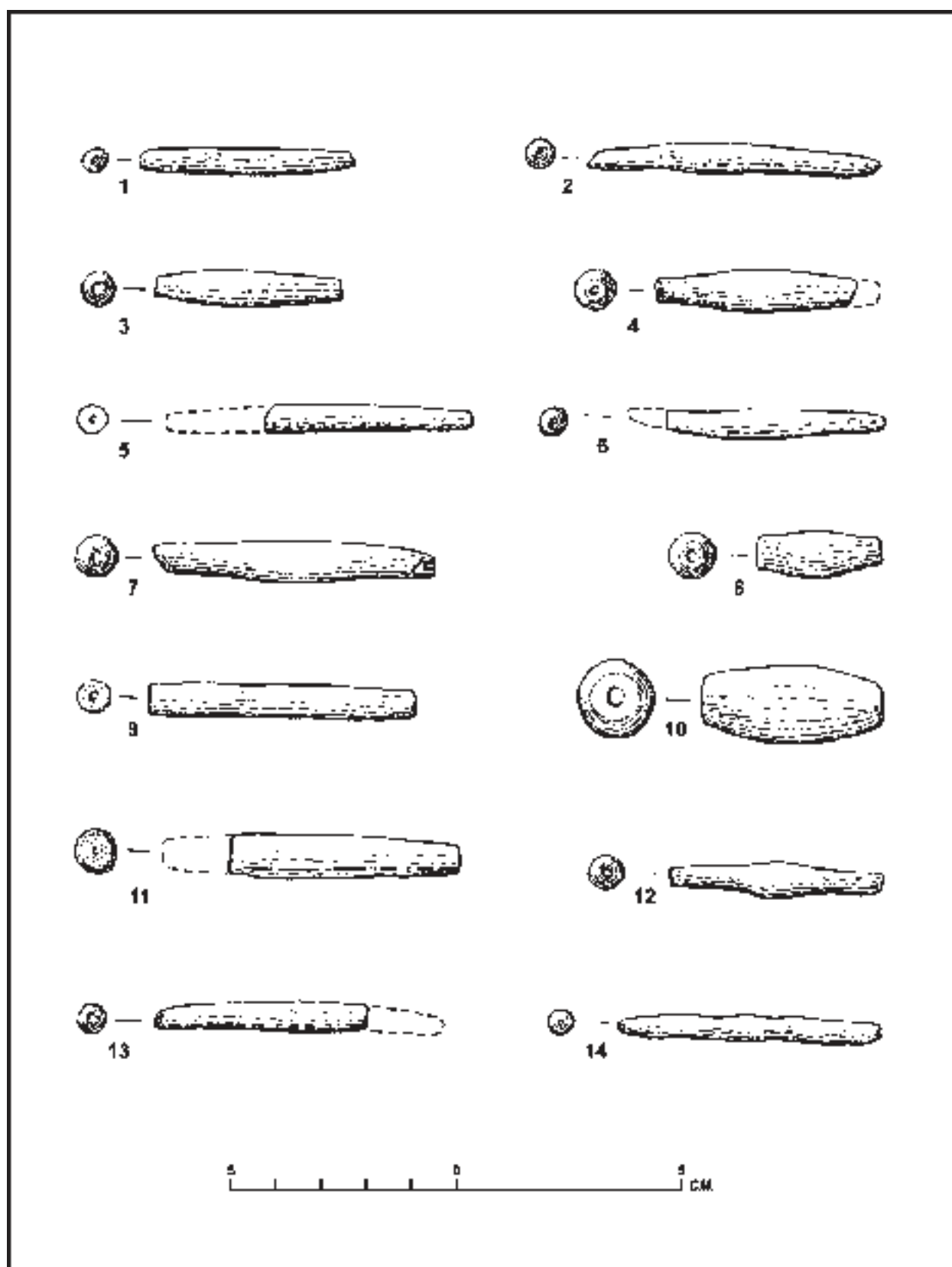


Fig. 16.8(a) Side and front views of long-barrel and cylindrical shaped terracotta beads

**Figs. 16.9 and 16.9(a)**

1. Terracotta bead; long, barrel, circular. From a late level of Period II. (KLB-1, Reg. No. 18472).
2. Terracotta bead; long, barrel, spiral, circular. From a late level of Period II. (KLB-2, Reg. No. 1029).
3. Terracotta bead; short, cylindrical, spiral circular. From a late level of Period II. (KLB-2, Reg. No. 18704).
4. Terracotta bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 15407).
5. Terracotta bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 10770).
6. Terracotta bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 14906).
7. Terracotta bead; short, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 19470).
8. Terracotta bead; long, barrel, spiral, circular. From a late level of Period II. (KLB-2, Reg. No. 729).
9. Terracotta bead; short, tubular, circular, painted with black bands at irregular intervals. From a late level of Period II. (KLB-2, Reg. No. 19773).



Fig. 16.9 Long-barrel shaped terracotta beads

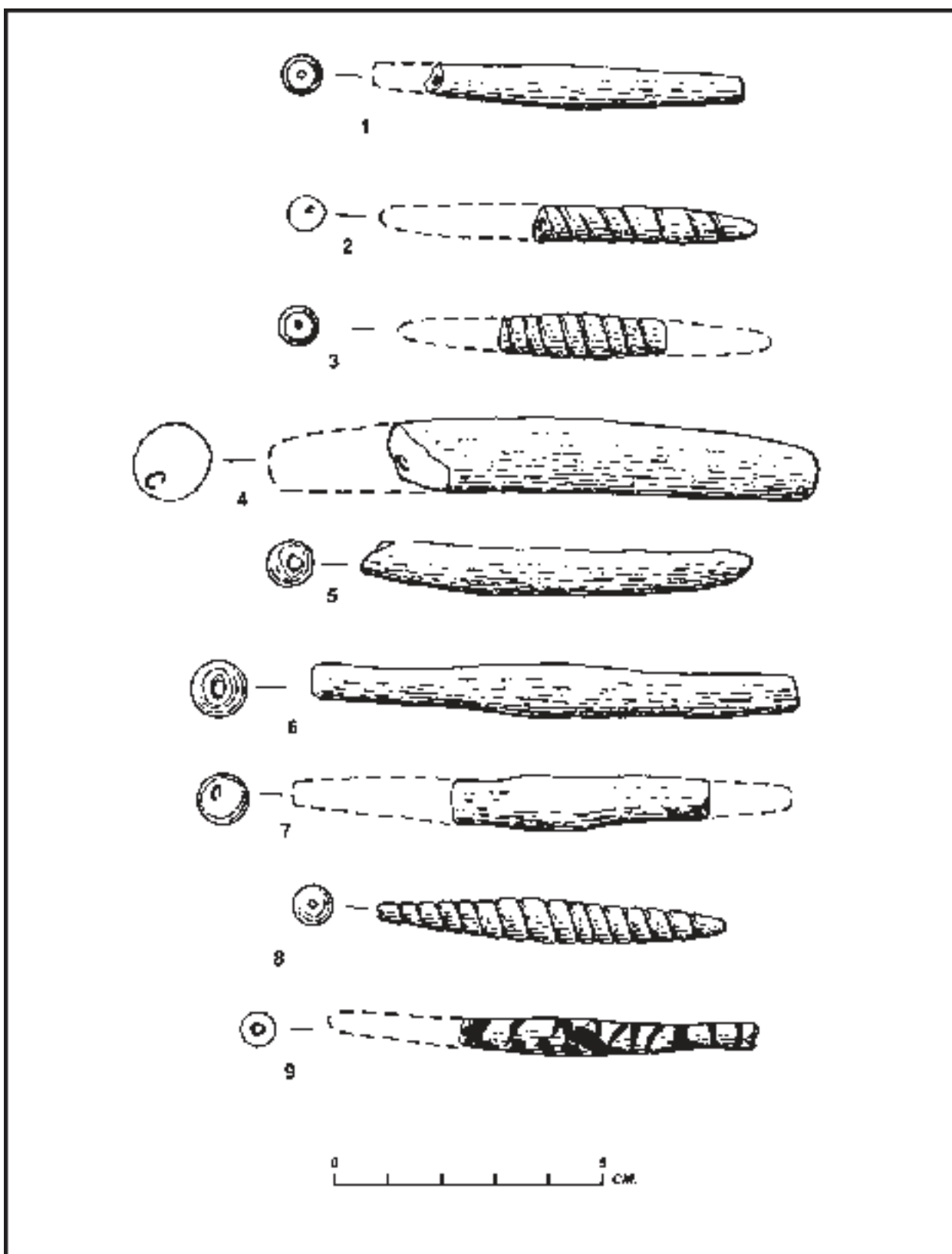


Fig. 16.9(a) Side and front views of long-barrel shaped terracotta beads

**Figs. 16.10 and 16.10(a)**

1. Terracotta bead; bicone, decorated with zigzag design, circular. From a late level of Period II. (KLB-1, Reg. No. 4887).
2. Terracotta bead; bicone, circular. From a late level of Period II. (KLB-1, Reg. No. 19814).
3. Terracotta bead; crescent shaped, rectangular. From a late level of Period II. (KLB-1 & 2, Reg. No. 162).
4. Terracotta bead; bicone, circular. From a late level of Period II. (KLB-1, Reg. No. 3512).
5. Terracotta bead; hemispherical. From a late level of Period II. (KLB-1, Reg. No. 12094).
6. Terracotta bead; triangular, rectangular. From a late level of Period II. (KLB-1, Reg. No. 443).
7. Terracotta bead; truncated bicone, circular. From a late level of Period II. (KLB-2, Reg. No. 21851).
8. Terracotta bead; unicone, circular. From a late level of Period II. (KLB-1, Reg. No. 882).
9. Terracotta bead; triangular, rectangular. From a late level of Period II. (KLB-1, Reg. No. 19969). (Fig 16.10 (a) no. 8) flat.



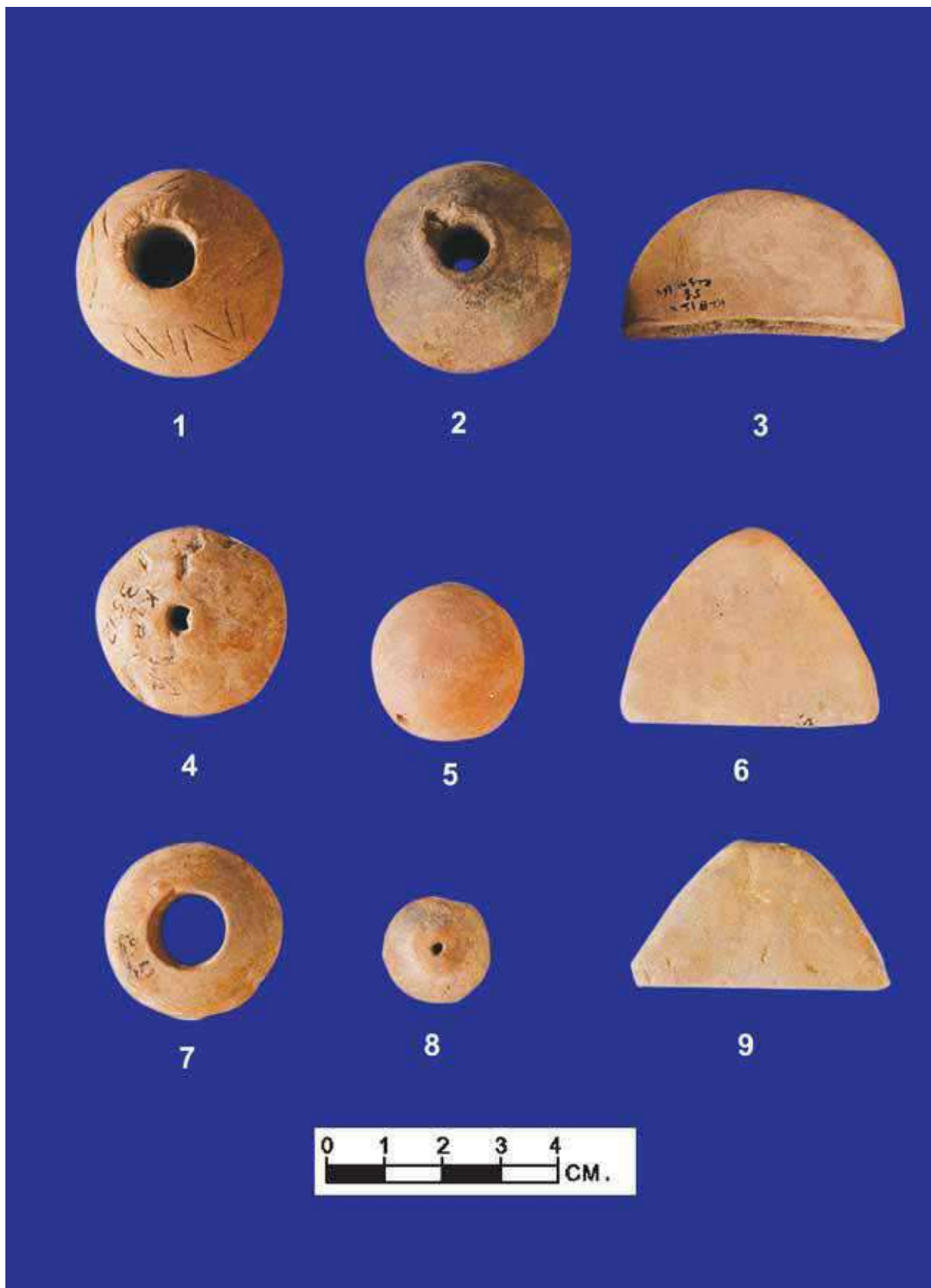


Fig. 16.10 *Terracotta bicone, crescent, triangular beads, etc.*

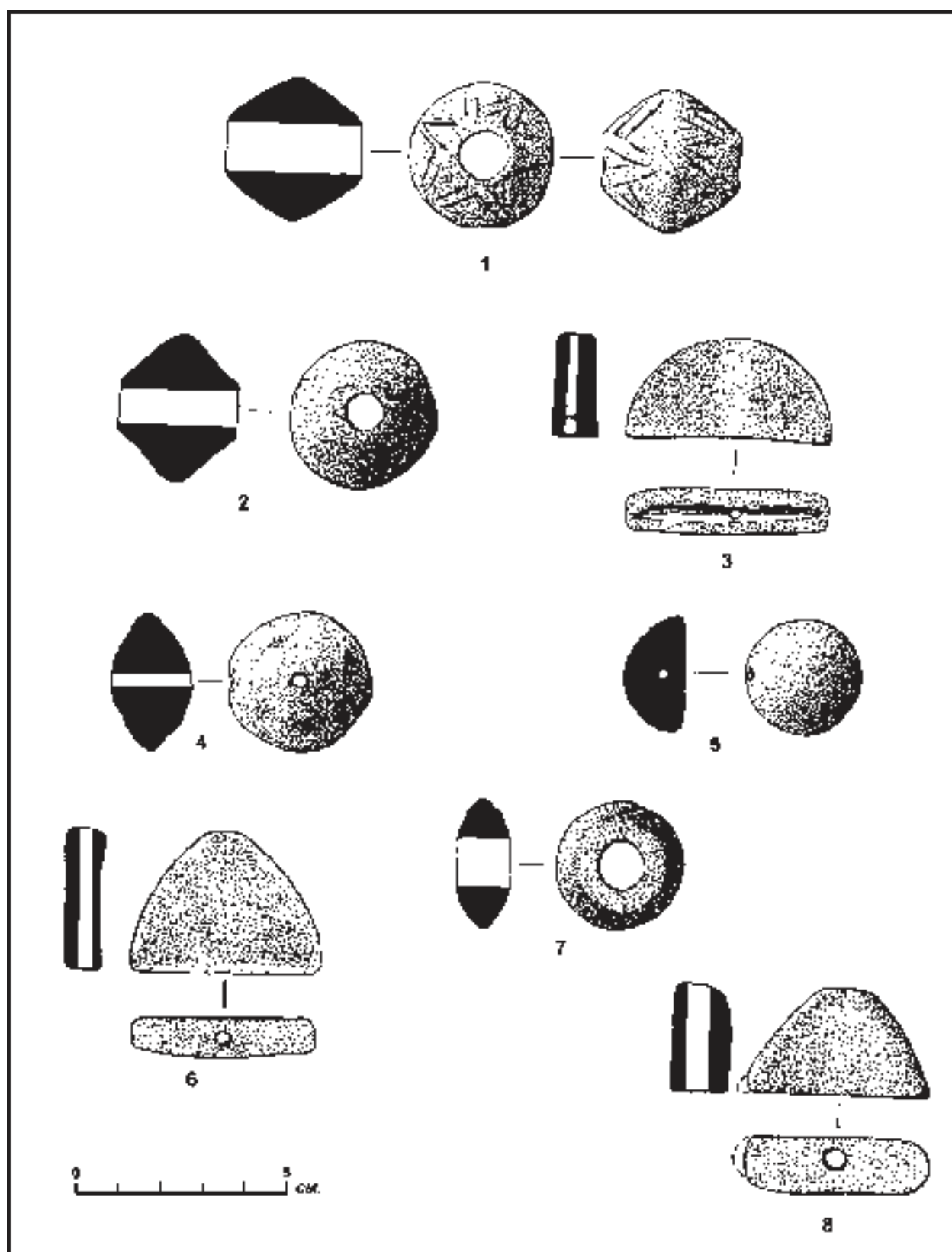


Fig. 16.10(a) Cross-section and different views of terracotta bicone, crescent, triangular beads, etc.

## **TERRACOTTA SPACER BEADS**

### **Figs. 16.11 and 16.11(a)**

Many spacers in terracotta have been found from the excavations at Kalibangan. These are having holes which varies from two to seven. A few of them are discribed below :-

1. Terracotta spacer; flat, rectangular in shape, has two holes. From a late level of Period II. (KLB-2, Reg. No. 15329).
2. Terracotta spacer; flat, oval in shape, with two holes. From a late level of Period II. (KLB-2, Reg. No. 21324).
3. Terracotta spacer; flat, oval in shape, with two holes. From a late level of Period II. (KLB-2, Reg. No. 21852).
4. Terracotta spacer; flat, rectangular in shape, consists of two holes. From a late level of Period II. (KLB-2, Reg. No. 5384).
5. Terracotta spacer; flat, rectangular, with six holes. From a late level of Period II. (KLB-1, Reg. No. 19486).
6. Terracotta spacer; flat, rectangular, with four holes. From a late level of Period II. (KLB-2, Reg. No. 21853).
7. Terracotta spacer; flat, rectangular, with four holes. From a late level of Period II. (KLB-1, Reg. No. 15334).
8. Terracotta spacer; flat, rectangular, has three holes. From a late level of Period II. (KLB-2, Reg. No. 21854).
9. Terracotta spacer; flat, rectangular, with two holes. From a late level of Period II. (KLB-1 & 2, Reg. No. 864).
10. Terracotta spacer; flat, tiny, rectangular in shape, has three holes. From a late level of Period II. (KLB-1, Reg. No. 2788).
11. Terracotta spacer; flat, frectangular, with four holes. From a late level of Period II. (KLB-2, Reg. No. 21855).
12. Terracotta spacer; flat, rectangular, with six holes. From a late level of Period II. (KLB-1, Reg. No. 12644).
13. Terracotta spacer; flat, rectangular, has seven holes. From a late level of Period II. (KLB-1, Reg. No. 5687).
14. Terracotta spacer; flat, oval, has five holes. From a late level of Period II. (KLB-1 & 2, Reg. No. 303).
15. Terracotta spacer; flat, rectangular, with two holes. From a late level of Period II. (KLB-2, Reg. No. 22038).
16. Terracotta spacer; convex, tiny, square, consists of one holes. From a late level of Period II. (KLB-2, Reg. No. 7670)

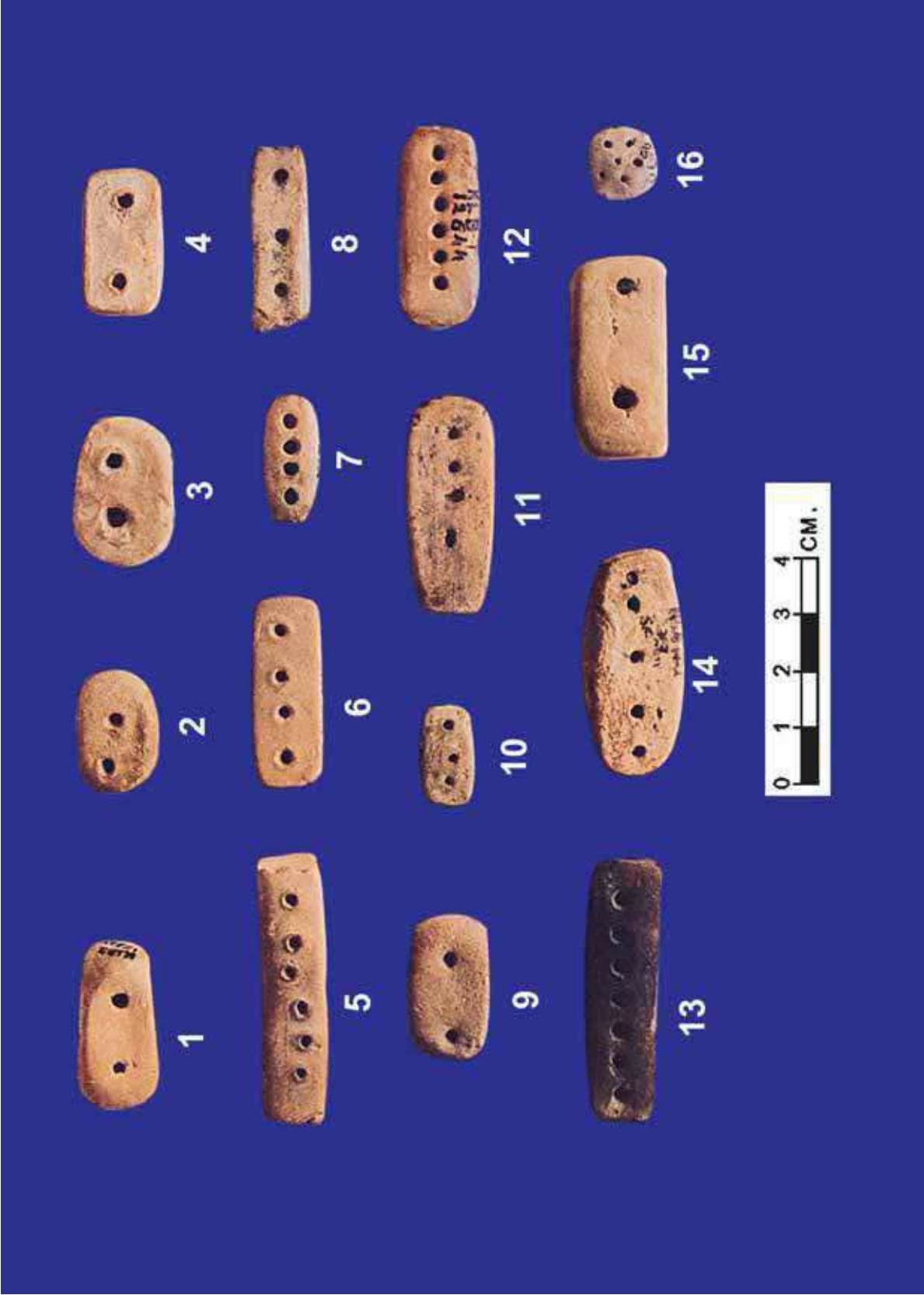


Fig. 16.11 Terracotta spacer beads

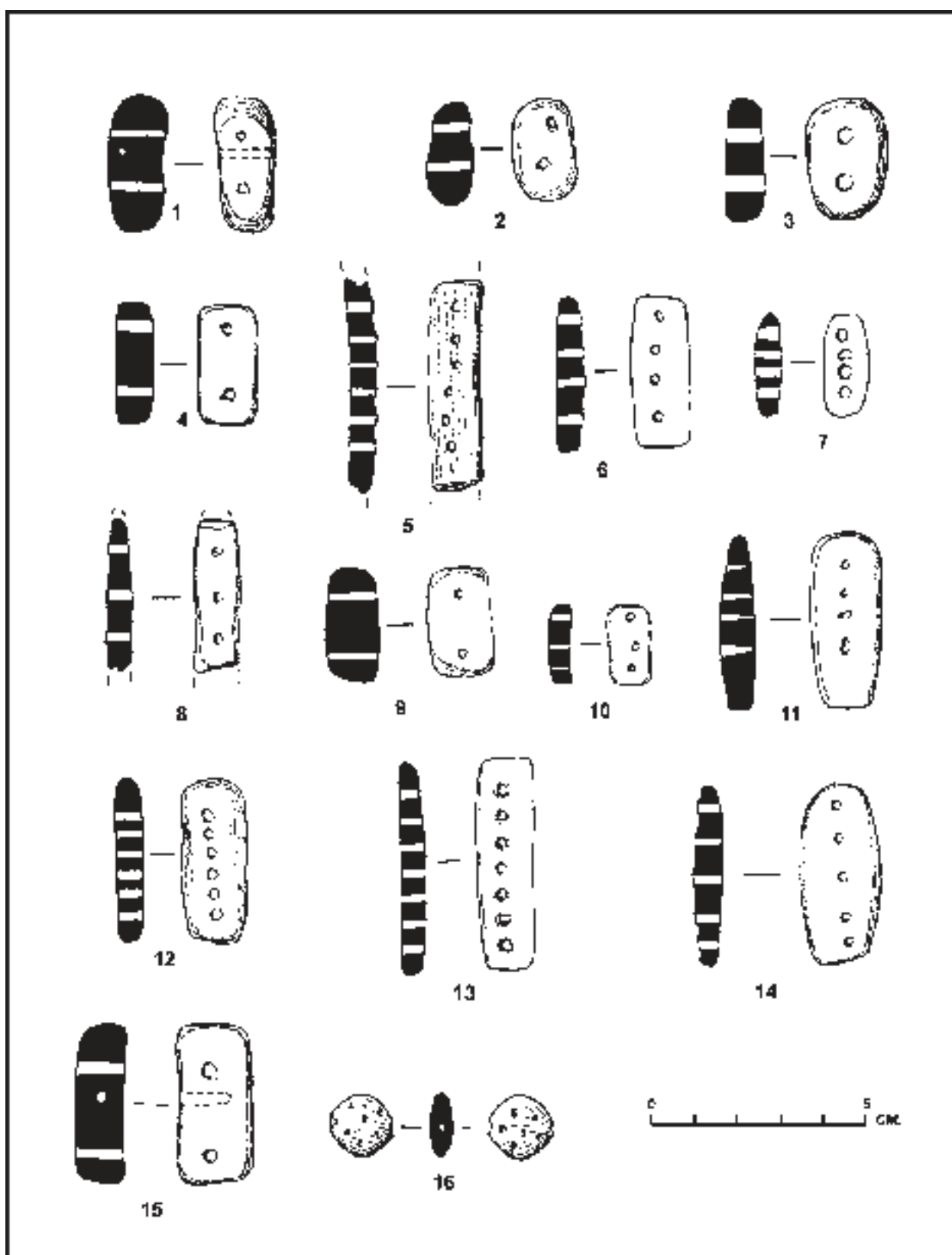


Fig. 16.11(a) *Terracotta spacers, cross-section and side views*

**2. SEMI-PRECIOUS STONE BEADS****Figs. 16.12, 16.13 and 16.13(a)**

1. Agate bead; banded, long barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 18076).
2. Agate bead; banded, standard, barrel, lenticular. From a late level of Period II. (KLB-2, Reg. No. 576).
3. Agate bead; banded, long, barrel, lenticular. From a late level of Period II. (KLB-2, Reg. No. 21856).
4. Agate bead; banded, long, barrel, lenticular. From a late level of Period II. (KLB-2, Reg. No. 17720).
5. Carnelian bead; short cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 208).
6. Agate bead; long, barrel, circular. From a late level of Period II. (KLB-1,2, Reg. No.118).
7. Agate bead; banded, long, barrel, circular. From surface. (KLB-1, Reg. No. 16202).
8. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No.707).
9. Etched carnelian bead; eye design, lenticular short. From a late level of Period II. (KLB-1, Reg. No. 11259).
10. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 8).
11. Agate bead; long, cylindrical, circular. From a late level of Period II. (KLB-1, Reg. No. 802).
12. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 13027).
13. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No.124).
14. Agate bead; banded, long, barrel, lenticular. From a late level of Period II. (KLB-1, Reg. No. 14564).
15. Agate bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 790).
16. Carnelian bead; long, truncated bicone, circular. From a late level of Period II. (KLB-2, Reg. No. 16899).
17. Carnelian bead; short, circular, disc. From a late level of Period II. (KLB-2, Reg. No. 564).
18. Agate bead; fragment, long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 464).
19. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 1627).
20. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 17365).
21. Agate bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 17753).
22. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 18194).
23. Agate bead; banded, long, barrel, circular. From a middle level of Period II. (KLB-2, Reg. No. 20008).
24. Agate bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 3125).
25. Carnelian bead; fragmentary, long, cylindrical, circular. From a late level of Period II. (KLB-1, Reg. No. 1856).
26. Carnelian eye bead; etched, short, disc. From a late level of Period II. (KLB-2, Reg. No. 105).





Fig. 16.12 *Semi-precious stone beads, surface collection*





Fig. 16.13 *Semi-precious stone beads*

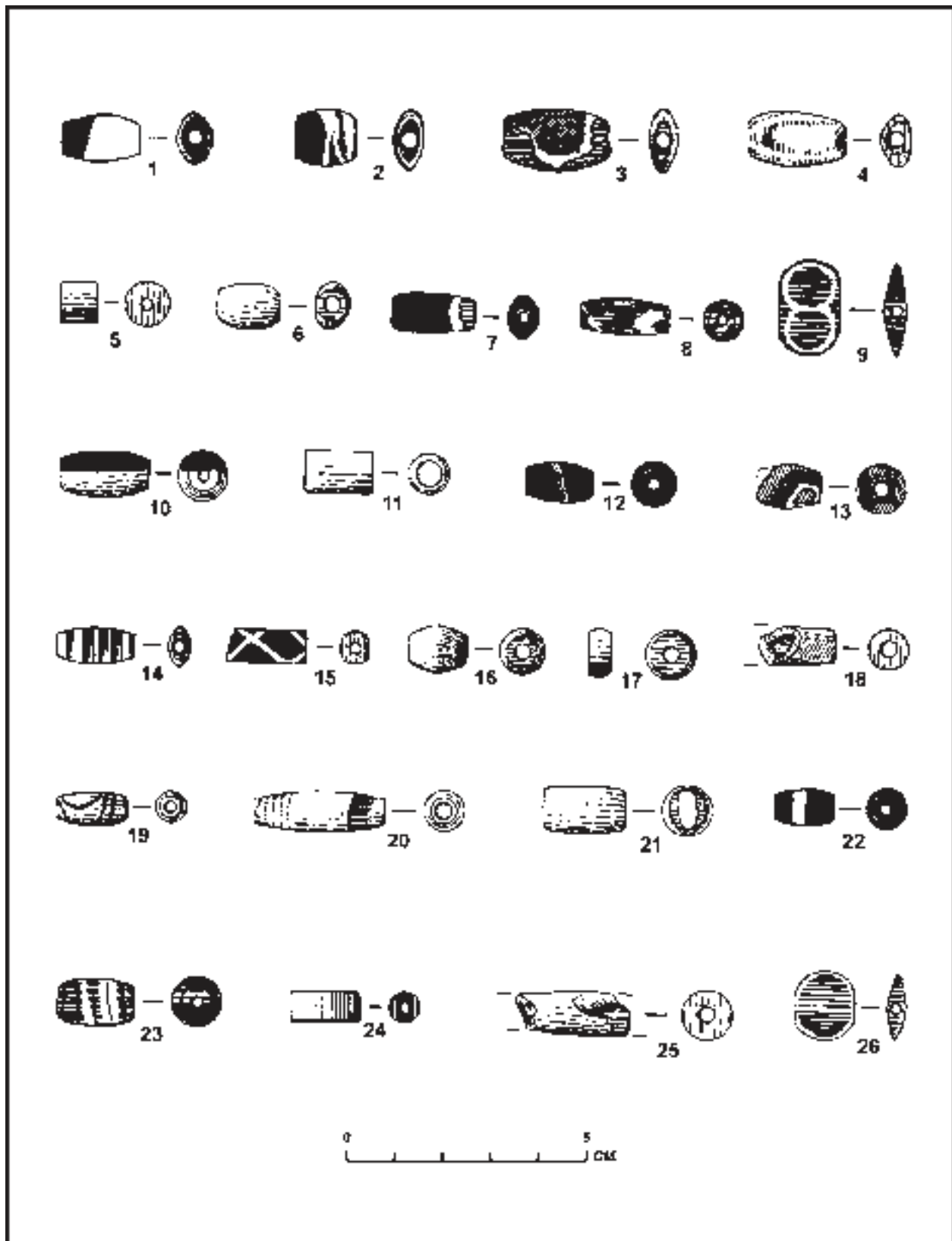


Fig. 16.13 (a) *Front and side views of semi-precious stone beads*

**Figs. 16.14 and 16.14(a)**

1. Agate bead; banded, long, barrel, circular. From an unstratified level of Period II. (KLB-1, Reg. No. 18783).
2. Agate bead; long, tubular, circular. Unstratified (KLB-, Reg. No. 12308).
3. Agate bead; banded, long, cylindrical, circular. From surface. (KLB-2, Reg. No. 18206).
4. Bone bead; long, barrel, lenticular-biconvex. From surface. (KLB-1, Reg. No. 20414).
5. Agate bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 312).
6. Agate bead; banded, long, cylindrical, circular. Unstratified. (KLB-1, Reg. No. 18208).
7. Agate bead; fragmentary, long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 18016).
8. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 349).
9. Faience bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 19118).
10. Carnelian bead; fragmentary, long, cylindrical, circular. From a middle level of Period II. (KLB-2, Reg. No. 1336).
11. Jasper bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 14918).
12. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 17549).
13. Agate bead; long, cylindrical. From a late level of Period II. (KLB-2, Reg. No. 489).
14. Jasper bead; long, barrel, circular. From a middle level of Period II. (KLB-1, Reg. No. 15647).
15. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 1093).
16. Agate bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 562).
17. Agate bead; banded, long, barrel, circular. Unstratified. (KLB-2, Reg. No. 11272).
18. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 124).
19. Agate bead; banded, long, barrel, roughly lenticular. From a late level of Period II. (KLB-2, Reg. No. 759).
20. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 11423).
21. Agate bead; long, barrel, circular. From a late level of Period II. (KLB-1, Reg. No. 1817).



Fig. 16.14 *Semi-precious stone beads*

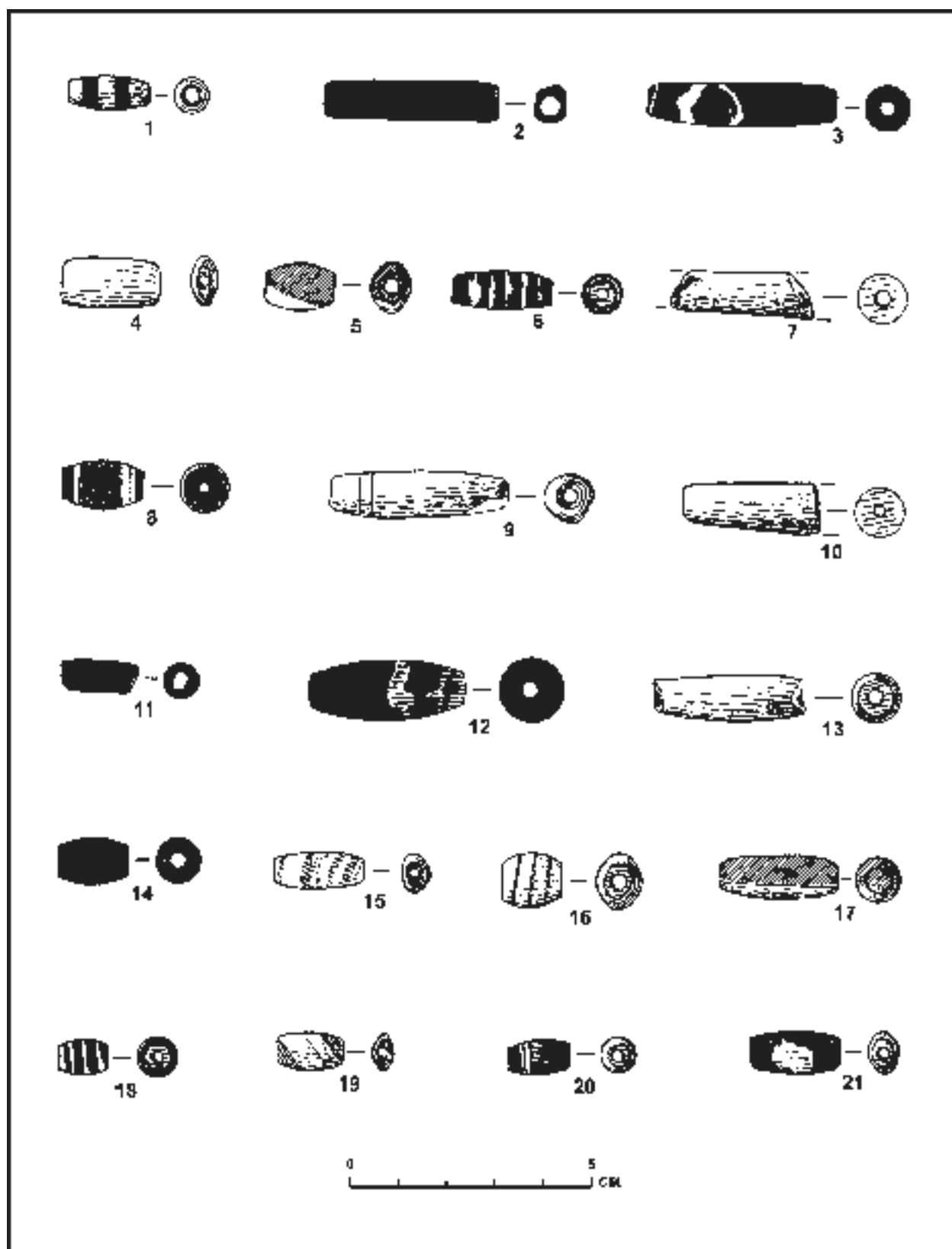


Fig. 16.14(a) *Front and side views of semi-precious stone beads*

**Figs. 16.15 and 16.15(a)**

1. Agate bead; long, tubular, barrel, circular. From a late level of Period II. (KLB-1, Reg. No. 14564).
2. Carnelian eye bead; etched, circular, lenticular. From a middle level of Period II. (KLB-2, Reg. No. 14475).
3. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 17365).
4. Agate bead; fragmentary, long, barrel, circular. From a late level of Period II. (KLB-1, Reg. No. 15324).
5. Agate bead; banded, long, rectangular, square. From a late level of Period II. (KLB-2, Reg. No. 13720).
6. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 15081).
7. Agate bead; standard, bicone, circular. From a late level of Period II. (KLB-2, Reg. No. 18194).
8. Carnelian bead; long, tubular, circular. From a late level of Period II. (KLB-, Reg. No. 20837).
9. Agate bead; long, cylindrical, circular. From a late level of Period II. (KLB-1, Reg. No. 14563).
10. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 17949).
11. Agate bead; banded, long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-2, Reg. No. 18295).
12. Agate bead; Standard, rectangular, biconvex lenticular. From a late level of Period II. (KLB-2, Reg. No. 15736).
13. Agate bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 16695).
14. Jasper bead; long, tubular, circular. From a late level of Period II. (KLB-2, Reg. No. 1093).
15. Agate bead; decorated with series of roundels, each within a lozenge frame, long, lenticular, biconvex. From a late level of Period II. (KLB-2, Reg. No. 13060).

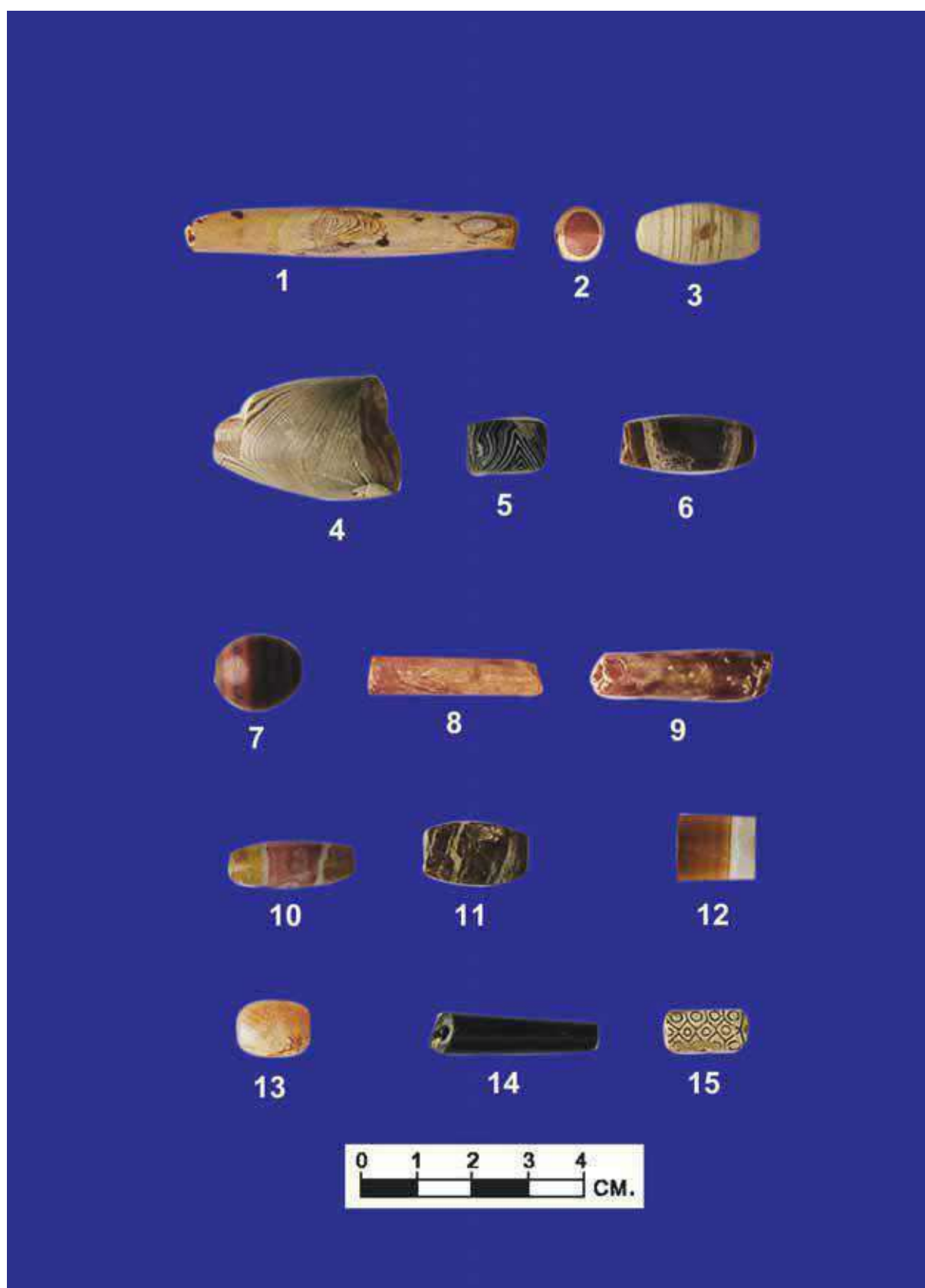


Fig. 16.15 Semi-precious stone beads



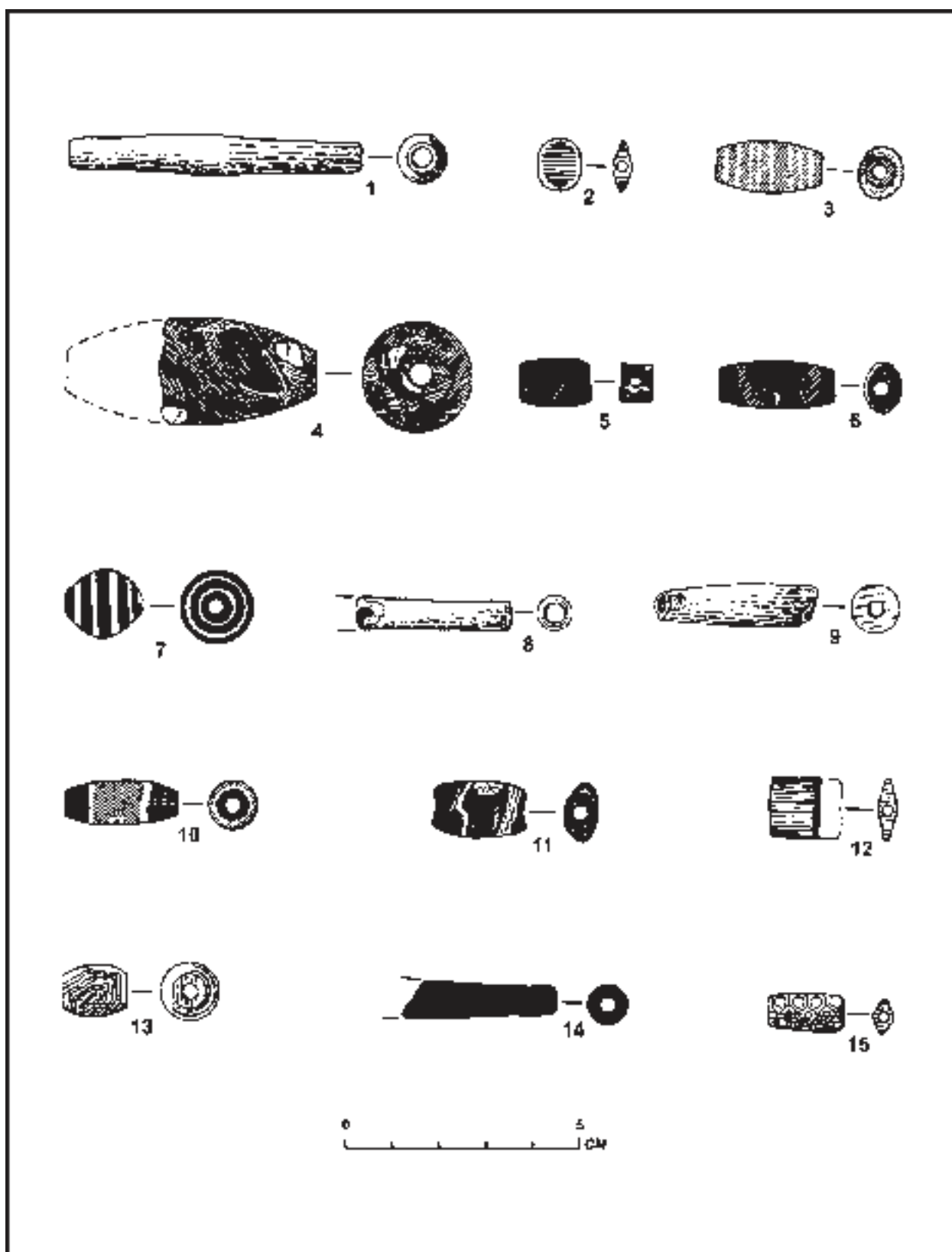


Fig. 16.15(a) *Front and side views of semi-precious stone beads*

**Figs. 16.16 and 16.16(a)**

1. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 17402).
2. Agate bead; long, tubular, circular. Subsequently an attempt was made to turn it into a spacer, elevation bears unfinished marks of drilling. (KLB-2, Reg. No. 11272).
3. Agate bead; standard, roughly square. From a late level of Period II. (KLB-2, Reg. No. 1093).
4. Agate bead; long, bicone, barrel like outline, lenticular in section. From a late level of Period II. (KLB-2, Reg. No. 18076).
5. Carnelian bead; fragmentary, long, tubular, circular. From a late level of Period II. (KLB-1, Reg. No. 15833).
6. Agate bead; banded, long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-1, Reg. No. 18908).
7. Agate bead; banded, long, barrel, circular. From surface of Period II. (KLB-1, Reg. No. 16202).
8. Agate bead; banded, long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-2, Reg. No. 10758).
9. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-1, Reg. No. 11423).
10. Carnelian bead; standard, barrel, circular. From a late level of Period II. (KLB-1, Reg. No. 11423).
11. Agate bead; banded, long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 18194).

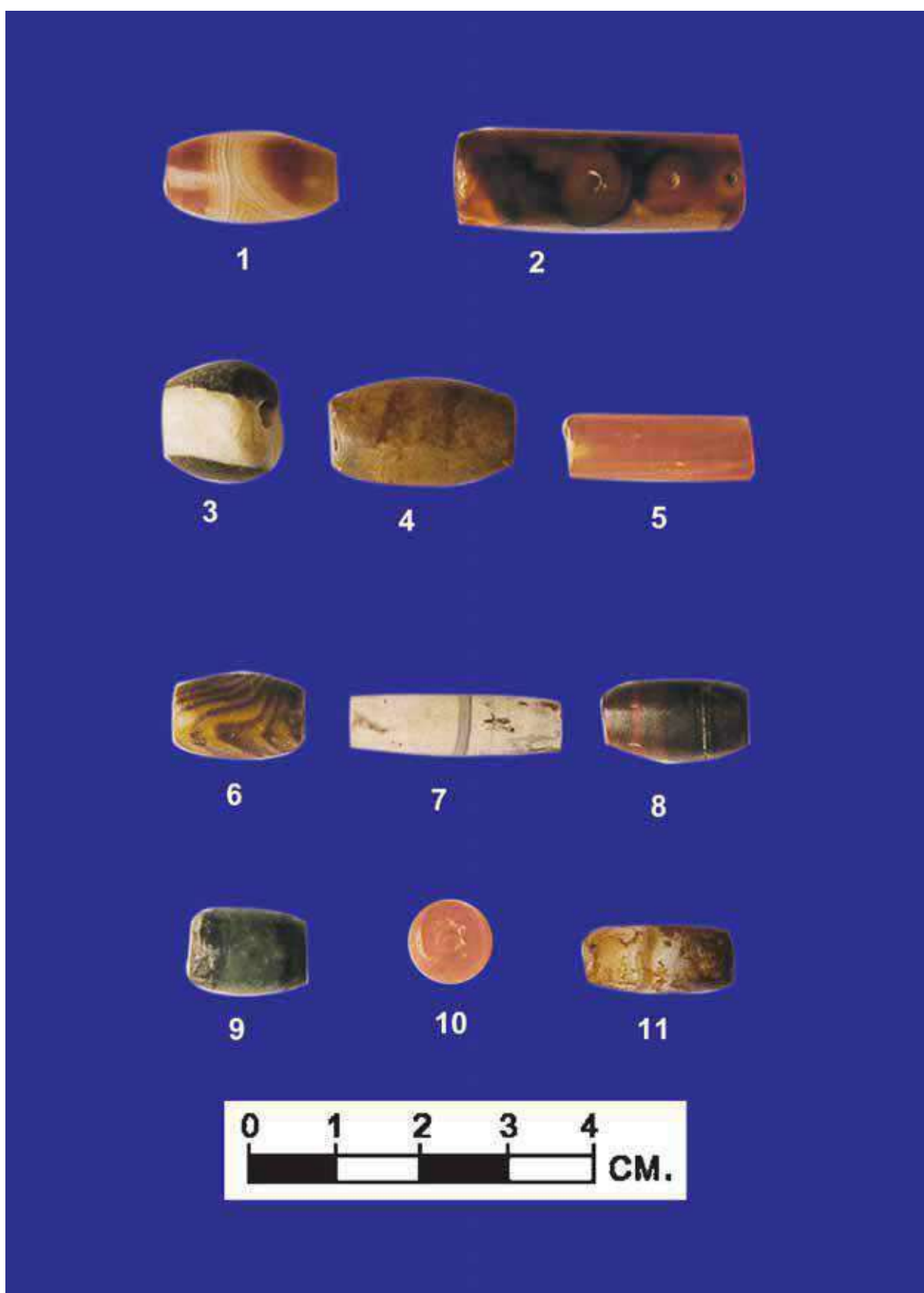


Fig. 16.16 *Semi-precious stone beads*

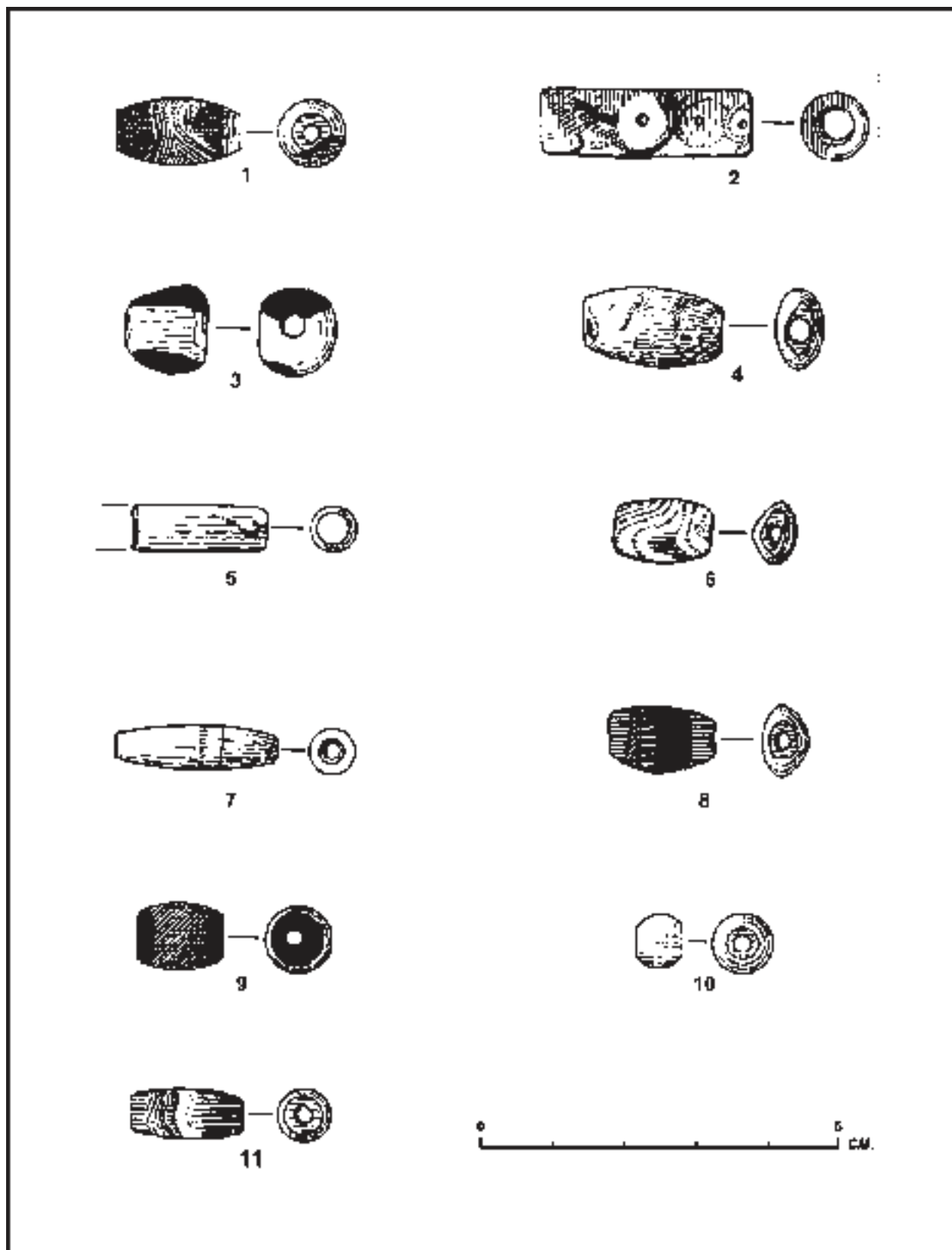


Fig. 16.16(a) *Front and side views of semi-precious stone beads*

**Fig. 16.17**

Lots of lapis lazuli beads have been found from surface or various levels of Period II at KLB-1 and 2. It is an extremely rare mineral, which must have been imported from Afghanistan. Amongst these, following ten beads are described below :

1. Lapis lazuli, bead; long, cylindrical, circular. From an early level of Period II. (KLB-1, Reg. No. 19293).
2. Lapis lazuli, bead; long, cylindrical, circular. From an early level of Period II. (KLB-1, Reg. No. 19293).
3. Lapis lazuli, bead; short, circular, disc bead. From a middle level of Period II. (KLB-2, Reg. No. 18169).
4. Lapis lazuli, bead; short, barrel, circular. From a late level of Period II. (KLB-1, Reg. No. 19209).
5. Lapis lazuli, bead; long, cylindrical, circular. From an early level of Period II. (KLB-2, Reg. No. 19877).
6. Lapis lazuli, bead; long, barrel, circular. From an early level of Period II. (KLB-2, Reg. No. 19933).
7. Lapis lazuli, pendant; standard, trapezoid, lenticular. From an early level of Period II. (KLB-2, Reg. No. 10615).
8. Lapis lazuli, bead; long, cylindrical, circular. From an early level of Period II. (KLB-2, Reg. No. 9521).
9. Lapis lazuli, bead; long, cylindrical, circular. From a late level of Period II. (KLB-2, Reg. No. 11881).
10. Lapis lazuli, bead; partly broken long, cylindrical, circular. From an early level of Period II. (KLB-2, Reg. No. 20188).

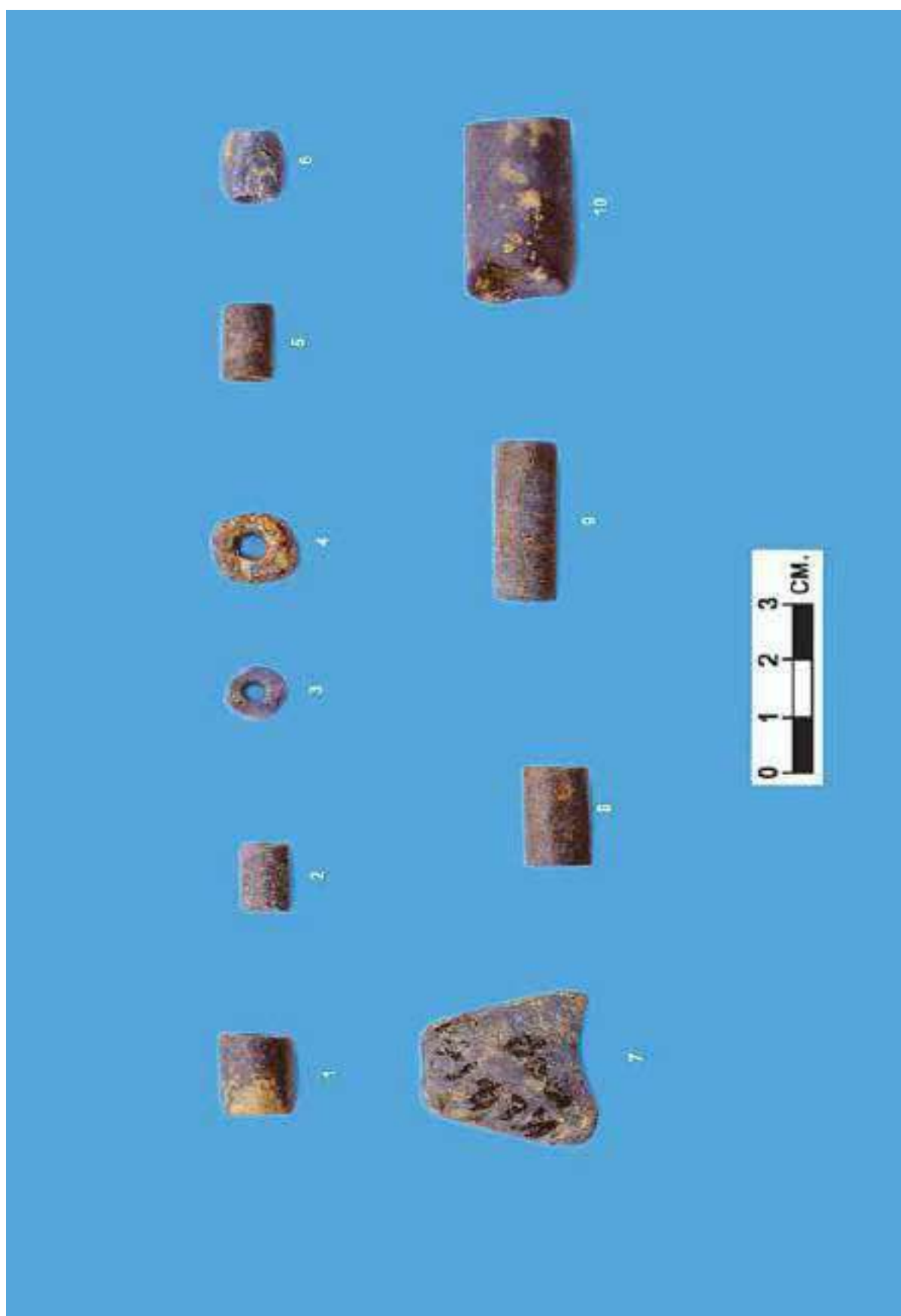


Fig. 16.17 *Lapis lazuli* beads

### **3. STEATITE BEADS**

#### **Figs. 16.18 and 16.18(a)**

1. Steatite bead; long, cylindrical, circular. From a late level of Period II. (KLB-1, Reg. No. 753).
2. Steatite bead; short, barrel like outline, lenticular in section. From a late level of Period II. (KLB-2, Reg. No. 573).
3. Steatite bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 2276).
4. Steatite bead; standard, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 424).
5. Steatite pendant; rectangular, decorated with incised chequer pattern. From a late level of Period II. (KLB-1, Reg. No. 2938).
6. Steatite bead; disc, circular. From a late level of Period II. (KLB-2, Reg. No. 16279).
7. Steatite bead; short, lozenge, lenticular. From a middle level of Period II. (KLB-2, Reg. No. 19567).
8. Shell; disc, circular. From a late level of Period II. (KLB-1, Reg. No. 5902).
9. Steatite bead; long, barrel, lenticular. From a late level of Period II. (KLB-2, Reg. No. 7825).
10. Steatite bead; long, cylindrical, circular. From surface. (KLB-2, Reg. No. 5600).
11. Steatite bead; disc, circular. From a late level of Period II. (KLB-1, Reg. No. 5597).
12. Steatite bead; standard, globular, circular. From a middle level of Period II. (KLB-2, Reg. No. 20845).
13. Steatite bead; long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-1, Reg. No. 12301).
14. Steatite bead; long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-1, Reg. No. 484).
15. Steatite bead; long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-2, Reg. No. 21081).



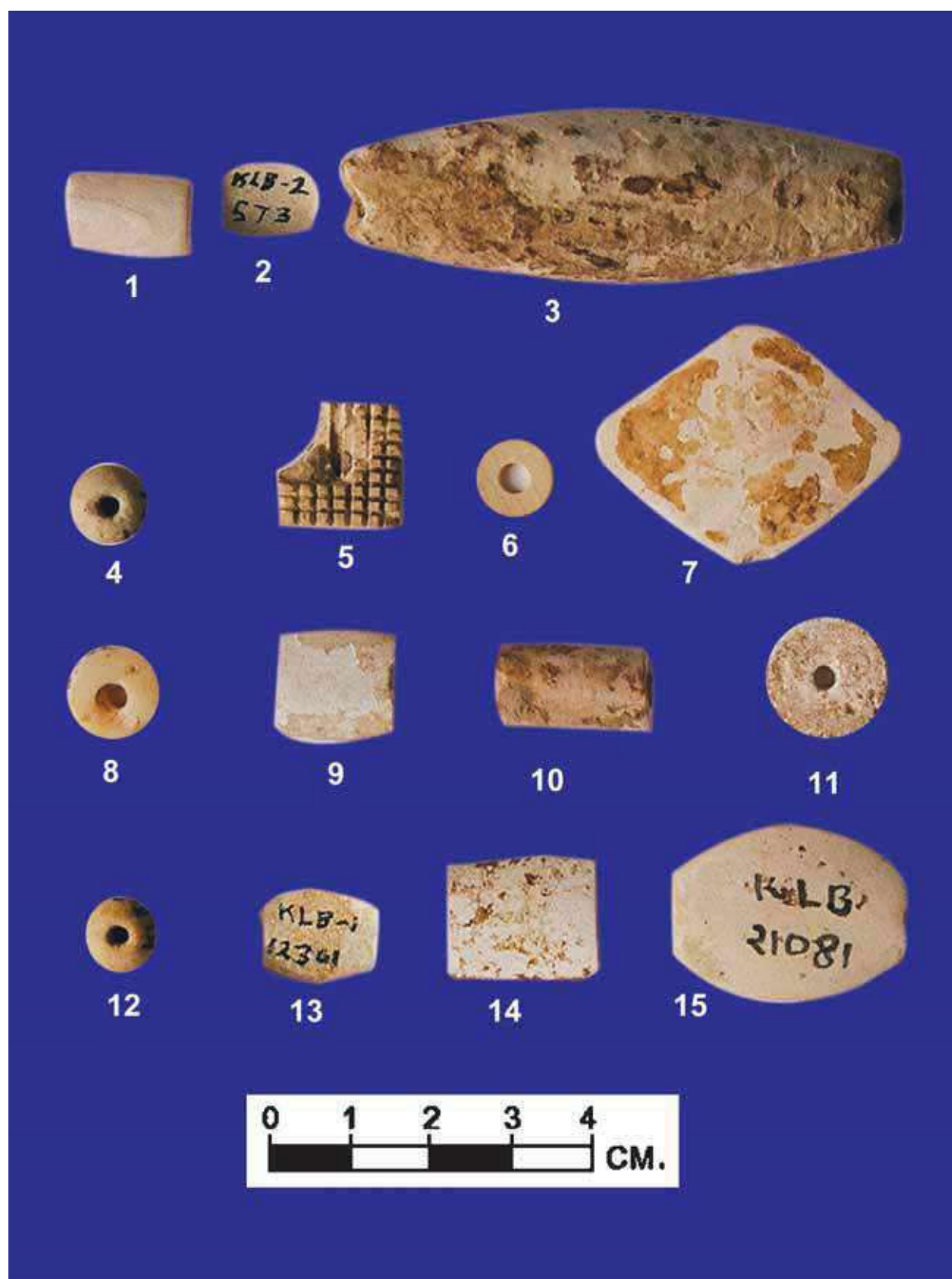


Fig. 16.18 *Steatite beads*

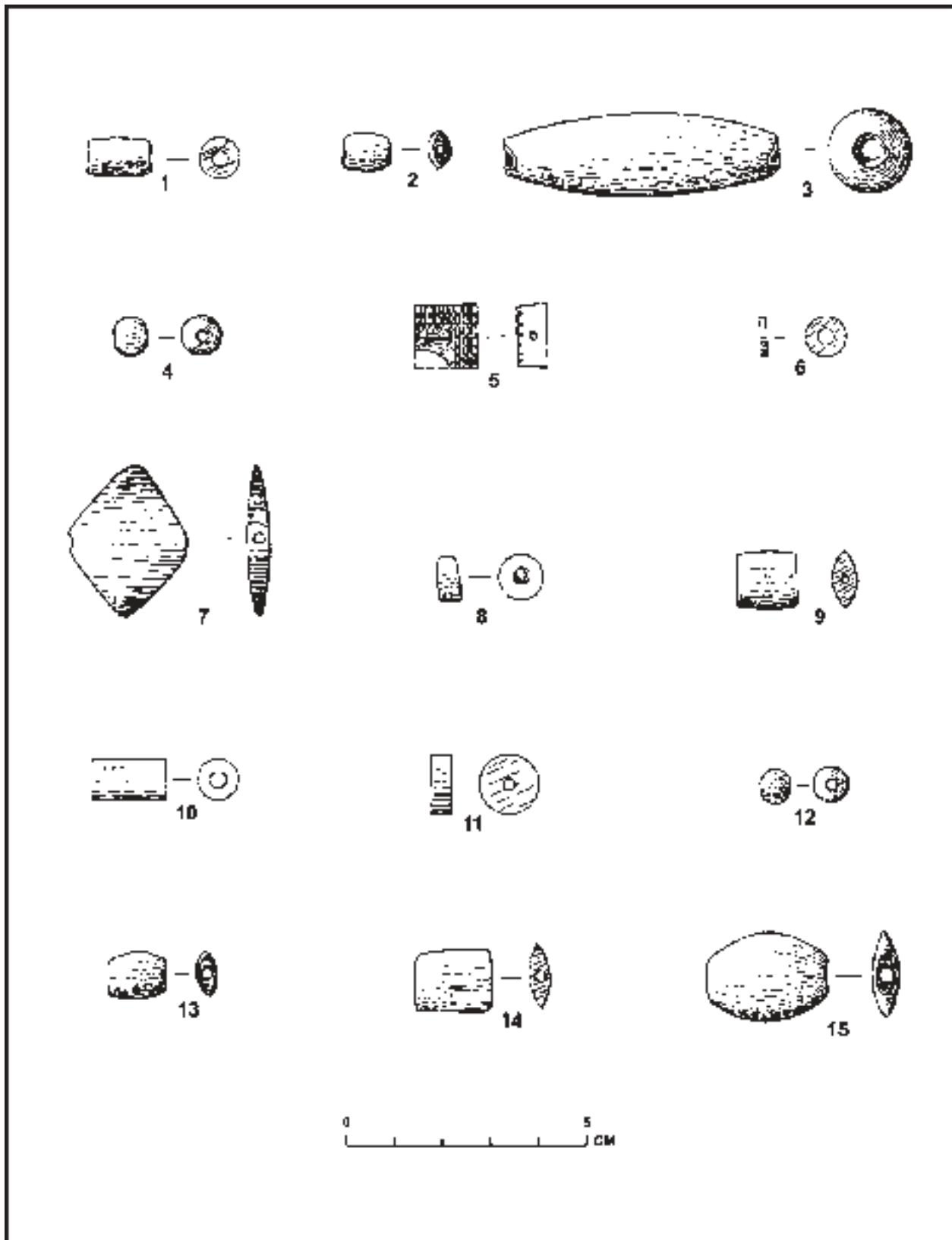


Fig. 16.18(a) *Front and side views of steatite beads*

**Figs. 16.19 and 16.19(a)**

1. Steatite bead; standard, globular, circular. From a late level of Period II. (KLB-1, Reg. No. 19354).
2. Steatite bead; standard, globular, circular. From a late level of Period II. (KLB-1, Reg. No. 774).
3. Steatite bead; standard, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 712).
4. Steatite bead; standard, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 19205).
5. Steatite bead; disc, circular. From an early level of Period II. (KLB-2, Reg. No. 1114).
6. Steatite bead; standard, globular, circular. From an early level of Period II. (KLB-1,2, Reg. No. 1032).
7. Shell bead; short, circular, disc. From a late level of Period II. (KLB-1, Reg. No. 6288).
8. Steatite bead; short, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 21032).
9. Faience bead; short, globular, circular. From a late level of Period II. (KLB-1, Reg. No. 14818).
10. Steatite bead; long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-1, Reg. No. 630).
11. Steatite bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 579).
12. Steatite bead; disc, circular. From a late level of Period II. (KLB-1, Reg. No. 4734).
13. Steatite bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 2579).
14. Steatite bead; short, globular, circular. From an early level of Period II. (KLB-2, Reg. No. 4737).
15. Steatite bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 11720).
16. Steatite bead; short, globular, circular. From a middle level of Period II. (KLB-2, Reg. No. 24755).
17. Steatite bead; standard, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 14731).
18. Steatite bead; standard, globular, circular. From an early level of Period II. (KLB-2, Reg. No. 19934).
19. Steatite bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 21045).
20. Faience bead; short, disc, circular. From a late level of Period II. (KLB-2, Reg. No. 542).
21. Steatite bead; long, cylindrical, circular. From a late level of Period II. (KLB-1, Reg. No. 497).
22. Steatite bead; disc, circular. From a late level of Period II. (KLB-2, Reg. No. 1038).
23. Steatite bead; disc, circular. From a late level of Period II. (KLB-2, Reg. No. 1039).
24. Steatite bead; disc, circular. From a late level of Period II. (KLB-2, Reg. No. 488).
25. Steatite bead; long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-1, Reg. No. 335).
26. Steatite bead; disc, circular. From a late level of Period II. (KLB-1, Reg. No. 325).

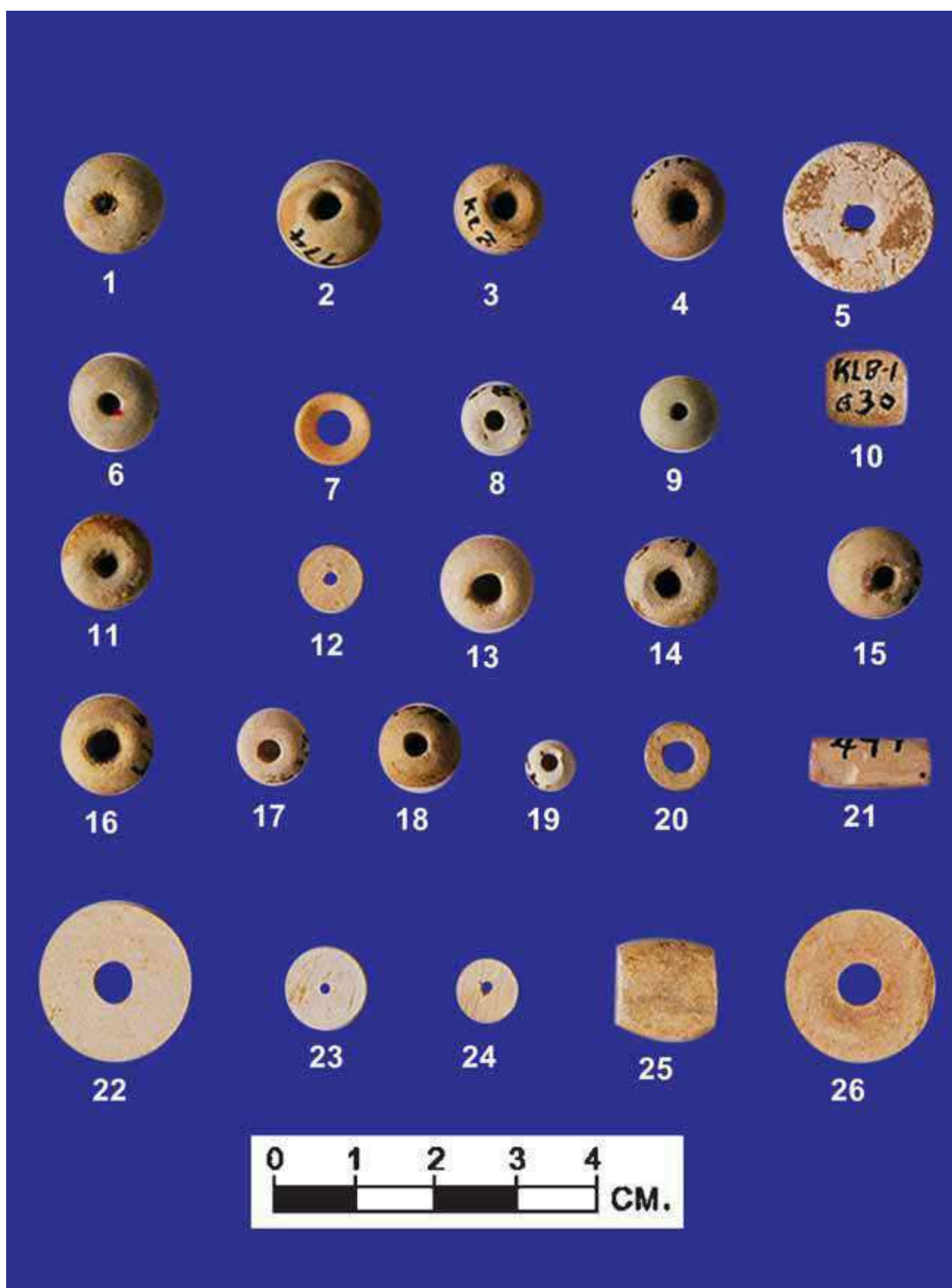


Fig. 16.19 Steatite beads

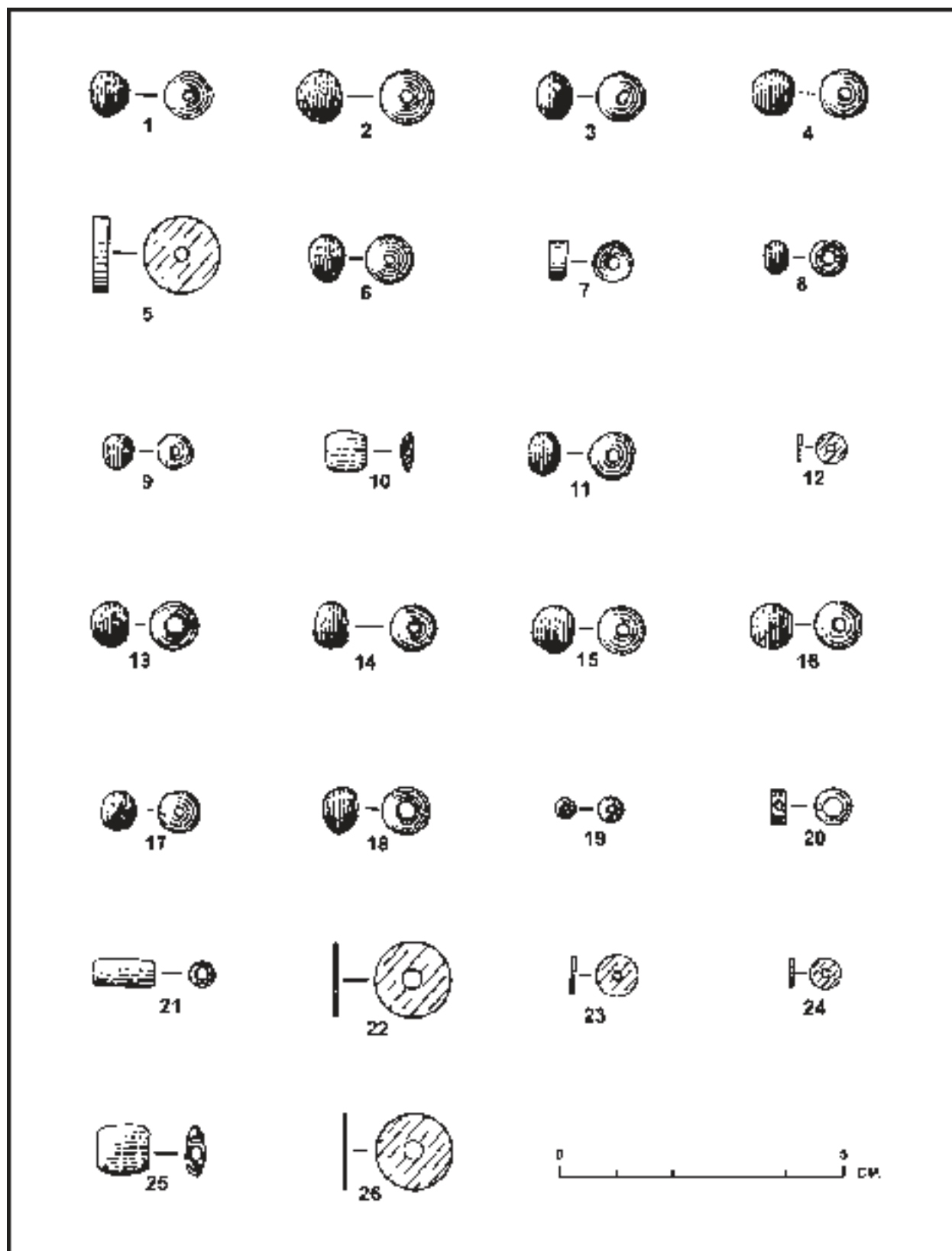


Fig. 16.19(a) *Front and side views of steatite beads*

# **STEATITE, SHELL AND FAIENCE BEADS/INLAY**

## **Figs. 16.20 and 16.20(a)**

1. Steatite, bead; long, barrel like outline, lenticular in section. From a late level of Period II. (KLB-1, Reg. No. 21913).
2. Steatite, bead; short, barrel like outline, lenticular in section. Unstratified. (KLB-2, Reg. No. 21914).
3. Steatite, bead; short, barrel like outline, lenticular in section. Unstratified. (KLB-1, Reg. No. 21915).
4. Steatite, bead; short, barrel like outline, lenticular in section. From surface. (KLB-1, Reg. No. 21916).
5. Steatite, bead; long, barrel, decorated with a dot in circles design in relief. From a late level of Period II. (KLB-2, Reg. No. 21917).
6. Steatite, bead; long, barrel like outline, lenticular in section. From surface. (KLB-2, Reg. No. 21918).
7. Steatite, bead; long, barrel like outline, lenticular in section. Unstratified (KLB-1, Reg. No. 21919).
8. Steatite, bead; long barrel, circular, etched with circle within circles Unstratified. (KLB-2, Reg. No. 21921).
9. Steatite, bead; long, tubular, circular. From surface. (KLB-2, Reg. No. 21920).
10. Steatite, bead; long, barrel, circular. From a late level of Period II. (KLB-2, Reg. No. 21922).
11. Steatite, bead; long, cylindrical, circular. From a middle level of Period II. (KLB-1, Reg. No. 21923).
12. Steatite, bead; etched, short, barrel like outline, lenticular in section. From a late level of Period II. (KLB-2, Reg. No. 21924).
13. Shell, inlay; with *Sarvato bhadra* design. Unstratified. (KLB-2, Reg. No. 21925).
14. Faience, bead; cog wheel-shaped with teeth. From surface. (KLB, Reg. No. 660).
15. Steatite, bead; long, barrel like outline, lenticular in section. Unstratified. (KLB , Reg. No. 21926).
16. Steatite, bead; standard, globular, circular. From a late level of Period II. (KLB , Reg. No. 21927).
17. Steatite, bead; standard, globular, circular. Unstratified. (KLB , Reg. No. 21928).
18. Steatite, bead; disc, circular with incised circle around the transverse hole. From a middle level of Period II. (KLB-1, Reg. No. 21929).
19. Steatite, bead; discular, circular with incised circle around the transverse hole. From a middle level of Period II. (KLB-1, Reg. No. 21930).
20. Steatite, bead; disc, circular. Unstratified (KLB-1, Reg. No. 21931).
21. Steatite, bead; disc, circular. From surface. (KLB-2, Reg. No. 21932).
22. Steatite, bead; short, barrel, circular. Unstratified. (KLB-2, Reg. No. 21933).
23. Steatite, bead; discular. Unstratified (KLB-2, Reg. No. 21934).
24. Steatite, bead; shrot, barrel, circular. Unstratified. (KLB-1, Reg. No. 21938).
25. Steatite, spacer; damaged with double holes, barrel like outline, lenticular in section. Unstratified. (KLB-2, Reg. No. 21935).
26. Steatite, bead; disc, circular. Unstratified. (KLB-2, Reg. No. 21936).
27. Steatite, bead; disc, circular. From a late level of Period II. (KLB-2, Reg. No. 21937).



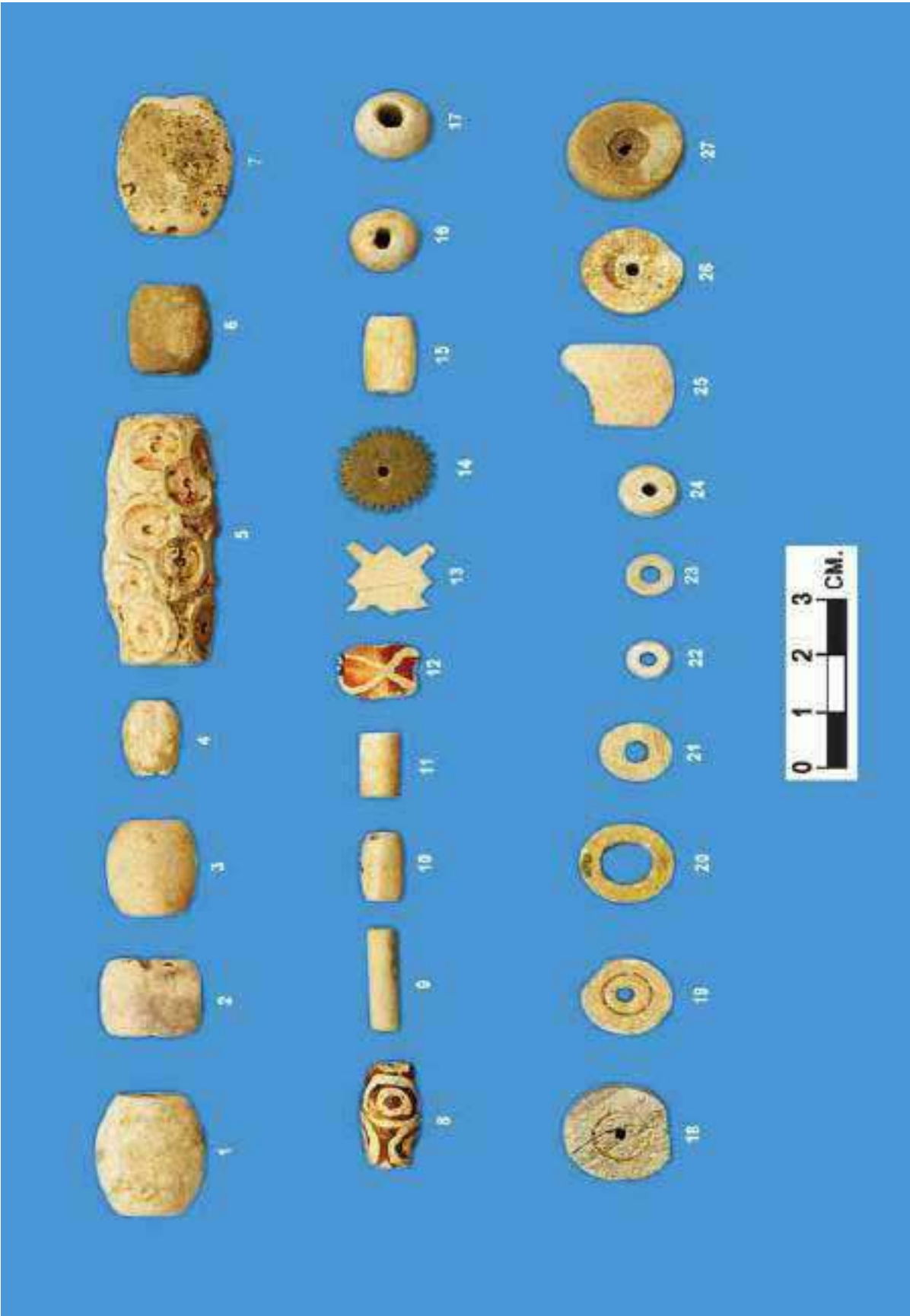


Fig. 16.20 Steatite, shell and faience beads/inlay



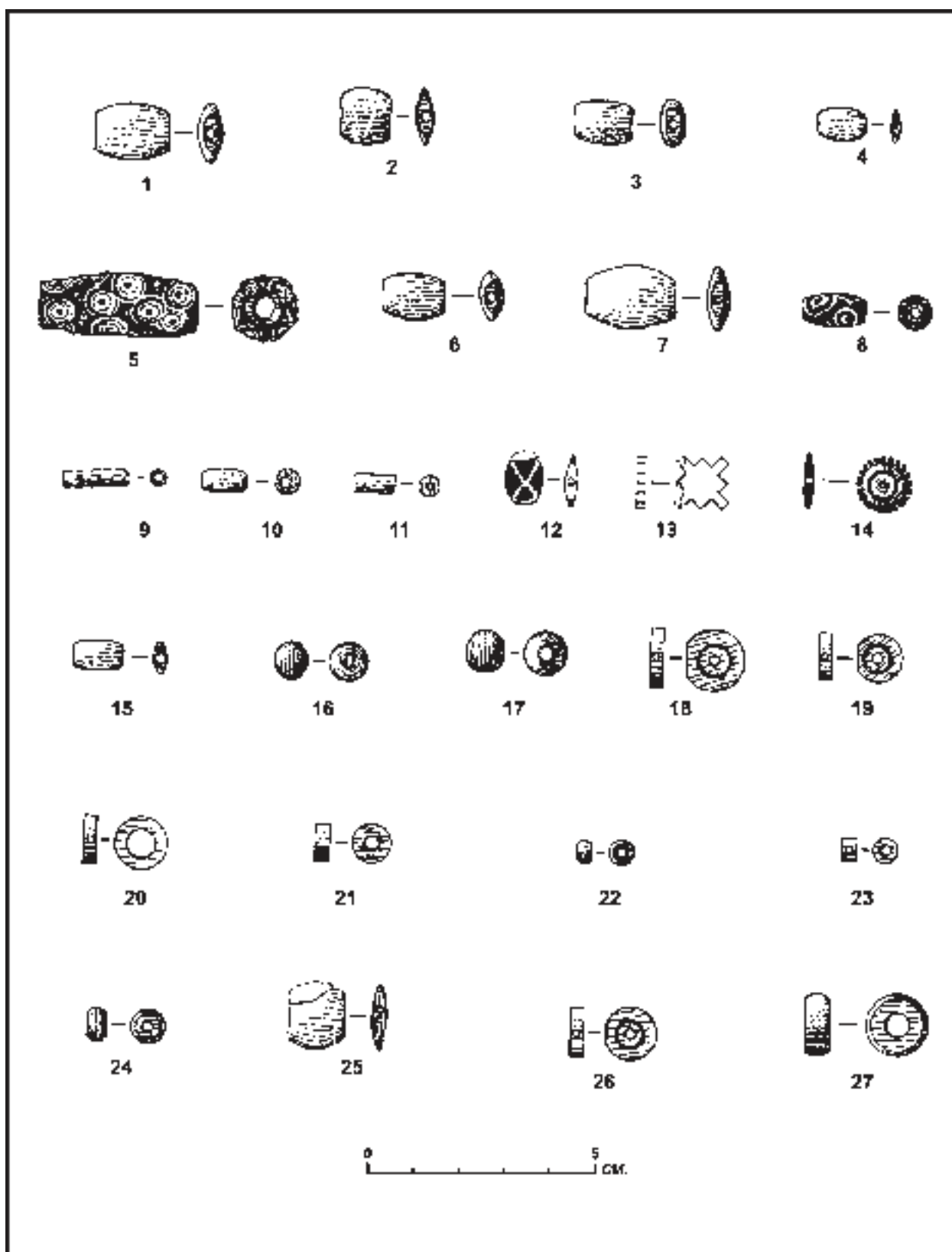


Fig. 16.20(a) Front and side views of steatite, shell and faience beads-obliq inlay

**STEATITE BEADS, PENDANTS AND BUTTON**

**Fig. 16.21**

1. Steatite, buckle-shaped pendant; rectangular with curved end. Unstratified. (KLB, Reg. No. 21939 N.S.).
2. Steatite, bead; disc, circular with an incised circle around the central hole. Unstratified. (KLB, Reg. No. 21940 N.S.).
3. Steatite, bead; long, barrel, circular decorated with incised lines. Unstratified. (KLB, Reg. No. 21941 N.S.).
4. Steatite, bead; long, barrel, decorated with incised herring-bone design. Unstratified. (KLB, Reg. No. 21942 N.S.).
5. Steatite; dome-shaped button with a transverse hole for passing the thread. Unstratified. (KLB, Reg. No. 21939 N.S.).
6. Steatite; spiral, tooth-shaped pendant. Unstratified. (KLB, Reg. No. 21944 N.S.).

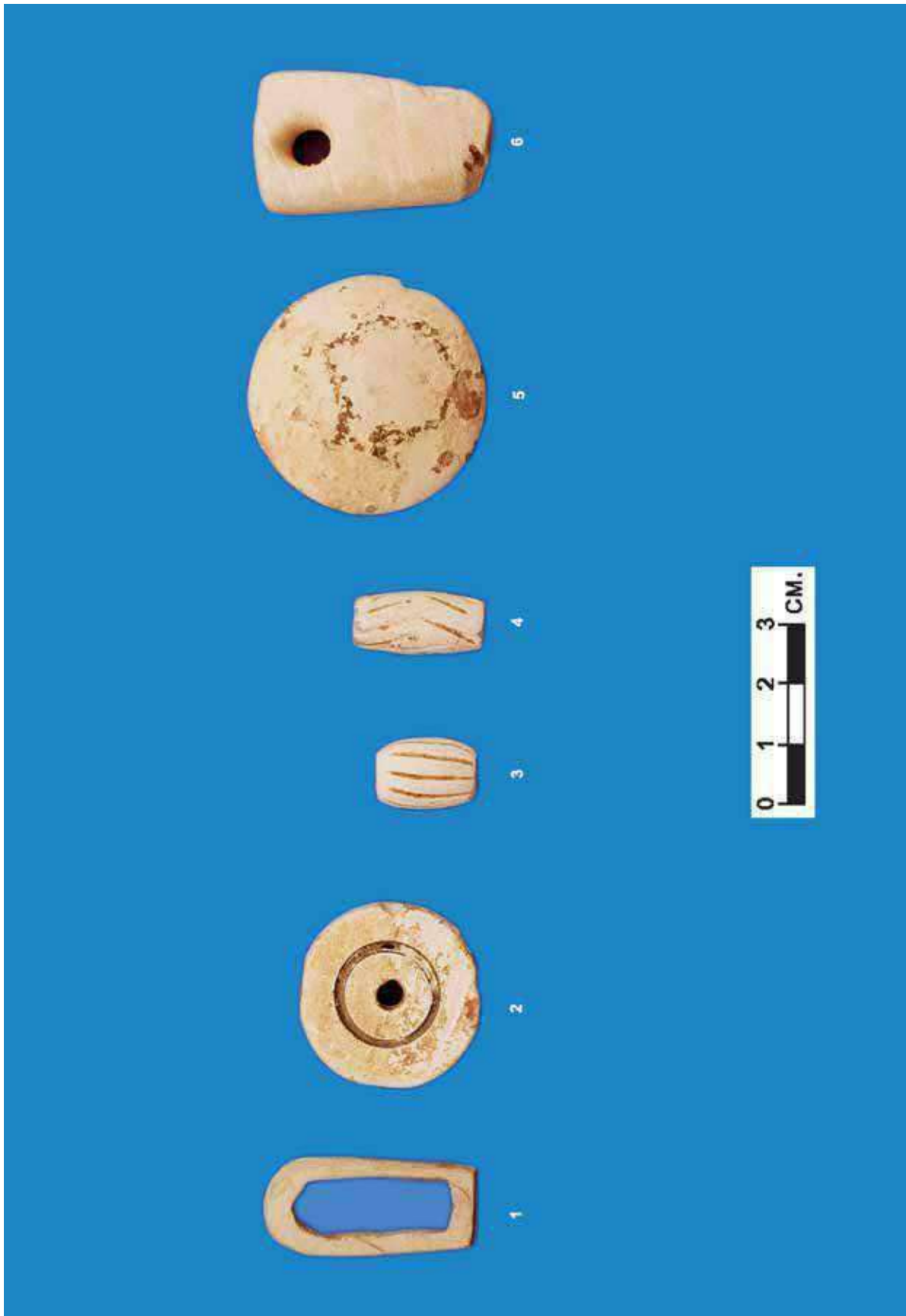


Fig. 16.21 Stearite beads, pendants and button

**4. COPPER SPACER AND BEADS****Figs. 16.22 and 16.22(a)**

1. Copper spacer bead; flat, rectangular with Twelve holes. From a late level of Period II. (KLB-2, Reg. No. 14501).
2. Copper bead; long, tubular, circular. From a late level of Period II. (KLB-1, Reg. No. 6813).
3. Copper bead; hollow, biconvex, circular. From a late level of Period II. (KLB-2, Reg. No. 16499).
4. Copper bead; short, cylindrical. From a late level of Period II. (KLB-1, Reg. No. 6295).
5. Copper bead; standard, barrel. From a late level of Period II. (KLB-2, Reg. No. 2742).
6. Copper bead; short, barrel. From a late level of Period II. (KLB-2, Reg. No. 9660).
7. Copper bead; standard, barrel. From a late level of Period II. (KLB-2, Reg. No. 14580).
8. Copper bead; standard, gadrooned. From a late level of Period II. (KLB-2, Reg. No. 9555).
9. Copper bead; long, barrel. From surface. (KLB-2, Reg. No. 15057).
10. Copper bead; short, barrel. From a middle level of Period II. (KLB-2, Reg. No. 9554).
11. Copper bead; long, tubular. From a late level of Period II. (KLB-2, Reg. No. 272).
12. Copper bead; short, barrel. From a middle level of Period II. (KLB-2, Reg. No. 15005).
13. Copper bead; short, cylindrical. From a late level of Period II. (KLB-2, Reg. No. 17660).
14. Copper bead; short, cylindrical. From a late level of Period II. (KLB-2, Reg. No. 10538).
15. Copper bead; standard, barrel. From a middle level of Period II. (KLB-1, Reg. No. 12648).
16. Copper bead; standard, globular. From a late level of Period II. (KLB-2, Reg. No. 9712).
17. Copper bead; standard, barrel. From a late level of Period II. (KLB-2, Reg. No. 1126).
18. Copper bead; standard, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 1352).
19. Copper bead; standard, barrel. From a late level of Period II. (KLB-2, Reg. No. 91).
20. Copper bead; short, disc, circular. From a late level of Period II. (KLB-1, Reg. No. 1296).
21. Copper bead; short, circular, barrel. From a late level of Period II. (KLB-1, Reg. No. 7068).



Fig. 16.22 Copper spacer and beads

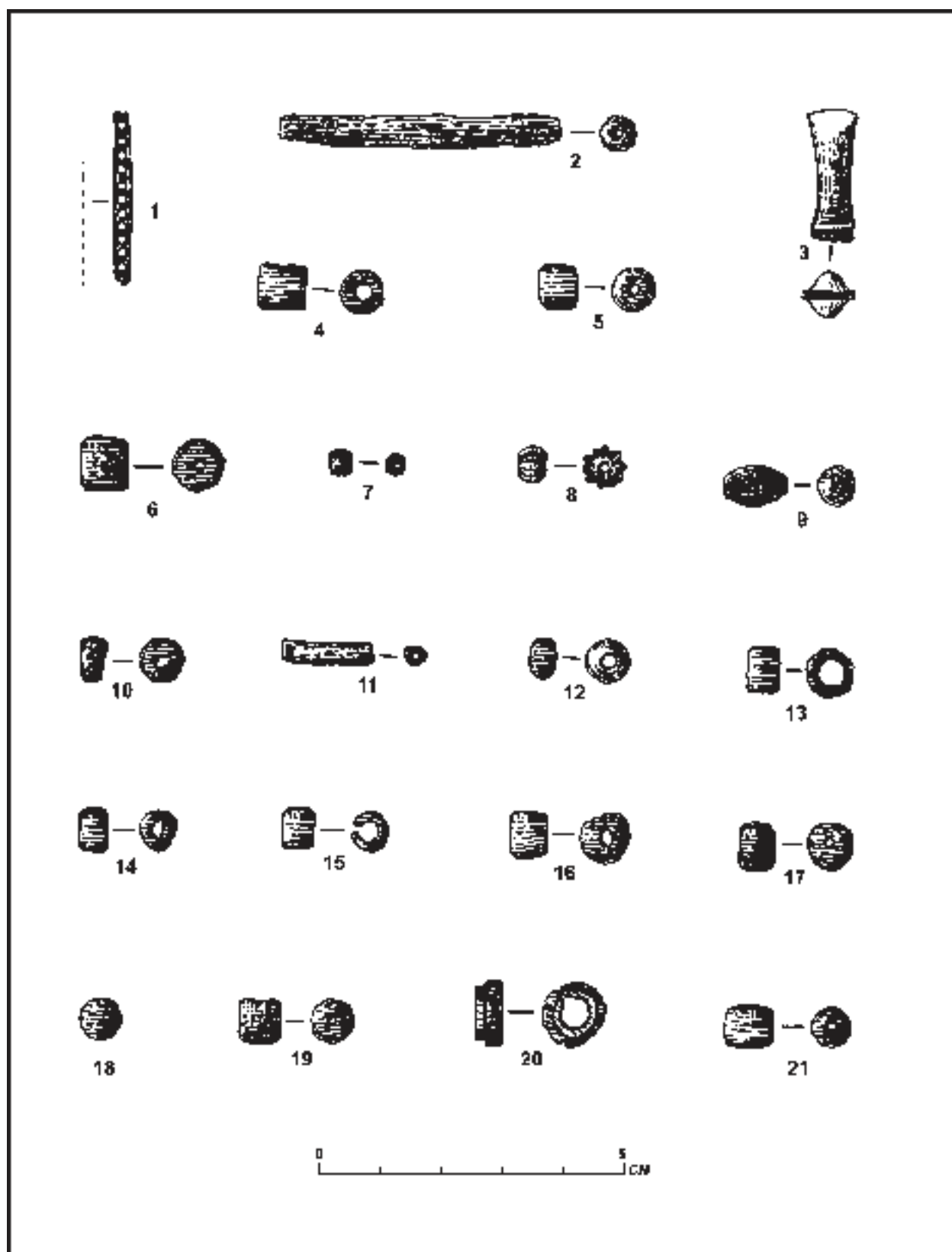


Fig. 16.22(a) Front and side views of copper spacer and beads

## **5. FAIENCE BEADS**

### **Figs. 16.23 and 16.23(a)**

1. Faience bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 6488).
2. Faience bead; short, globular, circular. From a late level of Period II. (KLB-1 & 2, Reg. No. 1032).
3. Faience bead; long, barrel. From a late level of Period II. (KLB-1, Reg. No. 803).
4. Faience bead; short, circular. From a late level of Period II. (KLB-1 & 2, Reg. No. 625).
5. Faience bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 713).
6. Faience bead; short, barrel. From a late level of Period II. (KLB-2, Reg. No. 936).
7. Faience bead; standard, barrel. From a late level of Period II. (KLB-1, Reg. No. 71).
8. Faience bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 13032).
9. Faience bead; tiny, cylindrical. From a late level of Period II. (KLB-1, Reg. No. 6596).
10. Faience bead; short, globular, circular. From a late level of Period II. (KLB-1, Reg. No. 538).
11. Faience bead; standard, globular, circular. From a late level of Period II. (KLB-1, Reg. No. 24).
12. Faience bead; long, tubular. From a late level of Period II. (KLB-1, Reg. No. 72).
13. Faience bead; long, tubular. From a late level of Period II. (KLB-1, Reg. No. 593).
14. Faience bead; standard, double circular. From a late level of Period II. (KLB-1, Reg. No. 768).
15. Faience bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 1320).
16. Faience bead; long, tubular, circular. From a late level of Period II. (KLB-1, Reg. No. 1293).
17. Faience bead; standard, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 14791).
18. Faience bead; standard, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 579).
19. Faience bead; short, disc, circular. From a late level of Period II. (KLB-1, Reg. No. 198).
20. Faience bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 14791).
21. Faience bead; short, disc circular. From a late level of Period II. (KLB-2, Reg. No. 781).
22. Faience bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 276).
23. Faience bead; short, globular, circular. From a late level of Period II. (KLB-2, Reg. No. 11869).
24. Faience bead; long, tubular, circular. From a late level of Period II. (KLB-1, Reg. No. 6777).
25. Faience bead; standard, tubular, circular. From a late level of Period II. (KLB-1, Reg. No. 2825).
26. Faience bead ; standard, tubular, circular. From a late level of Period II. (KLB-1, Reg. No. 2410).



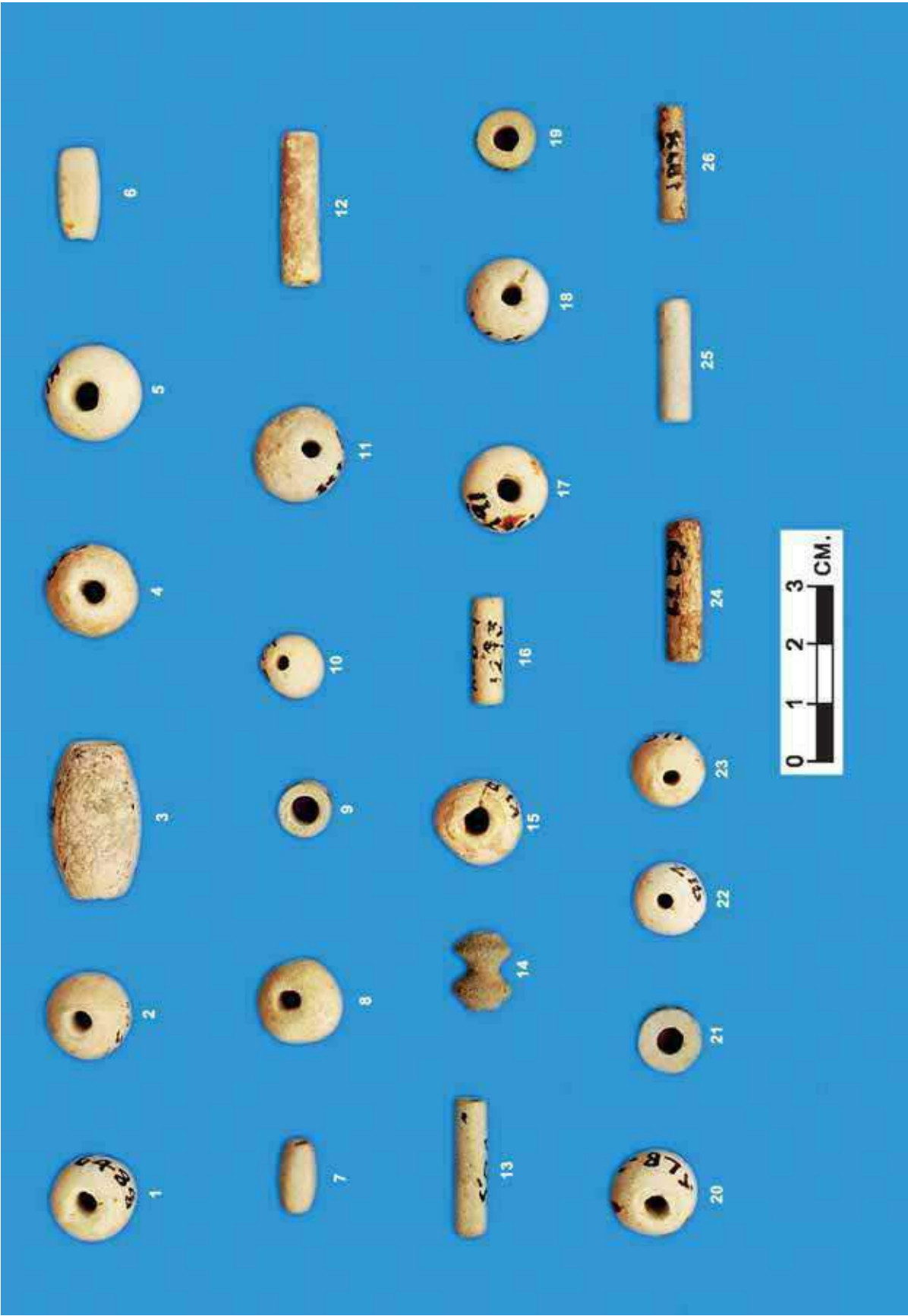


Fig. 16.23 Faience beads

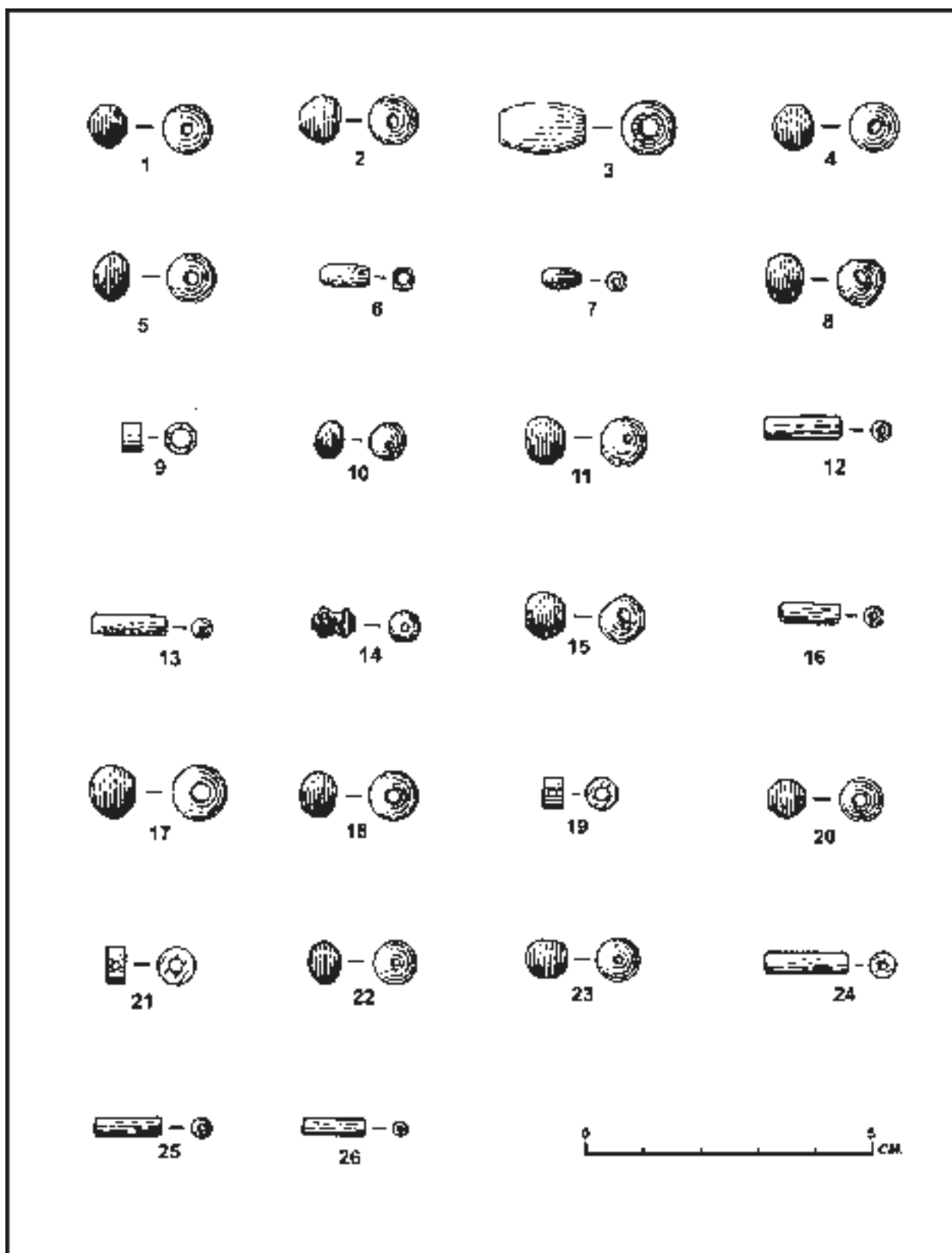


Fig. 16.23(a) *Front and side views of faience beads*

**TERRACOTTA BEADS FOR  
DECORATING ANIMALS**

**Fig. 16.24**

1. Terracotta bead; domical, circular. From a late level of Period II. (KLB-2, Reg. No. 17331).
2. Terracotta bead; circular, has a Large hole. From a late level of Period II. (KLB-1, Reg. No. 18463).
3. Terracotta bead; circular, has a Large hole. From a late level of Period II. (KLB-1, Reg. No. 9662).
4. Terracotta bead; circular, has a Large hole. From a late level of Period II. (KLB-1, Reg. No. 10027).
5. Terracotta bead; fragmentary, domical, circular. From a late level of Period II. (KLB-1, Reg. No. 10027).
6. Terracotta bead; circular, has a Large hole. From a late level of Period II. (KLB-1, Reg. No. 18722).
7. Terracotta annular bead; circular, has a Large hole. From a late level of Period II. (KLB-1, Reg. No. 20234).
8. Terracotta annular bead; decorated with incised dots, circular, has a Large hole. From a late level of Period II. (KLB-1, Reg. No. 2924).
9. Terracotta annular bead; circular, has a Large hole. From a late level of Period II. (KLB-1, Reg. No. 18468).



Fig. 16.24 Terracotta beads for decorating animals

**Fig. 16.25**

1. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 12482).
2. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 5946).
3. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 21370).
4. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 9411).
5. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 14350).
6. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 10474).
7. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 15482).
8. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 15178).
9. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 19337).
10. Terracotta bead; circular, flat, with a Large hole. From a late level of Period II. (KLB-2, Reg. No. 5764).
11. Terracotta bead; tiny, round, flat, with a Large hole. From a late level of Period II. (KLB-1, Reg. No. 18407).
12. Terracotta bead; tiny, circular, flat, with a Large hole. From an early level of Period II. (KLB-2, Reg. No. 3824).

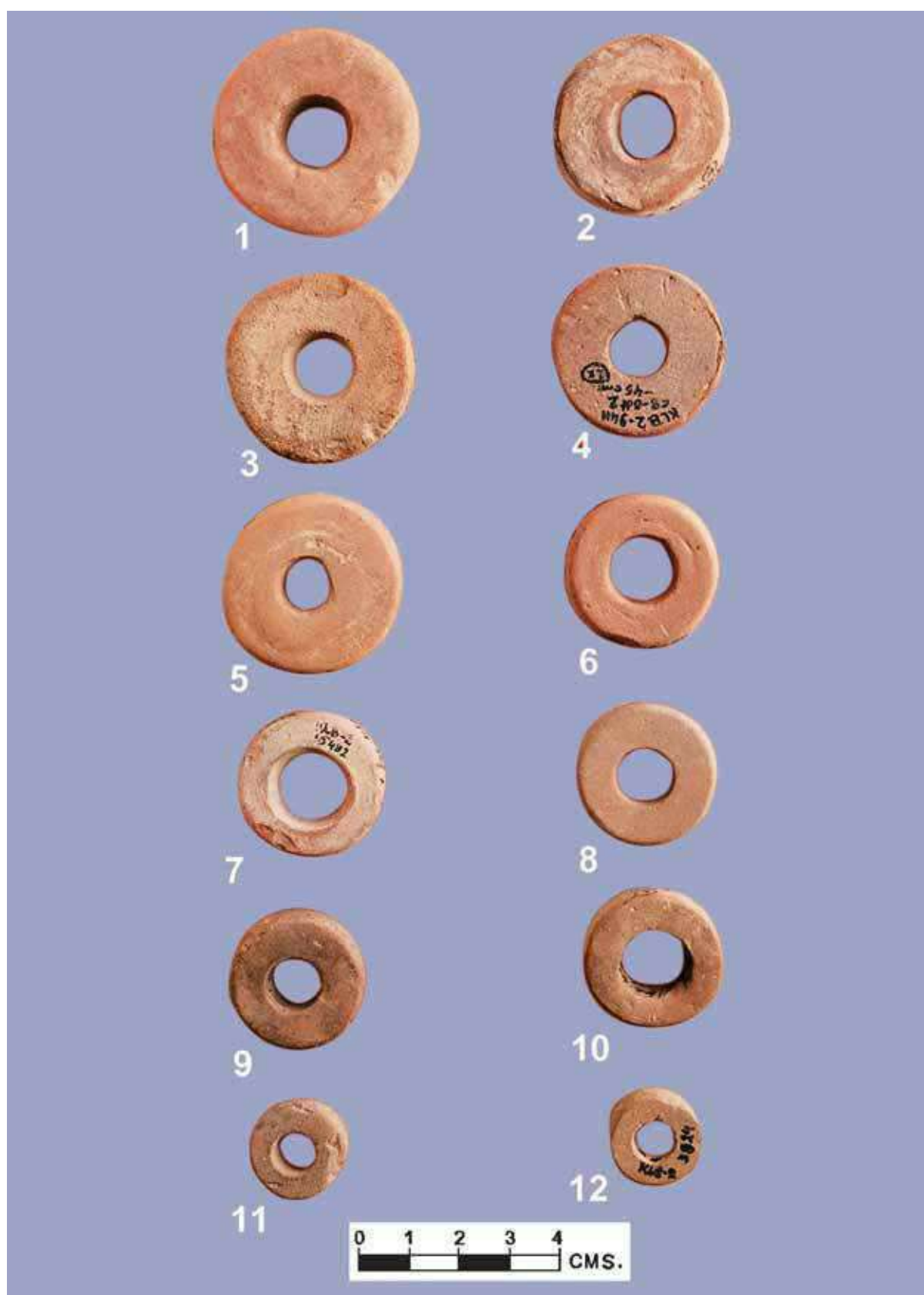


Fig. 16.25 Terracotta beads for decorating animals

# HARAPPAN MEASURING INSTRUMENTS FROM KALIBANGAN

## CHAPTER

# 17

Jagat Pati Joshi and Balasubramaniam<sup>1</sup>

The high degree of urbanization achieved by the Harappans of Mohenjodaro, Harappa, Lothal, Dholavira and Kalibangan was due to 'economic boom' of the people having surplus economy and excellent geometrical tools to build elaborate town planning and architecture by developing instruments like right angle, plumb-bob, measuring scale, weights and to calculate time the hour glass. All these instruments have been retrieved at some of the Harappan sites. The Harappans had a good idea of geometrical principles also. They knew to draw the rectangle, square, parallelogram, circle and intersecting circles. They divided straight line into parts, rhombs, intersecting circles and thus had the idea and knowledge of geometry. They knew about  $\pi r^2$  and ratio and proportions. The bricks of Early Harappans have a ratio of 1:2:3 and mature Harappans have a ratio of 1:2:4 at Kalibangan. While the lanes were 1.8 m wide, the streets have a width of 3.6 m to 5.4 m and 7.2 m thus having a ratio of 1:2:3:4. Sun rise and sun set in the day and polar star in the night gave them the idea of the cardinal directions to which the streets are oriented in most of the Harappan sites. At Kalibangan the location of ritualistic mound, KLB-3 is to the east of the city mound, KLB-2 and for worship the seven fire altars in the citadel mound, KLB-1 the devotee had to

face east. In the excavations at Kalibangan a terracotta hour-glass for time keeping, a terracotta linear scale, plumb-bobs of terracotta, faience and shell, weights of chert and agate and terracotta pans used in balances for weighing have been found. The weights have two series, first one is cube-shaped while second is cone-shaped.

These instruments are described as below :-

### TERRACOTTA HOUR-GLASS

#### Figs. 17.1 to 17.5

1. Terracotta hour-glass, *damaru*-shaped, height 7 cm with two inter connected bowls, one at upper end while other at lower. Both the bowls have an inter connected hole in between having a dia of .5 cm. The upper bowl has a dia of 7 cm with sliding walls having an angle of  $35^\circ$  and a height of 3 cm. The lower bowl with concave sides has a height of 4 cm and dia of 6 cm. From a late level of Period II. (KLB-1, Reg. No. 18064).

Hour-glass is a device wherein the flow of sand measured the duration of time. This device was widely used in the medieval times but its availability in the Harappan context is remarkable. Our

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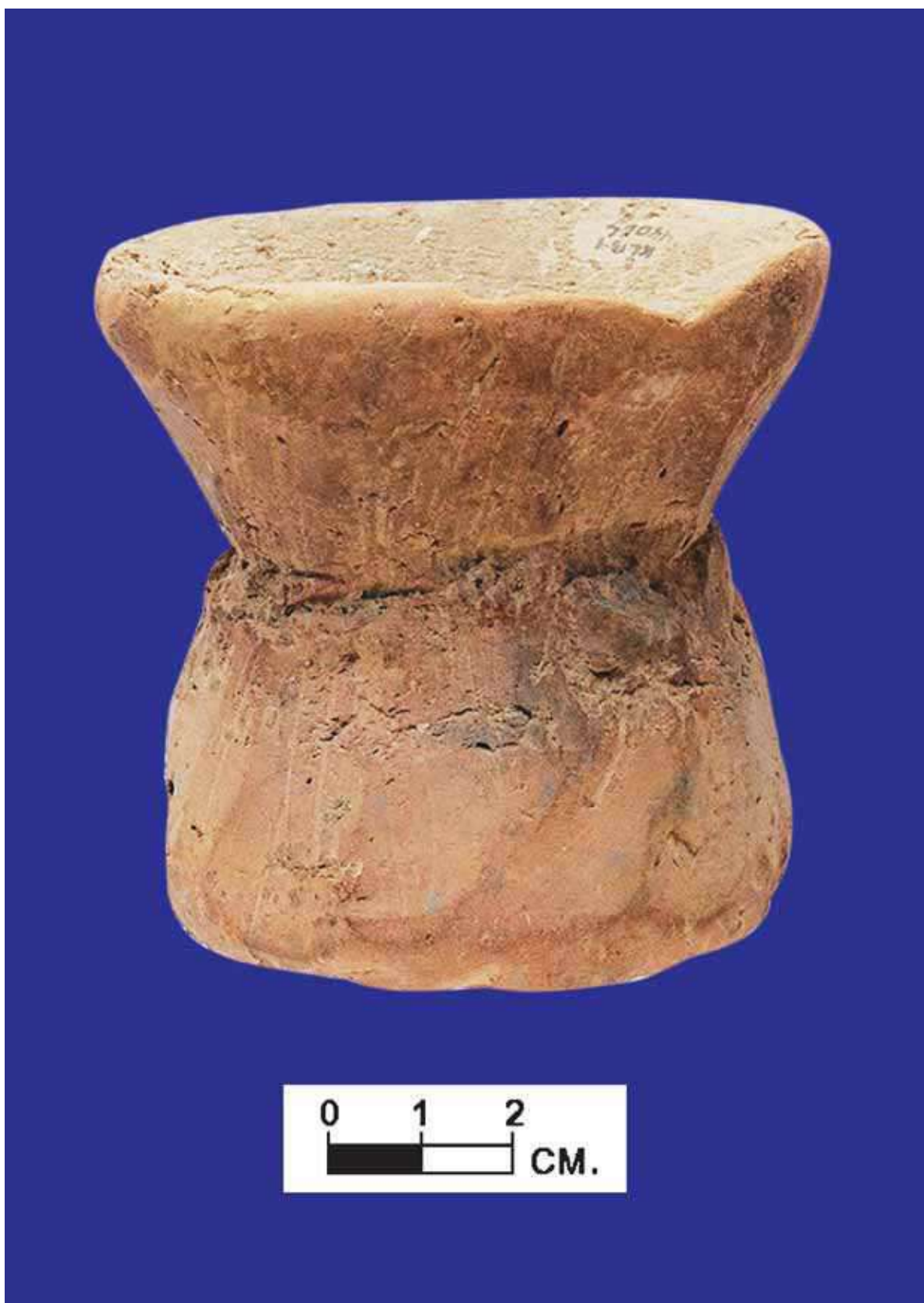


Fig. 17.1 *Terracotta hour-glass*

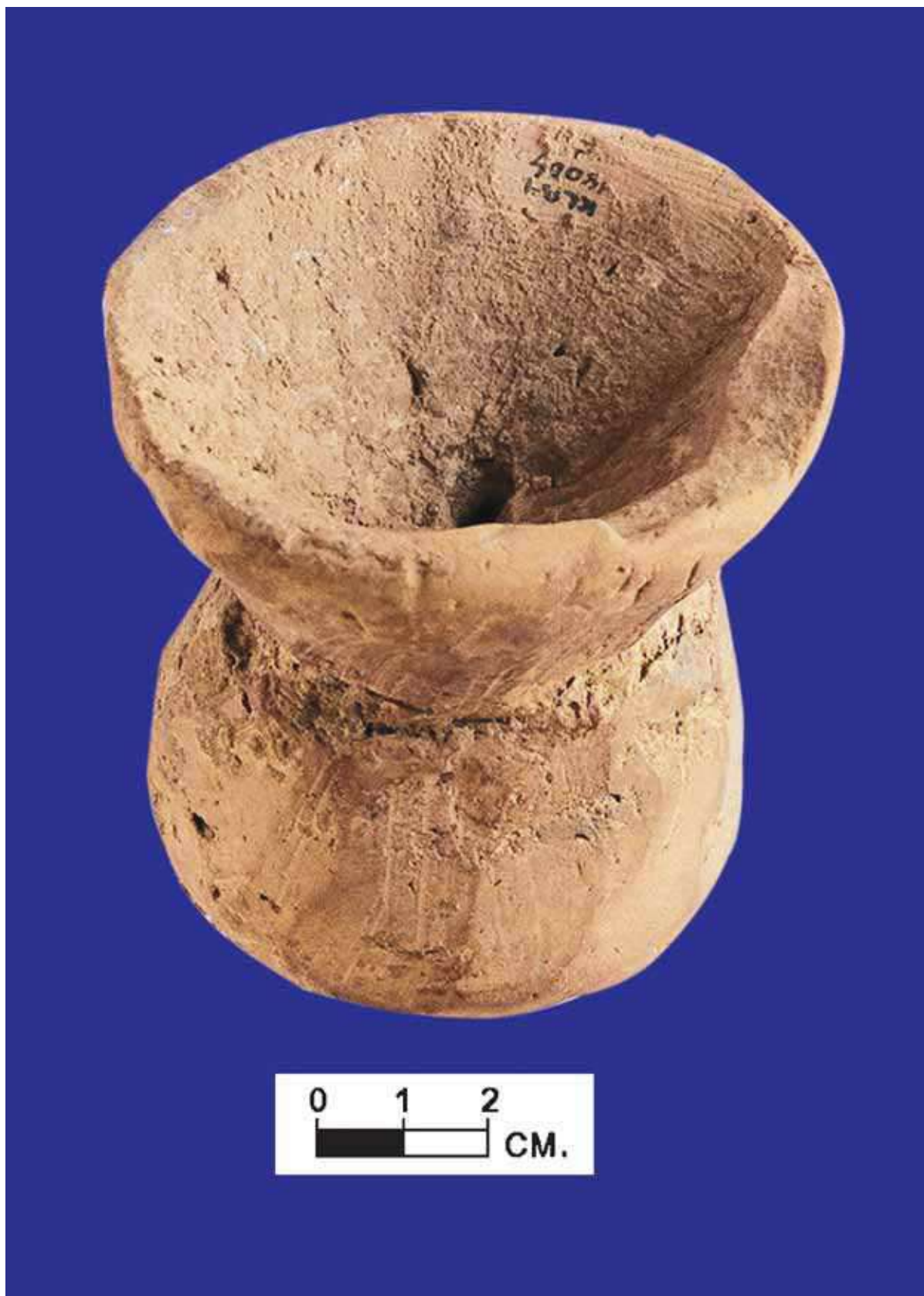


Fig. 17.2 *Inner view of upper bowl of terracotta hour-glass*



Fig. 17.3 Top view of terracotta hour-glass



Fig. 17.4 Inner view of lower bowl of terracotta hour-glass

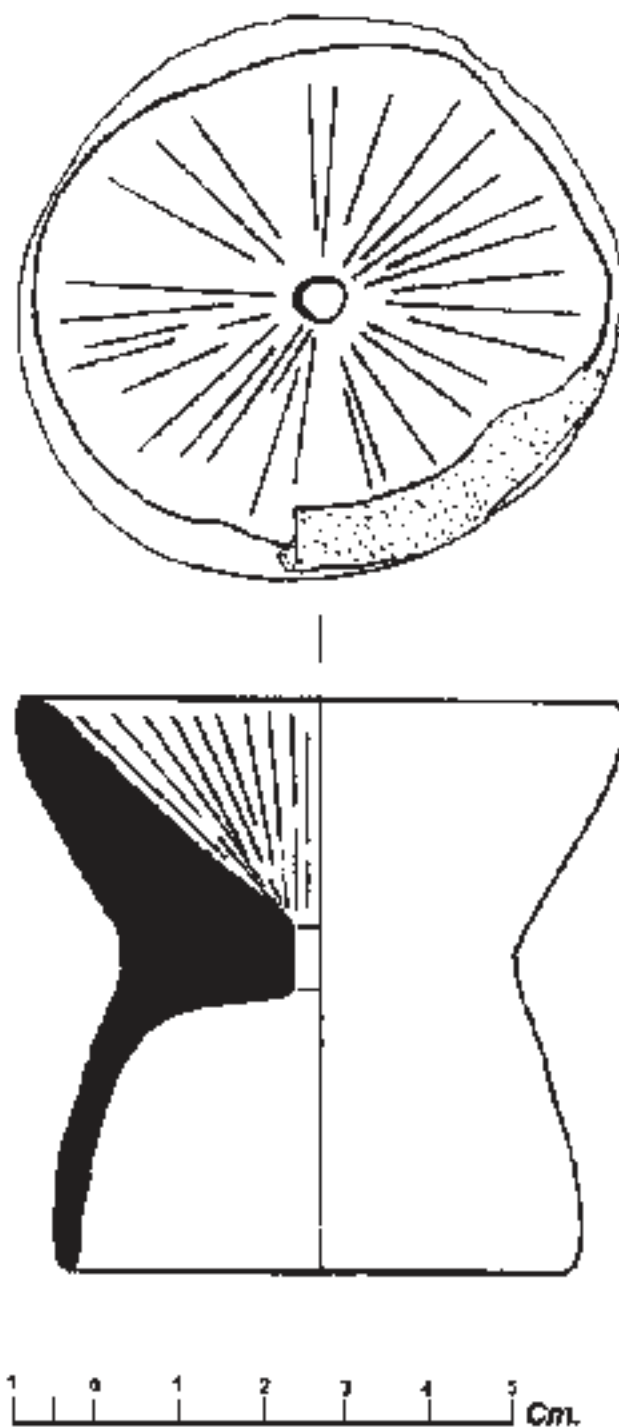


Fig. 17.5 *Plan and sectional-elevation of terracotta hour-glass*



experiments have shown that the upper bulb is emptied of sand in 10 seconds. It is interesting to note that it appears to be the time unit of Harappans. Since it is in decimal, it could be equated with a fraction of the later *muhurta* of *Vedāṅga Jyotish*.<sup>2</sup>

124 *Kāsthās* = 1 *Kalā*

20 and 1/10 *Kalās* = *Muhurta*

30 *Muhuratās* = 1 *ahorātra* (day and night) 24 hours

## TERRACOTTA SCALE

### Figs. 17.6 and 17.7

2. Terracotta scale is 9.2 cm in length. The scale is damaged on both sides. It is slightly tapering in shape. It has a maximum dia 12 mm. (KLB-1, Reg. No. 10282).

It has 2 sets of markings. There appear to be two axes, as marked on the sheet. The spacing between marks in these two axes is not constant and there are variations. This may be due to the crude nature of the scale.

However, it is noticed that the markings are almost going towards the 3.5 mm standard that we notice in Lothal and Mohenjodaro scale.<sup>3</sup> Therefore, at the most one can say that this crude scale provided some rough estimate of length and may be used in cases where the exact measurements were not required. No wonder that the scale material is terracotta because otherwise if the scale had to be precise they must have used a scale made of metal or shell or ivory, like in the other cases.

<sup>2</sup> Achar, B.N.N. 1998. On the measuring A.V. x 1 x 53.3 Measurement of Time, *Electronic/Journal of Vedic Studies* 4-c : 21-26; Joshi, D.D. *Sugam Jyotish*, (Reprinted). p. 46-47. Motilal Banarasidas, New Delhi.

<sup>3</sup> Mackay, E.J.H. 1938. *Further Excavations at Mohenjodaro*. 601 ff. New Delhi; Vats, M. 1940. *Excavations at Harappa*. pp. 365-366. Archaeological Survey of India, Delhi; Rao, S.R. 1979. *Lothal, A Harappan Port Town*, 1955-62, Vol. II. p. 689 ff. Archaeological Survey of India; Mainkar, V.B. 1984. Metology in the Indus Civilization. In Lal, B.B. and Gupta, S.P. (ed.), 1984. *Frontiers of the Indus Civilization*:141 ff. Books & Books; Raju, L. and Mainkar, V.B. 1964. Development of length & area measures in South India. *Metric Measures Vol. 7*: 3 ff.

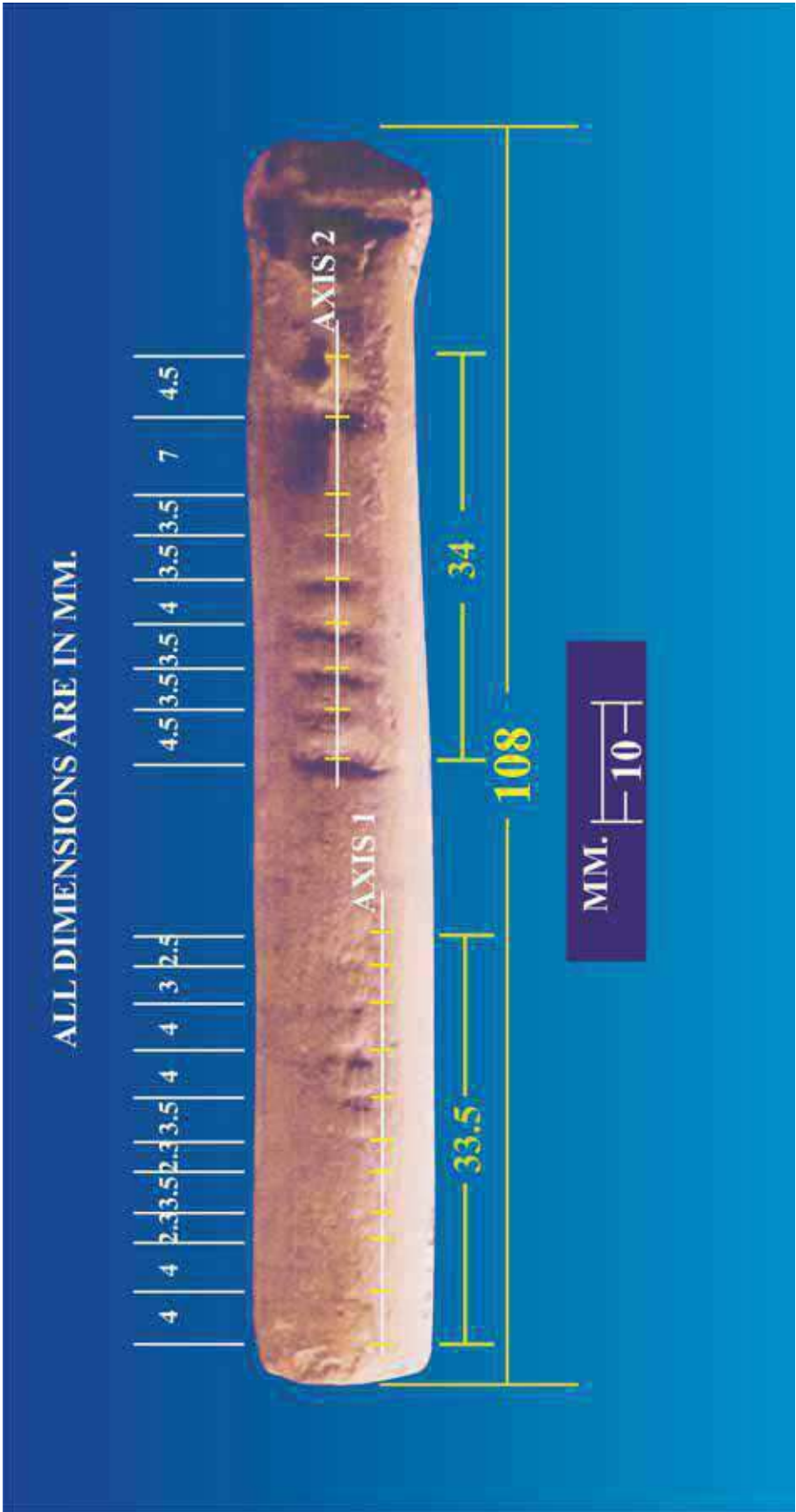


Fig. 17.6 Terracotta scale



**Lothal :** Ivory scale with divisions measuring on an average 1.7 mm

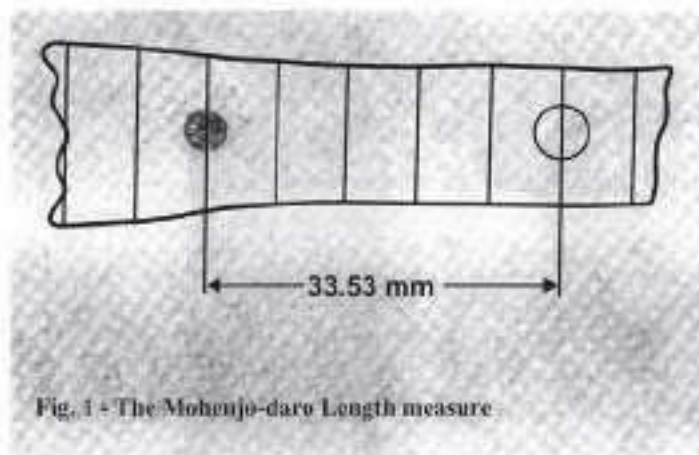


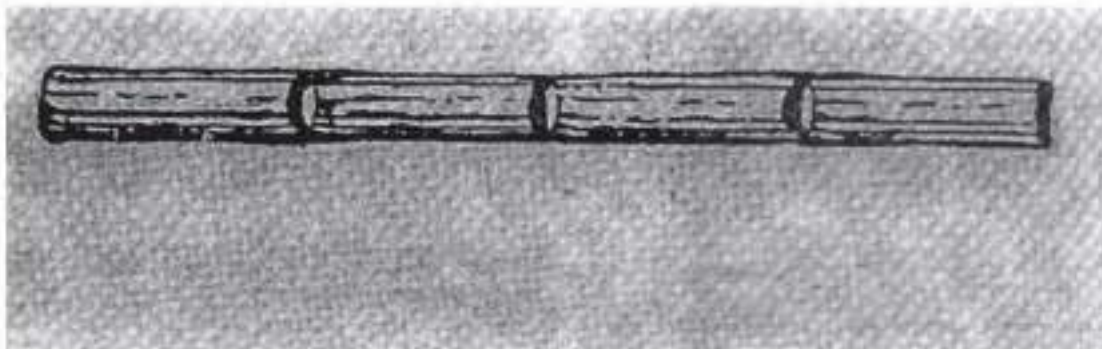
Fig. 1 - The Mohenjo-daro Length measure

Interesting co-relation here :

1.7 mm = 1 unit (Lothal)

1.7 x 20 = 34 units (Mohenjodaro marking is close to this)

34 mm is divided into 5 units (=Mohenjodaro marking above) in which each 1 unit = approximately 7 mm (3.4 mm x 2)



**Shell :** 2.64 inches? , Harappa Scale

Fig. 17.7 Scales from Lothal, Mohenjodaro and Harappa

## PLUMB-BOBS

### Figs. 17.8 and 17.8(a)

3. Plumb-bobs are available in faience, terracotta and shell.

1. Faience, plumb-bob; the height is 7.5 cm, bud-shaped with a prominent ledge and two holes on the collar, dia 4.1 cm of the mouth to fasten thread joining with the central thread which passes through bottom to top, the two threads keep the central thread in correct position at the centre. From Harappan pot-burial. (KLB-8, Reg. No. 11311) [Fig. 17.8(a)].

2. Terracotta, plumb-bob; truncated barrel-shaped with a central hole and two side holes for passing the string, height 4.8 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21804).

3. Terracotta, plumb-bob; height 4.2 cm, bud-shaped, circular, with a central hole. From late level of Period II. (KLB-2, Reg. No. N.S. 21805).

4. Terracotta, plumb-bob; barrel-shaped, with a central hole, height 4.3 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21803).

5. Shell, conical drop-shaped with a central hole, height 6 cm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21806)

Availability of a plumb-bob in a pot

burial throws light on the following two aspects:-

1. Pot burials or memorial burials were given to masons and architects, as they were considered different from the people who were given extended burials.
2. The practice of burying the important tools with the pot burial shows that it was one of the most important thing of the departed architect/mason.

## WEIGHTS

4. In all, forty-two weights of chert and agate have been found in the excavation at Kalibangan. Four terracotta pans of balances have also been found. Chert and agate weights are available at Mohenjodaro, Harappa, Chanhudaro, Lothal, and Surkotada.<sup>4</sup> The weights in gram have been documented as below in an ascending order of all 40 weights of cube - shaped.

1. 0.482 gm
2. 0.538 gm
3. 0.818 gm
4. 0.878 gm
5. 0.886 gm
6. 0.987 gm
7. 1.016 gm
8. 1.130 gm
9. 1.690 gm
10. 1.783 gm
11. 1.788 gm
12. 1.880 gm
13. 2.050 gm
14. 2.164 gm

<sup>4</sup> Mainkar, V.B. op.cit.

Hemmy, A.S. 1931. System of weights at Mohenjo-daro. In Marshall, J. (ed.), *Mohenjodaro and the Indus Civilization*, Vol. II: 589 ff. Arthur Probsthain, London.



Fig. 17.8 Faience, terracotta and shell plumb-bobs

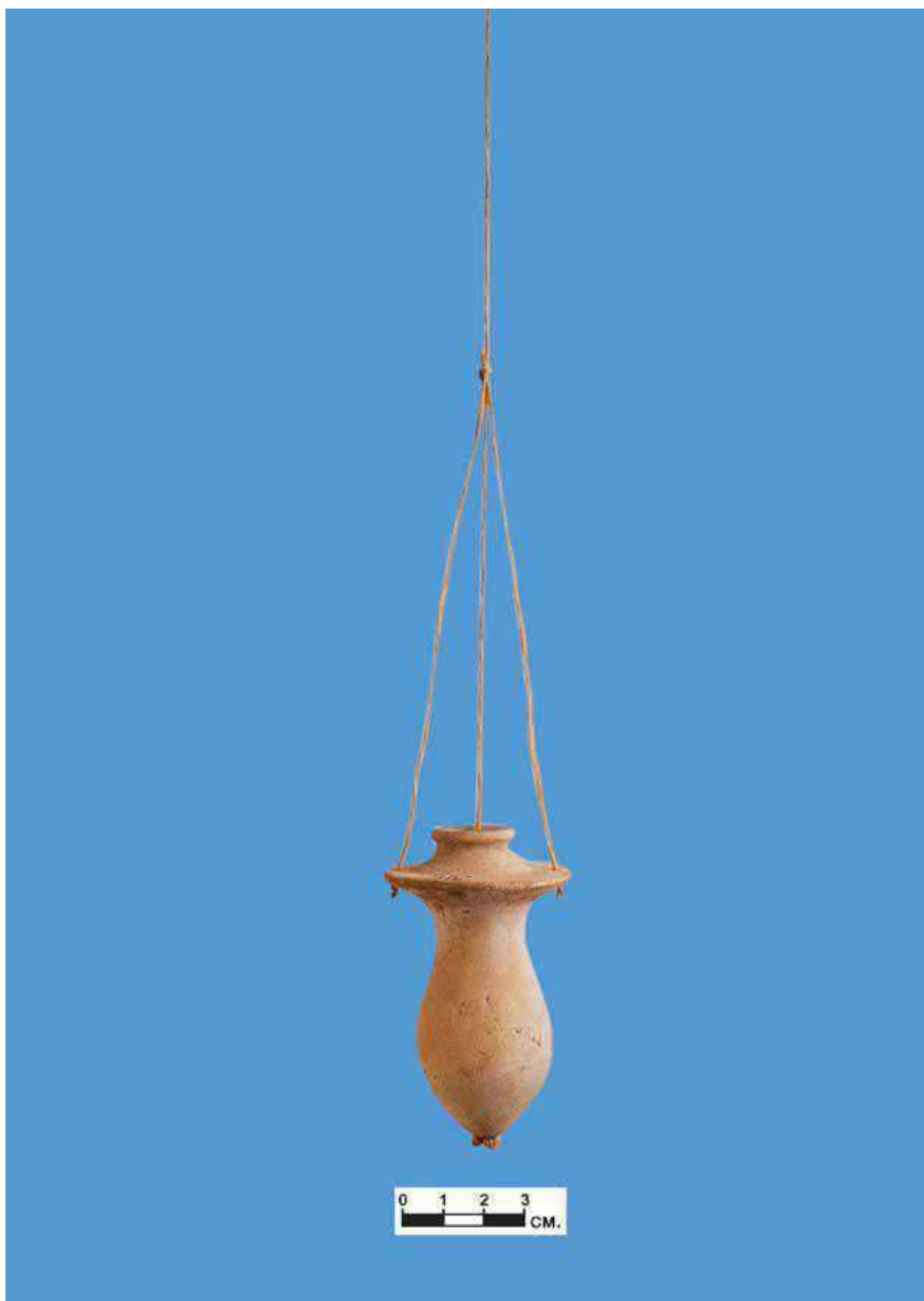


Fig. 17.8 (a) *Faience plumb-bob hanging with the thread (modern) showing the proper use*

15. 2.329 gm
16. 2.346 gm
17. 2.692 gm
18. 3.397 gm
19. 3.412 gm
20. 3.452 gm
21. 3.710 gm
22. 4.100 gm
23. 4.349 gm
24. 6.387 gm
25. 6.474 gm
26. 6.527 gm
27. 6.797 gm
28. 7.187 gm
29. 7.213 gm
30. 7.251 gm
31. 7.381 gm
32. 8.525 gm
33. 13.937 gm
34. 14.219 gm
35. 14.287 gm
36. 26.983 gm
37. 27.379 gm
38. 27.648 gm
39. 52.306 gm
40. 135.940 gm

All forty of these weights are intact which are described as below :-

**Fig. 17.9**

1. Chert, weight ; almost cubic, size 2.1 x 2.3 cm, weight 26.983 gm. From a late level of Period II. (KLB-2, Reg. No. 47).
2. Chert, weight; cubic, size 3 x 2.3 cm, weight 52.306 gm. From a late level of Period II. (KLB-1, Reg. No. 3616).
3. Chert, weight; cubic, size 3 x 4.1 cm, weight 135.940 gm. This is one of the biggest in the series. From a middle level of Period II. (KLB-2, Reg. No. 3531).
4. Chert, weight; cubic, size 1.9 x 1.9 cm, weight 14.219 gm. From a late level of Period II. (KLB-1, Reg. No. 17348).
5. Chert, weight; cubic, size 1.7 x 1.7 cm, weight 8.525 gm. From a late level of Period II. (KLB-1, Reg. No. 17348).
6. Chert, weight; rectangular, size 2.9 x 1.7 cm, weight 27.648 gm. Rounded sides and corners. From a late level of Period II. (KLB-1, Reg. No. 2144).
7. Banded-agate weight; rectangular, size 2.9 x 1.5 cm, weight 27.379 gm. Sides rounded. From a late level of Period II. (KLB-2, Reg. No. 7236).
8. Igneous rock weight; rectangular, size 2.1 x 1.4 cm, weight 13.937 gm. Unstratified. (KLB-1, Reg. No. 7349).
9. Chert, weight; rectangular, size 1.6 x 1.2 cm, weight 6.474 gm. From a late level of Period II. (KLB-1, Reg. No. 18721).
10. Agate, weight; rectangular, size 1.5 x 1.1 cm, weight 6.387 gm. From a late level of Period II. (KLB-2, Reg. No. 12417).
11. Chert, weight; almost cubic, size 1.9 x 1.8 cm, weight 14.287 gm. From a late level of Period II. (KLB-2, Reg. No. 6279).



Fig. 17.9 Chert and agate cubical weights



**Fig. 17.10**

1. Igneous rock, weight; cubic, size 1.5 x 1.5 cm, weight 7.251 gm. From a middle level of Period II. (KLB-2, Reg. No. 9447).
2. Igneous rock, weight; rectangular in section, size 2.9 x 1.7 cm, weight 7.187 gm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21807).
3. Chert, weight; rectangular, size 1.7 x 1.1 cm, weight 6.797 gm. From a middle level of Period II. (KLB-2, Reg. No. 1092).
4. Chert, weight; cubic, size 1.5 x 1.5 cm, weight 7.213 gm. From an early level of Period II. (KLB-2, Reg. No. 19651).
5. Chert, weight; square in section, size 1.6 x 1.6 cm square, weight 3.452 gm. From surface. (KLB-2, Reg. No. N.S. 21808).
6. Chert, weight; cubic, size 1.1 x 1.2 cm, weight 3.412 gm. From a late level of Period II. (KLB-1, Reg. No. 47)
7. Chert, weight; square in section, size 1.3 x 1.3 cm, weight 4.100 gm. From surface. (KLB-2, Reg. No. N.S. 21809).
8. Igneous rock, weight; rectangular in section, size 1.9 x 1.1 cm, weight 7.381 gm. From an early level of Period II. (KLB-2, Reg. No. 18300).
9. Igneous rock, weight; size 1.5 x 1.1 cm, weight 3.710 gm. From a late level of Period II. (KLB-2, Reg. No. 1410).
10. Agate, weight; rectangular with round corners and edges, size 1.4 x 1.9 cm, weight 2.346 gm. From a late level of Period II. (KLB-1, Reg. No. 401).
11. Igneous rock, weight; rectangular in section, size 1.5 x 1.00 cm, weight 4.349 gm. From a late level of Period II. (KLB-1, Reg. No. N.S. 21810).
12. Igneous rock, weight; rectangular in section, size 2.00 x .9 cm, weight 6.527 gm. From a late level of Period II. (KLB-2, Reg. No. 17272).
13. Chert, weight; tiny, rectangular in section, size 0.5 x 0.7 cm, weight 0.538 gm. From a late level of Period II. (KLB-2, Reg. No. 328).
14. Chert, weight; tiny, square in section, size 0.6 x 0.6 cm, weight 0.482 gm. From a late level of Period II. (KLB-2, Reg. No. 1749).
15. Chert, weight; square in section, size 1.1 x 1.1 cm, weight 2.164 gm. From a late level of Period II. (KLB-2, Reg. No. 2100).
16. Igneous rock, weight; square in section, size 1.0 x 1.0 cm, weight 2.329 gm. From an unstratified level. (KLB-2, Reg. No. N.S. 21811).
17. Chert, weight; square in section, size 1.0 x 1.0 cm, weight 1.788 gm. From surface. (KLB-2, Reg. No. 17215).
18. Chert, weight; square in section, size 0.8 x 0.8 cm, weight 0.886 gm. From a late level of Period II. (KLB-1, Reg. No. 862).
19. Chert, weight; square in section, size 1.9 x 1.9 cm, weight 2.692 gm. From surface. (KLB-2, Reg. No. 5457).



20. Chert, weight; rectangular in section, size .8 x .7 cm, weight 1.016 gm. From an early level of Period II. (KLB-2, Reg. No. 934).
21. Igneous rock, weight; rectangular in section, size 1.0 x 0.8 cm, weight 0.2.050 gm. From surface. (KLB-2, Reg. No. N.S. 21812).
22. Chert, weight; square in section, size 0.8 x 0.8 cm, weight 0.818. From surface. (KLB-2, Reg. No. N.S. 21813).
23. Chert, weight; square in section, size 1 x 1 cm, weight 1.690 gm. From surface. (KLB-2, Reg. No. 21814).
24. Chert, weight; rectangular in section, size 1 x 0.8 cm, weight 1.880 gm. From a late level of Period II. (KLB-2, Reg. No. 93).
25. Chert, weight; rectangular in section, size .8 x .9 cm, weight 1.130 gm. From a middle level of Period II. (KLB-2, Reg. No. 20015).
26. Chert, weight; square in section, size .8 x .8 cm, weight 0.987 gm. From a late level of Period II. (KLB-1, Reg. No. 20589).
27. Chert, weight; square in section, size .8 x .8 cm, weight 0.878 gm. From a late level of Period II. (KLB-2, Reg. No. 14137).
28. Chert, weight; square in section, size .9 x .9 cm, weight 1.783 gm. From a middle level of Period II. (KLB-2, Reg. No. 513).
29. Chert, weight; square in section, size 1.2 x 1.2 cm, weight 3.397 gm. From an early level of Period II. (KLB-1, Reg. No. 12370).

In addition to these weights conical objects have also been discovered. These are having a flat base and a groove below the button top of which some of these are polished. These objects have been described as gamesmen at Lothal and Surkotada<sup>5</sup> but these appears to be weights for weighing gold. The objects have following weights in an ascending order :-

1. 0.300 gm
2. 0.338 gm
3. 0.55 gm
4. 0.562 gm
5. 0.575 gm
6. 0.597 gm
7. 0.60 gm
8. 0.61 gm
9. 0.664 gm
10. 0.70 gm
11. 0.72 gm
12. 0.73 gm
13. 0.773 gm
14. 0.86 gm
15. 0.864 gm
16. 0.91 gm
17. 0.949 gm
18. 0.97 gm
19. 1.000 gm
20. 1.111 gm
21. 1.12 gm
22. 1.135 gm
23. 1.16 gm
24. 1.238 gm
25. 1.29 gm
26. 1.30 gm
27. 1.31 gm
28. 1.331 gm

<sup>5</sup> Joshi, J.P.1990. Excavation at Surkotada 1971-72 and Exploration in Kutch. ASI, New Delhi.

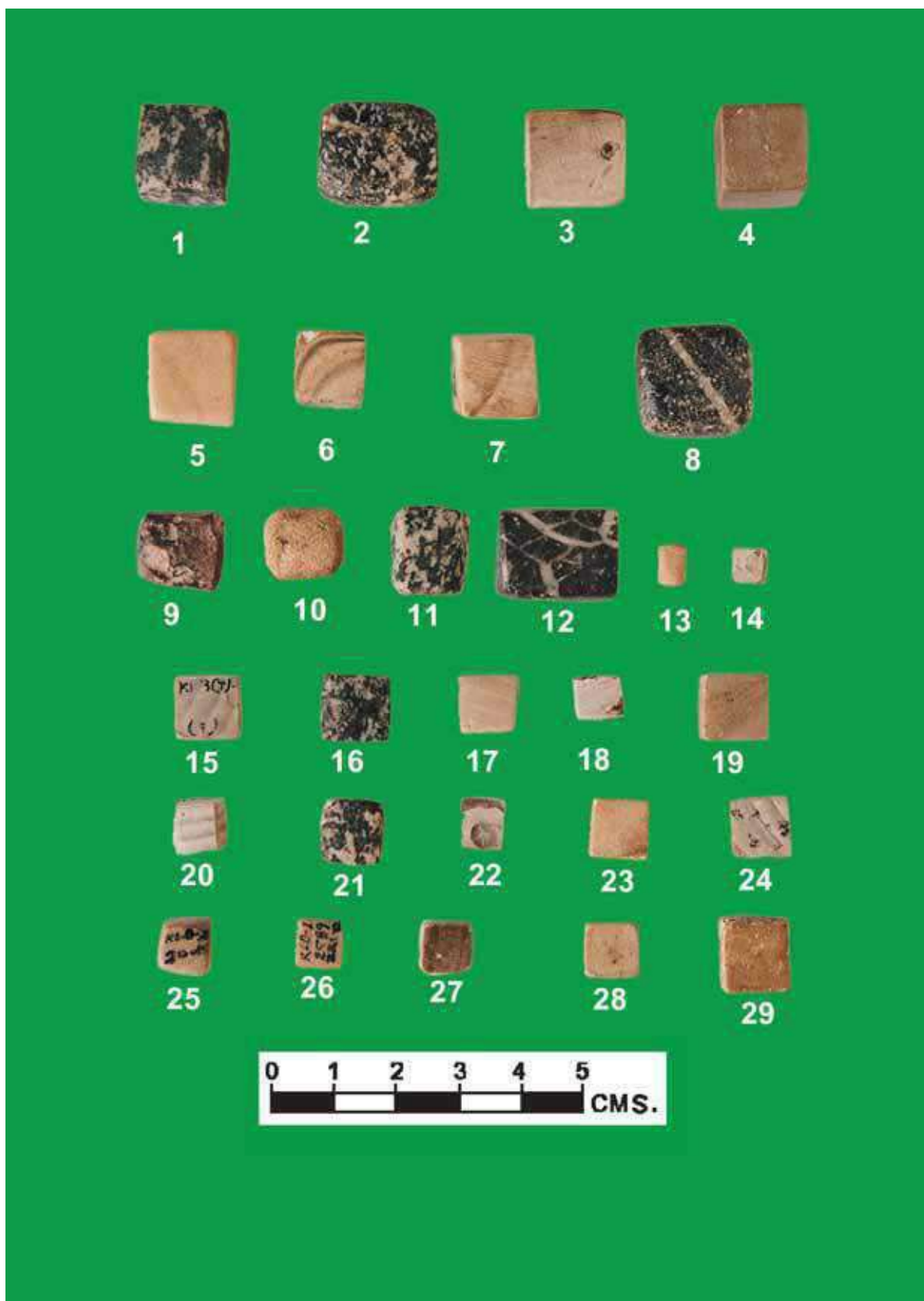


Fig. 17.10 Chert and agate cubical weights

29.	1.453	gm
30.	1.454	gm
31.	1.460	gm
32.	1.160	gm
33.	1.748	gm
34.	1.77	gm
35.	1.83	gm
36.	1.864	gm
37.	2.125	gm
38.	2.30	gm
39.	2.86	gm
40.	4.450	gm
41.	4.05	gm
42.	64.23	gm

Selected objects are described as below :-

**Fig. 17.11**

1. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.5 cm, basal dia 0.8 cm and weight 1.454 gm. From a late level of Period II. (KLB-2, Reg. No. 436)
2. Black jasper, weight; cone with a flat base and a mild groove below the button top, height 1.6 cm, basal dia 0.6 cm and weight 1.000 gm. From a late level of Period II. (KLB-2, Reg. No. 18041)
3. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.4 cm, basal dia 0.7 cm and weight 1.331 gm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21814).
4. Black jasper, weight; cone with a flat

base and a groove below the button top, height 1.8 cm, basal dia 0.7 cm and weight 2.125 gm. From a late level of Period II. (KLB-2, Reg. No. 11327).

5. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.5 cm, basal dia 0.6 cm and weight 1.77 gm. From a late level of Period II. (KLB-2, Reg. No. 436).
6. Terracotta, weight; cone with a flat base and a groove below the flat button top, height 1.6 cm, basal dia 0.8 cm and weight 0.949 gm. From an unstratified level. (KLB-2, Reg. No. N.S. 21815).
7. Agate, weight; cone with a flat base and a groove below the flat button top, height 1.7 cm, basal dia 0.7 cm and weight 1.238 gm. From a late level of Period II. (KLB-2, Reg. No. N.S. 21816).
8. Sandstone, weight; cone with a flat base and a groove below the button top, height 1.9 cm, basal dia 0.8 cm and weight 1.748 gm. From a middle level of Period II. (KLB-2, Reg. No. 6176).
9. Agate, weight; cone with a flat base and a groove below the button top, height 1.7 cm, basal dia 0.7 cm and weight 1.460 gm. From a middle level of Period (KLB-2, Reg. No. 14487).
10. Agate, weight; cone with a flat base and a groove below the button top, height 1.7 cm, basal dia 0.7 cm and weight 0.70 gm. From an early level of Period II. (KLB-1, Reg. No. 16432).

<sup>5</sup> Mainkar, V.B., *op.cit.*

11. Agate, weight; cone with a flat base and a top without a groove, height 1.6 cm, basal dia 0.6 cm and weight 1.111 gm. From a middle level of Period II. (KLB-2, Reg. No. 15623).
12. Agate, weight; cone with a flat base and a groove below the button top, height 1.6 cm, basal dia 0.6 cm and weight 0.562 gm. From an early level of Period II. (KLB-2, Reg. No. 18442).
13. Black jasper, weight; cone with a flat base and a deep groove below the button top, height 1.4 cm, basal dia 0.7 cm and weight 1.30 gm. From a late level of Period II. (KLB-2, Reg. No. 735)
14. Banded agate, weight; unfinished cone with a flat top and base, height 1.3 cm, basal dia 0.9 cm and weight 1.864 gm. From surface. (KLB-1, Reg. No. N.S. 21819).
15. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.4 cm basal dia 0.6 cm and weight 0.773 gm. From an early level of Period II. (KLB-1, Reg. No. 18766).
16. Agate, weight; cone with a flat base and a groove below the button top, height 1.3 cm, basal dia 0.5 cm and weight 0.664 gm. From a late level of Period II. (KLB-1, Reg. No. 279).
17. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.4 cm, basal dia 0.8 cm and weight 1.453 gm. From an early level of Period II. (KLB-1, Reg. No. 16720).
18. Agate, weight; partly broken, cone with a flat base and groove below the button top, height 1.1 cm, basal dia 0.6 cm and weight 0.338 gm. From a late level of Period II. (KLB-1, Reg. No. 13154).
19. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.2 cm, basal dia 0.5 cm and weight 0.575 gm. From a middle level of Period II. (KLB-2, Reg. No. N.S. 21817).
20. Black jasper, weight; cone with a flat base and a groove below the button top, height 0.9 cm, basal dia 0.6 cm and weight 0.597 gm. Unstratified. (KLB-2, Reg. No. N.S. 21818).

**Fig. 17.12**

1. Black jasper, weight; elongated cone with a flat base and groove below the button top, height 1.8 cm, basal dia 2.1 cm and weight 4.05 gm. From an early level of Period II. (KLB-1, Reg. No. 18104).
2. Black jasper, weight; cone with a flat base and a groove below the button top, height 2 cm, basal dia 2.2 cm and weight 1.83 gm. From a middle level of Period II. (KLB-1, Reg. No. 15603).
3. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.3 cm, basal dia .50 cm and weight 1.29 gm. From an early level of Period II. (KLB-1, Reg. No. 18104).
4. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.3 cm, basal dia 1 cm and weight 2.86 gm. From a middle level of Period II. (KLB-1, Reg. No. 10765).
5. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.3 cm, basal dia .50 cm and weight 1.93 gm. From a late level of Period II. (KLB-2, Reg. No. 3691).
6. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.2 cm, basal dia 0.4 cm and weight 0.70 gm. Unstratified. (KLB-1 & 2, Reg. No. 21899).
7. Agate, weight; cone with a flat base and a groove below the button top, height 1.6 cm, basal dia 0.50 cm and weight 0.60 gm. From an unstratified level of Period II. (KLB-1 & 2, Reg. No. 21900).
8. Agate, weight; cone with a flat base and a groove below the button top and a transverse hole, reused as a pendant, height 1.6 cm, basal dia 0.50 cm and weight 0.91 gm. Unstratified. (KLB-1 & 2, Reg. No. 21901).
9. Black jasper, weight; cone with a flat base and a groove below the button top, height 0.51 cm, basal dia. 0.50 cm and weight 0.86 gm. Unstratified. (KLB-1 & 2, Reg. No. 21902).
10. Black jasper, weight; partly broken, cone with a flat base and groove below the button top, height 1.50 cm, basal dia. 0.50 cm and weight 0.97 gm. Unstratified. (KLB-1 & 2, Reg. No. 21903).
11. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.41 cm, basal dia. 0.50 cm and weight 0.70 gm. Unstratified. (KLB-1 & 2, Reg. No. 21904).
12. Black jasper, weight; cone with a flat base and a groove below the button top, height 1.3 cm, basal dia. 0.60 cm and weight 1.12 gm. Unstratified. (KLB-1 & 2, Reg. No. 21905).
13. Black jasper, weight; cone with a flat base and a groove below the button top, height 1 cm, basal dia. 0.50 cm and weight 0.61 gm. Unstratified. (KLB-1 & 2, Reg. No. 21906).
14. Greyish agate, weight; cone with a broken button, reused as a pendant due to the transverse hole, height 1 cm, basal dia. 0.8 cm and weight 1.60 gm. unstratified. (KLB-1 & 2, Reg. No. 21907).



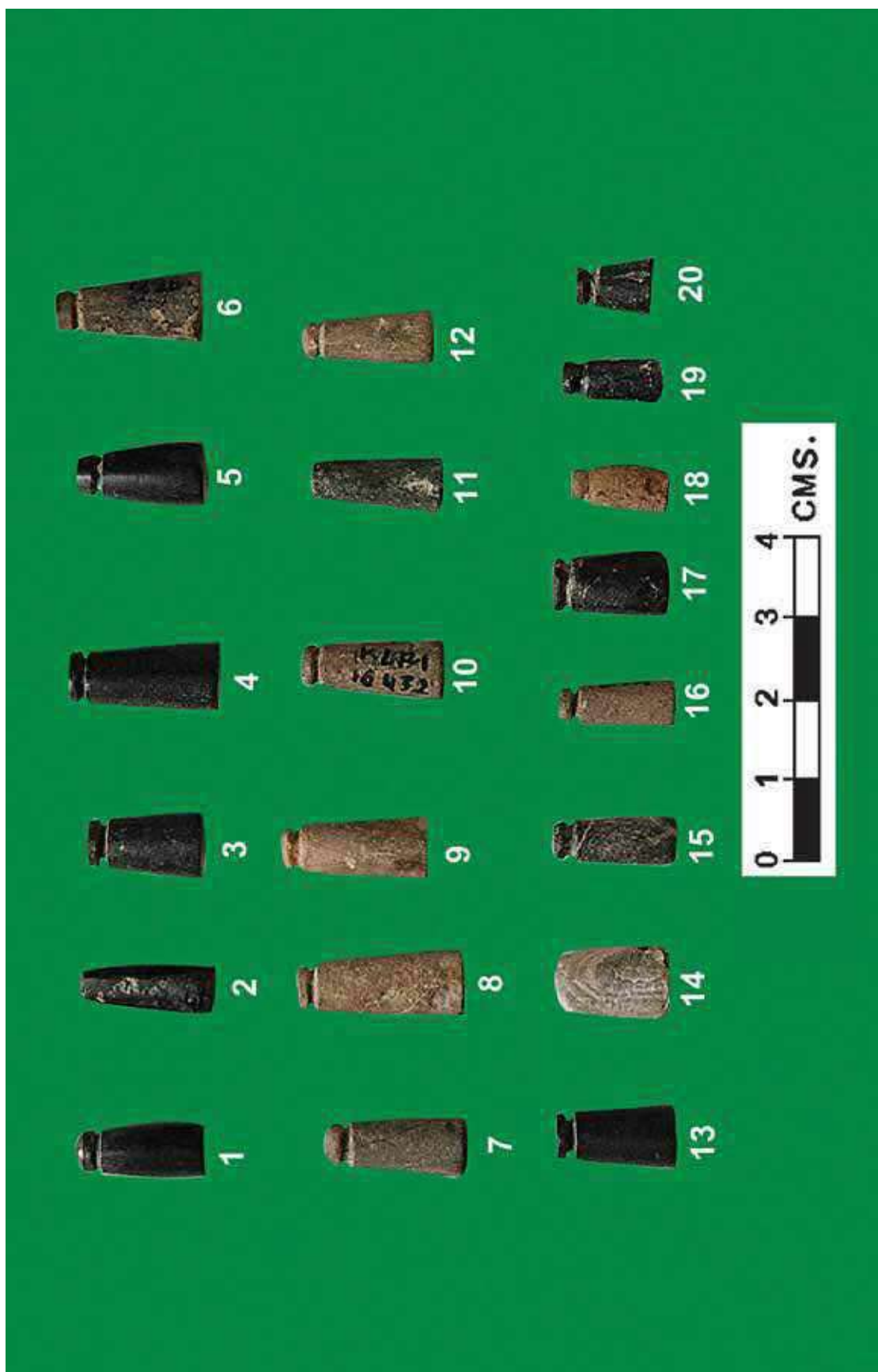


Fig. 17.11 Black jasper, agate, sandstone and terracotta conical weights

15. Black jasper, weight; cone with a flat base and a groove below the button top, height 1 cm, basal dia. 0.9 cm and weight 2.30 gm. Unstratified. (KLB-1 & 2, Reg. No. 21908).
16. Banded agate, weight; cone with a flat base and a groove below the button top, height 1.2 cm, basal dia. 0.8 cm and weight 1.31 gm. Unstratified. (KLB-1 & 2, Reg. No. 21909).
17. Blackish agate, weight; cone with a broken top, height 1.50 cm, basal dia. 0.45 cm and weight 0.73 gm. Unstratified. (KLB-1 & 2, Reg. No. 21910).
18. Agate, weight; cone with a flat base and a groove below the button top, height 1.50 cm, basal dia. 0.6 cm and weight 0.55 gm. Unstratified. (KLB-1 & 2, Reg. No. 21911).
19. Agate, weight; cone with a flat base and a groove below the button top, height 1 cm, basal dia. 0.50 cm and weight 0.72 gm. Unstratified. (KLB-1 & 2, Reg. No. 21912).





Fig. 17.12 Black jasper and agate conical weights

**Fig. 17.13**

1. Sandstone, weight ; cone with a flat base and a deep groove below the button top, height 5.50 cm, basal dia.

2 cm and weight 64.23 gm. From a late level of Period II. (KLB-1 & 2, Reg. No. 17939).



Fig. 17.13 *Sandstone conical weight*

## TERRACOTTA PANS FOR BALANCES<sup>6</sup>

### Fig. 17.14

Seven terracotta pans have been found. These have 3 or 4 holes near the circumference for passing strings for hanging the pans. These pans vary in dia. from 7 cm to 4.5 cm. Both flat and ridged pans with a slightly concave surface are found. Some of these are painted at the bottom with criss-cross pattern. One has an inscription also.

1. Terracotta pan; hand-made, circular with a dia. 7 cm, slightly concave surface with four holes for tying of strings of the balance. Unstratified. (KLB-2, Reg. No. 21800). (illustrated with balance on the left side fig. 17.14)
2. Terracotta pan; hand-made, circular with three holes near the circumference. Dia. 5 cm. From a late level of Period II. (KLB-1, Reg. No. 15331).
3. Terracotta pan; hand-made, circular with three holes near the circumference. Dia. 5.5 cm. From a late level of Period II. (KLB-1, Reg. No. 21802).
4. Terracotta pan; with three holes near the circumference for tying of the string. From a late level of Period II. (KLB-2, Reg. No. 10271). (illustrated with balance on the right side fig. 17.14)
5. Terracotta pan; hand-made with four oblique holes and ridge along the circumference. Unstratified. (KLB-1, Reg. No. 21801).
6. Terracotta pan; with four holes for the string with a ridge along the circumference. From surface. (KLB-2, Reg. No. 12987).
7. Terracotta pan; hand-made with three holes for fastening the string. From a late level of Period II. (KLB-2, Reg. No. 9785).

<sup>6</sup> Terracotta pans have been found at Mohenjodaro and Surkotada. Mackay, E.J.H. *op.cit.*, p. 435 Pl. CIX 32. Margabandhu, C. 1990. In Joshi, J.P. (ed.), *Excavation at Surkotada 1971-72 and Exploration in Kutch*: 338. Archaeological Survey of India, New Delhi.

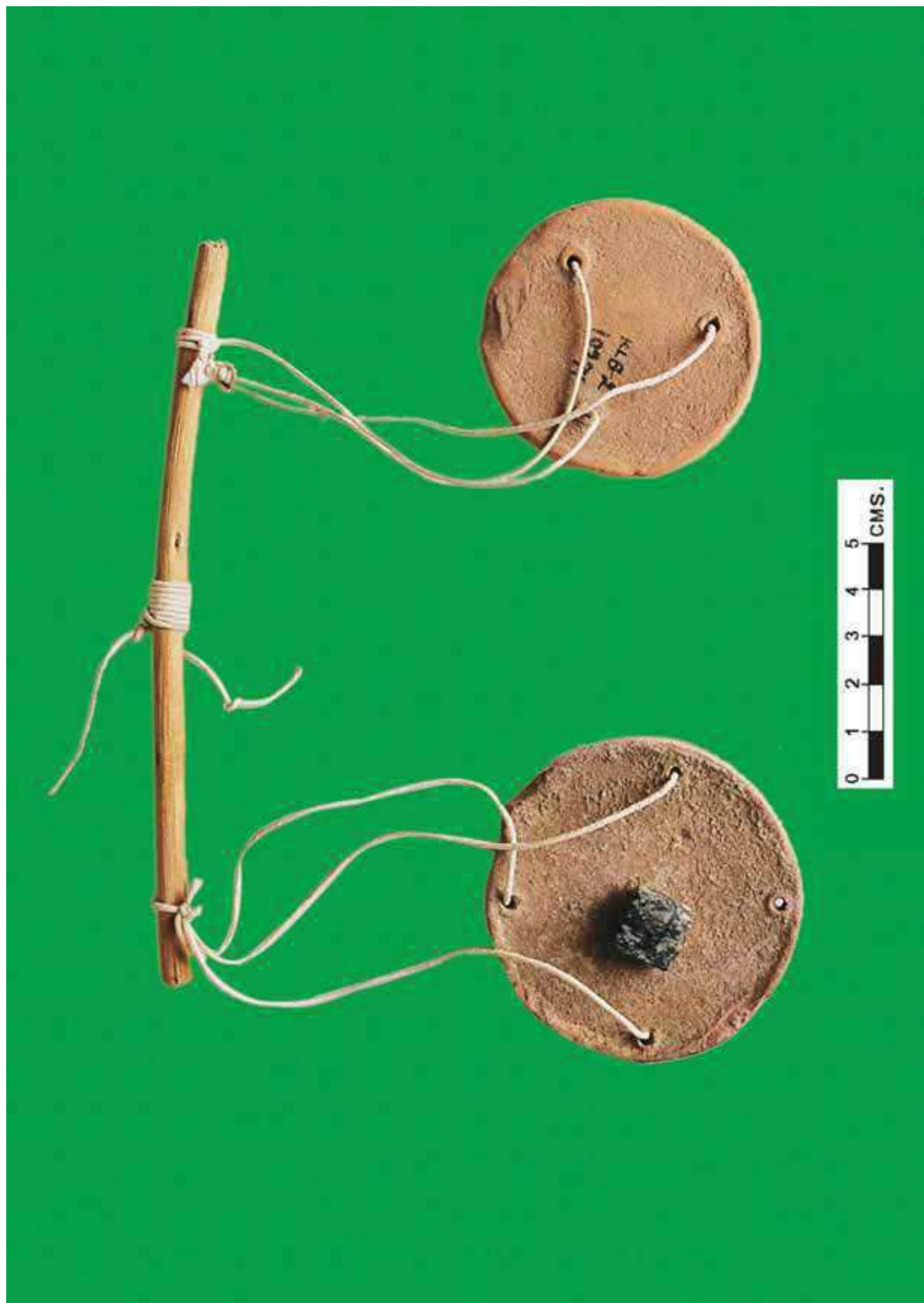
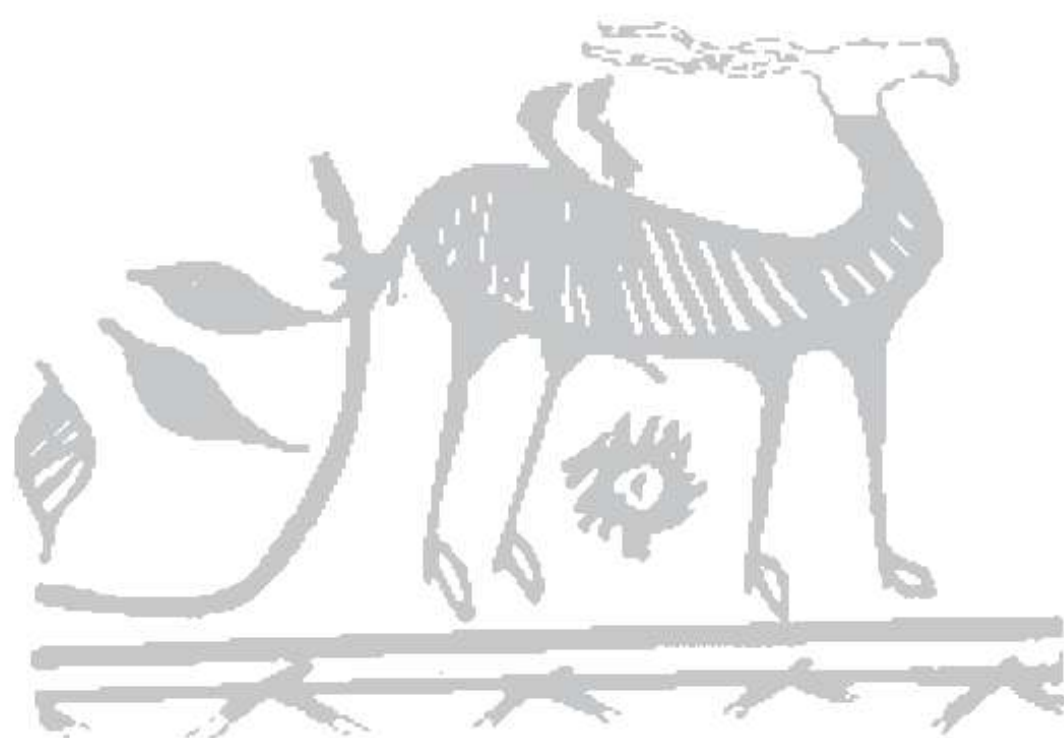


Fig. 17.14 Terracotta pan balance with wooden holding stick and string (both modern) showing the use



It appears that a small but full-fledged shell industry was existing in the Harappan levels at Kalibangan. Other Harappan sites of the region have also yielded evidence of shell working.<sup>1</sup> About 1480 objects of shell including raw

1	2	3	4	5	6	7	8	9	10	11
Bangles	Inlays	Buttons	Ladles	Bowls	Dish	Scapula	Flattish thin	Circular Tall	Waste material	Total
1411	20	4	4	3	1	1	1	2	33	1480

material, waste and finished products are available. The distribution is as below :-

**Figs. 18.1, 18.1(a) and 18.1(b)**

1. Shell, ladle with a broken cup/bowl and long handle for transferring liquid. From a late level of Period II. (KLB-2, Reg. No. 14407).
2. Shell, fragment of a bowl. From a late level of Period II. (KLB-1, Reg. No.

1124).

3. Shell, fragment of a dish with an inverted rim. From a middle level of Period II. (KLB-2, Reg. No. 10296).
4. Shell, ladle with a broken cup or bowl and long handle for transferring liquid or semi-liquid. From a late level of Period II. (KLB-2, Reg. No. 16728).
5. Shell, ladle with a broken cup or bowl and long handle for transferring liquid or semi-liquid. From a late level of Period II. (KLB-1, Reg. No. 14408) [Fig. 18.1(b)].
6. Shell, fragment of a bowl with incurved featureless rim. From a late level of Period II. (KLB-2, Reg. No. 11197).
7. Shell, fragment of a ladle. From a late level of Period II. (KLB-2, Reg. No. 21821).

<sup>1</sup> Nath, A. 2018. Archaeomalacology of the Harappans at Rakhigarhi, Haryana, Man and Environment, XLIII(2): 42-66.





Fig. 18.1 Fragmentary ladles, cups, bowls and dish of shell

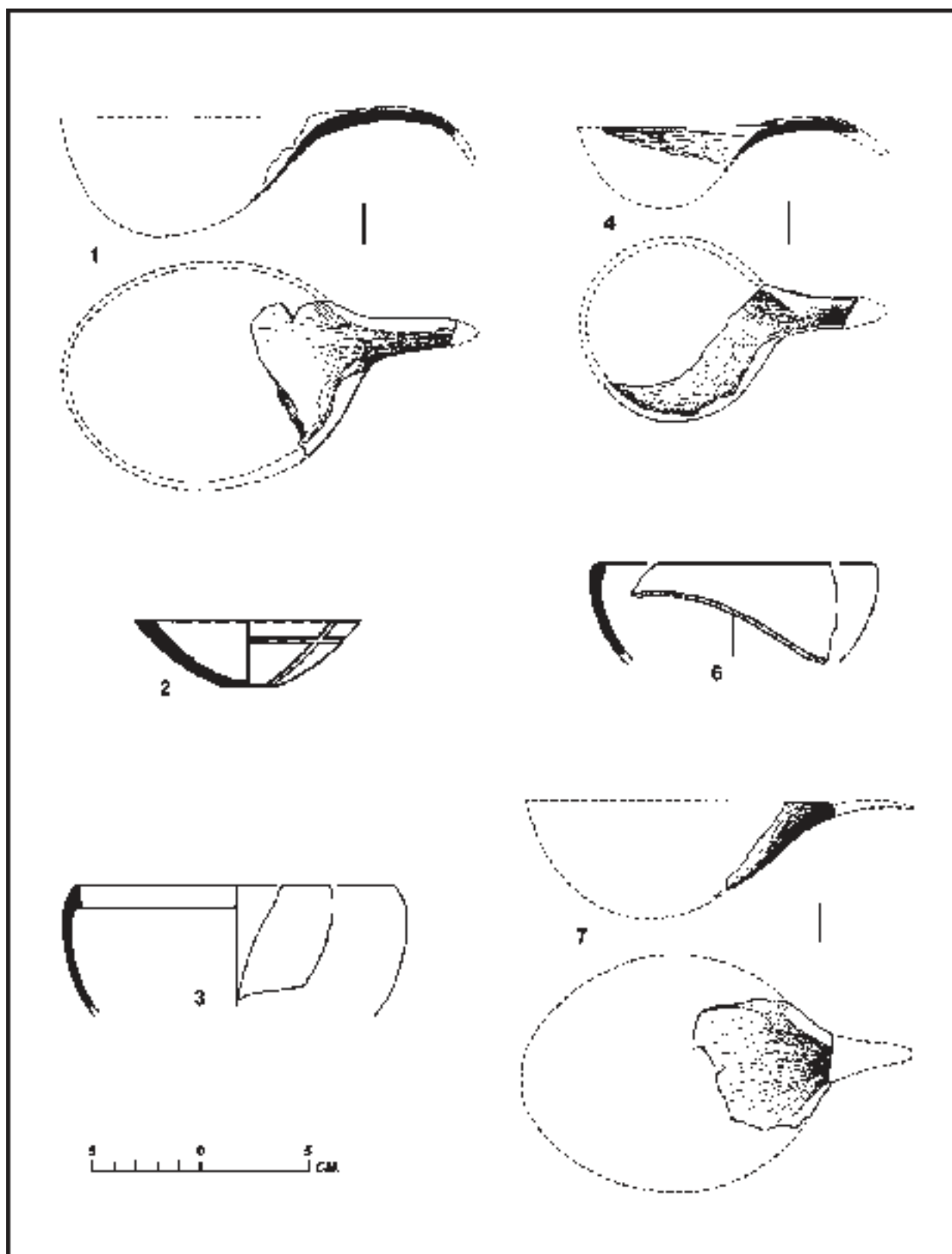


Fig. 18.1(a) Section and different views of ladles and bowls of shell

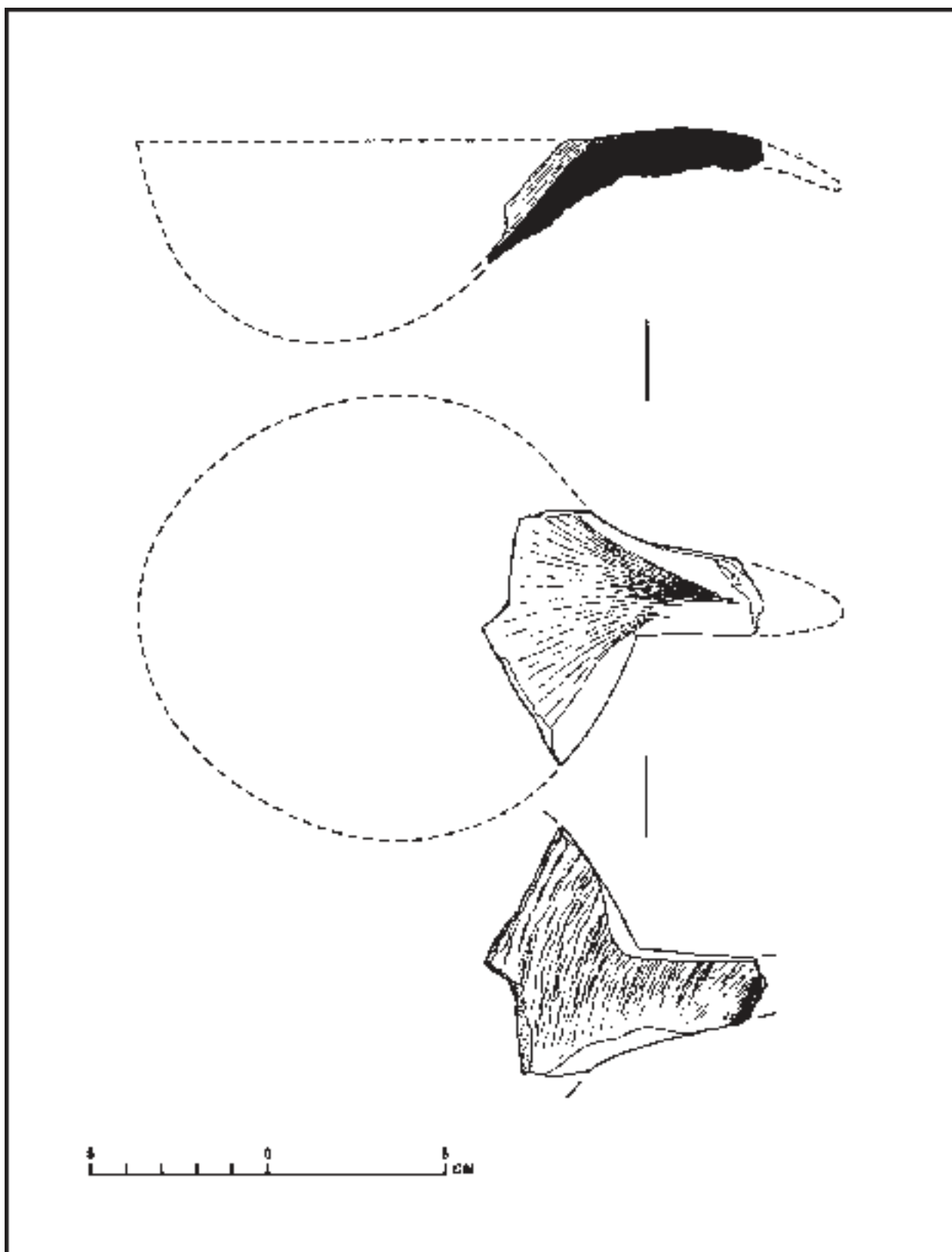


Fig. 18.1(b) *Section and different views of a ladle of shell*

**Figs. 18.2 and 18.2(a)**

1. Shell; button decorated with incised ten petal flower and criss-cross pattern filling around it, circular with a central hole. From a late level of Period II. (KLB-2, Reg. No. 13062).
2. Shell; button decorated with incised six petal flower and criss-cross pattern filling around it, circular with a central hole. From a late level of Period II. (KLB-2, Reg. No. 12995).
3. Shell; button decorated with incised nine petal flower and criss-cross pattern filling around it, circular with a central hole. From a late level of Period II. (KLB-1, Reg. No. 19410).
4. Shell; tortoise-shaped pendant with two perforations. From a late level of Period II. (KLB-2, Reg. No. 13231).
5. Shell; circular tablet with an incised channel. From a late level of Period II. (KLB-2, Reg. No. 11839).
6. Shell; scapula with a sharp pointed end. From a late level of Period II. (KLB-2, Reg. No. 4485).
7. Shell; quarter portion fragment of round object with three incised lines. From a late level of Period II. (KLB-2, Reg. No. 577).
8. Shell; fragment of a flattish pin. From a late level of Period II. (KLB-1, Reg. No. 12950).
9. Shell; fragment of a button with oblique incised lines forming triangles. From a late level of Period II. (KLB-2, Reg. No. 3164).



Fig. 18.2 Shell buttons, tortoise-shaped pendant, scapula, etc.

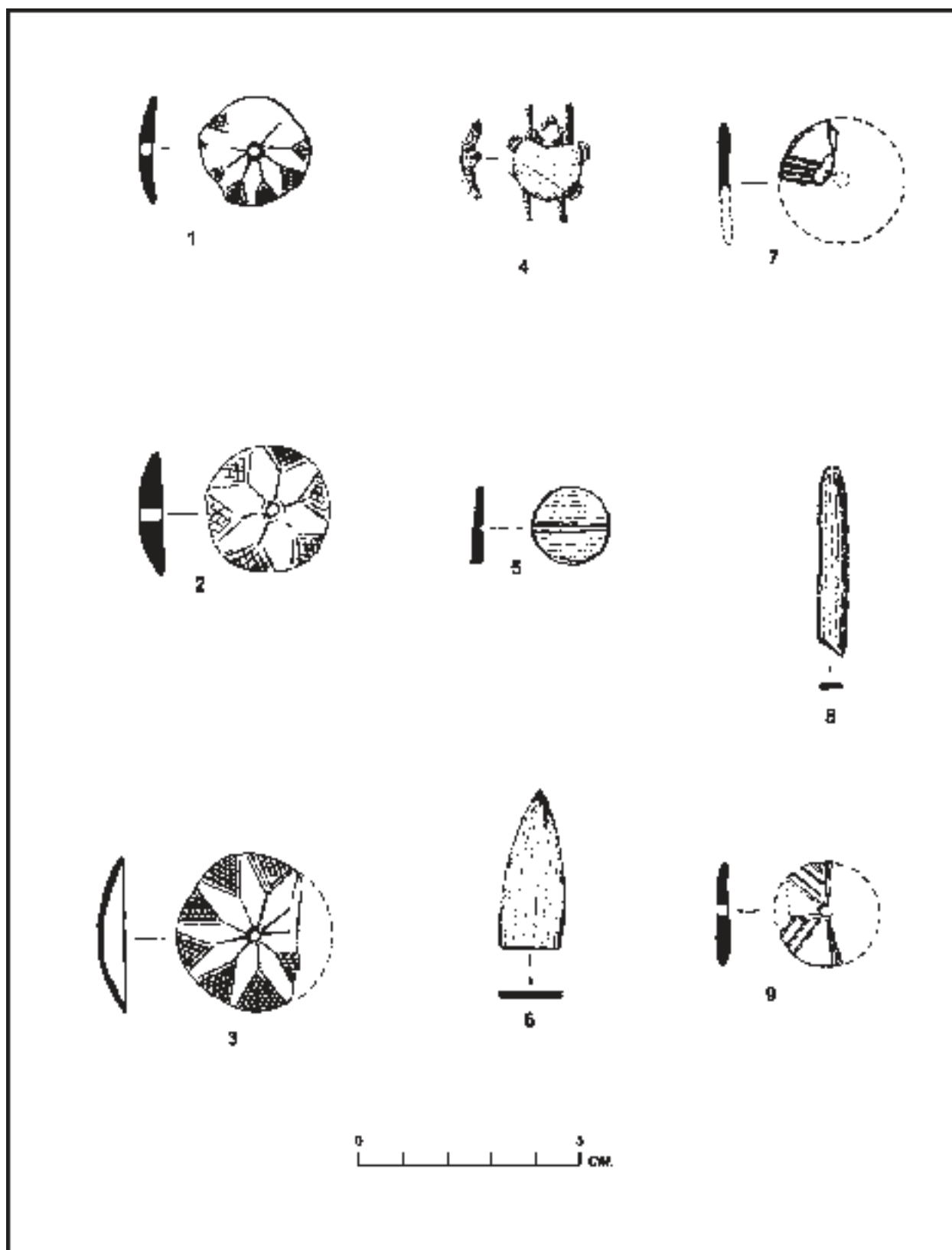


Fig. 18.2(a) Section, side views and front views of shell buttons, tortoise-shaped pendant, scapula, etc.

**Fig. 18.3**

1. Shell, inlay; circular tablet broken. From a late level of Period II. (KLB-2, Reg. No. 2119).
2. Shell, inlay; circular tablet. Unstratified. (KLB-2, Reg. No. 21822).
3. Shell, inlay; truncated cone-shaped. From a late level of Period II. (KLB-2, Reg. No. 14329).
4. Shell, inlay; circular tablet. From a late level of Period II. (KLB-2, Reg. No. 8968).
5. Shell, inlay; square. From a late level of Period II. (KLB-1, Reg. No. 14328).
6. Shell, inlay; circular tablet. From a late level of Period II. (KLB-1, Reg. No. 7384).
7. Shell, inlay; ovoid. From a late level of Period II. (KLB-1, Reg. No. 1432).
8. Shell, inlay; convex inlay. From a late level of Period II. (KLB-1, Reg. No. 840).
9. Shell, inlay; circular tablet. From a middle level of Period II. (KLB-2, Reg. No. 19768).
10. Shell, inlay; circular tablet. From a late level of Period II. (KLB-2, Reg. No. 6180).
11. Shell, inlay; unfinished ovoid piece. From a late level of Period II. (KLB-2, Reg. No. 13879).
12. Shell, inlay; rectangular. From a late level of Period II. (KLB-2, Reg. No. 17958).
13. Shell, inlay; broken with incised circles. From a late level of Period II. (KLB-2, Reg. No. 9587).
14. Shell, inlay; circular tablet. From a late level of Period II. (KLB-2, Reg. No. 4542).
15. Shell, inlay; circular tablet. From a late level of Period II. (KLB-2, Reg. No. 3062).



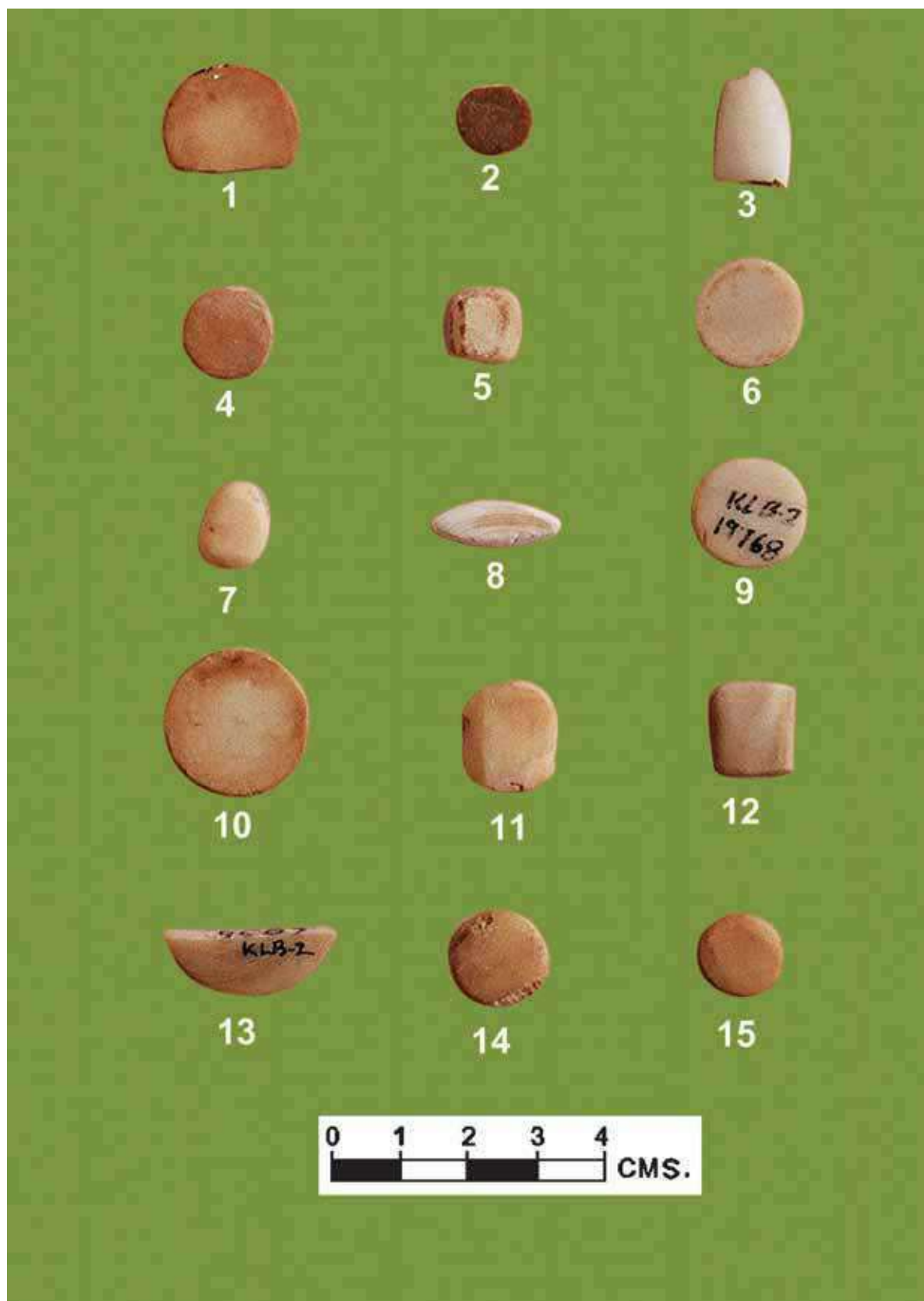


Fig. 18.3 *Shell inlays*

## **CONCH SHELL**

### **Figs. 18.4 and 18.4(a)**

Saw marks are clearly visible in the valva and columella indicating cutting of the shell by a copper or bronze wire or saw.

1. Shell; fragment with saw marks. From surface. (KLB-1, Reg. No. 13551).
2. Shell; fragment with saw marks. From a late level of Period II. (KLB-1, Reg. No. 5).
3. Shell columulla; From surface. (KLB-2, Reg. No. 13432).
4. Shell columulla; From a late level of Period II. (KLB-2, Reg. No. 1998).



Fig. 18.4 *Fragmentary conch shells*

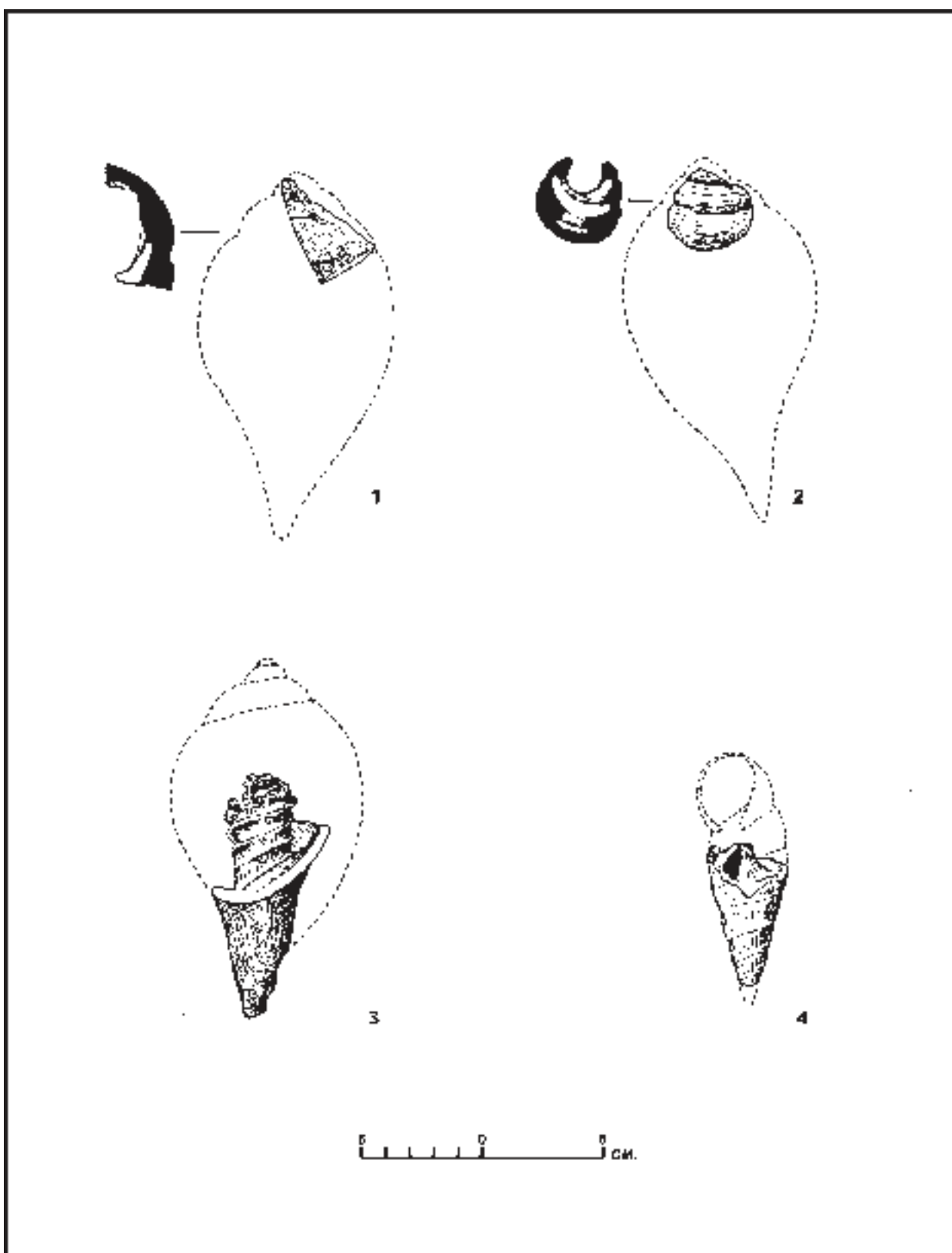


Fig. 18.4(a) Section and side view of fragmentary conch shells

# TERRACOTTA SPINDLE WHORLS, SPOOLS, WEAVER'S TOOLS AND WEIGHTS

Jagat Pati Joshi and Madhu Bala

## CHAPTER

# 19

The following objects connected with weaver's craft are described :-

### SPINDLE WHORLS

**Fig. 19.1**

1. Terracotta spindle whorl; circular with a hole at the centre, dia. 5.50 cm. From a middle level of Period II. (KLB-1, Reg. No. 14180).
2. Potsherd; rounded and dressed it as a spindle whorl with a hole, dia. 4 cm. From a late level of Period II. (KLB-2, Reg. No.8162).
3. Terracotta spindle whorl ; circular, with a central hole, dia. 4 cm. From a middle level of Period II. (KLB-2, Reg. No. 11205).
4. Terracotta spindle whorl ; circular, the hole is not exactly at the centre but could give a circular round, dia. 4.50 cm. From a late level of Period I. (KLB-1, Reg. No. 8963).

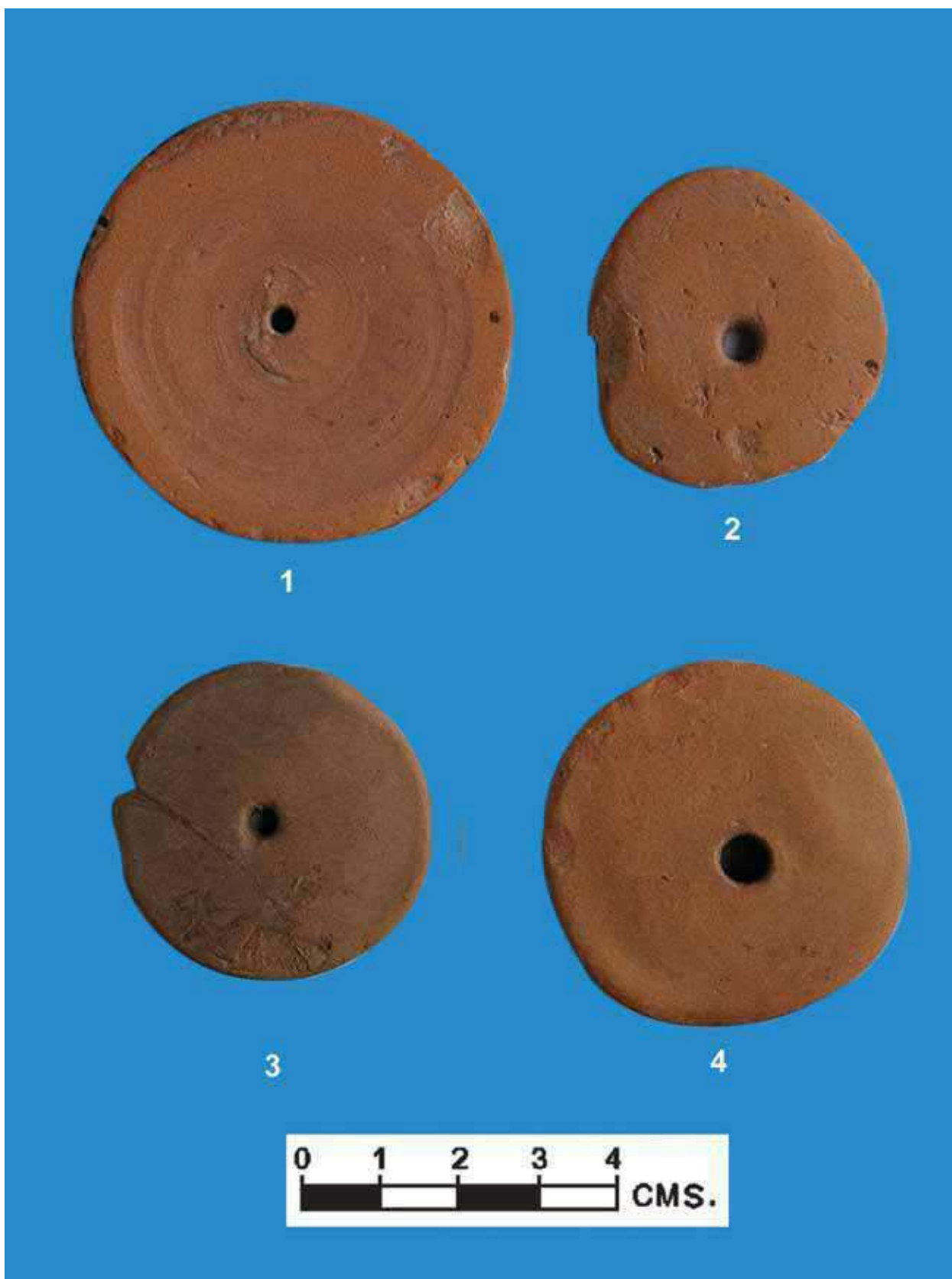


Fig. 19.1 *Terracotta spindle whorls with a central hole*

**Fig. 19.2**

1. Terracotta, spindle whorl; with a hub on one side, has raised circular edge and a central hole. From a middle level of Period II. (KLB-2, Reg. No. 13517).
2. Terracotta, spindle whorl; with a hub, on one side and central hole. From a late level of Period II. (KLB-1, Reg. No. 21953).
3. Terracotta, spindle whorl; with a hub and a hole. From a late level of Period II. (KLB-2, Reg. No. 10779).
4. Terracotta, spindle whorl; with a hub on one side and other side is flat. From a late level of Period II. (KLB-2, Reg. No. 6253).
5. Terracotta, spindle whorl; with a plano-convex section, hole on both sides. From a late level of Period II. (KLB-2, Reg. No. 11599).
6. Terracotta, spindle whorl; with a hub and a hole only on one side. Unstratified. (KLB-2, Reg. No. 21954).
7. Terracotta, spindle whorl; with a hole on the hub side for fixing the wooden rod. From a late level of Period II. (KLB-2, Reg. No. 74-74/263).



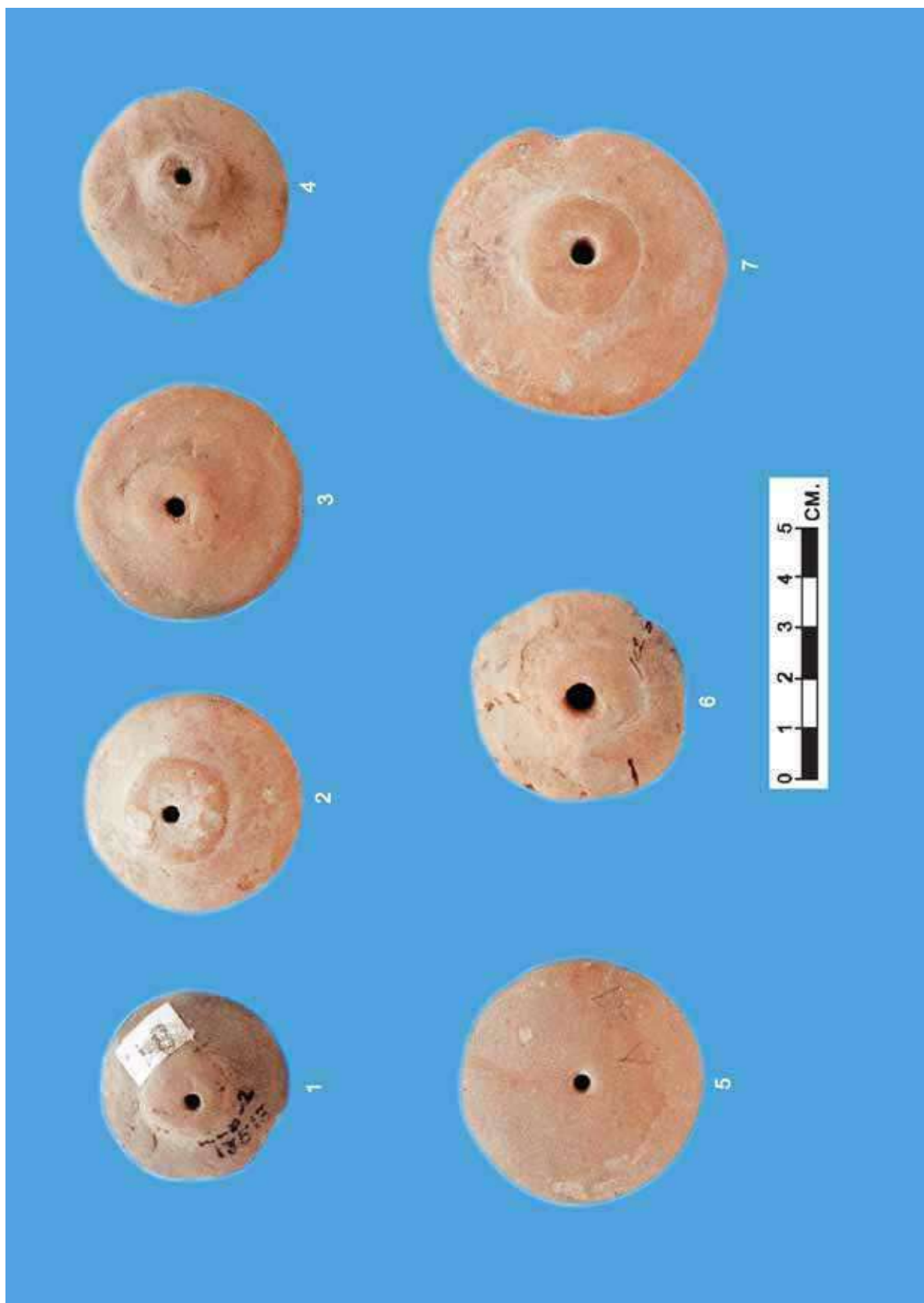


Fig. 19.2 Terracotta spindle whorls with a hub and plano-convex spindle whorls

## **SPOOLS**

**Fig. 19.3**

- 1(left) Terracotta; circular part of the spool with holes all around and a central hole inside and a hub without any hole on it. From a late level of Period II. (KLB-1, Reg. No. 8923).
- 1(right) Terracotta; circular part of a spool with a hub and holes all around. From a late level of Period II. (KLB-1, Reg. No. 21070)
- 2(left) Terracotta; circular part of the spool with holes all around and a hole to fix tenori. From a late level of Period II. (KLB-1, Reg. No. 16811).
- 2(right) Terracotta; circular spool side with a top having hole in the inner side and small hole all around the knob and lower area. From a late level of Period II. (KLB-1, Reg. No. 12176).
- 3(left) Terracotta; circular spool side with holes all around and a central hole. From a late level of Period II. (KLB-1, Reg. No. 181).
- 3(right) Terracotta; animal-headed spool, fragmentary, height 6 cm, dia. 5 cm, with a hole in the bottom and in the circular edge it has holes at a distance of 1.50 cm. From a late level of Period I. (KLB-1, Reg. No. 1251).

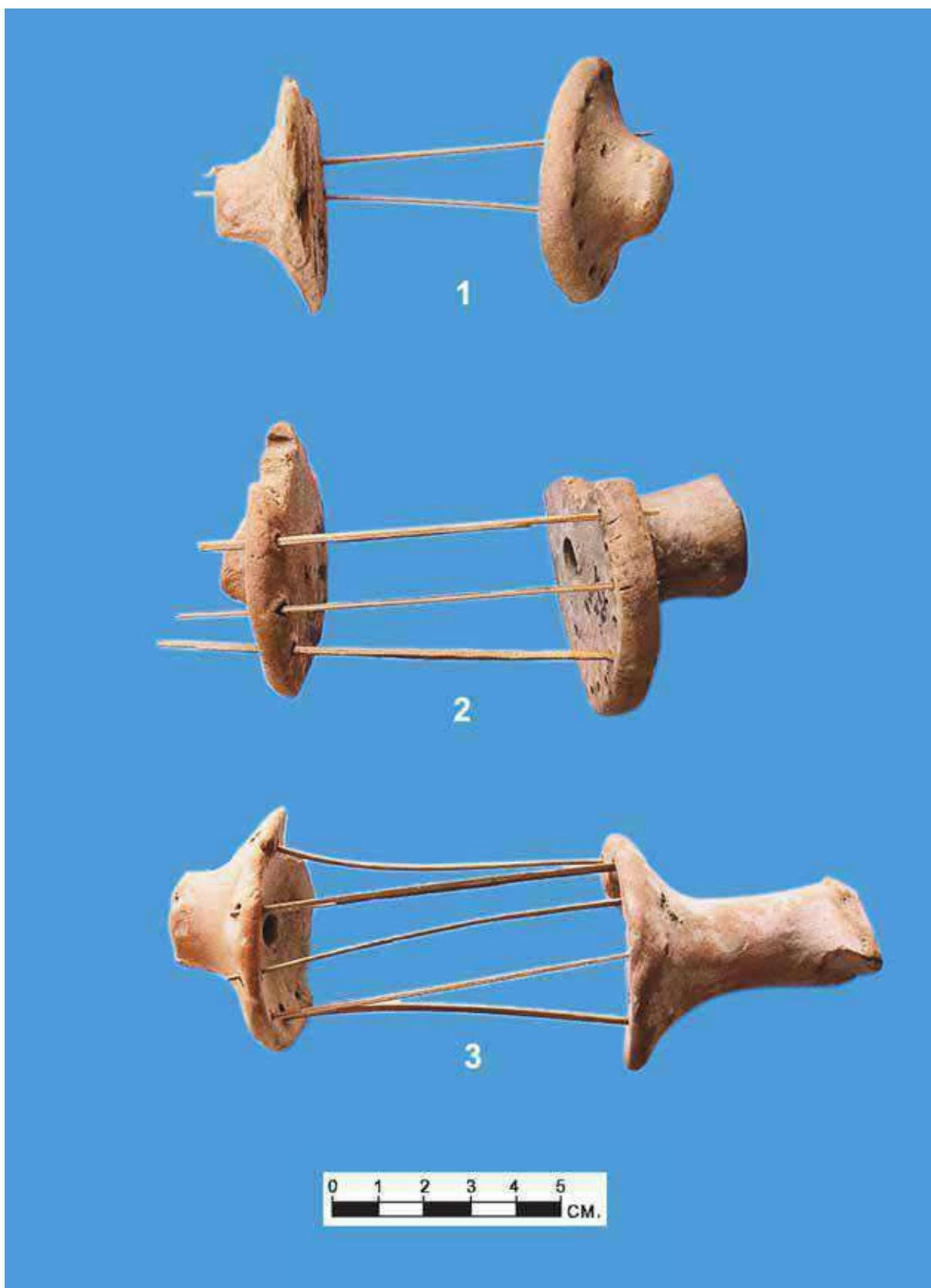


Fig. 19.3 Terracotta spool with wooden sticks (modern) showing their use

**Fig. 19.4**

bottom holes for putting straw bars for winding of yarn. From an unstratified level of Period II. (KLB-1, Reg. No. 17387).

1. Terracotta; funnel spool with side and

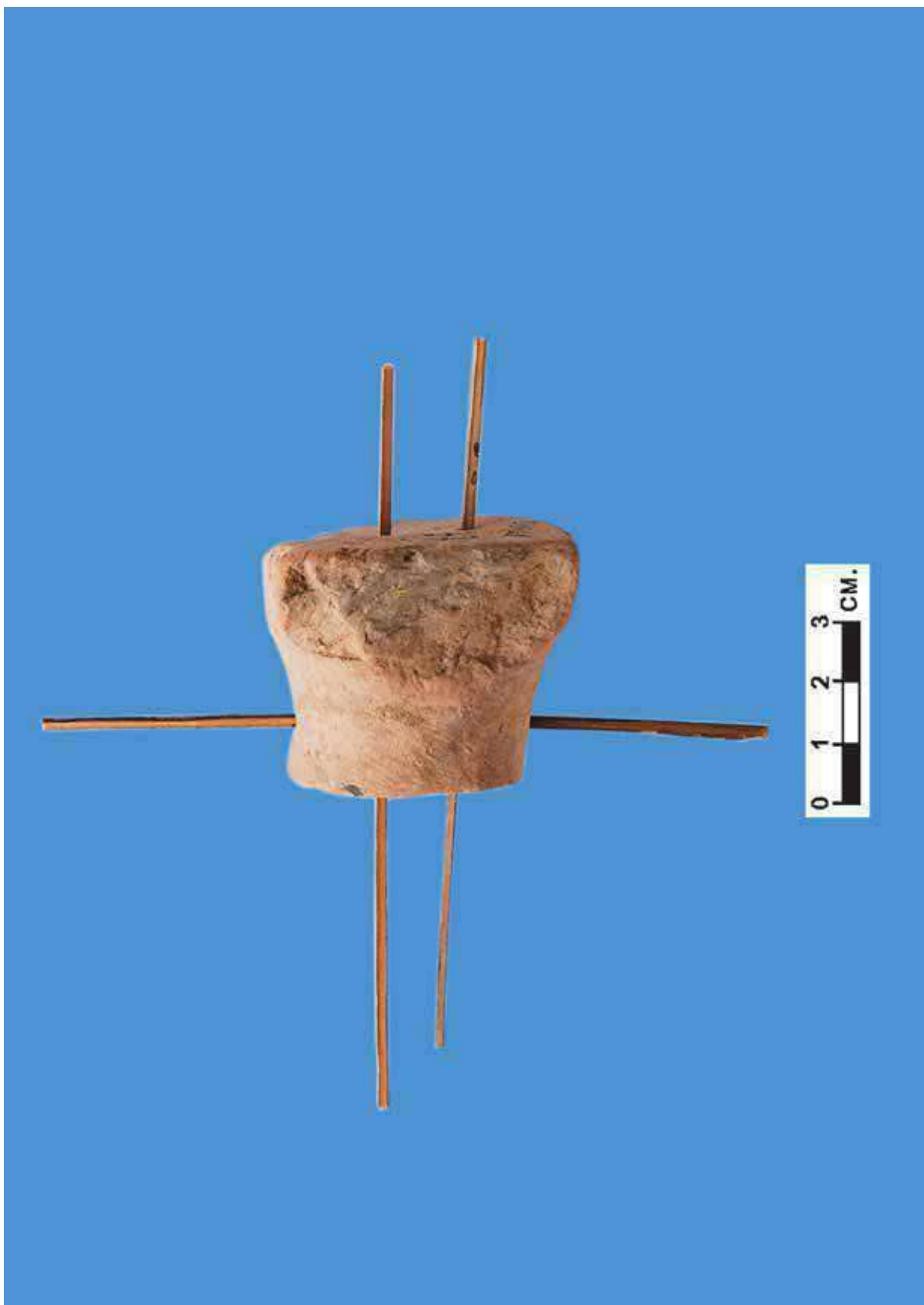


Fig. 19.4 Terracotta spool with wooden sticks (modern)

**Figs. 19.5 and 19.5(a)**

1. Terracotta, animal-headed spool; circular, with holes around at the base near the circumference. From a late level of Period II. (KLB-2 and 3, Reg. No. 21951)
2. Terracotta, fragment of a spool; circular, with holes around. From a late level of Period II. (KLB-1, Reg. No. 21952)



Fig. 19.5 Terracotta animal-headed spool and other circular spool



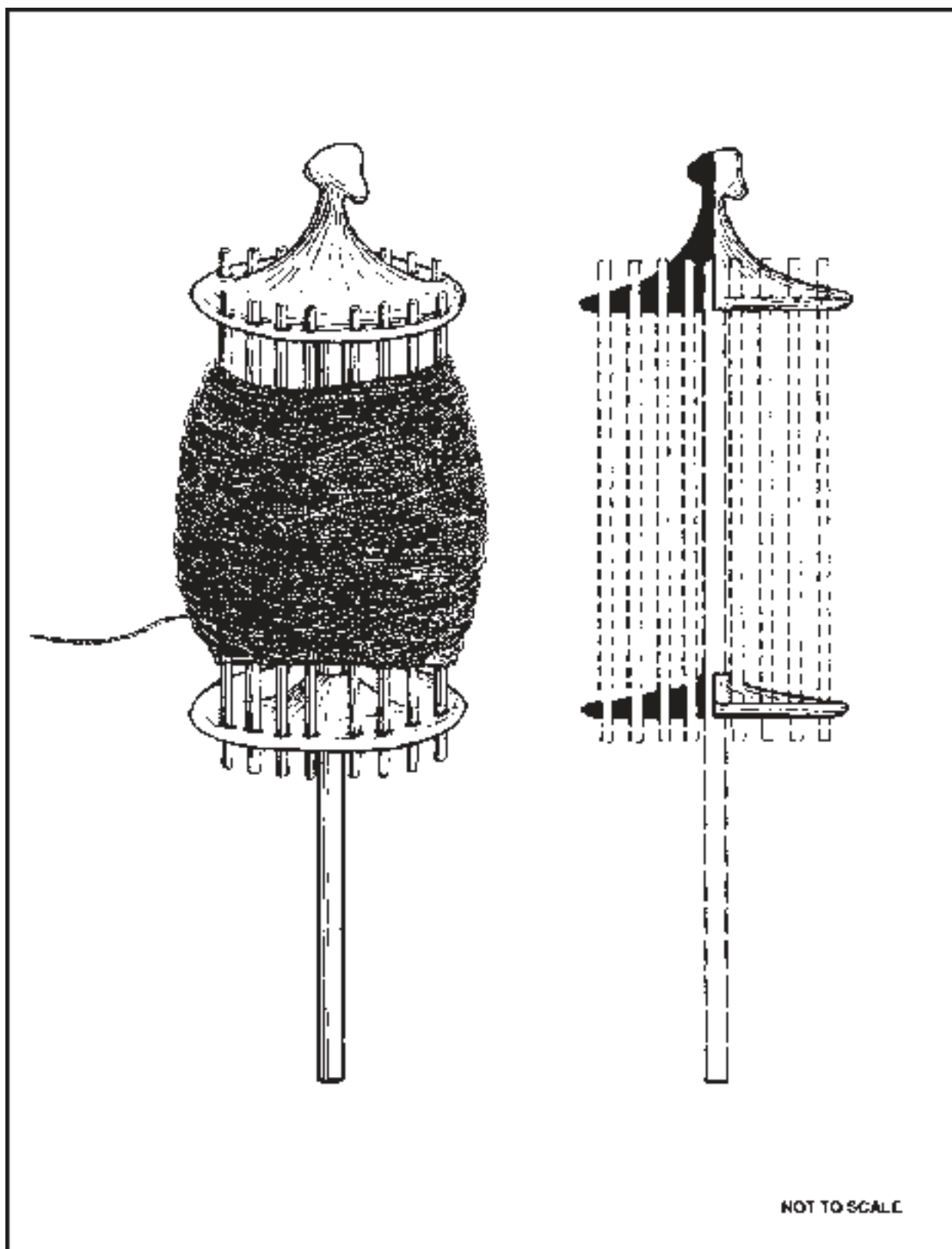


Fig. 19.5 (a) *Conjectural drawing of animal-headed spool*

**TERRACOTTA WEIGHTS USED  
BY WEAVERS**

**TERRACOTTA WEIGHTS**

**Fig. 19.6**

1. Terracotta weight; thin, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 9420).
2. Terracotta weight; thick, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 16178).
3. Terracotta weight; thick, broken, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 19289).
4. Terracotta weight; thin, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 18999).
5. Terracotta weight; thick, biconcave-shaped. From a mid level of Period II. (KLB-1, Reg. No. 15040).
6. Terracotta weight; thick, broken, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 19220).
7. Terracotta weight; thin, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 278).
8. Terracotta weight; thin, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 111).
9. Terracotta weight; thick, broken, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 7602).

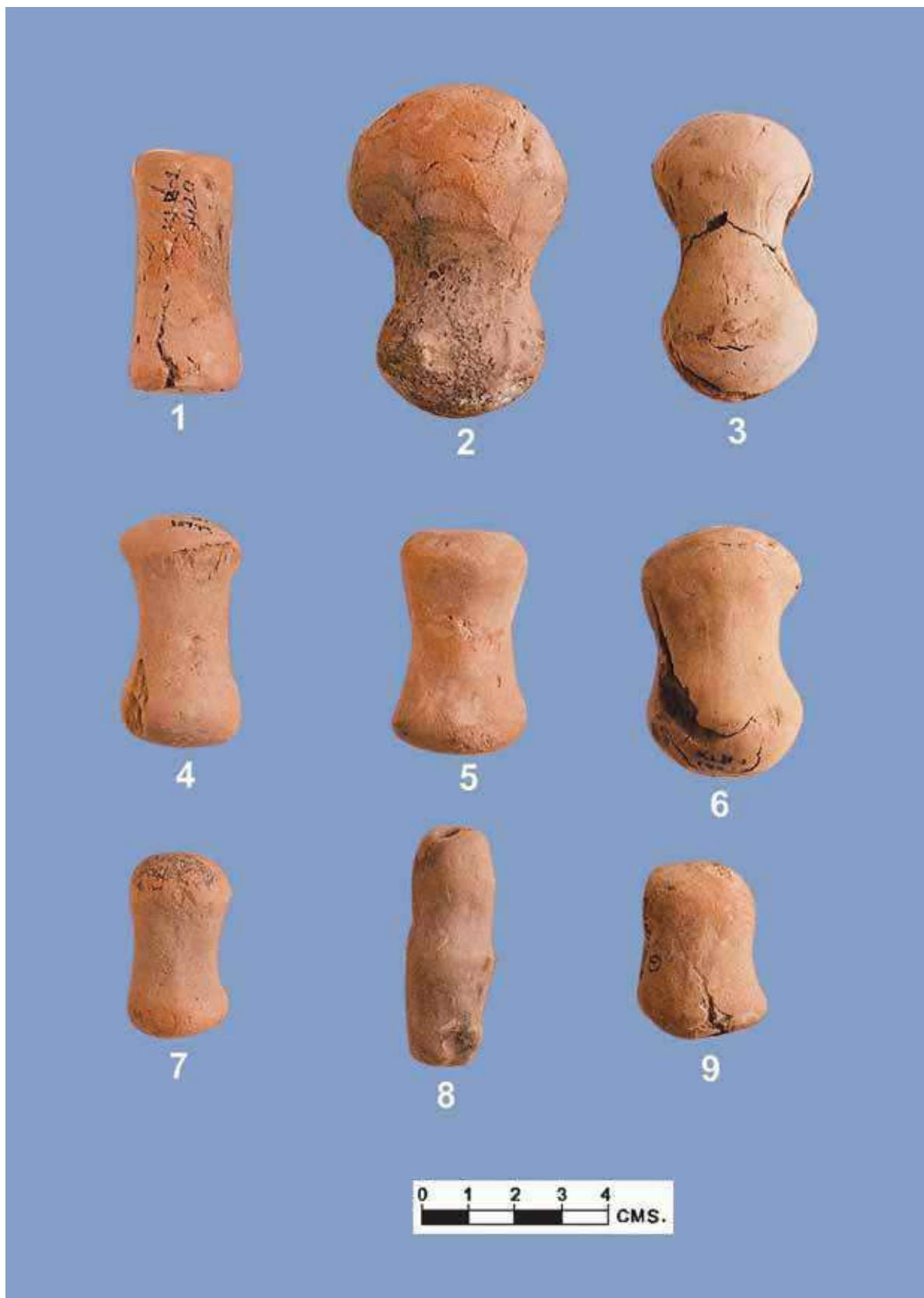


Fig. 19.6 *Terracotta weaver's biconcave weights*

**Fig. 19.7**

1. Terracotta weight; thick, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 12632).
2. Terracotta weight; biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 18887).
3. Terracotta weight; broken, biconcave-shaped. From a late level of Period II. (KLB-2, Reg. No. 21862).
4. Terracotta weight; thin, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 8898).
5. Terracotta weight; thin, biconcave-shaped. From a late level of Period II. (KLB-2, Reg. No. 2355).
6. Terracotta weight; short, thick, biconcave-shaped. From a late level of Period II. (KLB-2, Reg. No. 1712).
7. Terracotta weight; short, thin, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 19025).
8. Terracotta weight; short, broken, biconcave-shaped. From a late level of Period II. (KLB-2, Reg. No. 21863).
9. Terracotta weight; broken, short, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 714).
10. Terracotta weight; short, thin, biconcave-shaped. From a late level of Period II. (KLB-1, Reg. No. 20335).

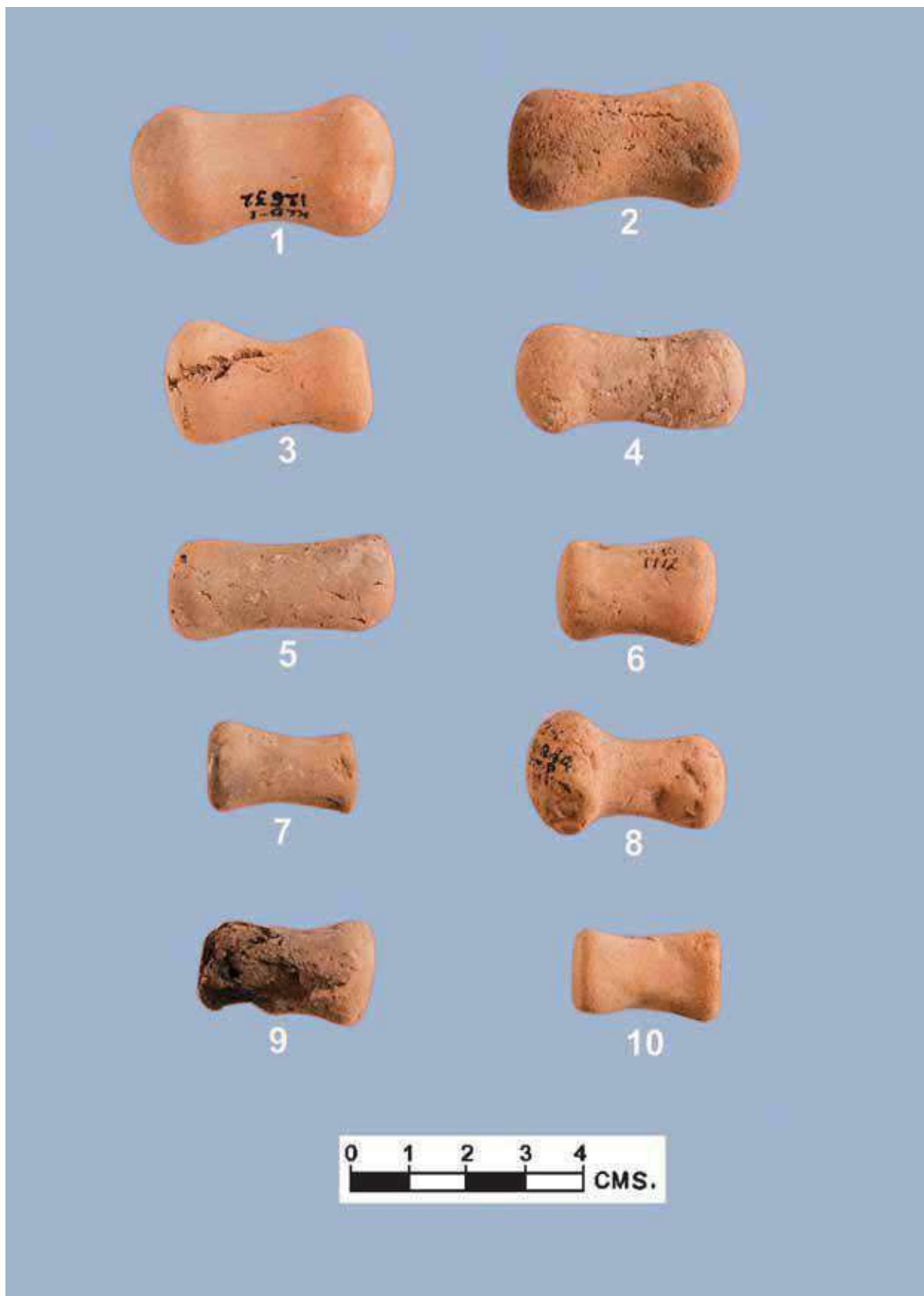


Fig. 19.7 *Terracotta weavers biconcave weights*

## **CLOTH IMPRESSION ON POTTERY**

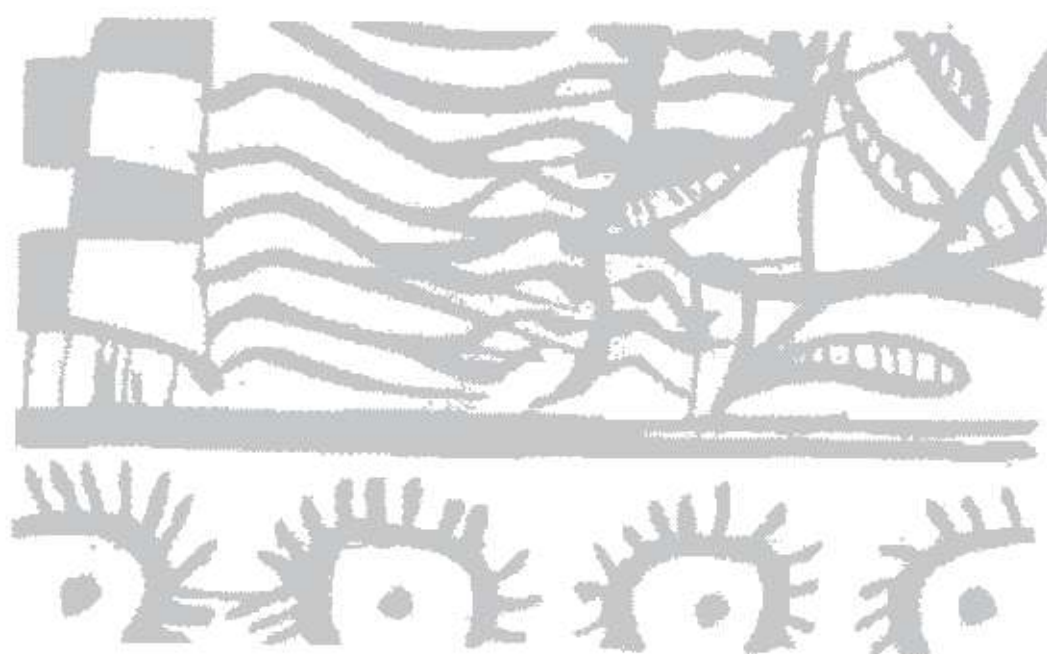
**Fig. 19.8**

1. Pottery, perforated base of bowl; broken, bears cloth impression. From a middle level of Period II. (KLB-1, Reg. No. 21834).
2. Pottery, small piece of a pot; broken, showing cloth impression. From a late level of Period II. (KLB-2, Reg. No. 21835).
3. Pottery, small piece of a pot; having handle with hole, showing cloth impression. From an early level of Period II. (KLB-2, Reg. No. 17081).



Fig. 19.8 Cloth impression on pottery





# TERRACOTTA PULLEYS, DECORATED TILES, PIPES AND STONE DOOR-DEVICES

JAGAT PATI JOSHI

## CHAPTER

# 20

### TERRACOTTA PULLEYS

A pulley is a grooved wheel or a set of wheels for ropes or chains, used for lifting things, at times fixed to wooden block in which a pulley is fixed, with the help of axle.

The basic function of a pulley which is a primary mover, is to increase the capacity of manpower for lifting up any material to a higher point e.g. with reference to Kalibangan lifting water from a well for domestic use or for irrigation or to lift material to the first floor as indicated by the steps to go up at the first floor in the houses. The use of pulley in lifting any load is to ease additional exertion by the human body or bullocks. It appears that the Harappans were aware of this scientific law. The size and the diameter of a pulley depends on the load for which it is used. The excavations at Kalibangan has yielded eight terracotta pulleys out of which two are fragmentary. An average the diameter varies from 3.3 cm to 10 cm. The thick circumference has a deep groove for the rope. By the side of the central hole there are two holes on either side. The pulleys appear in the late levels of Period II. Terracotta pulleys indicate that there might be wooden pulleys for use in wells for lifting water for domestic or agriculture use. The pulleys are described as below:-

**Fig. 20.1**

1. Terracotta, pulley; fragment, with a

groove on the thickness of circumference for putting a thread. There are two holes on the either side of the central hole, dia. 6 cm. From a late level of Period II. (KLB-1, Reg. No. 5436).

2. Terracotta, pulley; half portion with a deep groove on the thickness of the circumference for putting a thin rope. There are two holes on the sides of the central hole, dia. 10 cm. From a late level of Period II. (KLB-1, Reg. No. 19251).
3. Terracotta, pulley; almost complete with a deep groove on the thickness of circumference having one central hole, dia. 5.2 cm. From a late level of Period II. (KLB-2, Reg. No. 701).
4. Terracotta, pulley; almost complete with a wide central hole and deep groove on the thickness of the circumference, dia. 5 cm. From a late level of Period II. (KLB-1, Reg. No. 19426).
5. Terracotta, pulley; complete with a deep groove on the thickness of the circumference with a central hole, dia. 4.5 cm. From a late level of Period II. (KLB-1, Reg. No. 855).
6. Terracotta, pulley; Almost complete with a deep groove on the thickness of the circumference having one central hole and two side holes, dia. 5 cm. From a late level of Period II. (KLB-1, Reg. No. 701).

7. Terracotta, pulley; complete with a groove and a central hole in the thickness of the circumference, dia. 3.5 cm. From a late level of Period II. (KLB-2, Reg. No. 10024).
8. Terracotta, pulley; complete with a groove on the thickness of the circumference, dia. 3 cm. From a late level of Period II. (KLB-1, Reg. No. 621).

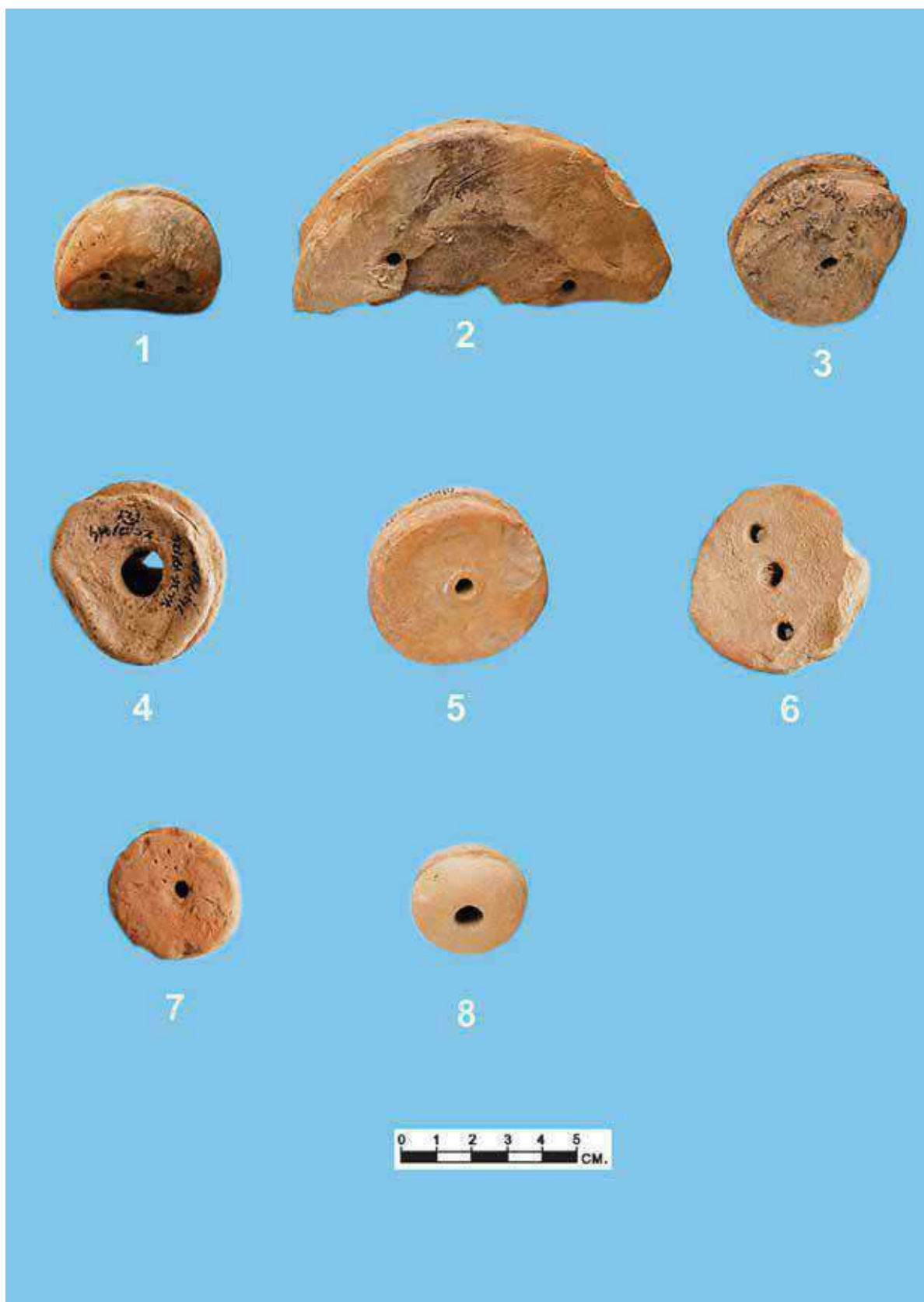


Fig. 20.1 *Terracotta pulleys*

## DECORATED TERRACOTTA TILES

While the Harappans were excellent architects and planners of their houses, they aesthetically decorated their homes with beautifully incised tiles. Kalibangan has yielded some very good evidence of these tiles. More or less similarly decorated tiles laid in the rooms have been reported from Balakot and Bagasara. These are available from the excavations in fragments and also *in situ* from one of the rooms of a house at KLB-2. Basically the designs comprise of a variety of geometrical motifs but in one case a bird motif is also incised. The specimens are described as below :-

### Fig. 20.2

1. Tile; fragmentary, decorated with incised intersecting circles of dia. 7.5 cm, thickness 2 cm, available size of tile 16 x 14 cm. From a late level of Period II. (KLB-2, Reg. No. 21774).
2. Tile; fragmentary, size 8 x 16 x 1 cm, decorated with three parallel lines within rectangles. From a late level of Period II. (KLB-1, Reg. No. 20436).
3. Tile; fragmentary, decorated with deep intersecting circles of dia. 4.5 cm, thickness 2 cm, size of tile 12.5 x 12 cm. From a late level of Period II. (KLB-2, Reg. No. 5031).
4. Tile; fragmentary, decorated with deep incised design of intersecting circles of dia 7.5 cm, thickness 2 cm, with a raised ridge, size of tile 14 x 9 cm. From a late level of Period II. (KLB-2, Reg. No. 21773).



Fig. 20.2 Decorated terracotta tiles

**Fig. 20.3**

1. Tile; fragmentary, size 19 x 14 cm. thickness 2 cm, decorated with double lines design with a bird obliquely hatched. From a late level of Period II. (KLB-1, Reg. No. 21775).
2. Tile; fragmentary, size 16 x 6.5 cm, thickness 1.5 cm. decorated with intersecting circles. From a middle level of Period II. (KLB-1, Reg. No. 21776).
3. Tile; fragmentary size 7.5 x 7 cm, thickness 1 cm, decorated with six petalled incised flower enclosed by petals all around. From an early level of Period II. (KLB-1, Reg. No. 1347).





Fig. 20.3 Terracotta decorated tiles

## TERRACOTTA PIPES

### **Figs. 20.4, 20.4(a), and 20.4(b)**

KLB-1, has yielded two examples of terracotta pipes from a residential area in trench No. ZA8, Qd. 3. Both were discovered in the big house of an important person, which belonged to Phase V. Both are wheel-made, out of which one is intact and other slightly damaged. One pipe is joined with other by a rim which could be entered into another pipe to hold it [Fig.20.4(b)]. The pipe is 26 cm long upto the rim. The rim is having a width of 4 cm and a dia. 11.8 cm. The dia. of the other end is 14.5 cm. The pipes were an important object and are marked by incised chain and the fish symbol. After joining these pipes, the total length of the pipes is 56 cm. From a late level of Period II. (KLB-1, Reg. No. 21582 and 21583).

Mackay reports<sup>1</sup> : "Prior to 1927, Hargreaves found several drain-pipes of this type in HR Area,<sup>2</sup> but the specimen that we now illustrate is rather better made. It is 18.8 inches in length, the outside diameter of its base is 5.75 inches and it is 0.4 inches thick. The flange at its spigot end is 0.5 inches thick and projects 0.6 inches This drain-pipe was made on the wheel from ordinary

pottery clay and was coated with a thick cream slip. It is heavily grooved by the fingers inside. Its top was enclosed in a square brick construction (PL. XXXIX, d). Locus : Bl. 9, Ho. VI, rm. 34. Level : - 15.7 ft.

These drain-pipes with their very scientific joints are by no means peculiar to Mohenjo-daro. They have been found at Knossos, where they date from the M.M.I Period.<sup>3</sup> At Ur, Woolley has found drain-pipes, about 3 ft. long and 6 inches in diameter, with a flange at one end, which he dates to 3,500 B.C.<sup>4</sup> The latter are not so elaborately made as the specimens found at Mohenjo-daro, none the less they suggest the existence of an elaborate drainage system in Sumer at an even earlier date."<sup>5</sup>

## STONE DOOR-DEVICES

Two door-devices, ball-shaped have a deep grooved socket in which the door tenon moved. There are four round granite door devices with depression in the centre due to the movement of door. In these door devices the circular depression is on both the sides. It appears that once one side gained a deeper hole, the other side was used. Such door devices are reported from Mohenjodaro also.

<sup>1</sup> Mackay, E.J.H. 1938. *Further Excavations at Mohenjo-daro*, p. 426, pl. CVIII.30.

<sup>2</sup> Marshall, J. 1931. *Mohenjodaro and the Indus Civilization*. pl. LXXXIII, 5, pp. 180, 280. Arthur Probsthain, London.

<sup>3</sup> Evans. *Palace of Minos*. vol. I, pp. 141-2, Fig. 103.

<sup>4</sup> *Antiquaries Journal*. vol. VI, pl. LIX.

<sup>5</sup> This dating may have to be amended. A later drain of a pattern very similar to those of Mohenjo-daro and dated to 2,200 B.C. has recently been illustrated by Frankfort; *Illust. Lon. News*, Oct. 1st, 1932, p. 505, fig. 8.

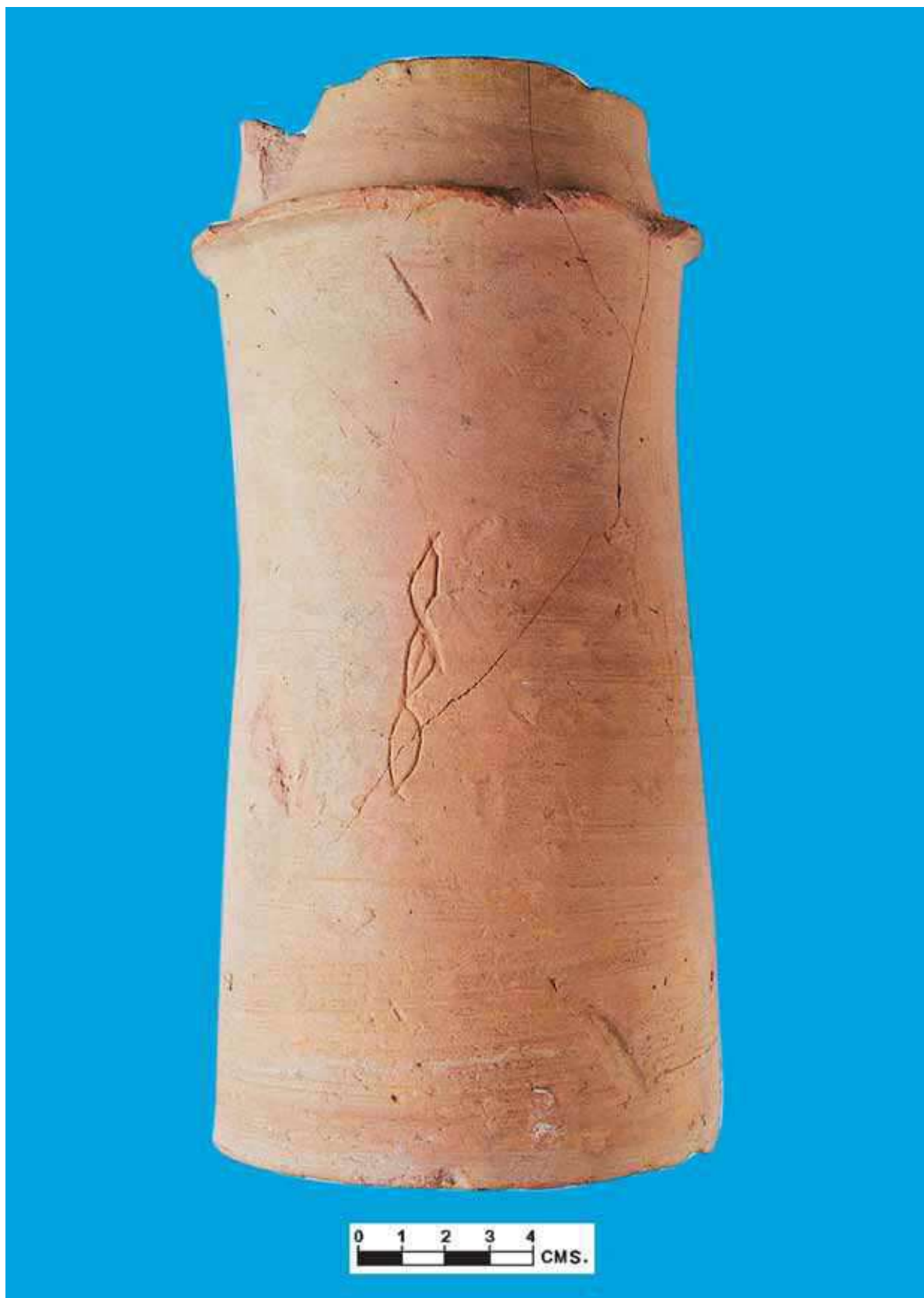


Fig. 20.4 *Terracotta pipe*



Fig. 20.4(a) *Another terracotta pipe*

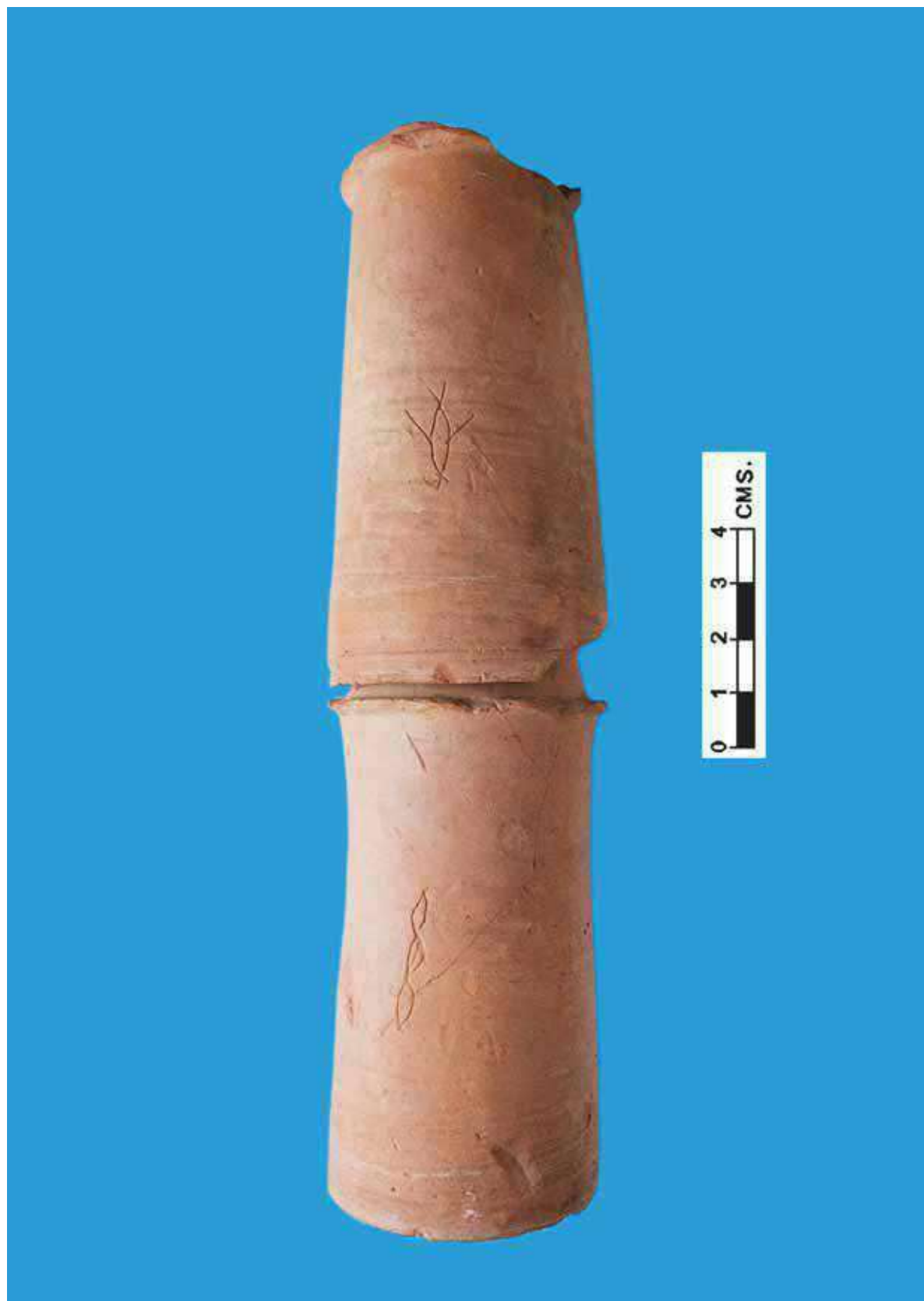


Fig. 20.4(b) A view of both terracotta pipes one upon other showing their setting for use



**Fig. 20.5**

1. Chert, door-device; ball-shaped, dia. 4.5 cm, having deep circular depression, depth 2.5 cm, broken. From a late level of Period II. (KLB-2, Reg. No. 17850).
2. Chert, door-device; stone ball-shaped, dia. 4.5 cm, having deep circular depression, depth 2.5 cm. From a late level of Period II. (KLB-2, Reg. No. 17258).

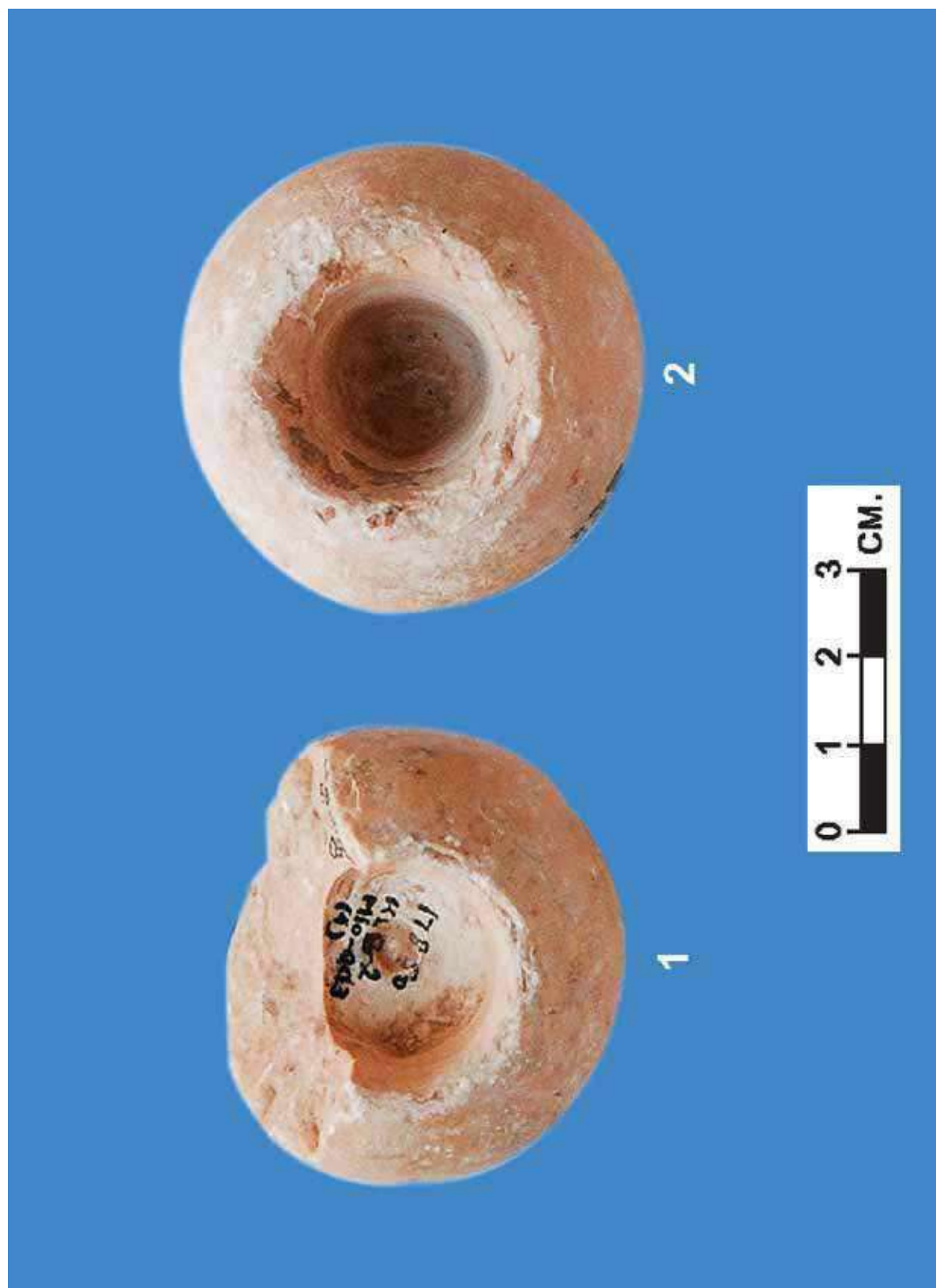


Fig. 20.5 Chert, door-devices



**Fig. 20.6 & 20.6 (a)**

1. Granite, door-device; circular, dia. 10 cm with a depression having a dia. 6.50 depth of 2 cm on one side and the other has a depression of dia 5.50 cm, depth 1.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18890).
2. Sandstone, door-device; having depression on both sides having a dia. 10 cm, depth of 1 cm. From a late level of Period II. (KLB-1, Reg. No. 22030).
3. Sandstone, door-device; having a lenticular section with slight depression of depth of 0.50 cm on both sides having a dia. 11 cm. From a late level of Period II. (KLB-1, Reg. No. 15617).
4. Himalayan schist, door-device; with lenticular section and sharp round edge, hole has marks of movement, it could possibly be a rotating saw (?). From a late level of Period II. (KLB-2, Reg. No. 16894). (Fig. 20.6(a))



Fig. 20.6 Stone door-devices



Fig. 20.6(a) *Himalayan cist, door-device with a hole*

**Fig. 20.7**

1. Brick, door-device; fragment with a blind hole for fixing the tenon.

Present size 12 x 9 cm, dia. of depression 5.50 cm, depth 2 cm. Unstratified. (KLB-1, Reg. No. 22031).



Fig. 20.7 Brick, fragment of a door-device

**Fig. 20.8**

Illustrated here are four bricks, out of which one is intact, while three are damaged. The Intact one is of rectangular shape, so is the shape of

other two; the third specimen in of wedge-shape. The common thing in each of them is the pug-mak of dog. These are unregistred bricks, unearthed from a late level of period I (KLB-1).



Fig. 20.8 Fragmentary bricks, with impressions of dog's paw



**Fig. 20.9**

1. Chert, hemispherical ball decorated with two deep lines cutting each other

at right angles making nine segments like criss-cross pattern. From a late level of Period II. (KLB-1, Reg. No. 18511).



Fig. 20.9 Decorated hemispherical ball of chert with deep incised lines

# OTHER TERRACOTTA OBJECTS

MADHU BALA

CHAPTER

# 21

Excavations at Kalibangan have yielded a large variety of terracotta objects from Harappan levels. It has been generally observed that different types of terracotta objects are available from all Harappan sites e.g. Mohenjodaro, Harappa, Chanhudaro, Lothal, Alamgirpur, and Surkotada. So far Kalibangan is concerned these consist of a large number of terracotta bangles and terracotta cakes of different shapes. While bangles<sup>1</sup> and beads were used as a part of jewellery by the women, the terracotta cakes might have been used, especially the triangular ones, for ritualistic purposes as these have been found from fire altars and one broken triangular cake has an incised horned figure on one side and an animal on the other. The other varieties were used for road material or as a cushion for mud floors. Inspired by the sense of *kautuka* of the children different types of toys or small-imitated models of utilitarian things are found e.g. terracotta toy carts, wheels, human and animal figures, hopscotch, marbles, mechanical toys, birds, gamesmen, balls, swings, bird-whistles, zoomorphic feeding cups for little children, whistles and rattles. Wheeled terracottas and mechanical bulls are remarkable. Different types of gamesmen are found for playing on board by adults, hopscotch and balls for playing by the children. The large-sized beads were used for hanging on dewlaps of bullocks which has a decorative and perhaps musical value.

A *damaru*-shaped object which has a perforation in between like hour glass, a terracotta scale and some sets of terracotta pans with holes for tying strings appear to be pans of a weighing balance. A few toy ploughshares give an idea of the plough-share used during Harappan times and similar plough shares could have been used in the early Harappan ploughed field found at Kalibangan. The eight types of terracotta cart-models reflect the bigger ones used by the people. The hopscotch and swings were the play things of the children. The depiction of spoked wheel shows the technological advancement in the movement of men and material. The spoked wheels are lighter and give greater mobility to the cart. The wheels with multiple holes used for spools and pieces of pottery bear cloth impression suggest the existence of textile industry. The footed *chaklas* and *tawas* indicate the making of *phulkas* (*rotis*) and their baking. The ritualistic aspect is reflected by the terracotta cake and the *Siva-linga* with a *yonī-pitha*. Some grating, pipes and incised tiles are found. incidently, a floor of the room was found laid with decorated tiles incised with intersecting circles on the tiles. Such decorated tiles are also found in one of the rooms of a house of Harappan level at Balakot.

Mostly amongst the terracotta objects, the bull figurines outnumber all varieties of animals and other items. The terracotta animals include elephants, cows, goats,

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<sup>1</sup> As a matter of fact the innumerable terracotta bangles of blackish colour (due to patination) spread over the mounds at the site have given it the name Kali (black) bangan (bangles).

## DISTRIBUTION OF TERRACOTTA OBJECTS

A	B			C	D		E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
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Human			Animal			Birds			Gamesmen			Cart Frames			Wheels			Decorated			Undecorated			Bird-whistles			Ear ornaments			Hopscotch			Rings			Rattles			Feeding-cups			Sharpeners			Cones			Plough			Dice			Gaming board			Inscribed cake			Takhti			Toy-bricks			Swing														
16	1009	14	419	965	517	8	1102	86	86	48	79	7	12	8	14	6	2	2	3	1	5	1																																																										
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24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50																																																						
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rams and dogs. Ducks and eagle represent birds and marine species include tortoise.

Mostly these animals are made in a realistic style. The charging mood of the bull is remarkable in terracotta (KLB-1, Reg. No. 3634). The feeding cups have the mouth of a buffalo and cow respectively made on it and this could be liked by the child who could fiddle and play with the figure while sucking milk besides the fact that it indicates cow's or buffalo's milk was given to the children.

Some of the gamesmen bear Harappan script which could give different status to the gamesmen while playing. Such denomination is important in the game.

The terracotta objects can also be classified as per the usage by various age groups.

#### I. Play-things for little children

- (i) Rattles
- (ii) Whistles
- (iii) Feeding cups

#### II. Play-things for children

- (i) Human figures
- (ii) Animal figures
- (iii) Bird figures

- (iv) Toy cart frame and wheels
- (v) Hopscotches
- (vi) Decorated balls

#### III. Play-things for adults

- (i) Pellets
- (ii) Gamesmen
- (iii) Dice
- (iv) Gaming board
- (v) Toy bricks

#### IV. Religious objects

- (i) Cakes
- (ii) Shiva linga
- (iii) Kernoi

#### V. Agricultural tools

#### VI. Furniture

- (i) *Diwan*
- (ii) Cots

#### VII. Sharpeners

#### VIII. Cones

#### IX. *Takhti*

#### X. Cradle

#### XI. Diadem

#### XII. Alabaster pots

#### XIII. Compartmented pots

#### XIV. Cylindrical objects

## **I. PLAY-THINGS FOR LITTLE CHILDREN**

### **(i) RATTLES**

The excavation at Kalibangan has yielded various types of rattles used for playing of little children. These vary in size and shape. A few of them are as below:-

#### **Fig. 21.1**

1. Terracotta, rattle; rattle painted with black having prominent knob with a hole on the top, round in shape. From an early level of Period II. (KLB-1, Reg. No. 18850).
2. Terracotta, rattle; standing bird-shaped with head, eyes and tail having a hole. From a late level of Period II. (KLB-2, Reg. No. 12241).
3. Terracotta, rattle; animal-shaped, with horns and tail, having holes on sides and front. From a late level of Period II. (KLB-2, Reg. No. 15901).
4. Terracotta, rattle; standing, bird-shaped, having hole on the back. From a late level of Period II. (KLB-1, Reg. No. 17655).
5. Terracotta, rattle; round in shape with broken top having perforations all around. From a middle level of Period II. (KLB-2, Reg. No. 15901).
6. Terracotta, rattle; standing, bird-shaped, painted, having hole at the back top. From a late level of Period II. (KLB-1, Reg. No. 19219).
7. Terracotta, rattle; standing, bird-shaped, with broken head, perforation in the tail. From a late level of Period II. (KLB-2, Reg. No. 11135).

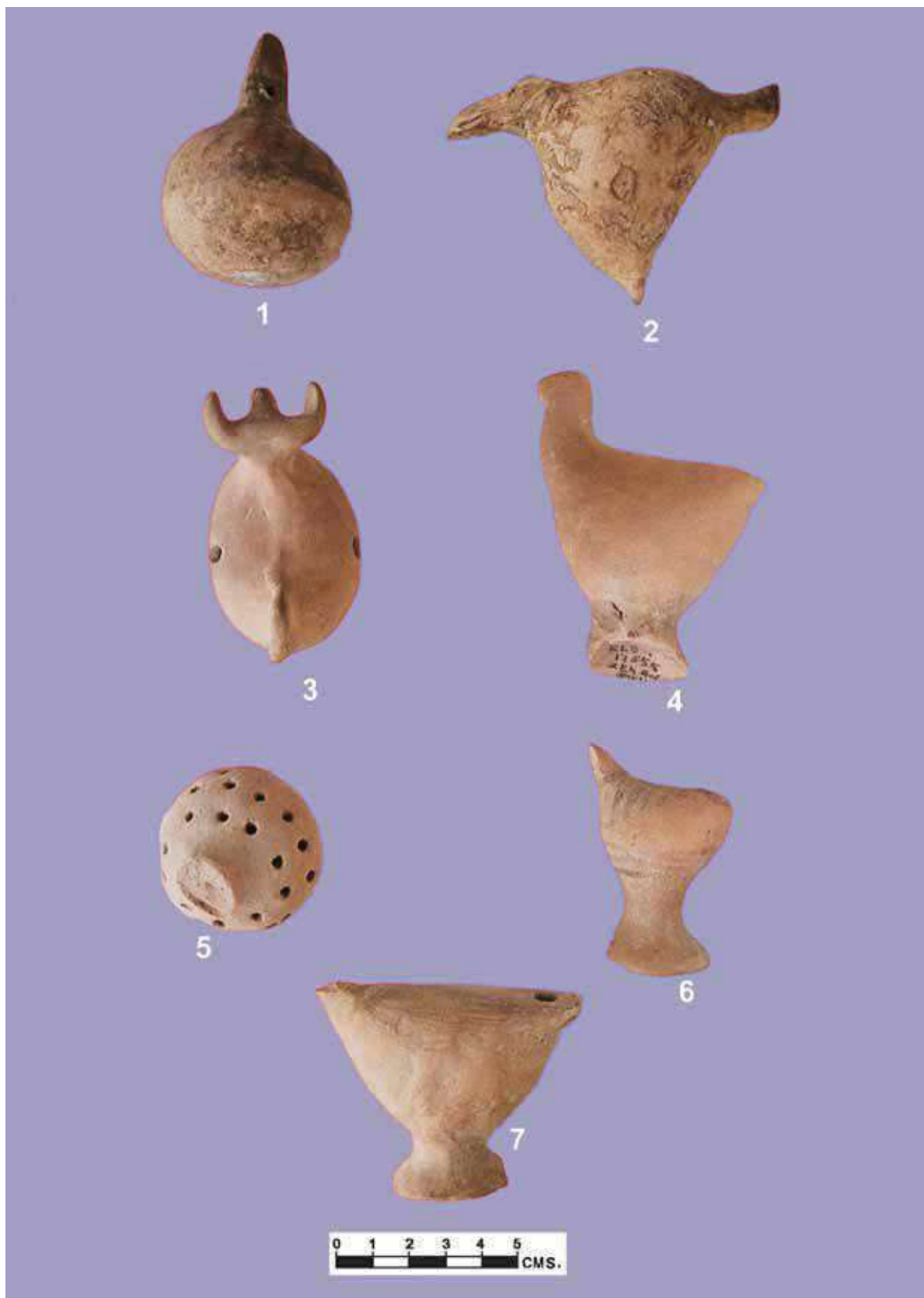


Fig. 21.1 *Terracotta rattles*



**(ii) WHISTLES**

**Fig. 21.2**

1. Terracotta; elongated bird whistle on a stand with broken head having hole on other side. From a late level of Period II. (KLB-1, Reg. No. 21958).
2. Terracotta; whistle, bird-shaped on a stand having hole on one side and tail on the other. From a late level of Period II. (KLB-2, Reg. No. 19537).
3. Terracotta; whistle, bird-shaped on a stand having hole on one side,. From an early level of Period II. (KLB-2, Reg. No. 20314).
4. Terracotta; whistle, bird-shaped on a stand with a hole. From a late level of Period II. (KLB-2, Reg. No. 22020).
5. Terracotta; small whistle, bird-shaped on a stand having hole on the top. From a late level of Period II. (KLB-2, Reg. No. 20534).
6. Terracotta; elongated whistle on stand, with a hole. From a middle level of Period II. (KLB-2, Reg. No. 5111).
7. Terracotta; small whistle, bird-shaped, on a broken stand, having hole. From an early level of Period II. (KLB-2, Reg. No. 14295).
8. Terracotta; whistle, bird-shaped with a hollow stand and hole. From a late level of Period II. (KLB-1, Reg. No. 22021).
9. Terracotta; elongated whistle with a hollow stand and a hole. From a late level of Period II. (KLB-2, Reg. No. 4556).

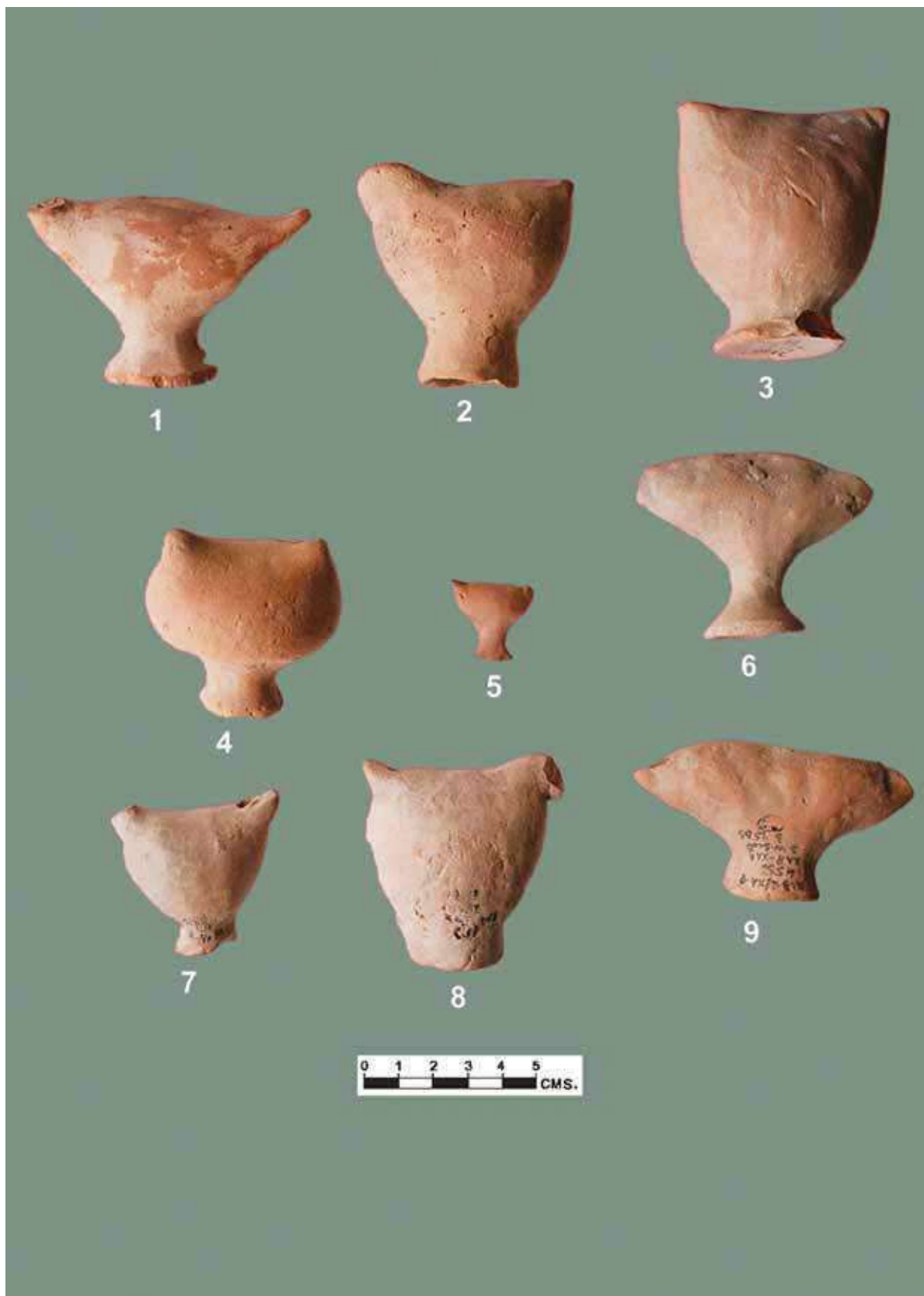


Fig. 21.2 *Terracotta whistles*

**Fig. 21.3**

1. Terracotta, whistle on a stand with broken head and a hole. From an early level of Period II. (KLB-2, Reg. No. 16219).
2. Terracotta, whistle on a stand with broken head and a hole. From an early level of Period II. (KLB-2, Reg. No. 7267).
3. Terracotta, whistle with broken head, base and a hole. From a late level of Period II. (KLB-2, Reg. No. 152).
4. Terracotta, whistle; upper body portion broken; stand, head and base are partly damaged. From a late level of Period II. (KLB-2, Reg. No. 153).
5. Terracotta, whistle; with broken upper portion, lower part intact. From a late level of Period II. (KLB-2, Reg. No. 11978).



Fig. 21.3 Terracotta whistles

**(iii) FEEDING CUPS**

2, Reg. No. 21832).

**Fig. 21.4**

1. Terracotta, feeding cup; with cow-faced spout, hand-made, having open wide folded rim, of the receptacle. From a late level of Period II. (KLB-1-
2. Terracotta, feeding cup; with a spout, hand-made, having open wide folded rim of the receptacle. From a late level of Period II. (KLB-2, Reg. No. 9155).



Fig. 21.4 *Terracotta feeding cup and cow-faced feeding cup*

**Fig. 21.5**

1. Terracotta, feeding cup; elongated cup with a long spout, hand-made. From a late level of Period II. (KLB-1, Reg. No. 15536).
2. Terracotta, feeding cup; broken, hand-made. From an early level of Period II. (KLB-1, Reg. No. 18232).
3. Terracotta, feeding cup; broken, with a spout, hand-made. From a late level of Period II. (KLB-1, Reg. No. 19173).
4. Terracotta, feeding cup; broken, with a long spout, hand-made. From a late level of Period II. (KLB-1, Reg. No. 12161).
5. Terracotta, feeding cup; broken, with a spout, hand-made. From a late level of Period II. (KLB-2, Reg. No. 10088).
6. Terracotta, feeding cup; broken, with a spout, hand-made. From a late level of Period II. (KLB-2, Reg. No. 21258).
7. Terracotta, feeding cup; broken, miniature, with a spout. From an early level of Period II. (KLB-2, Reg. No. 16518).





Fig. 21.5 *Terracotta feeding cups*

**Fig. 21.6**

1. Terracotta, feeding cup; upper portion broken, having spout with a hole. From a late level of Period II. (KLB-1, Reg. No. 21833).
2. Terracotta, feeding cup; grey in colour, broken, base and spout with a hole. From a late level of Period II. (KLB-2, Reg. No. 20856).



Fig. 21.6 Terracotta feeding cups

**Fig. 21.7**

1. Terracotta, broken feeding cup; buffalo-faced, having in turned horn, big eyes, nostrils and mouth, having perforation for feeding. From a late level of Period II. (KLB-2, Reg. No. 17622).

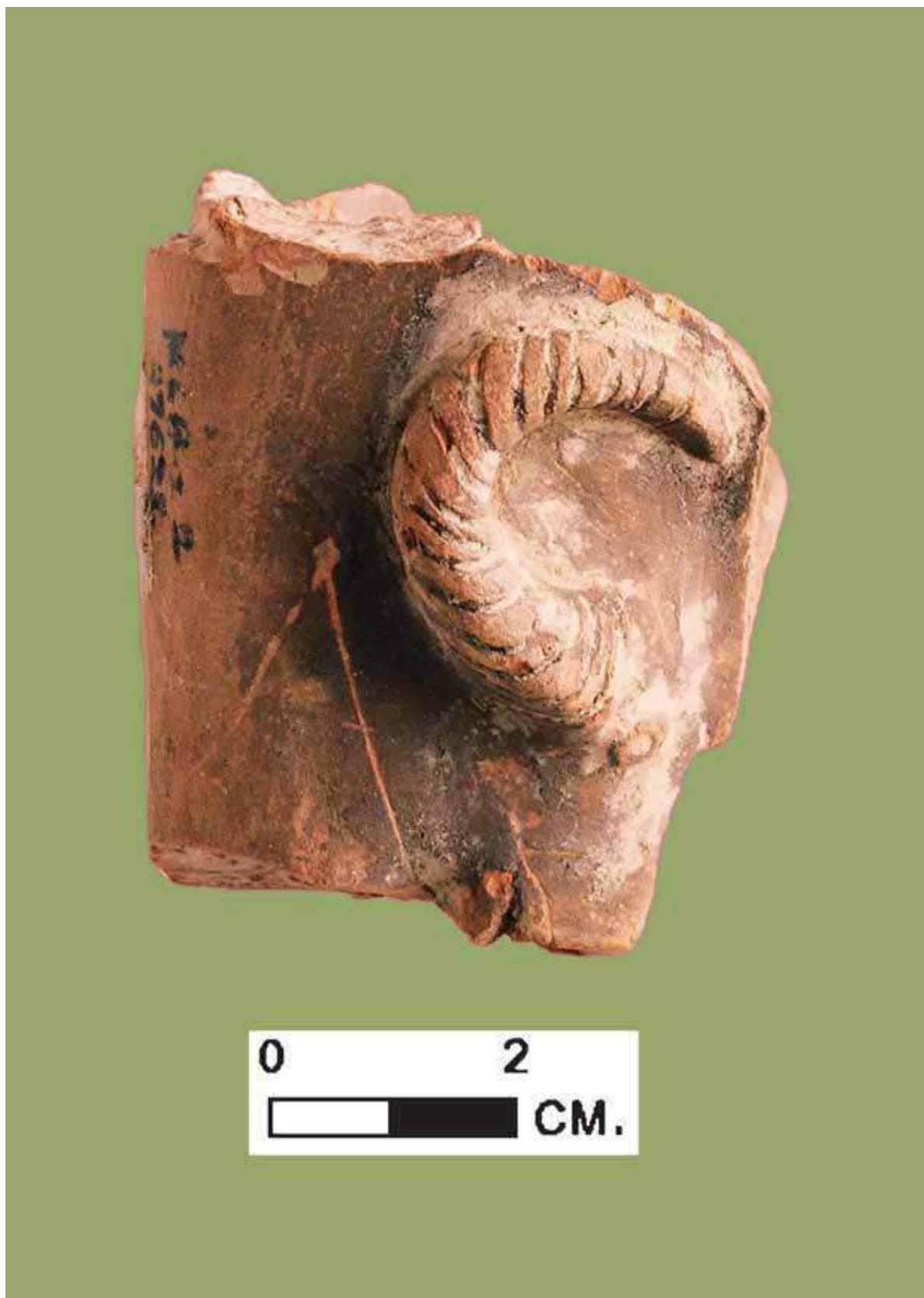


Fig. 21.7 *Buffalo-faced terracotta feeding cup*

## **II. PLAY THINGS FOR CHILDREN**

### **(i) HUMAN FIGURES**

The excavation at Kalibangan has yielded human figures of various types. Each figure has its own style. A few of them are described below:-

#### **Fig. 21.8**

1. Terracotta, human figure; with broken upper portion with two arms, bust portion intact, lower portion broken. From middle level of Period II. (KLB-2, Reg. No. 21484).
2. Terracotta, human standing figure; with head and arms broken. From a late level of Period II. (KLB-2, Reg. No. 8206).
3. Terracotta, human standing figure; with broken head, arm and legs. From a late level of Period II. (KLB-2, Reg. No. 21895).
4. Terracotta, human standing figure; with broken head and arms, having bust and legs. From a late level of Period II. (KLB-1, Reg. No. 2503).
5. Terracotta, human figure; with broken head, bust having two arms and broken legs. From a late level of Period II. (KLB-2, Reg. No. 9251).
6. Terracotta, standing figure; extended hands having joint legs. From a late level of Period II. (KLB-2, Reg. No. 13815).
7. Terracotta, anthropomorphic figure; with arms and broken legs. From a late level of Period II. (KLB-1, Reg. No. 223).
8. Terracotta, standing human figure; with bent face, with straight arms and broken legs. From a late level of Period II. (KLB-1, Reg. No. 9791).
9. Terracotta, human figure; with pinched up nose, eyes and mouth indicated by holes, head slightly bent, hair shown parted from the centre on both sides, with broken lower portion. From a late level of Period II. (KLB-1, Reg. No. 19663).
10. Terracotta, fragmentary human figure; with broken head, arms and legs. From surface. (KLB-1, Reg. No. 15237).



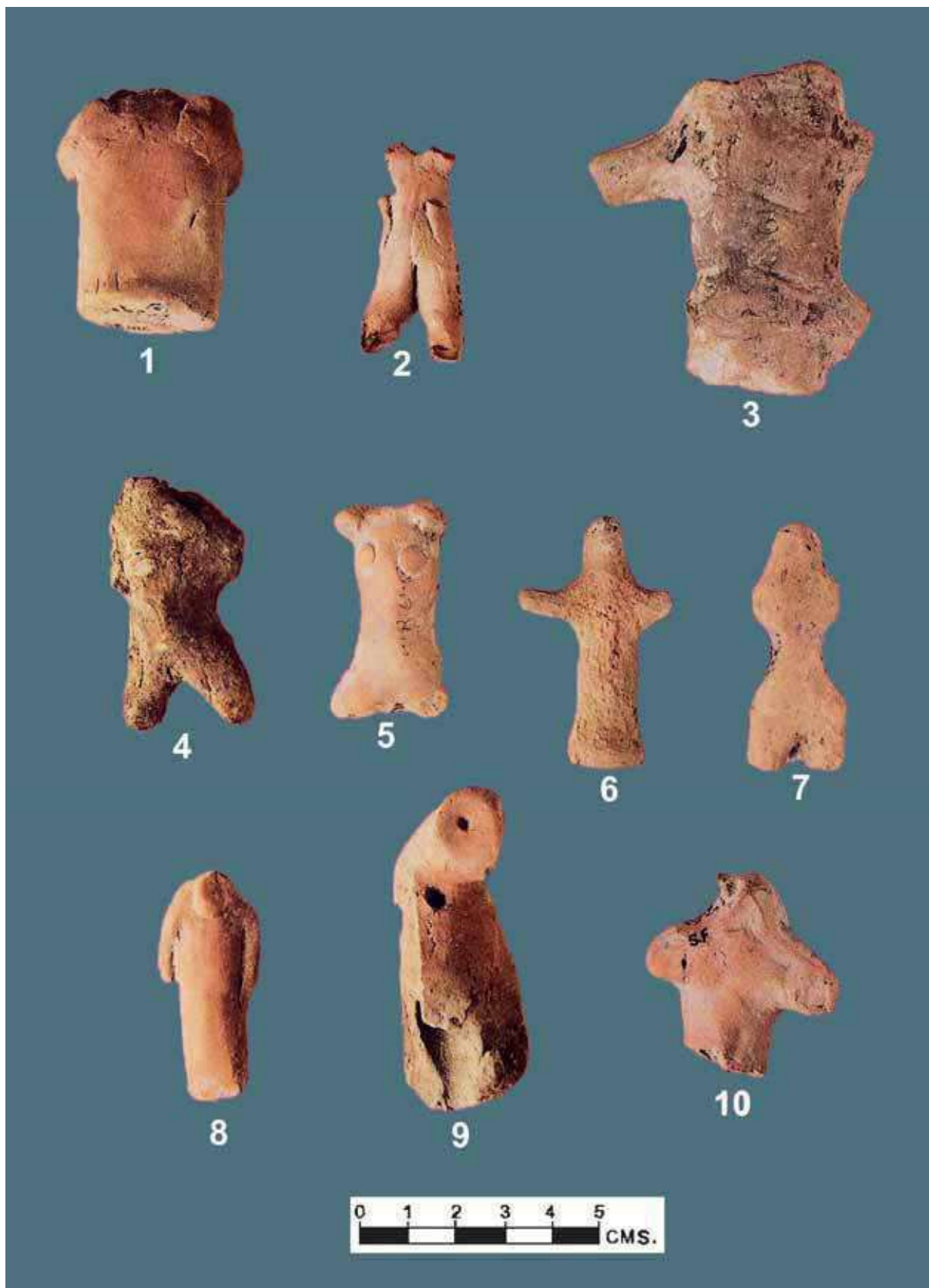


Fig. 21.8 *Terracotta human and anthropomorphic figures*



**Fig. 21.9**

1. Terracotta, human figure; damaged bust with mutilated face having one arm, wearing upper garments with

circlets and lower garments of incised criss-cross pattern, lower portion broken. From a late level of Period II. (KLB-1, Reg. No. 17930).



Fig. 21.9 *Decorated terracotta human figure*

**Fig. 21.10**

1. Terracotta, fragmentary anthropomorphic figure with one broken hand. From a late level of Period II. (KLB-2, Reg. No. 21959).
2. Terracotta, fragmentary anthropomorphic figure. From a late level of Period II. (KLB-2, Reg. No. 21896).



Fig. 21.10 Terracotta anthropomorphic figures

**Figs. 21.11, 21.11(a), 21.11 (b) and 21.11 (c)**

1. Terracotta, human figure; in sitting pose, legs held close to belly having perforation across shoulders for movable hands. Head missing. From a late level of Period II. (KLB-2, Reg. No. 18055). [Figs. 21.11 and 21.11(a)]
2. Terracotta, human figure ; seated with folded legs in *vajrasana* wearing a *dhoti* type lower garment decorated with incised herring-bone design. From a late level of Period II. (KLB-2, Reg. No. 8145). [Figs. 21.11(b) and 21.11(c)]



Fig. 21.11 *Terracotta seated human figure*

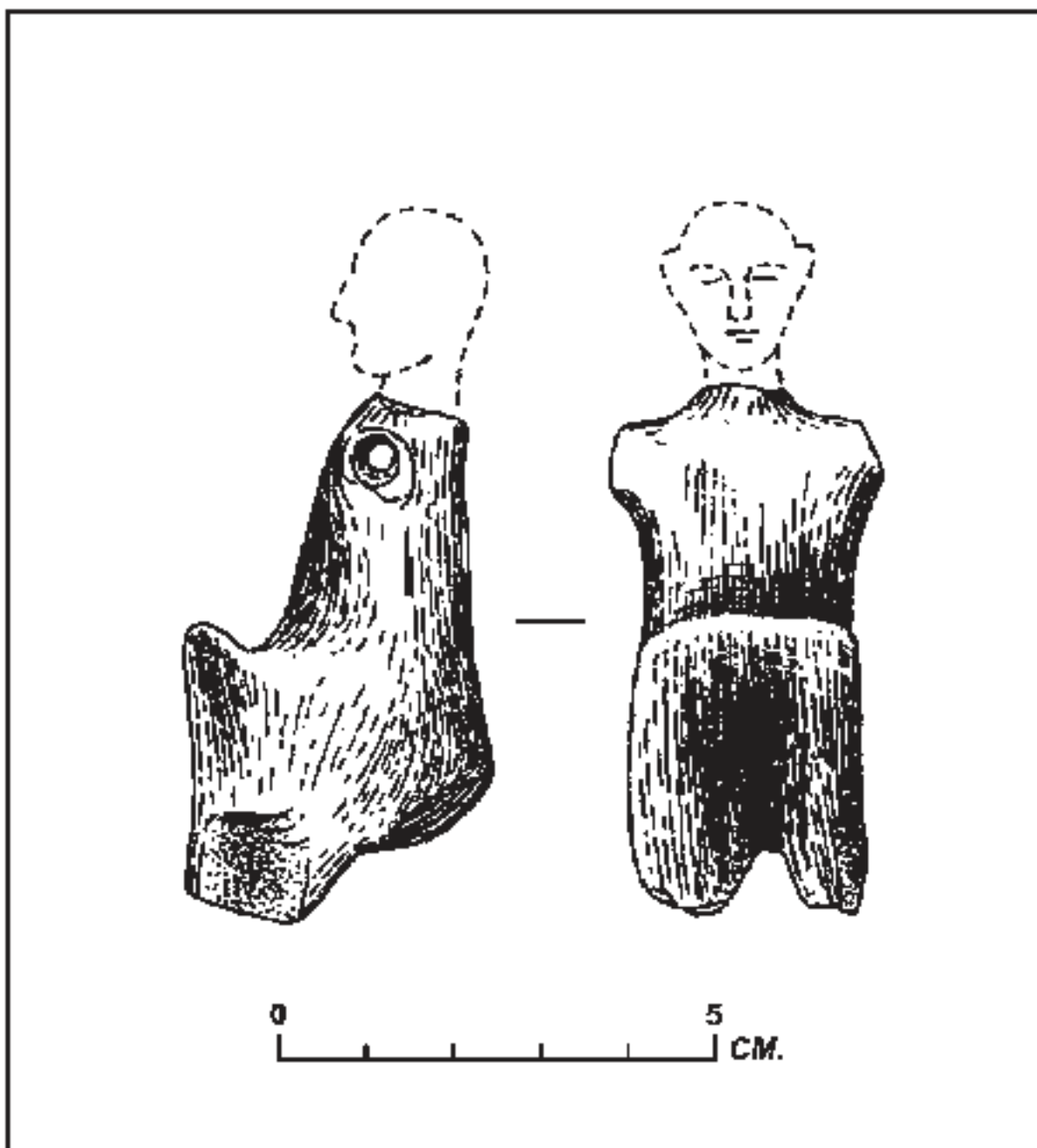


Fig. 21.11(a) *Side and front view of a terracotta seated human figure*





Fig. 21.11(b) *Terracotta seated human figure (fragmentary) in vajrasana wearing decorated dhoti*

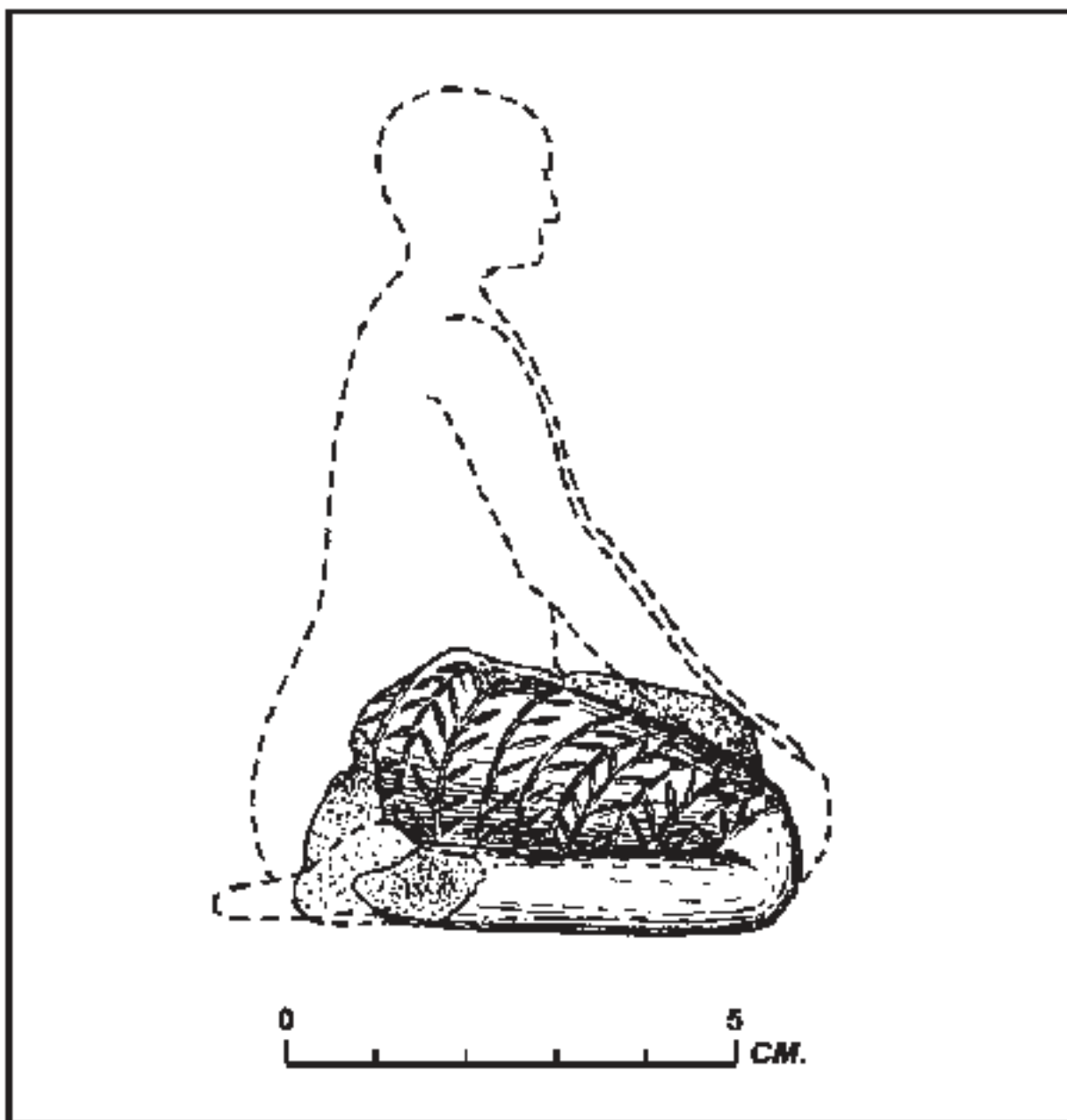


Fig. 21.11(c) *Side view showing decorated dhoti of seated human figure in vajrasana*

**Figs. 21.12, 21.12(a), 21.12(b) and 21.12(c)**

1. Terracotta, human head; with deep and sharp eye-sockets, pinched up eye brows, short and sharp nose and thick and wide lips. Provision of a socket for fixing the head with the tanged neck, height 2.6 cm, width 1.8 cm. From a late level of Period II. (KLB-2, Reg. No. 366). [Figs. 21.12 and 21.12(a)]
2. Terracotta, fragmentary head; with a medial partition-line of the combed hair, height 1.8 cm and width 1.4 cm. Unstratified. (KLB-1, Reg. No. 14276). [Figs 21.12 21.12 (b)]
3. Terracotta, human head; with roughly pinched up nose, flat cheeks and rounded chin, height 2.8 cm and width 1.8 cm. Unstratified. (KLB-2, Reg. No. 7455). [Fig. 21.12]
4. Terracotta, double-headed human figure; with thick lips, broken nose and deep circular eyes. Hole at the base of the neck for putting the tenon, height 3.5 cm and width 2.7 cm. (KLB-2, Reg. No. 295). [Figs. 21.12 and 21.12(c)].



Fig. 21.12 Terracotta human heads

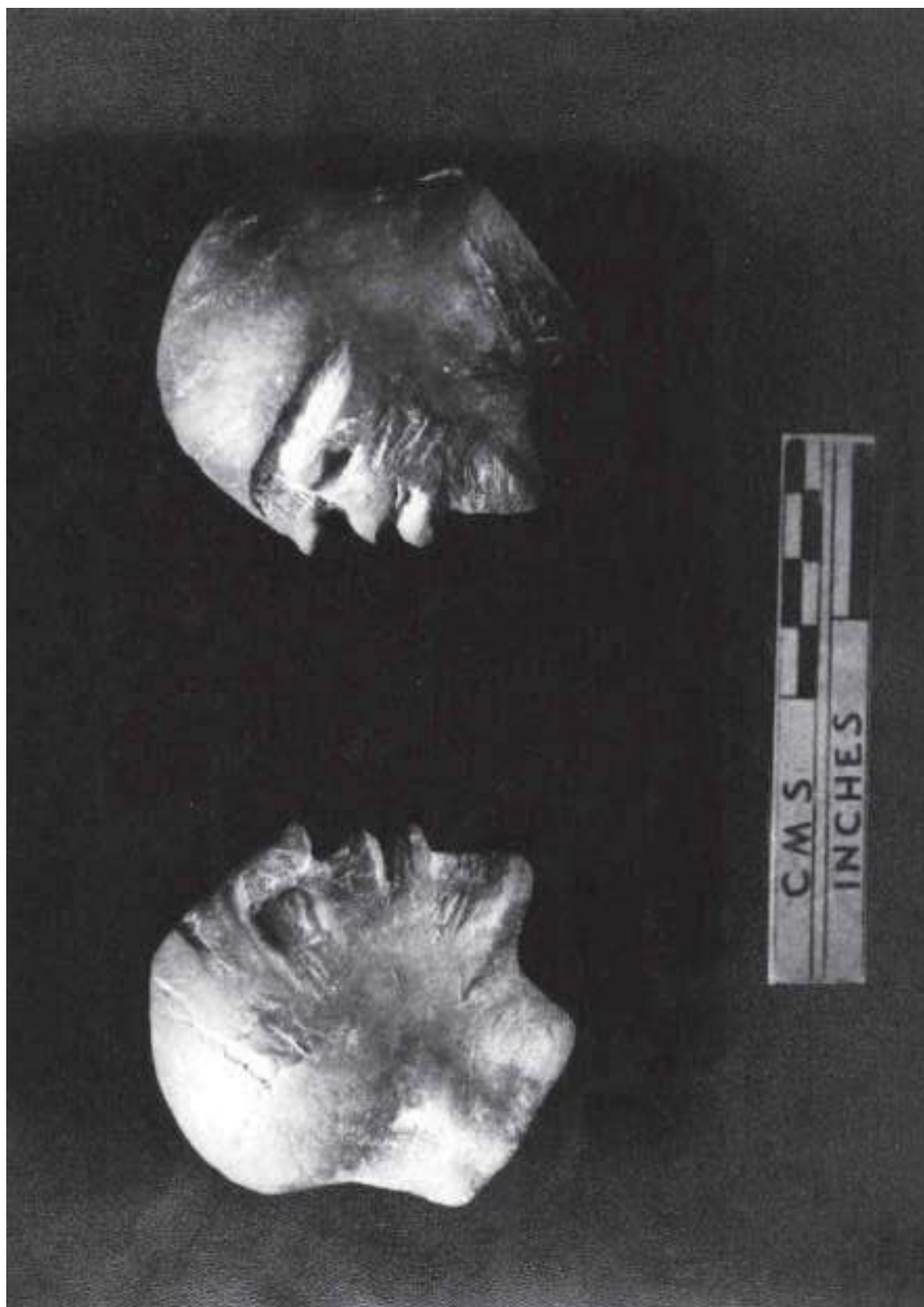


Fig. 21.12 (a) Both side views of a terracotta human head (Fig. 21.12, no.1)



Fig. 21.12(b) *Human head with parted hair, fragmentary*

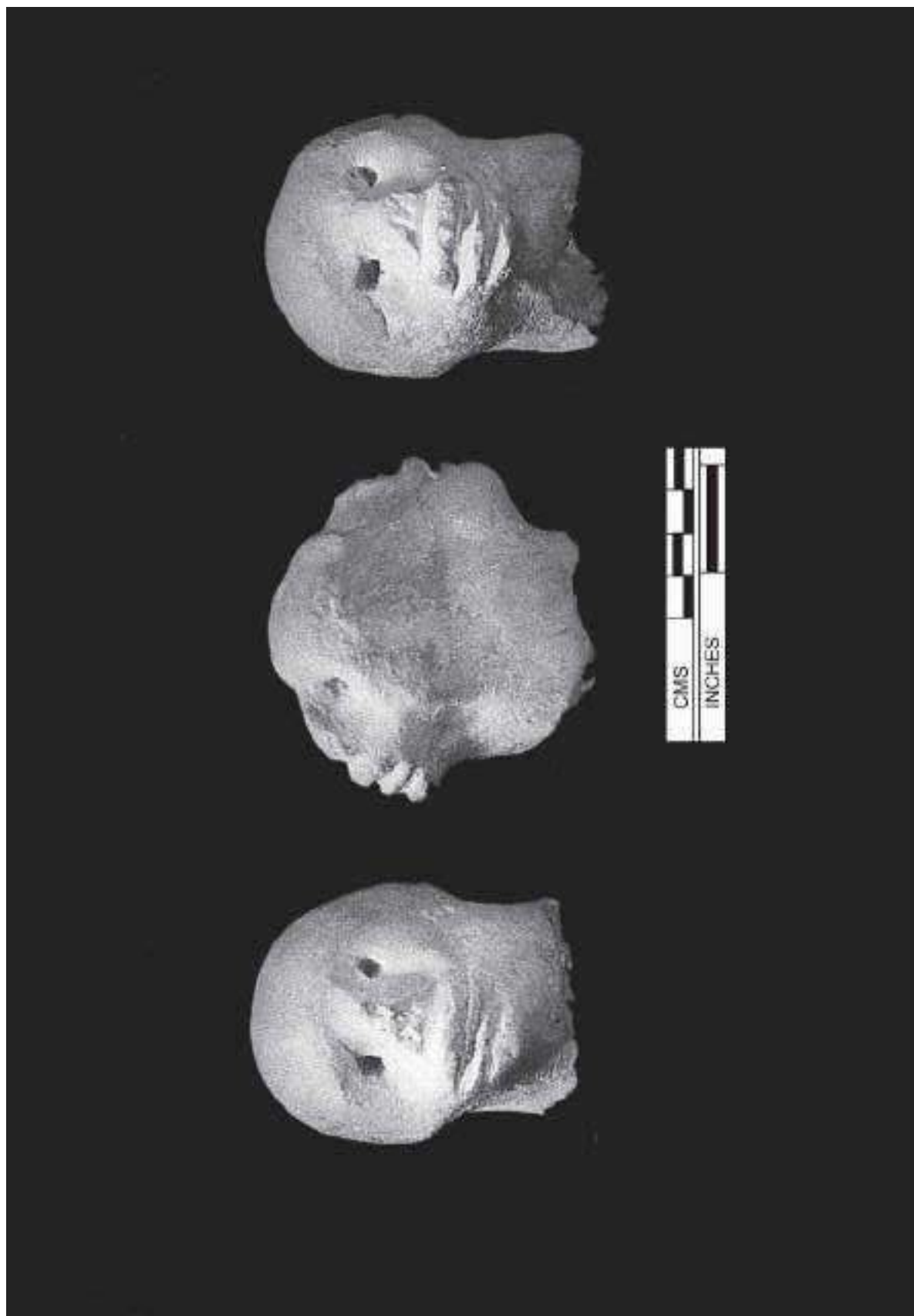


Fig. 21.12(c) Different views of double-headed human figure (Fig. 21.12, no. 4)



**(ii) ANIMAL FIGURES**

The excavation at Kalibangan has yielded various types of terracotta animal figurines. These are in different shapes.

**Fig. 21.13**

Terracotta, bull; broken, elongated bull with dewlaps depicted by four incised lines on the neck, hump broken, joint legs finely made. From a late level of Period II. (KLB-2, Reg. No. 21322).



Fig. 21.13 *Terracotta bull*

**Figs 21.14, 21.14(a) and 21.14(b)**

1. Terracotta, mechanical bull; elongated, with broken hump, it has a small tail, sharp horns with one broken horn, small legs, greyish in colour. A rare specimen of a toy of an elongated terracotta mechanical bull in two pieces. The shoulder appears to be the mouth of the animal and there are two parallel holes from mouth to hip, the purpose and use of these holes is uncertain. The head portion is smaller in comparison to the body of the animal. Both the portions have been found together. It might have been used by putting two washers (plano-convex beads) as a washer for moving the head quickly when the string is pulled, the head of the animal moves sidewise. From a late level of Period II. (KLB-1, Reg. No. 21380). [Figs.21.14, 21.14(a) and 21.14(b)].
2. Terracotta, bull; elongated, mechanical, in two pieces, face having horns and holes, prominent hump, joint legs. From a late level of Period II. (KLB-2, Reg. No. 7849).
3. Terracotta, bull; elongated, mechanical, in two pieces, front and back broken. From an early level of Period II. (KLB-2, Reg. No. 12980).
4. Terracotta, bull; elongated, mechanical, in two pieces, front and back, face having prominent horn and a hole, having joint broken legs. From an early level of Period II. (KLB-2, Reg. No. 15589).

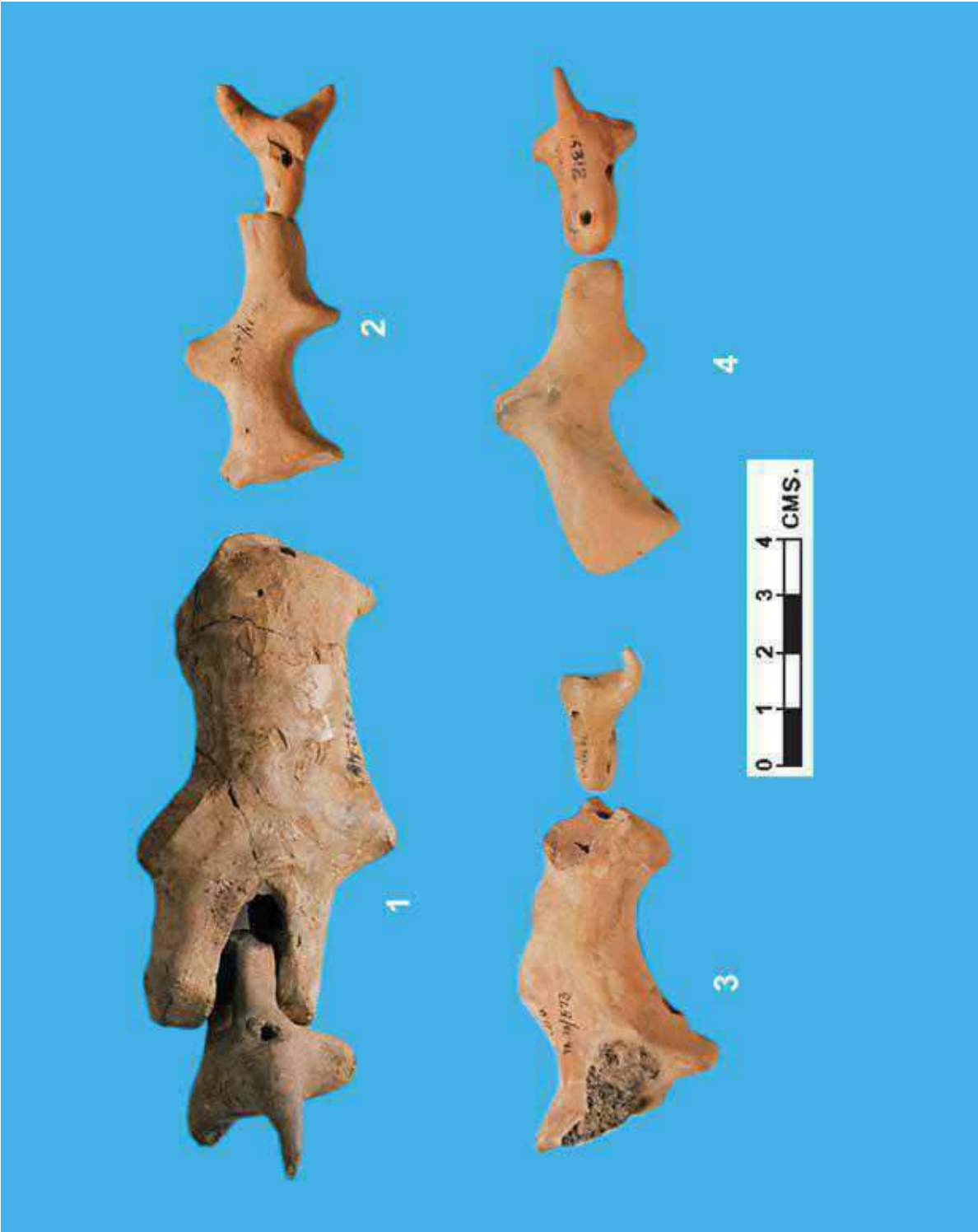


Fig. 21.14 Terracotta mechanical bulls



*Fig. 21.14(a) Close-up of a mechanical bull*

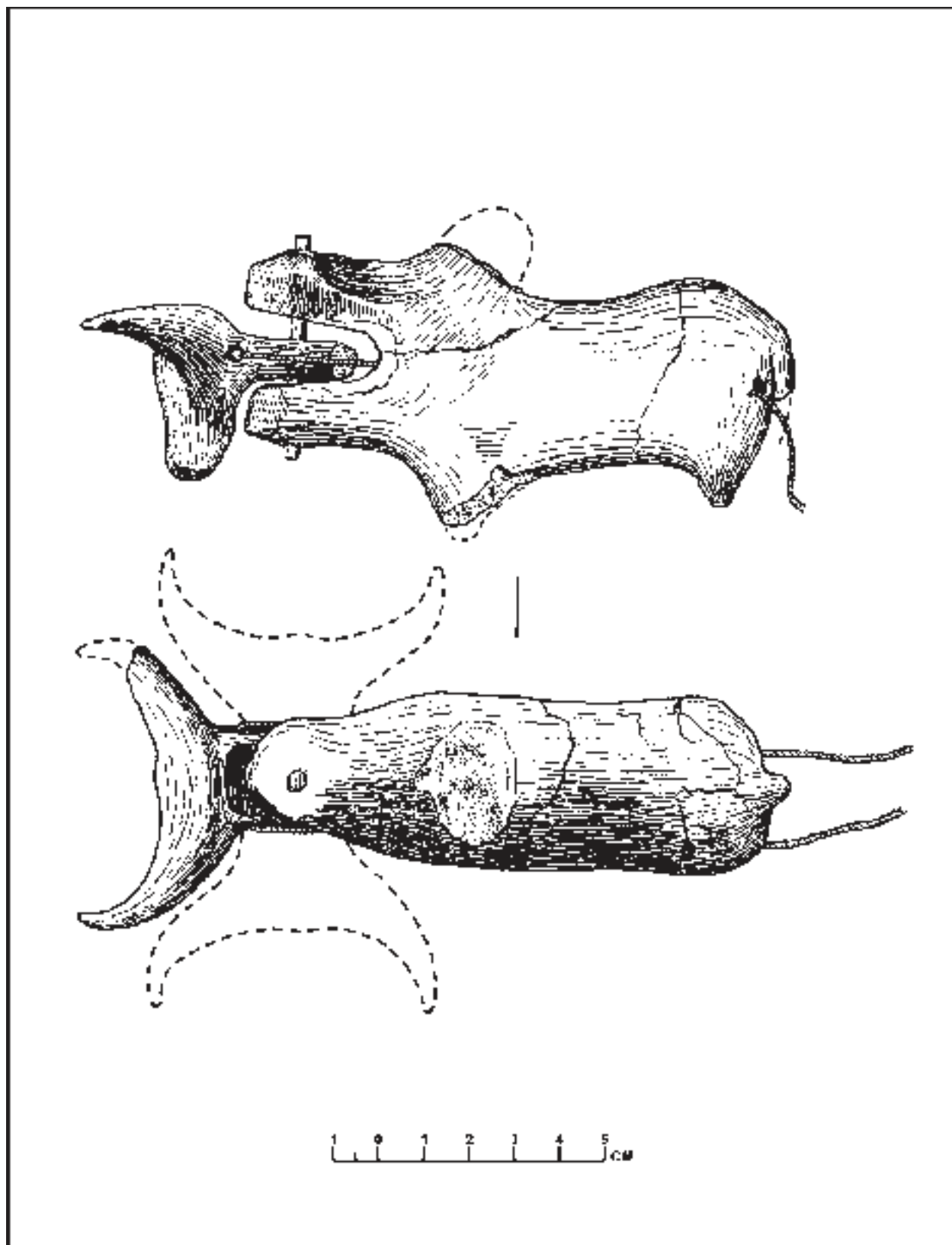


Fig. 21.14(b) *Conjectural views showing the movements*

**Fig. 21.15**

1. Terracotta, ram; broken, with twisted horns. From a late level of Period II. (KLB-3, Reg. No. 20810).
2. Terracotta, ram; one horn broken, with twisted horn. From an early level of Period II. (KLB-1, Reg. No. 20670).





Fig. 21.15 Terracotta rams, fragmentary

**Fig. 21.16**

1. Terracotta, bull; broken horns, showing pin hole eyes and nostrils,

having incised dewlap and low height hump, bull in a charging mode. From a late level of Period II. (KLB-1, Reg. No. 3634).

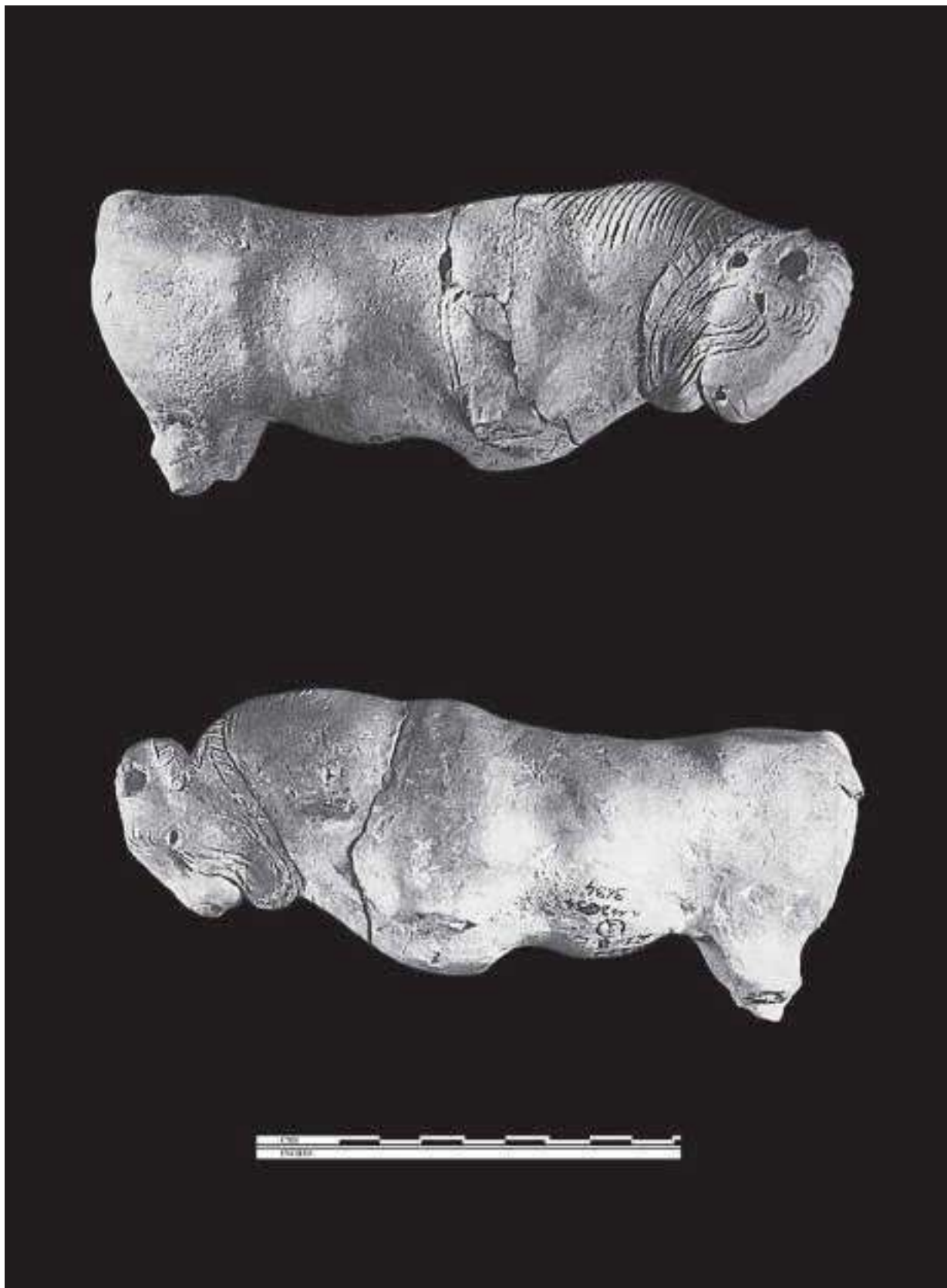


Fig. 21.16 *Terracotta charging bull*

**Fig. 21.17**

1. Terracotta, bull; (broken) having prominent hump. From a late level of Period II. (KLB-1, Reg. No. 14485).



Fig. 21.17 Terracotta humped bull

**Fig. 21.18**

1. Terracotta, bull; fragmentary, having broken face and broken legs, with

prominent hump, body appears to be in charging pose. From a late level of Period II. (KLB-2, Reg. No. 10832).



Fig. 21.18 *Terracotta humped bull*



**Fig. 21.19**

1. Terracotta, bull; fragmentary head having eyes, nose, ear and horns,

hollow, with a hump and broken hind portion. From a late level of Period II. (KLB-2, Reg. No. 6649).



Fig. 21.19 *Terracotta moulded bull, fragmentary*

**Fig. 21.20**

1. Terracotta, cat; head portion, with pinched up ears, one ear broken, two depressed eyes, nose showing two bifurcated nostrils, an open mouth and hollow neck. From a late level of Period II. (KLB-2, Reg. No. 13495).

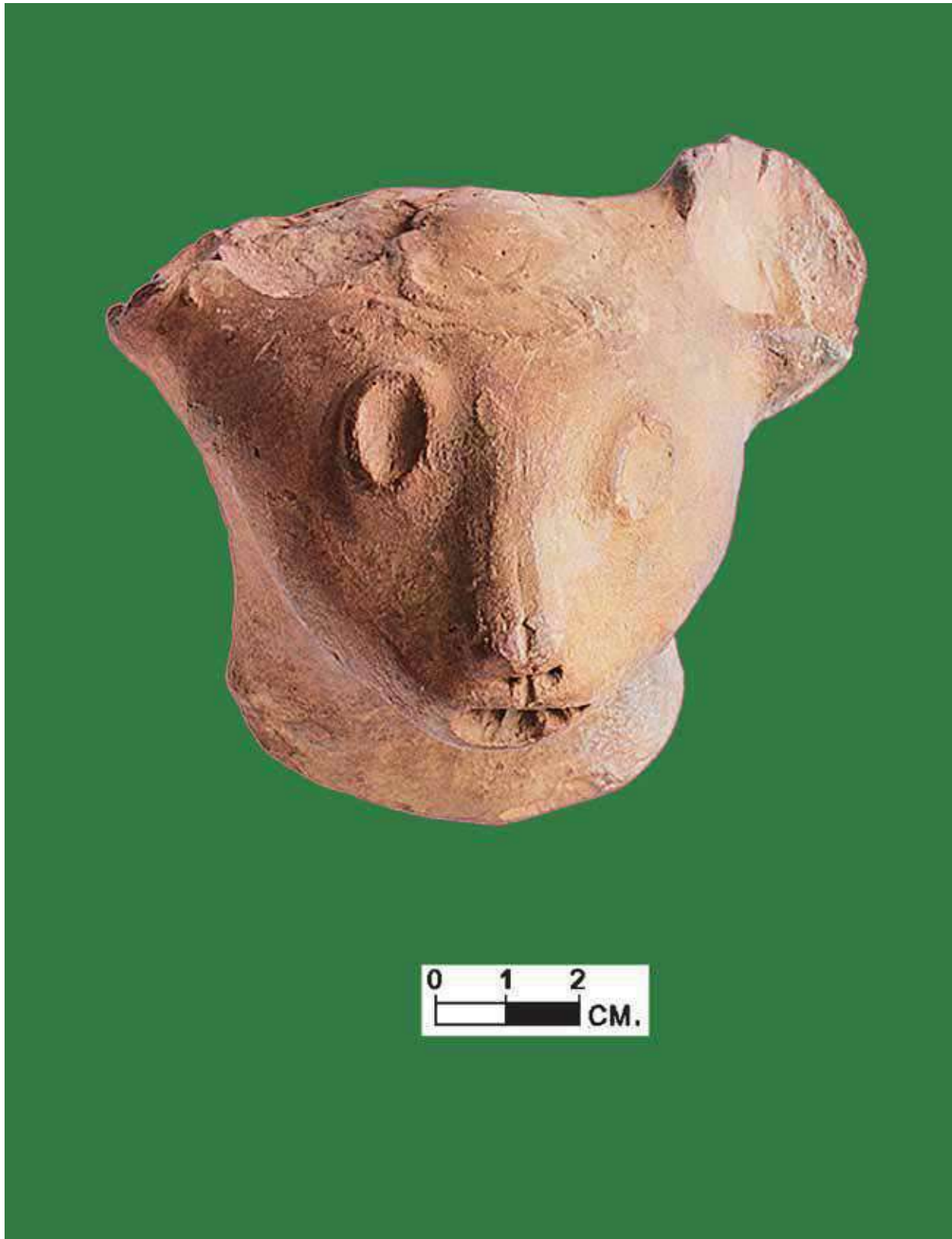


Fig. 21.20 *Terracotta cat*

**Fig. 21.21**

1. Terracotta, buffalo; fragmentary, with big horns and hole on the front, elongated face, broken hind and lower portion. From a late level of Period II. (KLB-2, Reg. No. 19269).
2. Terracotta, buffalo; with elongated face, big horns, eyes, nostrils and mouth, hole on the back side. From a late level of Period II. (KLB-2, Reg. No. 21960).
3. Terracotta, bull; with broken head, joint legs with holes. From a late level of Period II. (KLB-2, Reg. No. 20942).
4. Terracotta, animal figure; with broken horns, nose and hole on the chest. From a late level of Period II. (KLB-1, Reg. No. 21961).
5. Terracotta, animal figure; with two horns, long nose, hole on the chest. From a late level of Period II. (KLB-2, Reg. No. 2938).
6. Terracotta, dog; elongated with pinched up ears, prominent snout and joint legs with a hole. From a late level of Period II. (KLB-2, Reg. No. 6852).
7. Terracotta, animal figure; with prominent horns and nose, elongated neck with big perforation on the chest. From a late level of Period II. (KLB-2, Reg. No. 21962).
8. Terracotta, animal figure; with broken ears, prominent nose and hole on the chest. From a late level of Period II. (KLB-2, Reg. No. 21963).
9. Terracotta, animal figure; small with ears down, small tail, perforated on three sides. From a late level of Period II. (KLB-2, Reg. No. 21964).



Fig. 21.21 *Terracotta animal figures*

## **MECHANICAL ANIMAL TOYS**

**Fig. 21.22**

1. Terracotta, animal figure; fragmentary part of mechanical toy having holes in the nose for putting string. From a late level of Period II. (KLB-2, Reg. No. 4428).
2. Terracotta, animal figure; fragmentary part of mechanical toy having holes in the nose for putting string. From a late level of Period II. (KLB-1, Reg. No. 50).
3. Terracotta, animal figure; fragmentary part of mechanical toy with broken horns, having holes on the hump and back. From a late level of Period II. (KLB-2, Reg. No. 19835).
4. Terracotta, animal figure; fragmentary part of mechanical toy with broken horns, having holes on the head and neck for putting string.
5. Terracotta, animal figure; fragmentary part of mechanical toy with one broken horn, having hole in the centre for putting string. From a late level of Period II. (KLB-1, Reg. No. 2891).
6. Terracotta, animal figure; fragmentary part of mechanical toy with broken horns, having hole in the head. From a late level of Period II. (KLB-1, Reg. No. 14253).
7. Terracotta, animal figure; fragmentary part of mechanical toy with one broken horn, having hole on the neck for putting string. From a late level of Period II. (KLB-1, Reg. No. 21108).
8. Terracotta, animal figure; fragmentary part of mechanical toy with broken horns, prominent eyes. From a late level of Period II. (KLB-1, Reg. No. 1334).

From a middle level of Period II. (KLB-2, Reg. No. 14590).





Fig. 21.22 Terracotta animal figures

**Fig. 21.23**

1. Terracotta, animal figure; fragmentary part of mechanical toy with one twisted horn having hole in the centre. From a late level of Period II. (KLB-2, Reg. No. 2590).
2. Terracotta, animal figure; fragmentary part of mechanical toy having prominent circular eyes. From a late level of Period II. (KLB-1, Reg. No. 20520).
3. Terracotta, animal figure; fragmentary part of mechanical toy having broken horns, and hole in the centre. From a late level of Period II. (KLB-1, Reg. No. 14465).
4. Terracotta, animal figure; fragmentary part of mechanical toy having one broken and another prominent horn. From a late level of Period II. (KLB-1, Reg. No. 19664).



Fig. 21.23 Terracotta animal figures

**Fig. 21.24**

1. Terracotta, animal figure; with elongated body, broken face, joint legs, having holes on both the ends. From a late level of Period II. (KLB-2, Reg. No. 842).
2. Terracotta, animal figure; fragmentary, with broken horns, elongated face, having hole on the back. From a late level of Period II. (KLB-2, Reg. No. 19727).
3. Terracotta, animal figure; with broken horns, broken nose and hole on the chest. From a late level of Period II. (KLB-2, Reg. No. 23).
4. Terracotta, animal figure; with prominent ear, elongated face. From a late level of Period II. (KLB-2, Reg. No. 21965).
5. Terracotta, dog; with broken ears and broken nose, joint legs with hole. From a late level of Period II. (KLB-2, Reg. No. 2158).
6. Terracotta, animal figure; having broken horns and elongated back with hole. From a late level of Period II. (KLB-2, Reg. No. 22029).
7. Terracotta, bull; with broken horns, legs and broken tail. From a late level of Period II. (KLB-1, Reg. No. 20333).



Fig. 21.24 Terracotta animal figures

**Fig. 21.25**

1. Terracotta, bull; broken ears and legs, having long face, joint legs, prominent hump. From a late level of Period II. (KLB-2, Reg. No. 21880).
2. Terracotta, bull; broken head, hump, tail and legs, painted. From a late level of Period II. (KLB-2, Reg. No. 308).
3. Terracotta, bull; broken, prominent hump and broken tail. From a late level of Period II. (KLB-2, Reg. No. 21881).
4. Terracotta, bull; prominent hump, joint legs, having incision. From a late level of Period II. (KLB-2, Reg. No. 12021).



Fig. 21.25 Terracotta humped bulls



**Figs. 21.26 and 21.26(a)**

1. Terracotta, bull; fragmentary, having broken ears, neck and large protruded eyes. From a late level of Period II. (KLB-2, Reg. No. 12816).
2. Terracotta, bull; broken, decorated head and ornamented neck, two holes on horns, beautiful eyes. From a late level of Period II. (KLB-1, Reg. No. 16337).

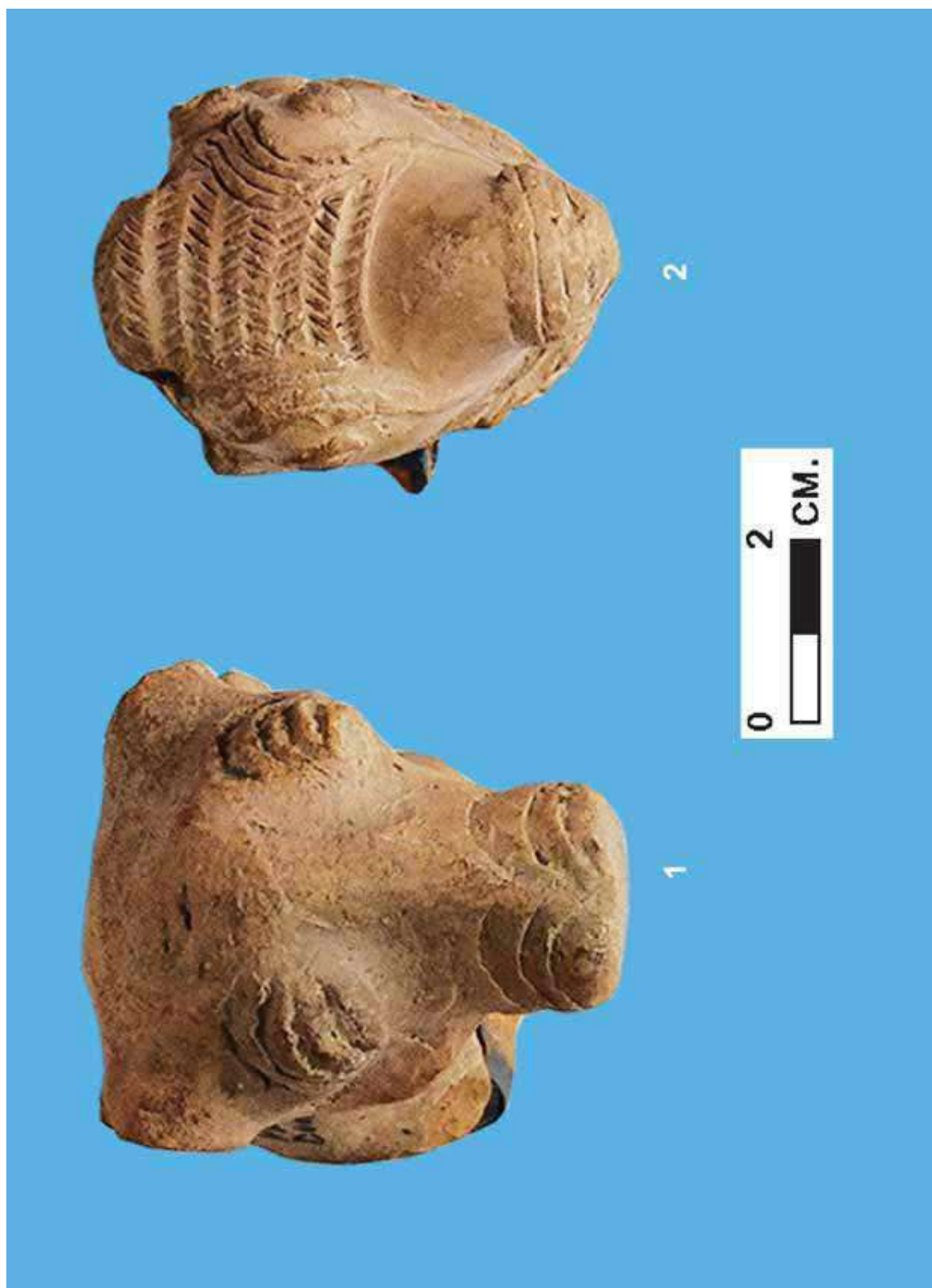


Fig. 21.26 Terracotta bulls

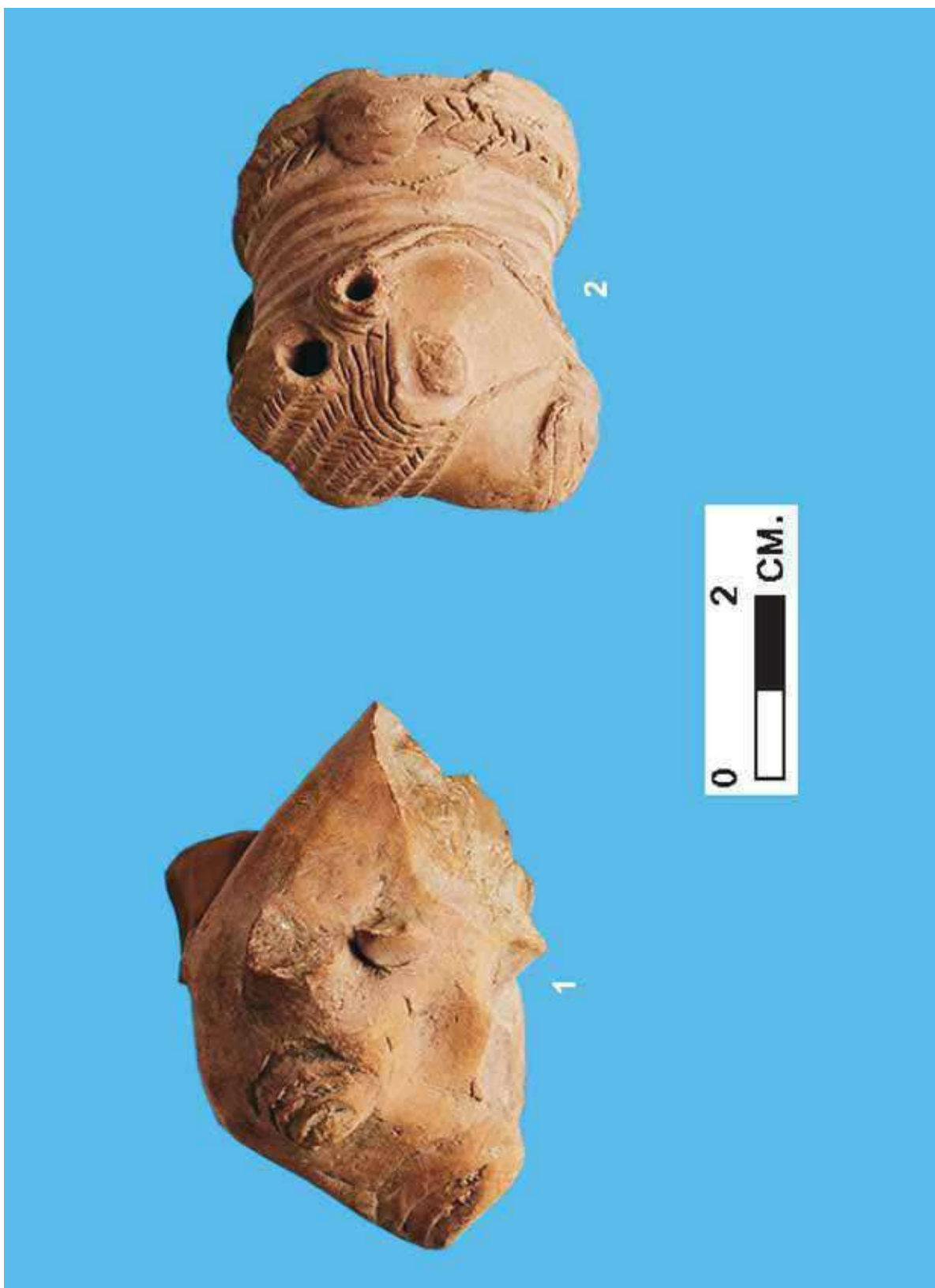


Fig. 21.26 (a) Side view of terracotta bulls

**Fig. 21.27**

1. Terracotta, bull; broken, prominent hump and joint legs. From a late level of Period II. (KLB-2, Reg. No. 21325).
2. Terracotta, bull; broken, prominent hump and joint legs. From a late level of Period II. (KLB-2, Reg. No. 18404).
3. Terracotta, bull; broken, long face, prominent hump and joint legs. From a late level of Period II. (KLB-1, Reg. No. 19108).
4. Terracotta, bull; broken, long face, prominent hump and broken tail. From a late level of Period II. (KLB-1, Reg. No. 19216).



Fig. 21.27 Terracotta humped bulls

**Fig. 21.28**

1. Terracotta, bull; fragmentary with one side broken. From a late level of Period II. (KLB-2, Reg. No. 21882).
2. Terracotta, dog; long face, small tail and joint legs with hind legs broken having graffiti on the body. From a late level of Period II (KLB-2, Reg. No. 21102).
3. Terracotta, bull ; fragmentary, having graffiti on the body. From a late level of Period II. (KLB-1, Reg. No. 18936).
4. Terracotta, bull; fragmentary, broken from front and hind portion, prominent hump, painted with black. From a late level of Period II. (KLB-2, Reg. No. 12725).



Fig. 21.28 Terracotta bulls and dog



**Fig. 21.29**

1. Terracotta, boar; fragmentary, hind

portion with upright hair and broken legs. From a late level of Period II. (KLB-2, Reg. No. 22308).



Fig. 21.29 Hind portion of a terracotta boar

**Fig. 21.30**

1. Terracotta, rhinoceros; snout, broken, conical leg and small tail, painted with black. From a late level of Period II. (KLB-1, Reg. No. 12249).
2. Terracotta, elephant; fragmentary, head portion decorated, beautiful eyes and tusk decorated with shell pieces. From a late level of Period II. (KLB-2, Reg. No. 21037).
3. Terracotta, rhinoceros; broken, snout. From a late level of Period II. (KLB-2, Reg. No. 12249).
4. Terracotta, dog; long neck, small tail and joint legs. From a late level of Period II. (KLB-2, Reg. No. 1524).
5. Terracotta, bull; prominent hump, circlets, eyes, notched design and graffiti on the back. From a late level of Period II. (KLB-1, Reg. No. 19603).
6. Terracotta, bull; prominent hump, broken legs and face. From a late level of Period II. (KLB-2, Reg. No. 2098).



Fig. 21.30 Terracotta rhinoceros, elephant, dog and bulls

**Fig. 21.31**

1. Terracotta, camel (?); head portion and lower portion broken, slightly open mouth. From a late level of Period II. (KLB-2, Reg. No. 19155).
2. Terracotta, camel; broken head, big pin holed eyes, nostrils and open mouth. From a late level of Period II. (KLB-1, Reg. No. 20482).
3. Terracotta, dog; fragmentary with broken lower portion, having pin holed eyes and nostrils. From a late level of Period II. (KLB-2, Reg. No. 18975).
4. Terracotta, tortoise; having face and four legs, flat back. From a late level of Period II. (KLB-2, Reg. No. 1594).
5. Terracotta, animal figure; having head, neck portion with ear, nose, eyes and lips, having stylized tail, holes on the top. From a late level of Period II. (KLB-2, Reg. No. 20026).
6. Terracotta, tortoise; having an open mouth. From a late level of Period II. (KLB-2, Reg. No. 486).

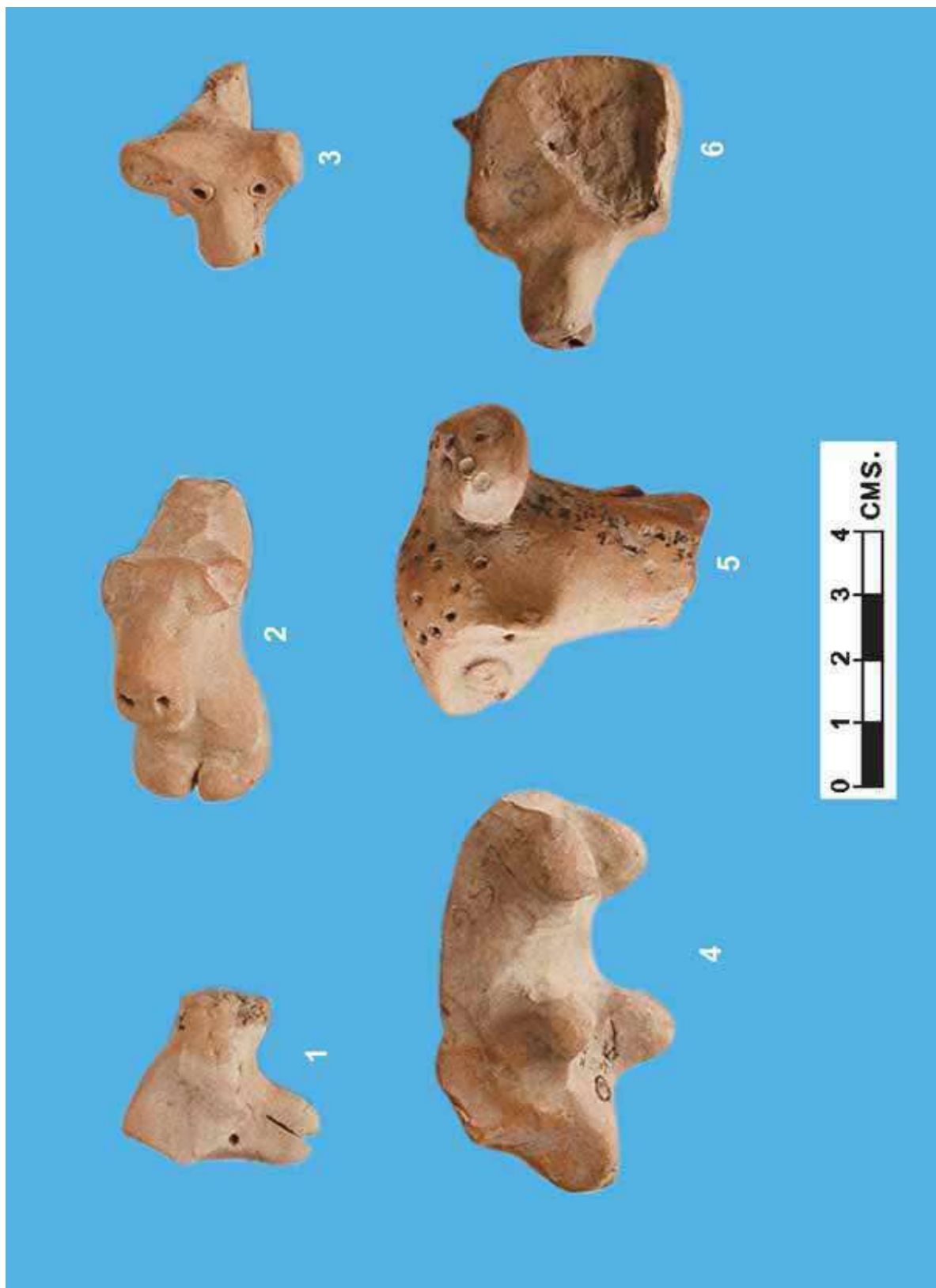


Fig. 21.31 Terracotta camels, dog, tortoise, etc.

**Fig. 21.32**

1. Terracotta, dog; broken head having one leg with tail. From a late level of Period II. (KLB-1, Reg. No. 3023).
2. Terracotta, ram; with an open mouth, hind legs broken, having small tail. From a late level of Period II. (KLB-2, Reg. No. 21403).
3. Terracotta, bull; having prominent hump, long face, one hind leg broken. From a late level of Period II. (KLB-2, Reg. No. 21966).
4. Terracotta, bull; having hump, small tail and broken legs. From a late level of Period II. (KLB-2, Reg. No. 22022).





Fig. 21.32 Terracotta dog, ram and bulls

**Fig. 21.33**

1. Terracotta, bull; with broken face, prominent hump with hole, small tail. From a late level of Period II. (KLB-2, Reg. No. 17735).
2. Terracotta, dog; elongated body with broken ear, hole on the forehead and joint legs with a hole and tail. From a late level of Period II. (KLB-2, Reg. No. 14391).
3. Terracotta, bull; hind portion with tail, holes on the body. From a late level of Period II. (KLB-2, Reg. No. 58).
4. Terracotta, bull; prominent hump, with broken hind legs, stylized face and small tail. From a late level of Period II. (KLB-1, Reg. No. 11230).



Fig. 21.33 Terracotta bulls and dog

**Fig. 21.34**

1. Terracotta, ant eater; having sharp

snout with eyes, tail and broken legs.  
From a late level of Period II. (KLB-2,  
Reg. No. 21967).



Fig. 21.34 *Terracotta ant eater*

**Fig. 21.35**

1. Terracotta, dog; broken ear, small tail, joint legs and elongated body. From a late level of Period II. (KLB-2, Reg. No. 15668).
2. Terracotta, dog; broken, pinched up ears, incised eyes, and open mouth. From a late level of Period II. (KLB-2, Reg. No. 14155).
3. Terracotta, dog; broken face, wears a belt and beaded necklace in the neck, broken legs and a small tail. From a late level of Period II. (KLB-2, Reg. No. 20393).
4. Terracotta, dog; small, broken joint legs, ears and grey in colour. From a late level of Period II. (KLB-2, Reg. No. 21968).
5. Terracotta, dog; in seated pose, having tail and back legs broken. From a late level of Period II. (KLB-2, Reg. No. 18428).
6. Terracotta, dog; broken up raised ear, joint legs and small tail. From a late level of Period II. (KLB-2, Reg. No. 21253).
7. Terracotta, dog; decorated body with nail design, broken ear and a tail. From a late level of Period II. (KLB-2, Reg. No. 21969).
8. Terracotta, dog; in greyish colour, decorated body with notched design, broken ear and joint legs. From a late level of Period II. (KLB-1, Reg. No. 21401).



Fig. 21.35 Terracotta dogs



**Fig. 21.36**

1. Terracotta, dog ; standing, broken legs ear and tail. From a late level of Period II. (KLB-2, Reg. No. 18911).
2. Terracotta, dog; standing pose, small tail conical snout and joint legs. From a late level of Period II. (KLB-1, Reg. No. 14665).
3. Terracotta, dog; tiny, broken legs, long face and small tail. From a late level of Period II. (KLB-2, Reg. No. 27).

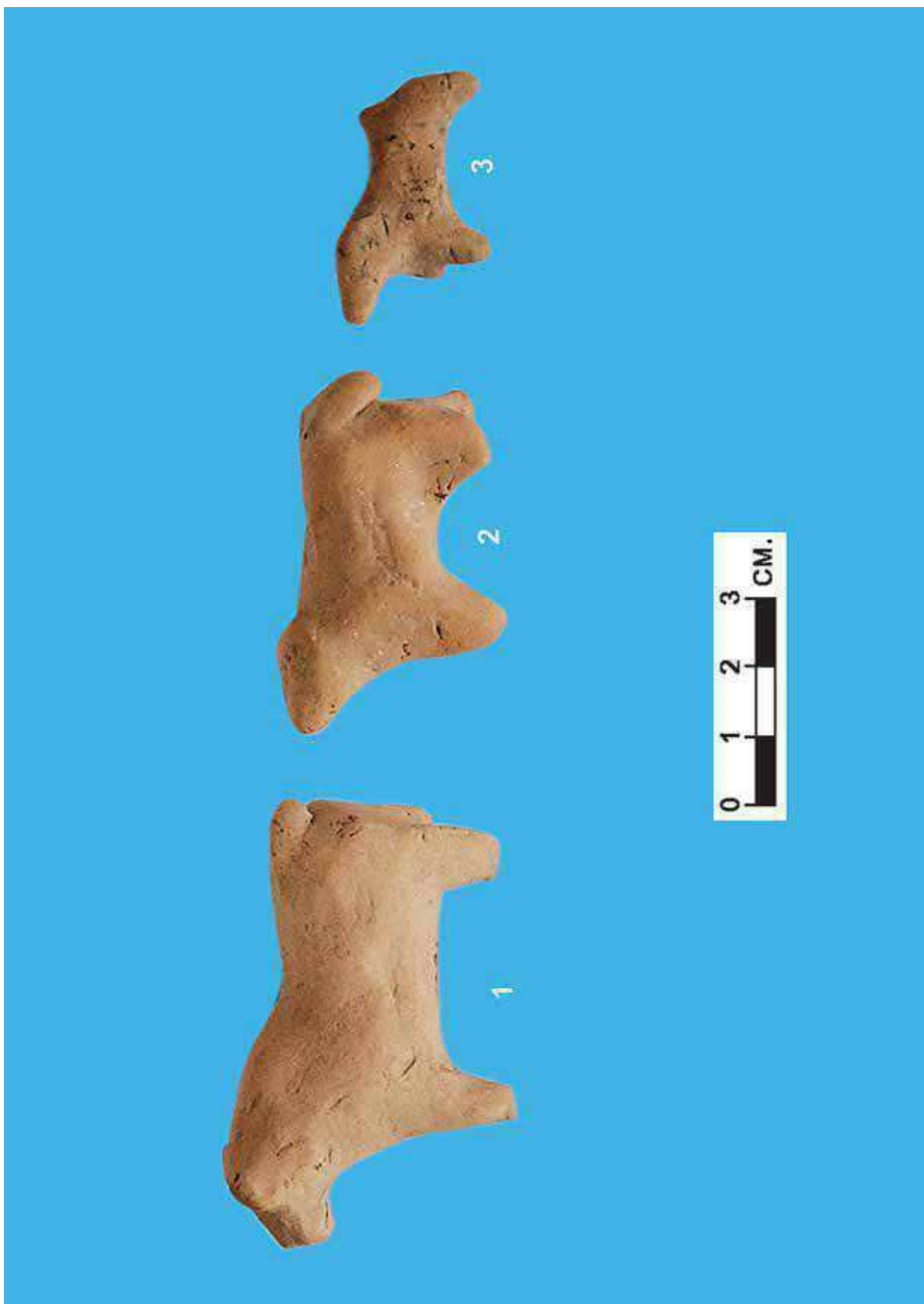


Fig. 21.36 *Terracotta dogs*

**Fig. 21.37**

1. Terracotta, beaver (*udbilao*); in seated pose, having broken head, deep eyes,

projected lips, broken hands and legs. From a late level of Period II. (KLB-1, Reg. No. 13165).



Fig. 21.37 Terracotta seated beaver (*udbilao*)

**Fig. 21.38**

1. Terracotta, dog ; small, damaged, with hole at the back. From an early level of Period II. (KLB-1, Reg. No. 14621).
2. Terracotta, buffalo ; fragmentary, with a curved horn, other horn broken, conical snout, nostrils shown with holes and mouth is indicated by a slit. From a level of Period II. (KLB-1, Reg. No. 14166).
3. Terracotta, dog (?) ; with joint legs. From a late level of Period II. (KLB-2, Reg. No. N.S. 21946).



Fig. 21.38 Terracotta dogs and buffalo

**Fig. 21.39**

1. Terracotta, dog; with a bushy tail with slightly elongated body and short conical legs. From an early level of Period II. (KLB-2, Reg. No. 19751).
2. Terracotta, bear; from an unstratified level of Period II. (KLB-1, Reg. No. 21945).
3. Terracotta, dog; in a fighting mood, broken ears and bushy tail, having a transverse hole passing through face for putting a string for pulling it. From a late level of Period II. (KLB-1 and 2, Reg. No. 42).



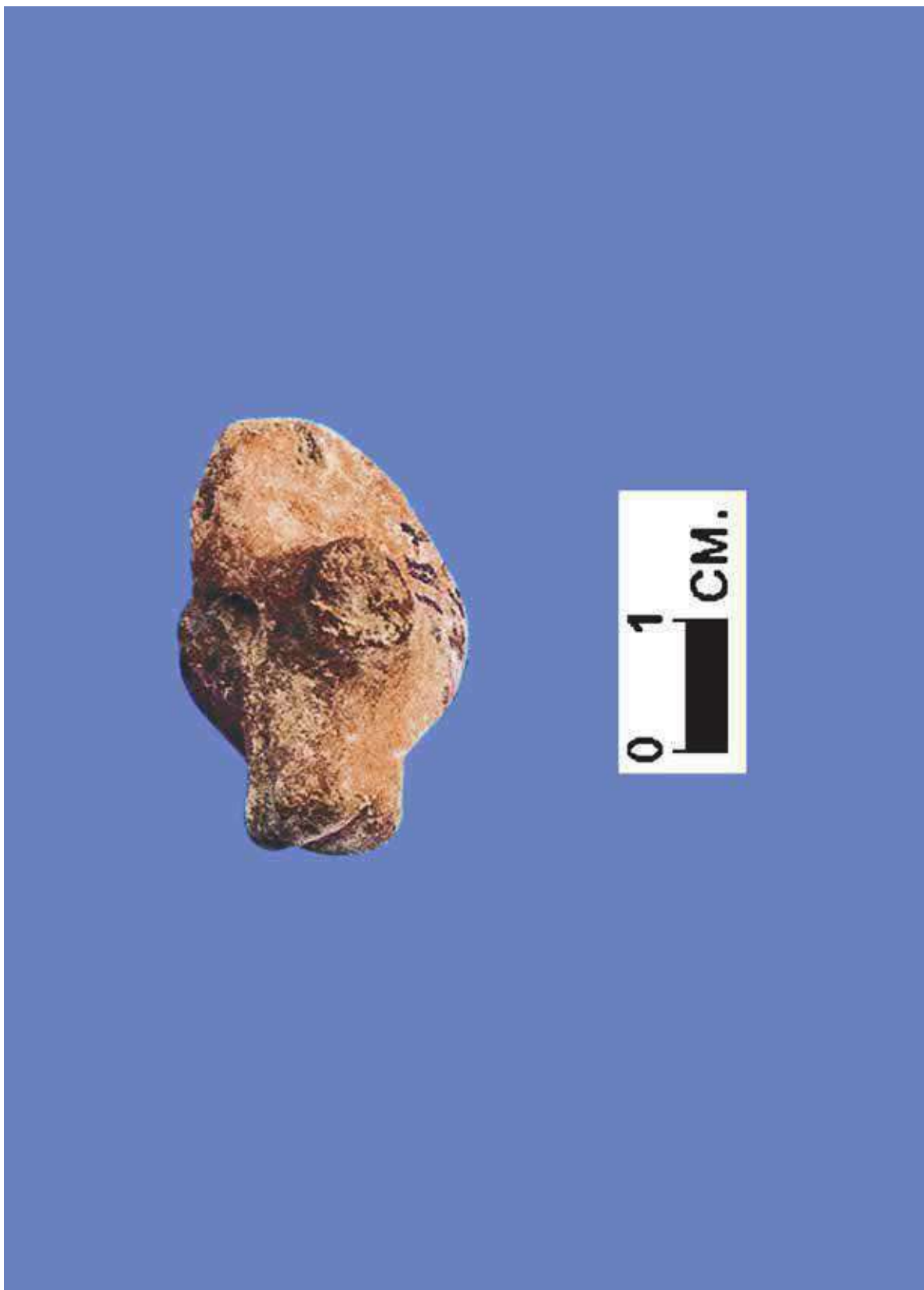


Fig. 21.39 Terracotta dogs and bear

**Fig. 21.40**

Terracotta, animal figure; with a movable head having a transverse

hole on the head portion. From late level of Period II. (KLB-2, Reg. No. 19439).



*Fig. 21.40 Terracotta, head of a animal figure*

**Fig. 21.41**

Terracotta, ram; fragmentary, with

twisted horns. From a late level of Period II. (KLB-1 and 2, Reg. No. 74-73/535).



Fig. 21.41 Terracotta, head of a ram

**(iii) BIRD FIGURES**

**Fig. 21.42**

1. Terracotta, bird; sparrow, broken, with incised eyes and open mouth, having holes below. From a late level of Period II. (KLB-2, Reg. No. 1035).
2. Terracotta, bird; eagle, having out-stretched wings and turned legs with broken hind portion. From a late level of Period II. (KLB-1, Reg. No. 122).
3. Terracotta, bird; pigeon, small, having head, long neck and wings in a seated pose. From a late level of Period II. (KLB-1, Reg. No. 132).
4. Terracotta, bird; eagle, having head and out-stretched wings and joint legs. From a late level of Period II. (KLB-2, Reg. No. 10184).
5. Terracotta, bird; eagle, showing head and out-stretched wings, having two holes on the stomach portion. From a late level of Period II. (KLB-2, Reg. No. 21955).
6. Terracotta, bird; sparrow, seated, broken head, having wings, two holes on the stomach portion. From a late level of Period II (KLB-2, Reg. No. 21956).
7. Terracotta, bird; parrot, seated, long neck with broken head, wings and holes in the stomach. From a late level of Period II. (KLB-2, Reg. No. 21957).

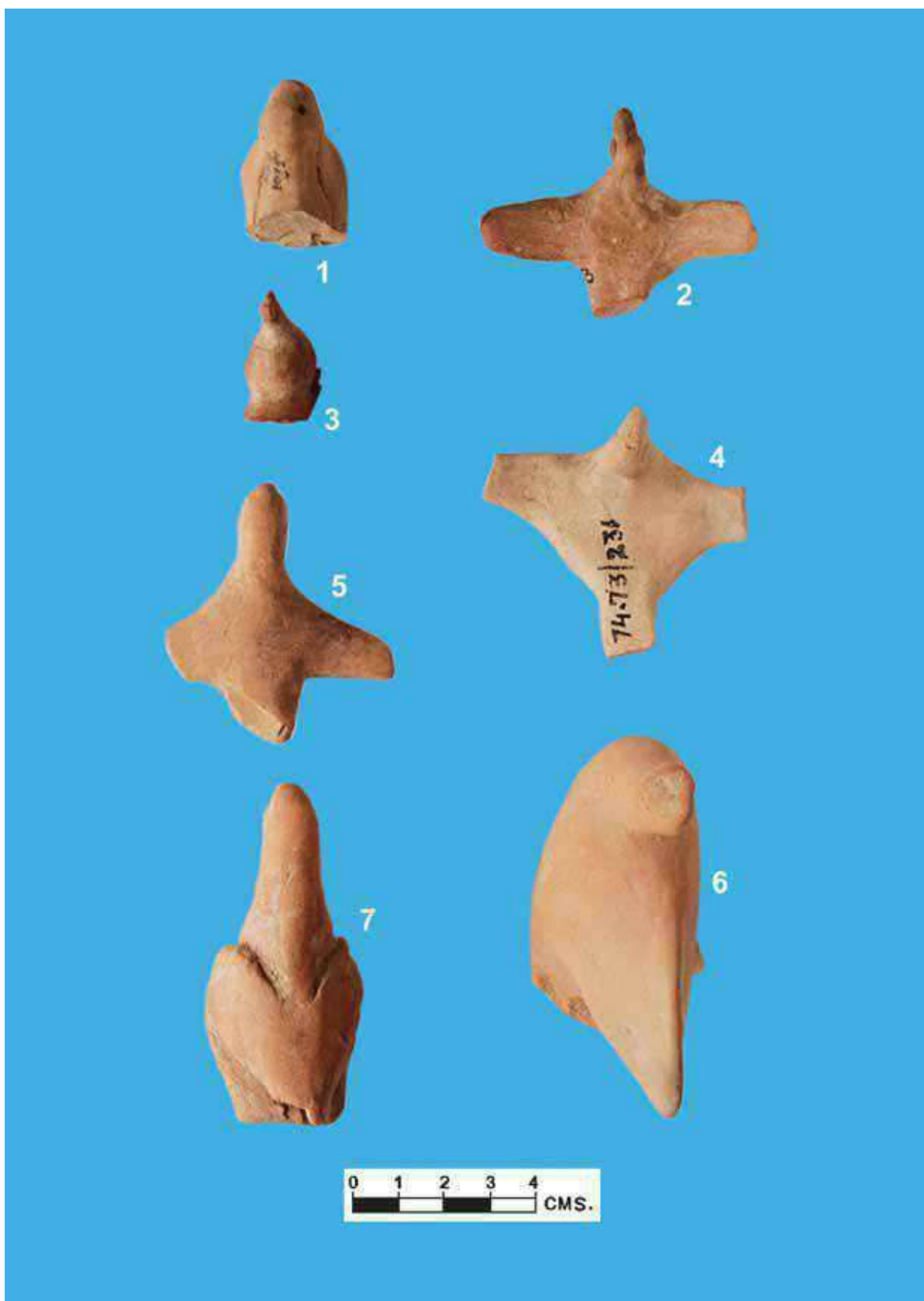


Fig. 21.42 *Terracotta birds*



**Fig. 21.43**

1. Terracotta, duck ; in swimming pose, two holes at the stomach for legs or fixing stand. From a late level of Period II. (KLB-2, Reg. No. 807).
2. Terracotta, pigeon head; movable with button eyes, transverse hole through the neck for fixing a wooden rod. From a late level of Period II. (KLB-2, Reg. No. 8007).
3. Terracotta, pigeon head; movable having a transverse hole for fixing a wooden stick. From a late level of Period II. (KLB-2, Reg. No. 16364).
4. Terracotta, small duck; From a late level of Period II. (KLB-1, Reg. No. 1003).
5. Terracotta, duck; in swimming pose, having two hole on either side and another hole for fixing wheel, button for fixing a rod to make the toy movable. From a middle level of Period II. (KLB-2, Reg. No. 7118).
6. Terracotta, bird; with a long neck and having two holes at the back for pulling the wooden rod for moving the toy. From a middle level of Period II. (KLB-2, Reg. No. 21486).
7. Terracotta, pigeon head; with long neck having round incised eyes. From an unstratified level of Period II. (KLB-2, Reg. No. 20548).



Fig.21.43 Terracotta birds

#### (iv) TOY CART FRAMES AND WHEELS

In the Harappan agricultural economy, transportation of the agricultural commodities, trade and movement of people was dependent on land, sea and riverine routes. For transportation Harappans depended on oxen, horses, bullock and camels and bullock-carts of different types. They perhaps used *ekka* type carts and chariots. In this respect the rock art of India which is generally considered questionable from the point of view of time frame, still it provides valuable information. As per Erwin Neumayer<sup>1</sup> remarks the “Bullock cart is rarely depicted in rock pictures only about ten examples are known to the author and surprisingly none of them is shown loaded nor have any of these a driver sitting on it trial”. However, these are important as visual representation of the carts of the protohistoric and historic period.

A large number of toy cart-frames about 836+ are available from the excavations at Kalibangan. Mostly these toy cart-frames are fragmentary but some of these could reflect the type of carts used by Harappans. Cart frames are

available at Alamgirpur, Desalpur, Lothal, Ropar, Surkotada, Dholavira, Dhalewan and Banawali, besides Mohenjodaro, Harappa and Chanhudaro.<sup>2</sup> These toy carts are the earliest example, found at Kalibangan, of a vehicle used in the land transportation of men and commodities. A study of these toy cart-frames suggests as many as nine types.

These carts are not much different from the present day ones. The cart track-marks (ruts) found from Harappa suggests that the wheel span of the carts was not much different from modern carts. Even the *ekka* type of models are available from Chanhudaro and Harappa. The Daimabad cache of bronze objects which is attributed to late Harappan lineage had solid wheels and the copper chariot with the standing driver and Inamgaon incised bullock cart on a pot sherd gives fairly good idea of the ancestry of bullock carts used by the Harappan.<sup>3</sup> While only two types of terracotta toy-carts are found in the Indus Valley, there are three types found at Lothal<sup>4</sup> and two types with first one having two sub-types at Surkotada.<sup>5</sup> The Kalibangan terracotta toy carts have a variety of as many as nine types which reflects that at Kalibangan besides the

<sup>1</sup> Neumayer, E. 1991. Wheeled Vehicles and Mounted Animals in Prehistoric Indian Rock Art. *Man and Environment*. Vol. XVI: 39-70.

Lal, B.B. 2002. *Sarasvati Flows On*. p. 74, 90. Aryan Books International, New Delhi.

<sup>2</sup> Margabandhu, C. 1989. Transport. In Ghosh, A. (ed.), *An Encyclopaedia of Indian Archaeology*: 335. Munshiram Manohar Lal Publication, Delhi.

<sup>3</sup> Allchin, R. and Allchin, B. 1982. *The Rise of Civilization in India and Pakistan*. pp. 189-190, 278- 281. Cambridge University Press, Cambridge.

<sup>4</sup> Rao, S.R. 1985. *Lothal : A Harappan Port Town*, 1955-62, Vol. II, p. 504. Archaeological Survey of India, New Delhi.

<sup>5</sup> Margabandhu, C. In Joshi, J.P. 1990. *Excavation at Surkotada and Exploration in Kutch*. pp. 284-285. Archaeological Survey of India New Delhi.

transportation the people had innovated different shapes of carts. Basically the cart consists of the upper part which was either concave, flat or open with a solid

chassis having holes for wooden poles and axle as well to hold the wheels and a shaft to be put on the yoke of the bulls.

**TYPES OF TERRACOTTA TOY  
CART-FRAMES Figs. 21.44,  
21.44(a), 21.44(b) and 21.44(c)**

**TYPE 1 – RECTANGULAR FLAT :**

There are four perforations, one at each corner for stakes. Sometimes more perforations are found. To tie the axle, other four perforations, 2 each at the middle of the longer side are found.

**TYPE 2 – FRAME MADE WITH BARS  
(LADDER SHAPE) :**

Two parallel bars of clay are joined with small bars at right angle. These cross bars can be three or four which are so joined that make square or rectangular space in between (ladder shape). Perforations are found on the parallel longer sides vertically. These perforations were meant to fix stakes, leaving two perforations in the centre on the each longer side for the purpose to tie the axle with the thread. One perforation in each cross bar is for inserting a long stake horizontally for the purpose to pull the cart. Generally these carts are flat rectangular but some times curved, with projecting ends. The axle was tied along and below the centre cross -bar to fix wheel.

**TYPE 3 – CART MADE WITH TWO  
CURVED BARS WITH BASE FOR AXLE:**

Both the bars have slightly concave shape with upward end having vertical perforations for inserting stakes and horizontal perforations in cross bars for long stakes. Both the bars have base with horizontal perforation for axle. In this cart the axle is free to rotate the

wheels.

**TYPE 4 – CART MADE WITH TWO  
CURVED PIECES WITHOUT BASE FOR  
AXLE :**

It has no base for axle and rest of the things are similar. Here two perforations are found made in each piece vertically to tie the axle with thread. In this arrangement the axle is fixed and wheels are free to rotate. Certain examples of carts are free form perforation.

**TYPE 5 – RECTANGULAR CURVED  
(BOAT SHAPED) :**

It has curved surfaces with four perforations, one each at four corners. There is perforation along the width for axle which can rotate freely.

**TYPE 6 – OVAL SHAPE :**

This type of cart has incurved sides (edge) which make oval shape, with two perforations each in opposite sides, to fix a long horizontal stake for the purpose to pull the cart. It has four perforations at the base, two on either sides to fix the axle below the base. Axle is so fixed that it cannot move, only wheel can move. The body is bent upward (curved) if seen from the side, and oval if seen from above.

**TYPE 7 – BOX TYPE :**

It is square or rectangular with vertical sides. The outer surface has incised design intersecting oblique lines. At the base there are four perforations to tie the axle with thread. In some pieces of carts there are no perforations.

**TYPE 8 AND 8A :**

Cart frame with two curved pieces having two holes on sides with an axle tied thread. In another variant 8A the cart is similar to type 8 but has hole for the axle.

**TYPE 9 - UNIDENTIFIED HOLES ON BASE AND SIDES (NOT ILLUSTRATED) :**

One end of the cart is broken, so it is difficult to identify the complete shape, only portion is intact which is having two horizontal perforations, besides two perforations at the base.

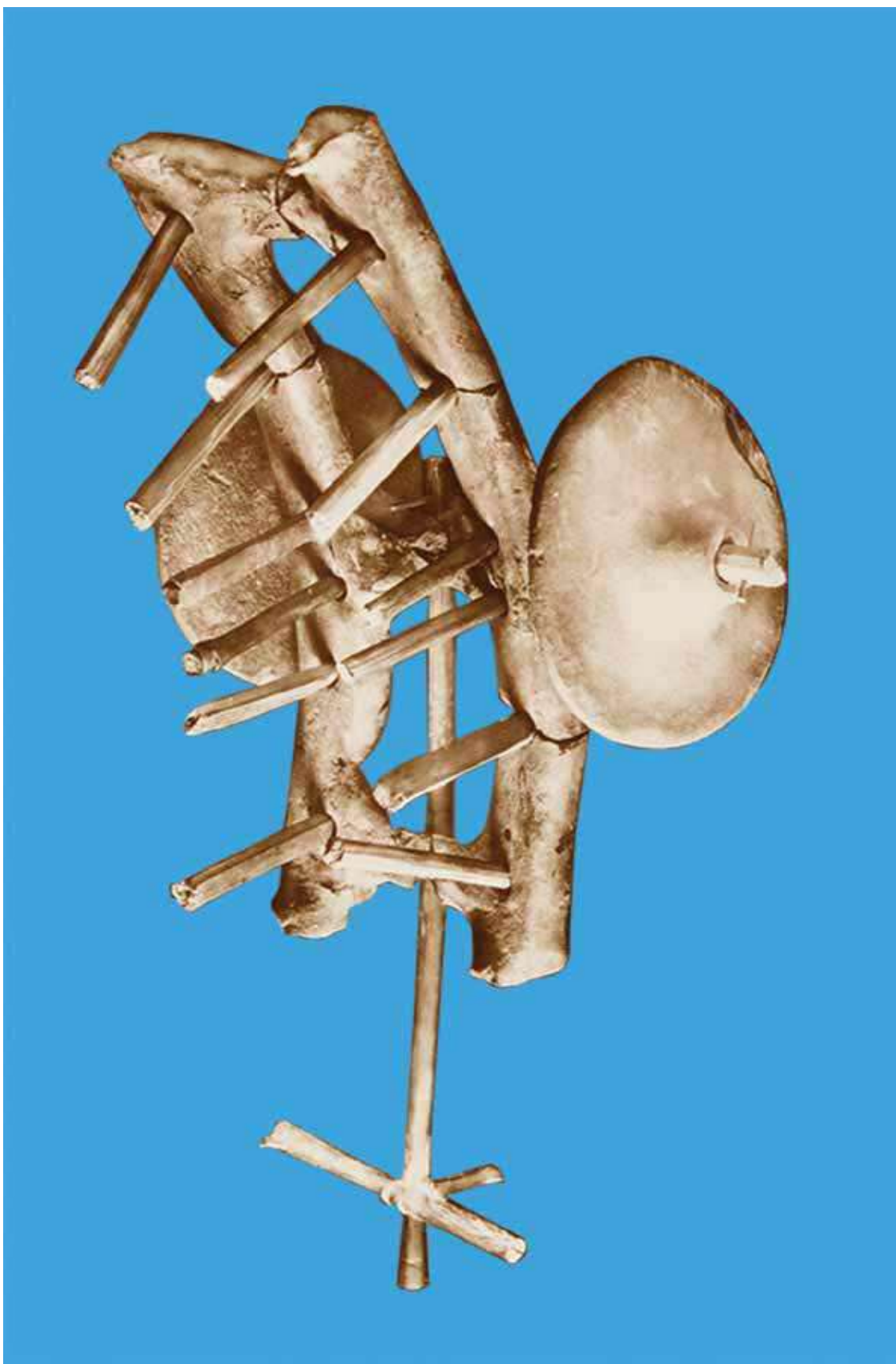


Fig. 21.44 Terracotta toy cart frame with wheels and wooden sticks (modern) showing the conjectural view



**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**TERACOTTA TOY-CART FRAMES**

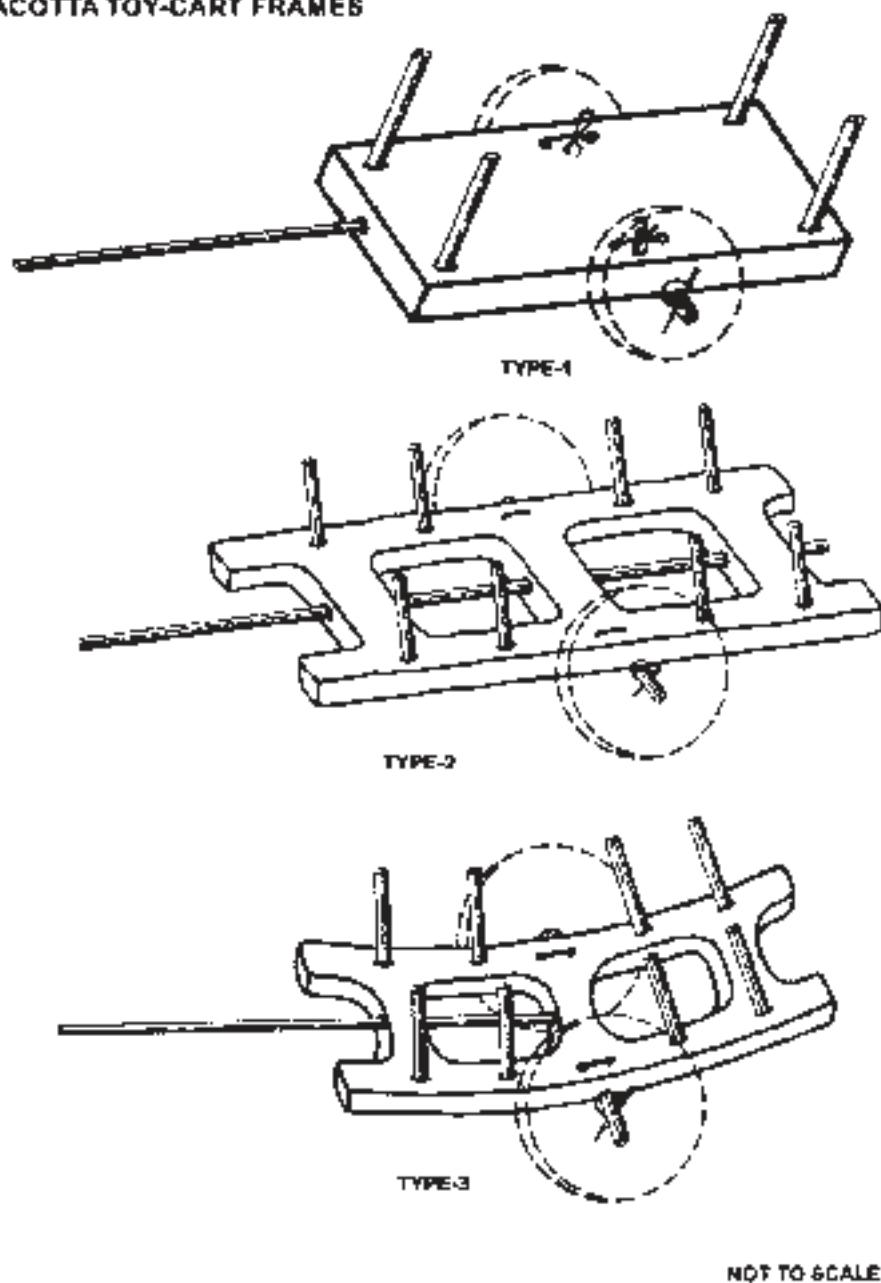


Fig. 21.44(a) : Conjectural drawings of terracotta toy-carts showing their types

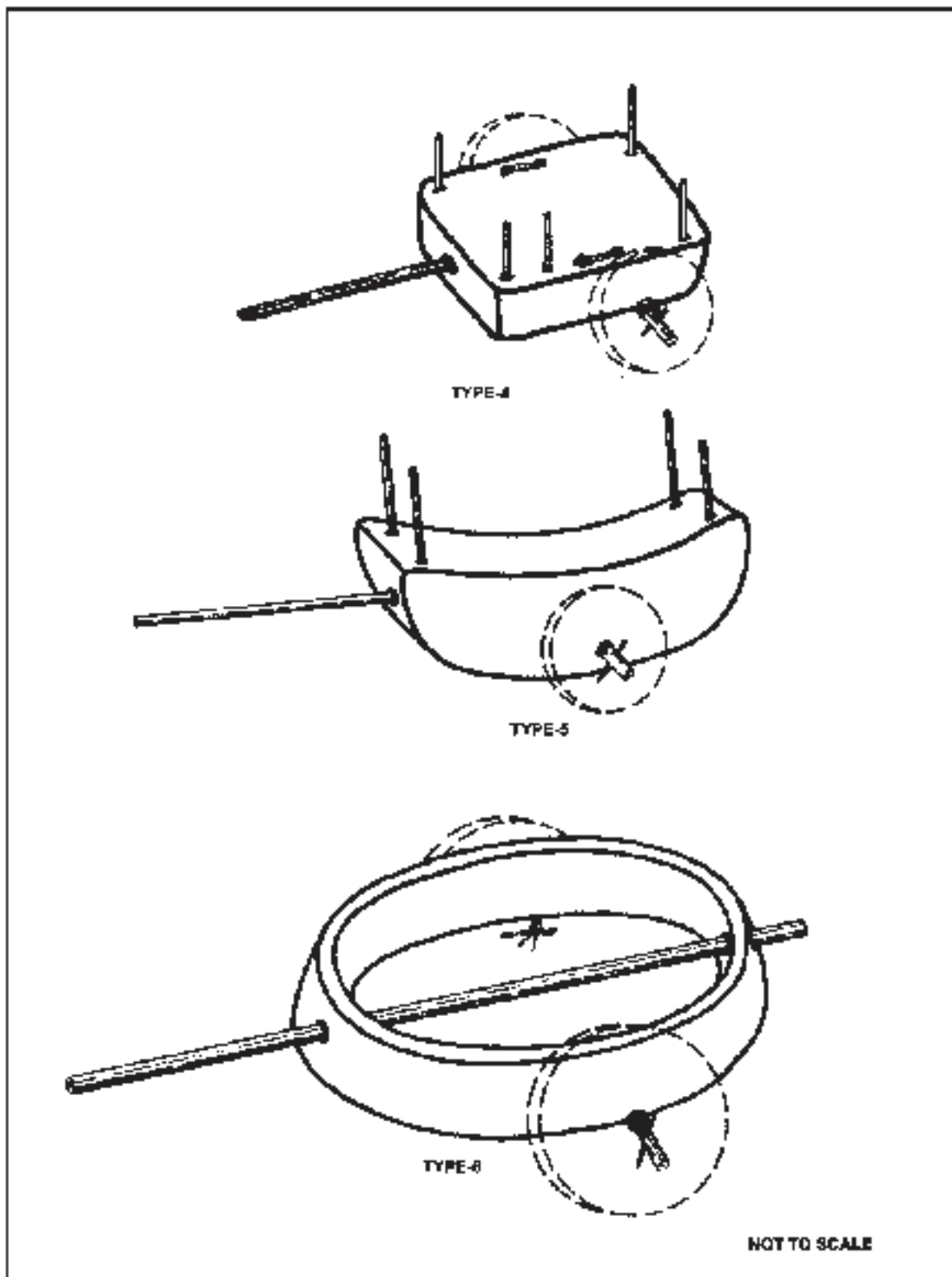


Fig. 21.44(b) : Conjectural drawings of terracotta toy-carts showing their types

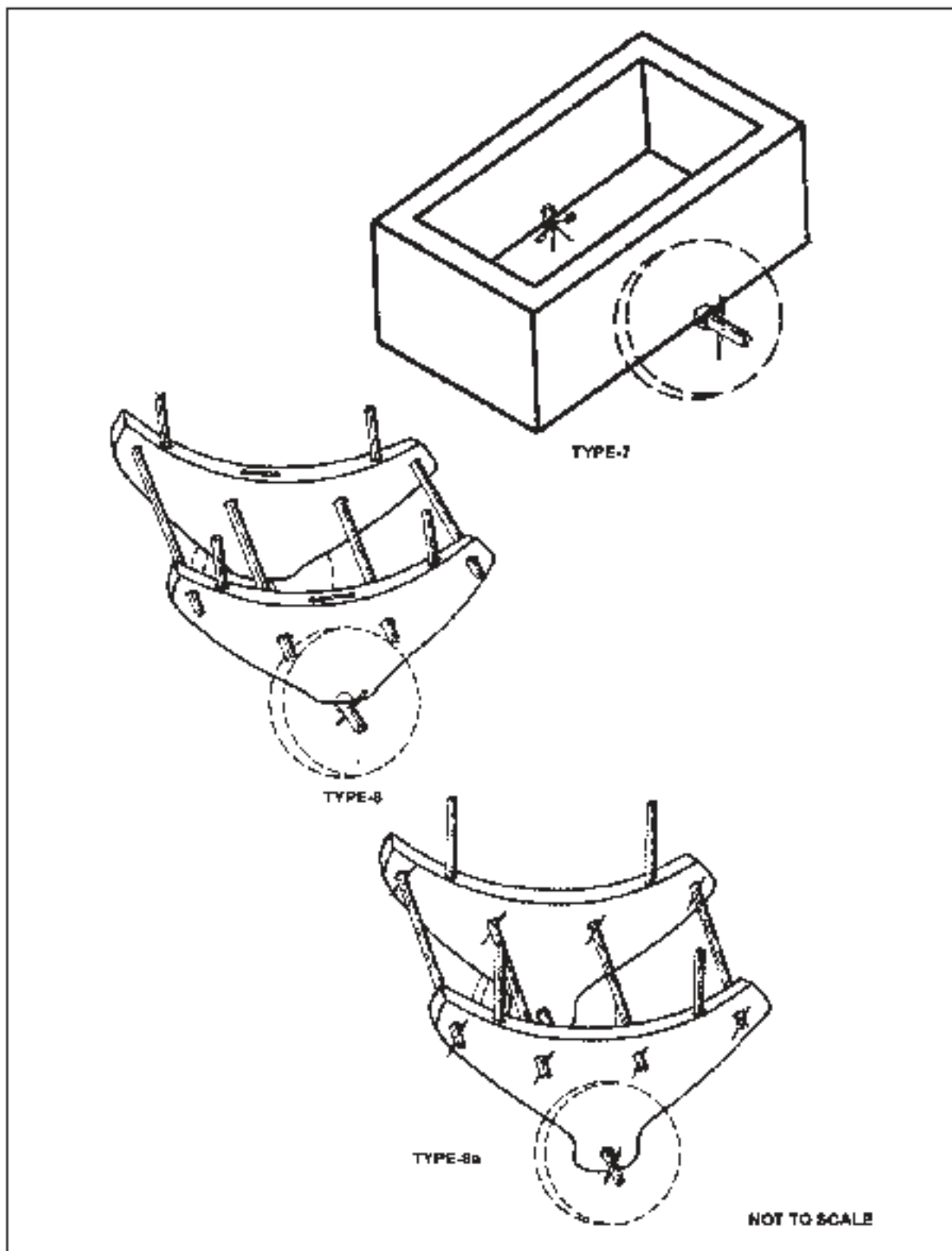


Fig. 21.44(c) : Conjectural drawings of terracotta toy-carts showing their types

## **CART FRAMES**

**Fig. 21.45**

1. Terracotta, fragmentary curved portion of a cart frame having four perforations on the side and six small perforations on the concave top to fix stakes. The axle was tied along and below the centre cross piece. In this cart axle is fixed only wheels for moving the cart. From a late level of Period II. (KLB-1, Reg. No. 6509).
2. Terracotta, complete, incurved sides oval shaped cart frame with one perforation on both longer ends and four perforations at the base on either sides for tying the axle, front perforation is for inserting a long stake horizontally for the purpose of pulling the cart. From an early level of period II. (KLB-1, Reg. No. 1772).
3. Terracotta, miniature rectangular cart frame having four perforations on both longer sides and one perforation on the front side. The front perforation is probably for inserting a long stake horizontally for the purpose of pulling the cart. From a late level of Period II (KLB-2, Reg. No. 2580).
4. Terracotta, large curved portion of a cart frame, having three perforations on the side and two visible on the concave top. Perforations probably are to fix stakes. The axle was tied along and below the centre cross piece. In this cart axle is fixed only when wheels can move. From a late level of Period II. (KLB-2, Reg. No. 21883).
5. Terracotta, fragmentary curved portion of a cart frame, oval shaped, showing one perforation on the front probably for inserting a long stake horizontally for the purpose of pulling the cart. From a late level of Period II. (KLB-1, Reg. No. 717).



Fig. 21.45 Terracotta toy-cart frames

**Fig. 21.46**

1. Terracotta, cart frame; it has rectangular shape, curved and bent downward with perforations, six on both sides for inserting upright stakes. From a late level of Period II (KLB-2, Reg. No. 10652).
2. Terracotta, cart frame; fragmentary rectangular shaped frame with flat surface and projected end. From an early level of Period II. (KLB-1, Reg. No. 19276).
3. Terracotta, cart frame; complete, rectangular cart frame having four perforations on both longer sides and one each on both ends for inserting stakes. From a late level of Period II. (KLB-1, Reg. No. 18403).
4. Terracotta, cart frame; fragmentary, side portion of cart frame having one perforation on the cross-bar and one each on the sides for putting stakes. From a late level of Period II. (KLB-1, Reg. No. 6590).



Fig. 21.46 Terracotta toy-cart frames



**Fig. 21.47**

1. Terracotta, cart frame; (biggest) rectangular with flat surface, having

holes on all sides for putting stakes, size 9 x 15 cm. From a late level of Period II. (KLB-2, Reg. No. 21062).



Fig. 21.47 Terracotta toy-cart frame

**Fig. 21.48**

1. Terracotta, cart frame; fragmentary, rectangular with incised design in three sides perhaps showing use of mat. From a late level of Period II. (KLB-2, Reg. No. 15426).
2. Terracotta, cart frame; fragmentary, rectangular cart frame with tenon at the back side, tenon for pulling, showing criss-cross design on three sides. From a late level of Period II. (KLB-1, Reg. No. 9150).
3. Terracotta, cart frame; fragmentary, showing criss-cross design on three sides. From a middle level of Period II. (KLB-2, Reg. No. 10422).
4. Terracotta, cart frame; fragmentary, with hole for the axle of the wheel. From a late level of Period II. (KLB-2, Reg. No. 7286).
5. Terracotta, cart frame; fragmentary, with a hole in the back side for pulling with a string. From a middle level of Period II. (KLB-2, Reg. No. 8).
6. Terracotta, model of a toy cart; with holes indicating canopy, space for wheels and axle. From an unstratified level of Period II. (KLB-1 and 2, Reg. No. 15426).
7. Terracotta, frame; fragmentary, with two holes on sides, painted black on white showing lines. From an unstratified level of Period II. (KLB-1, Reg. No. 15978).



Fig. 21.48 Terracotta toy-cart frames

### **TERRACOTTA CART WHEELS**

Wheeled transport is a major innovation for carrying men and goods from one place to another. Wheeled vehicles are evidenced in Assyria in about 3000 B.C. and in Sumer C 3000 B.C. Its emergence as a wheeled cart in circa 2500 B.C. is very well reflected in the toy carts of the Harappan

Civilization. It is interesting to note that terracotta cart wheels in Harappan levels at Kalibangan are (1) flat (2) with single hub (3) with hubs on both sides. These are painted showing different toy carts. Spoked wheels are less heavier and have more maneuverability in hard terrain. In India spoked cart wheels are available from early Harappan period.<sup>7</sup>

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<sup>7</sup> Rao, L.S. The Harappan spoked wheels rattle down the streets of Bhirrana, Distt. Fatehabad, Haryana. *Puratattva*, No. 36: 59-67.

**TERRACOTTA TOY CART WHEELS**

S.No	Hub Types	Frequency	Diameter in cm	Description
1.	Without hub	3	Maxi. 5.7 Mini. 4.6	Simple, without painting, the wheel is discular.
2.	Small hub	49	Maxi. 14.2 Mini. 2.8 Mid. 7.5	Diameter is not constant. Painting is seen on three wheels, painted in black design comprises three to four-arches in a group (semi-circles). Two incised lines are found, each on either sides of the hub, are parallel (only on one wheel). One wheel have incised lines along the periphery on the inner surface. Two wheels have unfinished holes. One has four pinholes on the periphery at cardinals (must have been used for other purpose).
3.	Prominent hub	87	Maxi. 9.1 Mini. 4.1 Mid. 8.0	20 painted wheels have paintings in black, painted designs are four arches (semi-circles). Some times outer surface is found dome type, showing thick section. Some times inner side shows concave. Edge is thick or sharp. Diameter is not constant.
4.	Hub with other side depressed	5	Maxi. 9.1 Mini. 6.8 Mid. 7.0	Diameter is not constant. Some wheels are painted, design comprises four - arches (semi-circles). One wheel's hub is so eroded that it shows two projections, or it might have been purposely made.
5.	Hub with cross mark	17	Maxi. 10.9 Mini. 3.7 Mid. 7.5	No painting. One wheel has two incised parallel lines each on either sides of the hub and also on the inner surface. Some times hub is prominent. Deep cross mark (+) is found on the hub.
6.	Discular hub	17	Maxi. 13.0 Mini. 3.9 Mid. 7.5	Painting in black, design four arches (semi-circles). Some wheels are thrown on wheel.
	Total	178		

## **WHEELS**

**Fig. 21.49**

The excavation at Kalibangan has yielded many terracotta toy cart wheels of various types. These could be classified as small, medium and big types. Some of these are painted and most of these are unpainted. These are with hub, prominent hub and without hub. The illustrated specimens are as below :

1. Terracotta wheel; hand made with a prominent hand made hub having dia. 10.5 cm. painted in black with group of concentric circles. From late level of Period II. (KLB-2, Reg. No. 21997).
2. Terracotta wheel; with a prominent hub, hand made, having a dia. 9 cm. From middle level of Period II. (KLB-2, Reg. No. 21999).
3. Terracotta, big wheel; with a flat hub, hand made, having a dia. 13 cm. From a late level of Period II. (KLB-2, Reg. No. 21998).
4. Terracotta small wheel; with a prominent hub, hand made, having a dia. 4 cm. From a late level of Period II. (KLB-2, Reg. No. 22000).
5. Terracotta medium sized wheel; with a prominent hub having cross mark on the hub, hand made, having dia. 8.3 cm. From a middle level of Period II. (KLB-2, Reg. No. 22001).



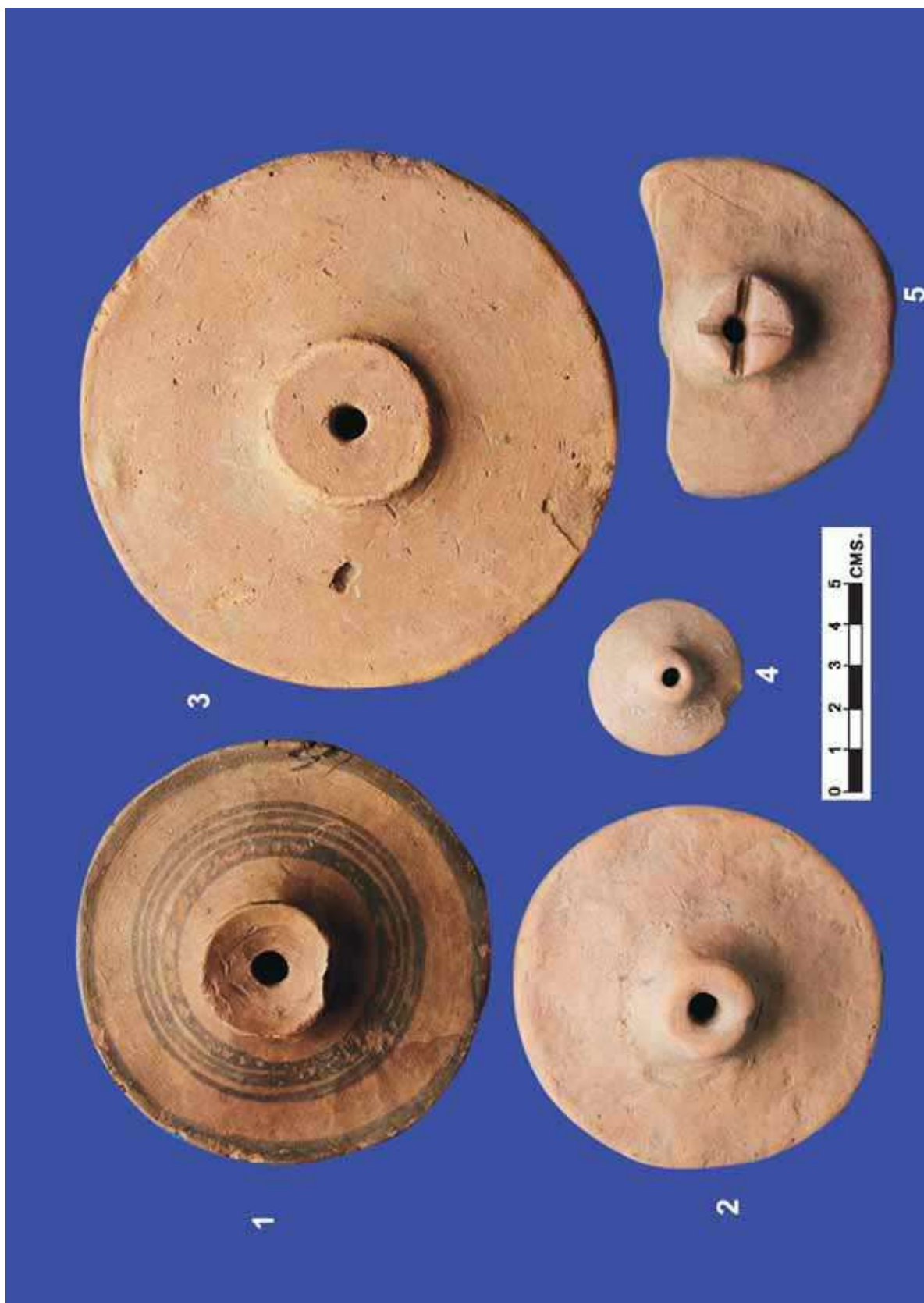


Fig. 21.49 Terracotta hubbed wheels

**Fig. 21.50**

1. Terracotta wheel ; partly broken, with a prominent hub, hand made, having dia. 5 cm. and showing painted spokes all over. From a late level of Period II. (KLB-2, Reg. No. 22002).
2. Terracotta small wheel; partly broken, with a hub, hand made, having dia. 7.2 cm. From a late level of Period II. (KLB-2, Reg. No. 21973).
3. Terracotta wheel; broken, with prominent hub, decorated with five groups of four incised lines all over wheel and around the hub, hand made having dia. 7 cm. From a late level of period II. (KLB-2, Reg. No. 21975).
4. Terracotta small wheel; with a prominent hub, hand made, having dia. 3.7 cm, painted with four groups of six curved lines around the hub. From a middle level of Period II. (KLB-2, Reg. No. 21974).
5. Terracotta wheel; broken, with a flat and prominent hub, hand made, having, dia. 12 cm. From a middle level of Period II. (KLB-2, Reg. No. 21976).
6. Terracotta; double hubbed wheel of red ware, hand made, self-slipped having dia. 5 cm. From a late level of Period II. (KLB-2, Reg. No. 21977).

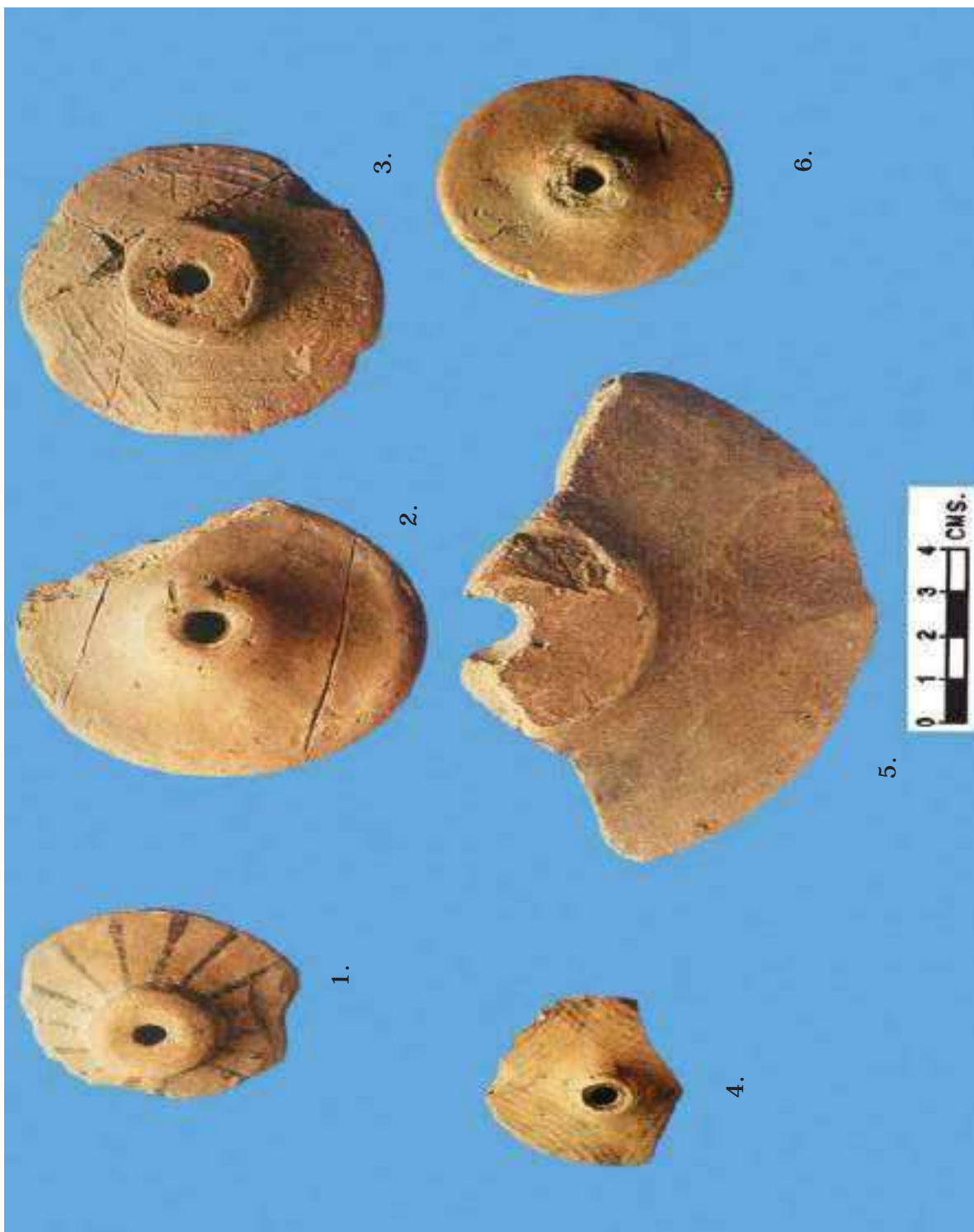


Fig. 21.50 Terracotta hubbed wheels

**Fig. 21.51**

1. Terracotta wheel; painted with black making four groups of three curved lines around the painted hub with three concentric arches, having one sided hub. From a late level of Period II. (KLB-2, Reg. No. 1601).
2. Terracotta wheel; painted with black making four groups of five curved lines around the painted hub in similar fashion as sr. no.1, having one sided hub. From a middle level of Period II. (KLB-1, Reg. No. 16723).
3. Terracotta wheel; with a small hub. From a late level of Period II. (KLB-2, Reg. No. 21879).

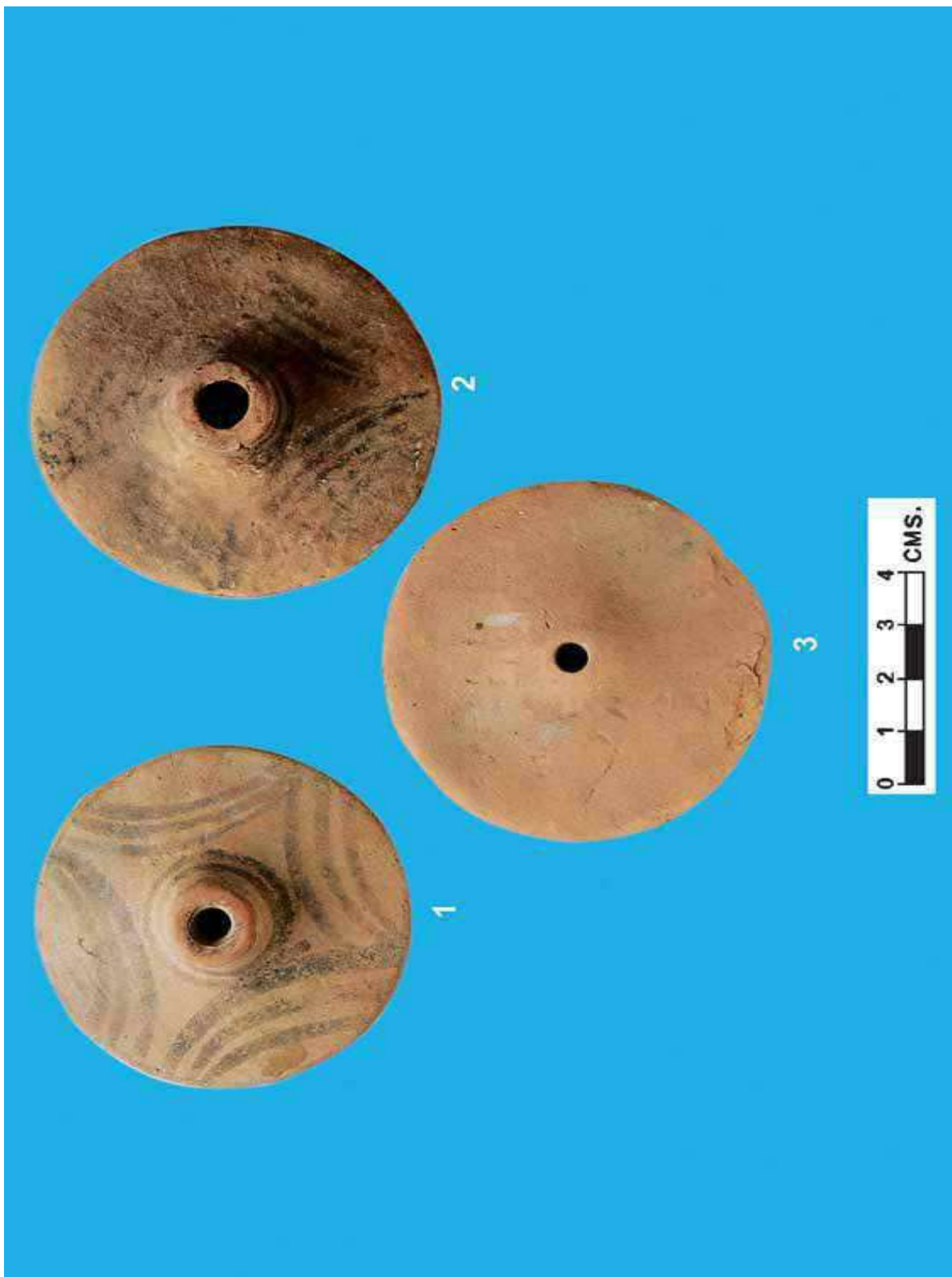


Fig. 21.51 Terracotta hubbed wheels

## **(V) HOPSCOTCHES**

### **Fig. 21.52**

The excavation at Kalibangan has yielded hundreds of hopscotches for playing of children. They differ in form and size. They are of terracotta. A few of them are discribed below:-

1. Terracotta, hopscotch; medium, not completely finished. From a late level of Period II. (KLB-2, Reg. No. 15282).
2. Terracotta, hopscotch; big, finished. From a late level of Period II. (KLB-2, Reg. No. 18034).
3. Terracotta, hopscotch; medium, finished. From a late level of Period II. (KLB-2, Reg. No. 3245).
4. Terracotta, hopscotch; medium, finished. From a late level of Period II. (KLB-2, Reg. No. 21876).
5. Terracotta, hopscotch; small, finished. From a mid level of Period II. (KLB-2, Reg. No. 21877).
6. Terracotta, hopscotch; medium, finished. From a late level of Period II. (KLB-1, Reg. No. 19442).





Fig. 21.52 *Terracotta hopscotches*



**Fig. 21.53**

1. Terracotta, hopscotch; big, finished, decorated with incisions. From a late level of Period II. (KLB-2, Reg. No. 8638).
2. Terracotta, hopscotch; medium, finished. From a middle level of Period II. (KLB-2, Reg. No.11075).
3. Terracotta, hopscotch; medium, finished. From a late level of Period II. (KLB-1, Reg. No.19221).
4. Terracotta, hopscotch; small, finished. From a late level of Period II. (KLB-2, Reg. No.11313).
5. Terracotta, hopscotch; very small, finished. From a late level of Period II. (KLB-2, Reg. No. 21878).



Fig. 21.53 *Terracotta hopscotches*

**(vi) DECORATED BALLS**

**Fig. 21.54**

The excavation at Kalibangan has yielded one thousand and ten terracotta balls varying in size, out of which eight are decorated. These balls might have been used for playing by the children. A few of them are as below:-

1. Terracotta, broken ball; showing melon-like incisions on the surface, dia. 4 cm. From a late level of Period II. (KLB-2, Reg. No. 21983).
2. Terracotta, complete ball; showing notched design over surface, dia. 3.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21984).
3. Terracotta, plain ball; dia. 3.5 cm. From a late level of Period II. (KLB-2, Reg. No. 22010).
4. Terracotta, plain ball; showing a hole on the top, dia. 3.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21985).
5. Terracotta, small ball; showing notched design all over the surface, dia. 2.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21986).
6. Terracotta, broken ball; having notched design all over the surface, dia. 3.7 cm. From a late level of Period II. (KLB-2, Reg. No. 21987).
7. Terracotta, ball; showing notched design all over the surface, dia. 2.7 cm. From a late level of Period II. (KLB-2, Reg. No. 21988).
8. Terracotta, very small ball; plain, dia. 2 cm. From a late level of Period II. (KLB-2, Reg. No. 21989).

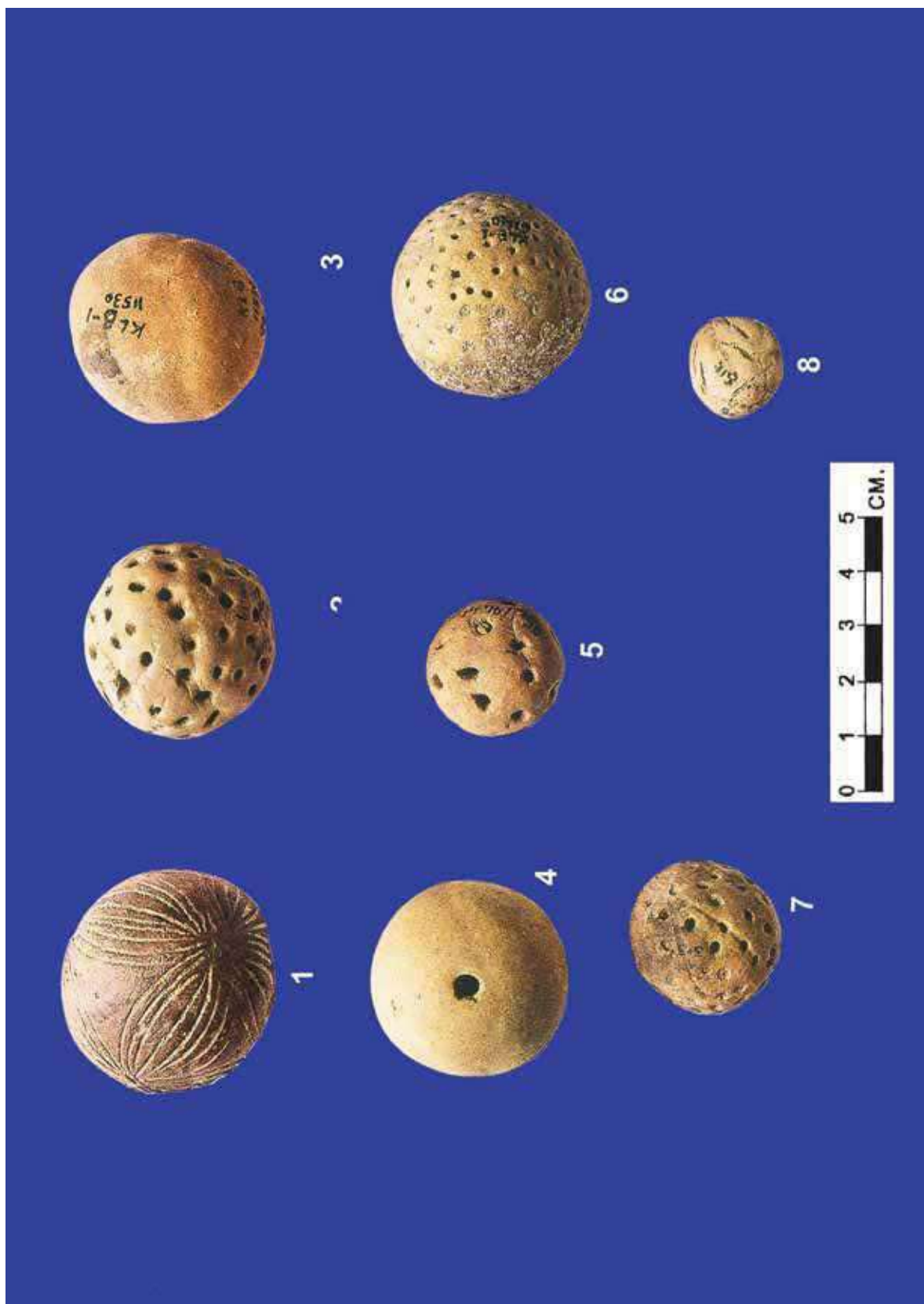


Fig. 21.54 Terracotta decorated balls

### **III. PLAY THINGS FOR ADULTS TERRACOTTA PELLETS, TOY BRICKS, GAMESMEN, DICE AND GAMING BOARD**

A large number of gaming pieces have been found in the excavation at Kalibangan. These gaming pieces are of different types i.e. zoomorphic figures, pellets, tetrahedrons, cones and castles. Besides some of the tetrahedrons have one to five legs or multi-legged. Some of these are inscribed with script, perhaps a pictogram giving a particular value to the gamesman. There are double-headed figures as well. A number of small jasper and agate cones with a groove under the top have also been found which do not appear to be gamesmen and have been described as weights. One brick and another

terracotta cake has incised-squares which indicates that gaming pieces were moved into these squares. It appears that a game on squares with terracotta gamesmen and another with a dice was being played. It suggests that the Indian game of chess (*chausar*) had its origin in Harappan times. Similar type of gaming pieces are reported from Lothal and other Harappan sites also.

The dice is a cube-shaped object and has one to six blind holes, out of the two dice, the first has one opposite two, three opposite five and four opposite six holes; second dice consists of two opposite one, three opposite four, five opposite six. No other type of dice is available at Kalibangan.

**(i) STUD-SHAPED GAMESMEN**

**Fig. 21.55**

1. Terracotta, stud-shaped gamesmen; with perfect side (length 2.7 cm). From a late level of Period II. (KLB-2, Reg. No. 21824).
2. Terracotta, stud-shaped gamesmen; with perfect side (length 2.7 cm). From a late level of Period II. (KLB-1, Reg. No. 18728).
3. Terracotta, stud-shaped gamesmen; with perfect thick sides (length 2.5 cm). From a late level of Period II. (KLB-1, Reg. No. 2997).
4. Terracotta, stud-shaped gamesmen; with accurate sides (length 3 cm.) From a middle level of Period II. (KLB-1, Reg. No. 4688).
5. Terracotta, stud-shaped gamesmen; with perfect sides (length 2.3 cm). From an early level of Period II (KLB-1, Reg. No. 1545).
6. Terracotta, stud-shaped gamesmen; (length 2.6 cm.) From a late level of Period II. (KLB-2, Reg. No. 18299).
7. Terracotta, stud-shaped gamesmen; incomplete oxidized (length 2 cm.). (KLB-1, Reg. No. 21825).
8. Terracotta, stud-shaped gamesmen; shape with perfect side (length 3 cm.). From a late level of Period II. (KLB-1, 14862).

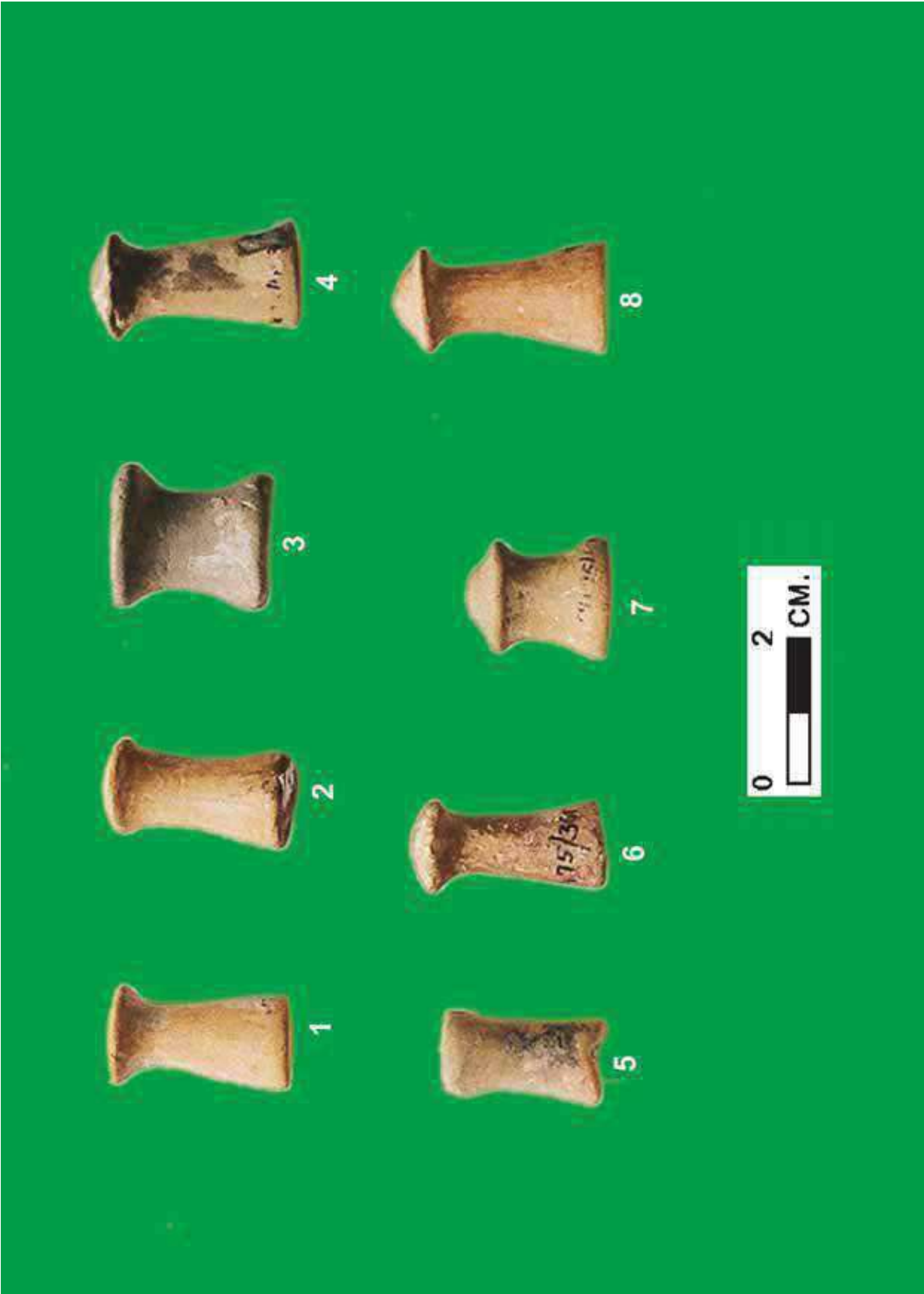


Fig. 21.55 Terracotta stud-shaped gamesmen



**(ii) PALLET-SHAPED GAMESMEN**

From an early level of Period II (KLB-2, Reg. No. 3376)

**Fig. 21.56**

1. Terracotta, gamesman; pellet-shaped, triangular sides and base. From a late level of Period II. (KLB-2, Reg. No. 9912).
1. Terracotta, gamesman; pellet-shaped, having triangular sides and base. From a late level of Period II. (KLB-2, Reg. No. 10317).
2. Terracotta, gamesman; pellet-shaped, having triangular sides and base. From a late level of Period II. (KLB-2, Reg. No. 21864)
3. Terracotta, gamesman; pellet-shaped having triangular sides and base.
4. Terracotta, gamesman; pellet-shaped, having triangular sides and base. From a late level of Period II. (KLB-1, Reg. No. 18240).
5. Terracotta, gamesman; pellet-shaped, blackish having triangular sides and base. From a late level of Period II . (KLB-2, Reg. No. 21865).
6. Terracotta, gamesman; pellet-shaped, having triangular sides and base. From surface. (KLB-2, Reg. No. 21866).
7. Terracotta, gamesman; pellet-shaped with triangular sides and base. From a late level of Period II .

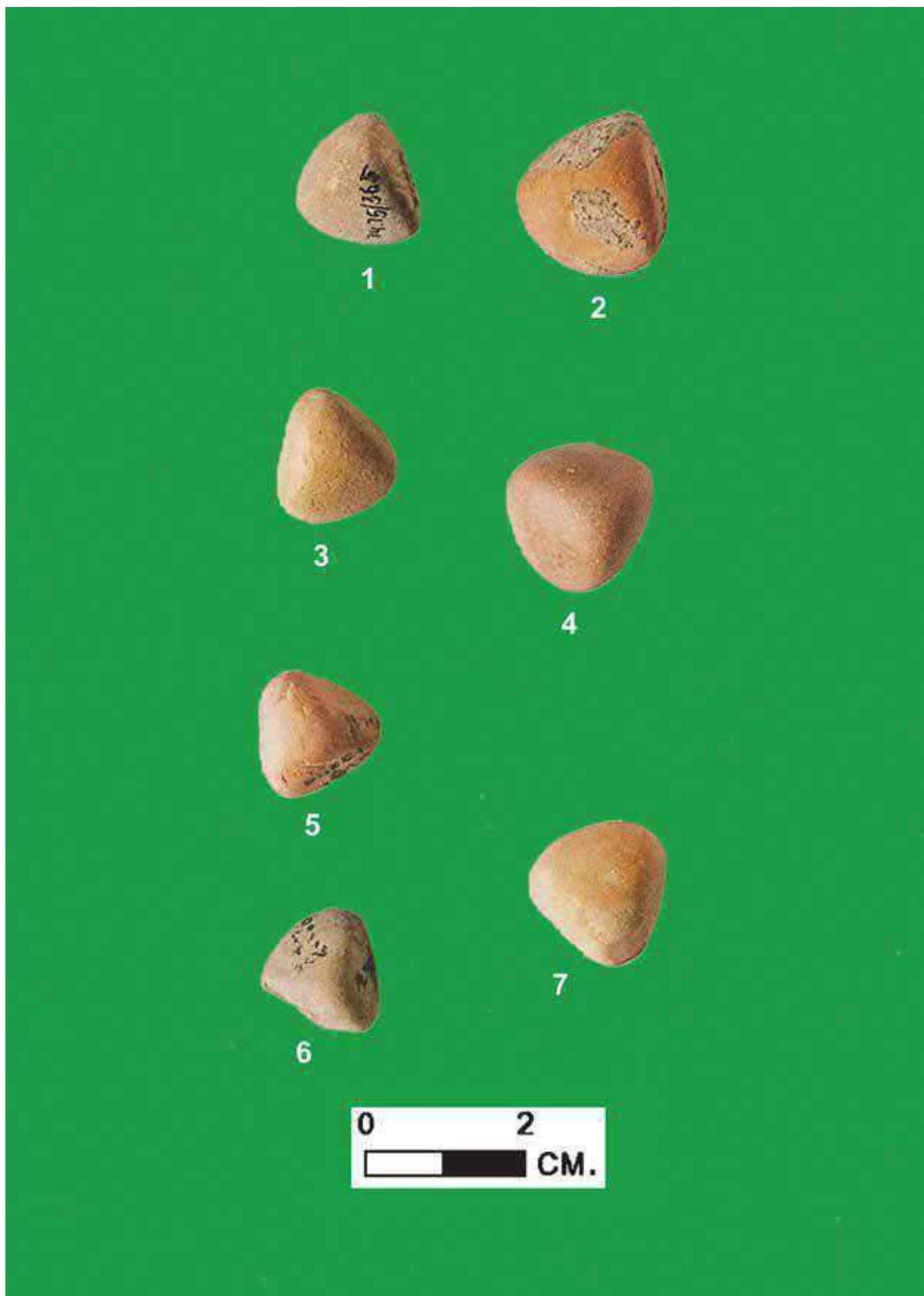


Fig. 21.56 *Terracotta pellet shaped gamesmen*

**Fig. 21.57**

1. Terracotta, gamesman; having thick end on both sides and thin in the middle (length 4 cm.). From a late level of Period II. (KLB-2, Reg. No. 21823).
2. Terracotta, gamesman; small, having thick end on both sides and thin in the middle. (length 2.7 cm). From a late level of Period II. (KLB-2, Reg. No. 18447).
3. Terracotta, gamesman; big, having thick end on both sides and thin in the middle (length 4.5 cm). From a late level of Period II. (KLB-1, Reg. No. 15536).
4. Terracotta, gamesman; small, having thick end on both sides, thin in the middle (length 3.5 cm.). From a late level of Period II. (KLB-2, Reg. No. 20850).
5. Terracotta, gamesman; having thick end on both sides, thin in the middle (length 3.7 cm.). From a late level of Period II. (KLB-2, Reg. No. 7938).
6. Terracotta, gamesman; having thick end on both sides, thin in the middle (length 2.4 cm.). From a late level of Period II. (KLB-2, Reg. No. 1992)
7. Terracotta, gamesman; small, having thick end on both sides, thin in the middle (length 2.7 cm.). From a late level of Period II. (KLB-1, Reg. No. 3013).
8. Terracotta, gamesman; having thick end on both sides and thin the middle (length 3 cm). From a middle level of Period II. (KLB-2, Reg. No. 12130).



Fig. 21.57 Terracotta concave-sided gamesmen

**Fig. 21.58**

1. Terracotta, cone; with broad circular base and thick knob (length 2.3 cm). From a late level of Period II. (KLB-2, Reg. No. 167).
2. Terracotta, cone; having broad circular base and conical knob (length 2.4 cm). From a middle level of Period II. (KLB-2, Reg. No. 14424).
3. Terracotta, cone; having broad circular base and prominent knob (length 2.9 cm). From a late level of Period II. (KLB-1, Reg. No. 6817).
4. Terracotta, cone; having broad circular base and prominent knob (length 2.5 cm). From a late level of Period II. (KLB-1, Reg. No. 55).
5. Terracotta, cone; having broad circular base and thick knob (length 2 cm). From a late level of Period II. (KLB-1, Reg. No. 21826).
6. Terracotta, cone; having broad circular base and conical knob (length 1.7 cm). From a late level of Period II. (KLB-1, Reg. No. 21827).
7. Terracotta, cone; having broad circular base and conical knob (length 2.2 cm). From a late level of Period II. (KLB-2, Reg. No. 20996).

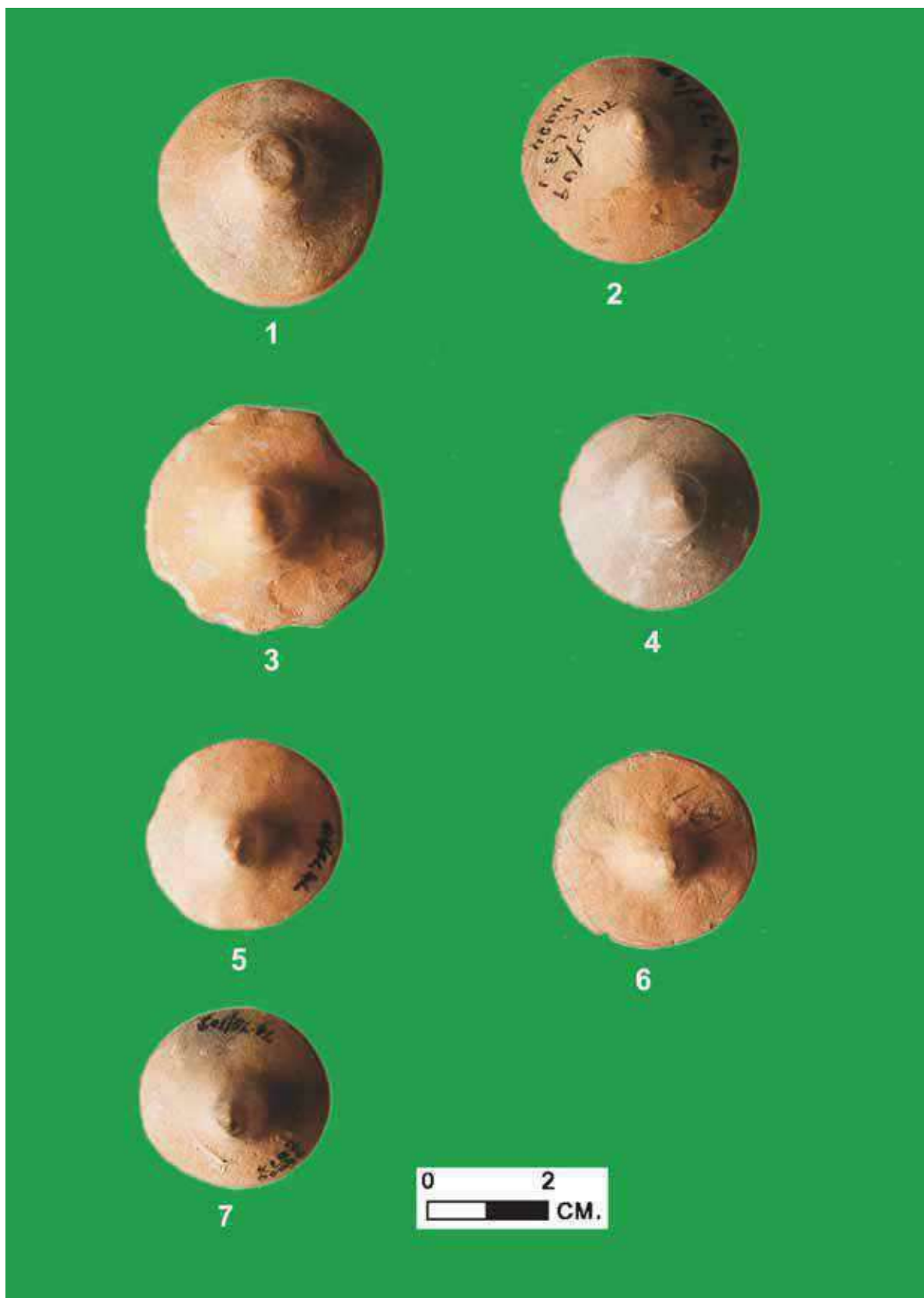


Fig. 21.58 Terracotta cone-shaped gamesmen

**Fig. 21.59**

1. Terracotta, gamesman; four-footed base with a prominent knob. From a late level of Period II. (KLB-1, Reg. No. 1304).
2. Terracotta, gamesman; five-footed base with slightly thick knob. From a late level of Period II. (KLB-1, Reg. No. 345).
3. Terracotta, gamesman; broken, probably eight-footed base with knob. From a late level of Period II. (KLB-2, Reg. No. 1639).
4. Terracotta, gamesman; five-footed base with thick knob, incomplete firing, grey in colour. From a late level of Period II. (KLB-1, Reg. No. 19815).
5. Terracotta, gamesman; six-footed base with prominent knob. From a late level of Period II. (KLB-2, Reg. No. 544).
6. Terracotta, gamesman; seven-footed base with prominent knob. From a late level of Period II. (KLB-1, Reg. No. 6513).
7. Terracotta, gamesman; with circular base and very long prominent knob. From a late level of Period II. (KLB-1, Reg. No. 2978).
8. Terracotta, gamesman; five-footed base with prominent knob. From a late level of Period II. (KLB-1, Reg. No. 439).
9. Terracotta, gamesman; five-footed gamesman with thin knob. From a late level of Period II. (KLB-1, Reg. No. 1704).
10. Terracotta, gamesman; one-footed base with thick knob. From a late level of Period II. (KLB-1, Reg. No. 3267).
11. Terracotta, gamesman; fifteen-footed base with small thick knob. From an early level of Period II. (KLB-2, Reg. No. 15700).
12. Terracotta, gamesman; one-footed base with prominent knob. From a late level of Period II. (KLB-1, Reg. No. 156).
13. Terracotta, gamesman; five-footed base with conical knob. From a late level of Period II. (KLB-1, Reg. No. 1207).
14. Terracotta, gamesman; one-footed base with long prominent knob. From a late level of Period II. (KLB-1, Reg. No. 6642).
15. Terracotta, gamesman; one-footed base with prominent knob. From a late level of Period II. (KLB-1, Reg. No. 20348).



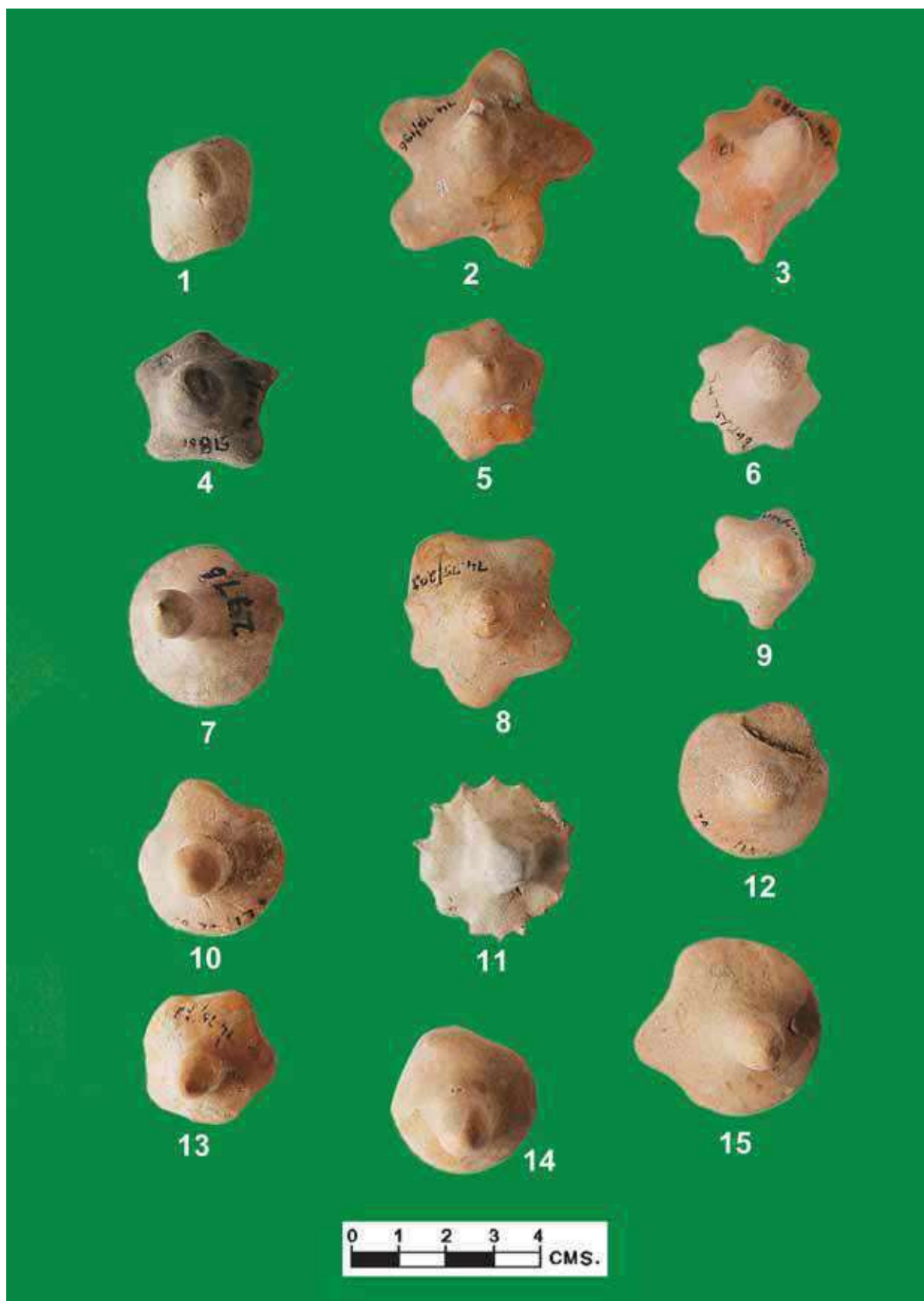


Fig. 21.59 Terracotta knobbed gamesmen

**Fig. 21.60**

1. Terracotta, gamesman; four-footed base with conical knob. From a late level of Period II. (KLB-1, Reg. No. 12442).
2. Terracotta, gamesman; five-footed base with long conical knob. From a late level of Period II. (KLB-1, Reg. No. 12358).
3. Terracotta, gamesman; four-footed base other broken with thick knob. From a late level of Period II. (KLB-1, Reg. No. 13770).
4. Terracotta, gamesman; four-footed base with thick knob. From a late level of Period II. (KLB-1, Reg. No. 681).
5. Terracotta, gamesman; four-footed base with domical knob. From a late level of Period II. (KLB-1, Reg. No. 5267).
6. Terracotta, gamesman; four-footed base with prominent long knob. From a late level of Period II. (KLB-1, Reg. No. 3215).
7. Terracotta, gamesman; four-footed base with thick knob. From a late level of Period II. (KLB-2, Reg. No. 21828).
8. Terracotta, gamesman; four-footed base with thick knob. From a late level of Period II. (KLB-1, Reg. No. 21829).
9. Terracotta, gamesman; four-footed base with thick knob. From a late level of Period II. (KLB-1, Reg. No. 11087).
10. Terracotta, gamesman; four-footed base with prominent knob, incomplete fired. From a late level of Period II. (KLB-1, Reg. No. 19187).



Fig. 21.60 Terracotta knobbed gamesmen

**Fig. 21.61**

1. Terracotta, gamesman; three-footed or triangular base with thick knob. From a late level of Period II. (KLB-1, Reg. No. 6613).
2. Terracotta, gamesman; three-footed or triangular base with thick knob. From a late level of Period II. (KLB-1, Reg. No. 865).
3. Terracotta, gamesman; three-footed with thick knob. From a late level of Period II. (KLB-1, Reg. No. 6518).
4. Terracotta, gamesman; three-footed or triangular base with conical knob. From a late level of Period II. (KLB-1, Reg. No. 5417).
5. Terracotta, gamesman; three-footed with prominent knob. From a late level of Period I. (KLB-1, Reg. No. 2170).
6. Terracotta, gamesman; one-footed with prominent knob. From a late level of Period II. (KLB-1, Reg. No. 775).

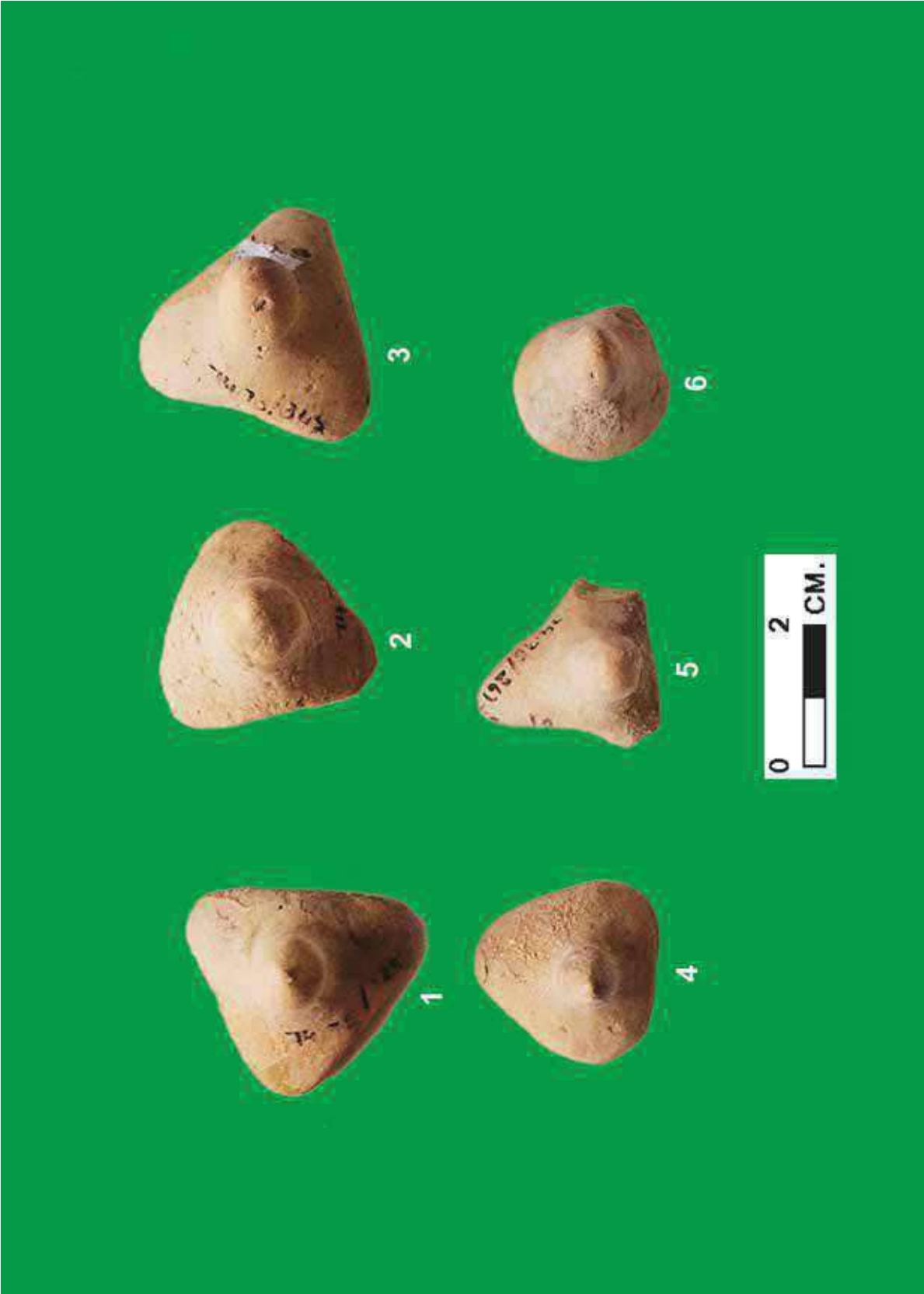


Fig. 21.61 Terracotta knobbed gamesmen

**Fig. 21.62**

1. Terracotta, gamesman; animal-head with broken horns, on a stand. From a late level of Period II. (KLB-1, Reg. No. 12132).
2. Terracotta, gamesman; animal-head with pinched up horns, on a stand.
3. Terracotta, gamesman; addorsed animal, double-faced on a stand. From a late level of Period II. (KLB-2, Reg. No. 11772).



Fig. 21.62 Terracotta animal-headed gamesmen



## **INSCRIBED GAMESMEN**

### **Fig. 21.63**

1. Terracotta, gamesman; four-footed base with prominent knob having incised script near the knob. From a late level of Period II. (KLB-1, Reg. No. 18949).
2. Terracotta, gamesman; four-footed base with prominent knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 681).
3. Terracotta, gamesman; double-footed base with broken knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 19789).
4. Terracotta, gamesman; circular-base with small knob having incised script. From a middle level of Period II. (KLB-1, Reg. No. 5364).
5. Terracotta, gamesman; four-footed base with thick knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 19377).
6. Terracotta, gamesman; one-footed base, broken with prominent knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 6511).
7. Terracotta, gamesman; three-footed base, with long knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 5329).
8. Terracotta, gamesman; five-footed base, with prominent knob having incised script. From a late level of Period II. (KLB-1 & 2, Reg. No. 21830).
9. Terracotta, gamesman; four-footed base, two broken having prominent knob with incised script. From a late level of Period II. (KLB-1, Reg. No. 11374).
10. Terracotta, gamesman; four-footed base, with small knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 1763).



Fig. 21.63 Terracotta inscribed gamesmen

**Fig. 21.64**

1. Terracotta, gamesman; circular base with broken knob, having incised script. From a late level of Period II. (KLB-1, Reg. No. 17622).
2. Terracotta, gamesman; five-footed base with prominent knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 1168).
3. Terracotta, gamesman; five-footed base with prominent knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 43278).
4. Terracotta, gamesman; five-footed base, broken with prominent knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 14712).
5. Terracotta, gamesman; six-footed base with broken knob having incised script. From a late level of Period II. (KLB-1-2, Reg. No. 21831).
6. Terracotta, gamesman; four-footed base with prominent knob having incised script, incomplete oxidization. From a late level of Period II. (KLB-2, Reg. No. 21996).
7. Terracotta, gamesman; four-footed base with long prominent knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 741).
8. Terracotta, gamesman; five-footed base with thick knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 4585).
9. Terracotta, gamesman; three-footed base with prominent knob. From a late level of Period II. (KLB-1, Reg. No. 6630).
10. Terracotta, gamesman; one-footed base with prominent knob having incised script. From a late level of Period II. (KLB-1, Reg. No. 13157).

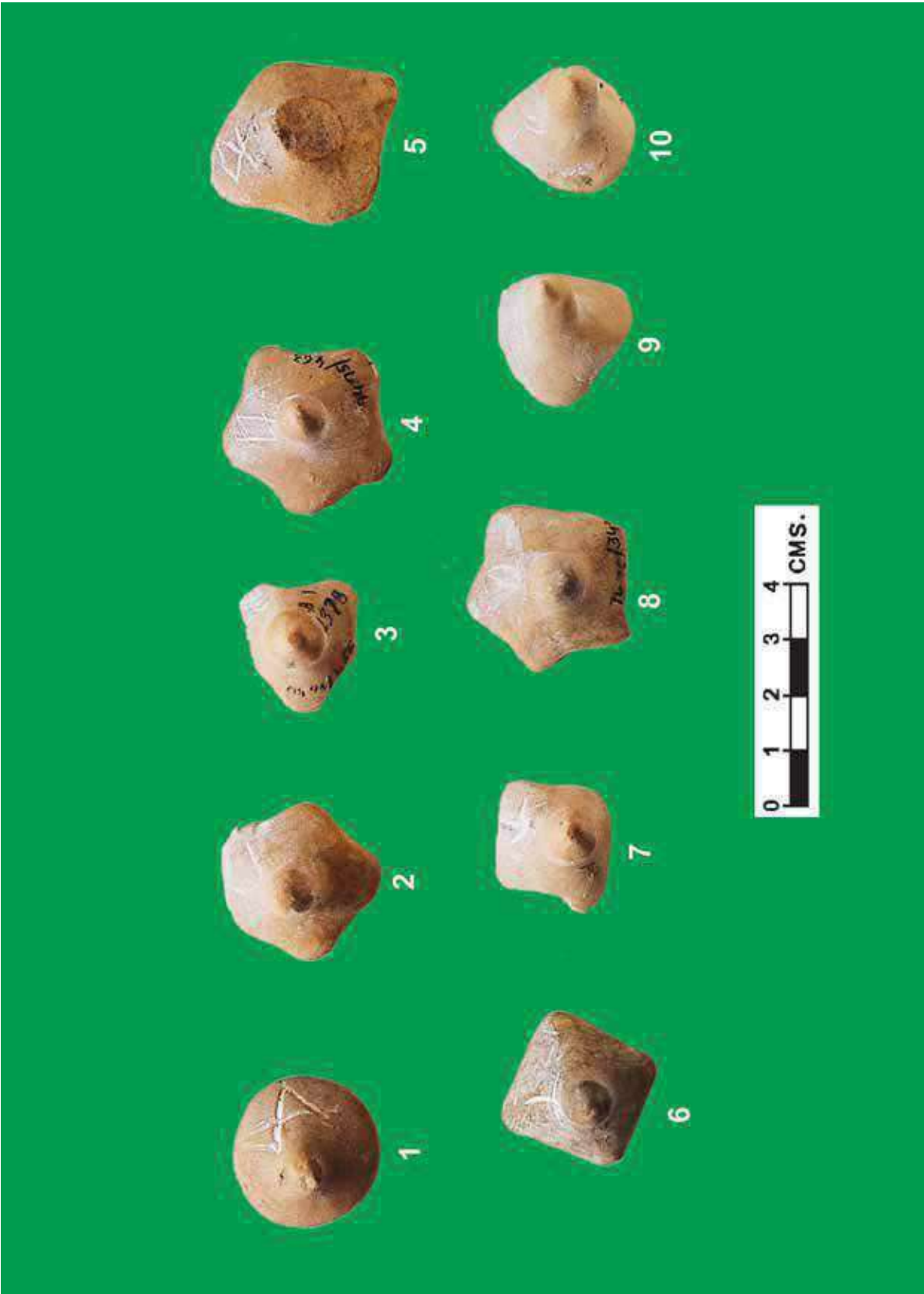


Fig. 21.64 Terracotta inscribed gamesmen

**(iii) DICE**

**Fig. 21.65**

1. Terracotta, broken cubical dice, square in section, size 2.5 x 2 cm, numbering one to six. From a late level of Period II. (KLB-2, Reg. No. 1044).
2. Terracotta, cubical dice, square in section, size 2.5 x 2.5 cm, numbering one to six i.e. 1, 2, 3, 4, 5 and 6 holes. From a late level of Period II. (KLB-1, Reg. No. 12768).<sup>8</sup>

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<sup>8</sup> Mackey, E.J.H. *Further Excavations at Mohenjo-daro*, p. 560-61. Manager of Publication, Delhi.

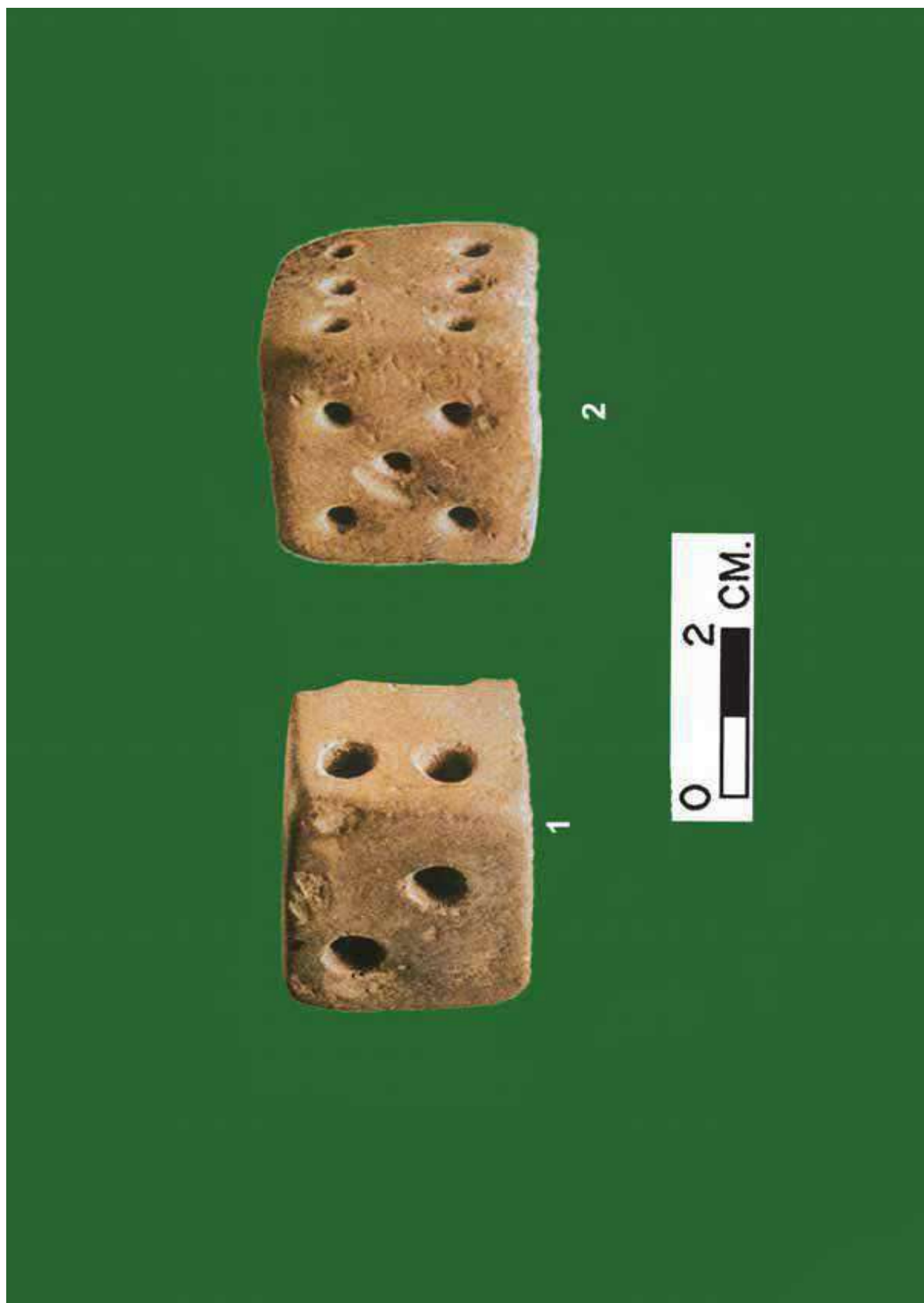


Fig. 21.65 *Terracotta dices*

**(iv) GAMING BOARD**

**Fig. 21.66**

1. Brick, fragmentary; measuring 13.5

x 9 x 6.5 cm. marked with eight squares of 3 x 3 cm in *chausar* design (chess). From a late level of Period II. (KLB-1, Reg. No. 17657). (Also see Terracotta Cake<sup>9</sup>).

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<sup>9</sup> At Mohenjodaro similar bricks have been found though 'unluckily neither is complete.' Mackey, E.J.H. *Further Excavations at Mohenjo-daro*. p.574. Manager of Publication, Delhi; Rao, S.R. 1985. *Lothal, A Harappan Port Town*, Vol. II, ASI, , pp. 511-512. Archaeological Survey of India, New Delhi.





Fig. 21.66 Terracotta brick bearing incised chauser design

**(V) TOY BRICKS**

**Fig. 21.67**

1. Terracotta, toy brick; size 2.5 x 2.5 x 0.8 cm. From a late level of Period II. (KLB-1, Reg. No. 635).
2. Terracotta, toy brick; size 3.5 x 2.5 x 1.2 cm. From a late level of Period I. (KLB-1, Reg. No. 827A).
3. Terracotta, toy brick; wedge-shaped, size 3.4 x 1.5 to 2.5 x 0.5 cm. From a late level of Period II. (KLB-1, Reg. No. 22023).
4. Terracotta, toy brick; size 3.5 x 2 x .6 cm. From a late level of Period II. (KLB-1, Reg. No. 21970).
5. Terracotta, toy brick; size 3.5 x 1 x 0.5 cm. From a late level of Period II. (KLB-1, Reg. No. 850).

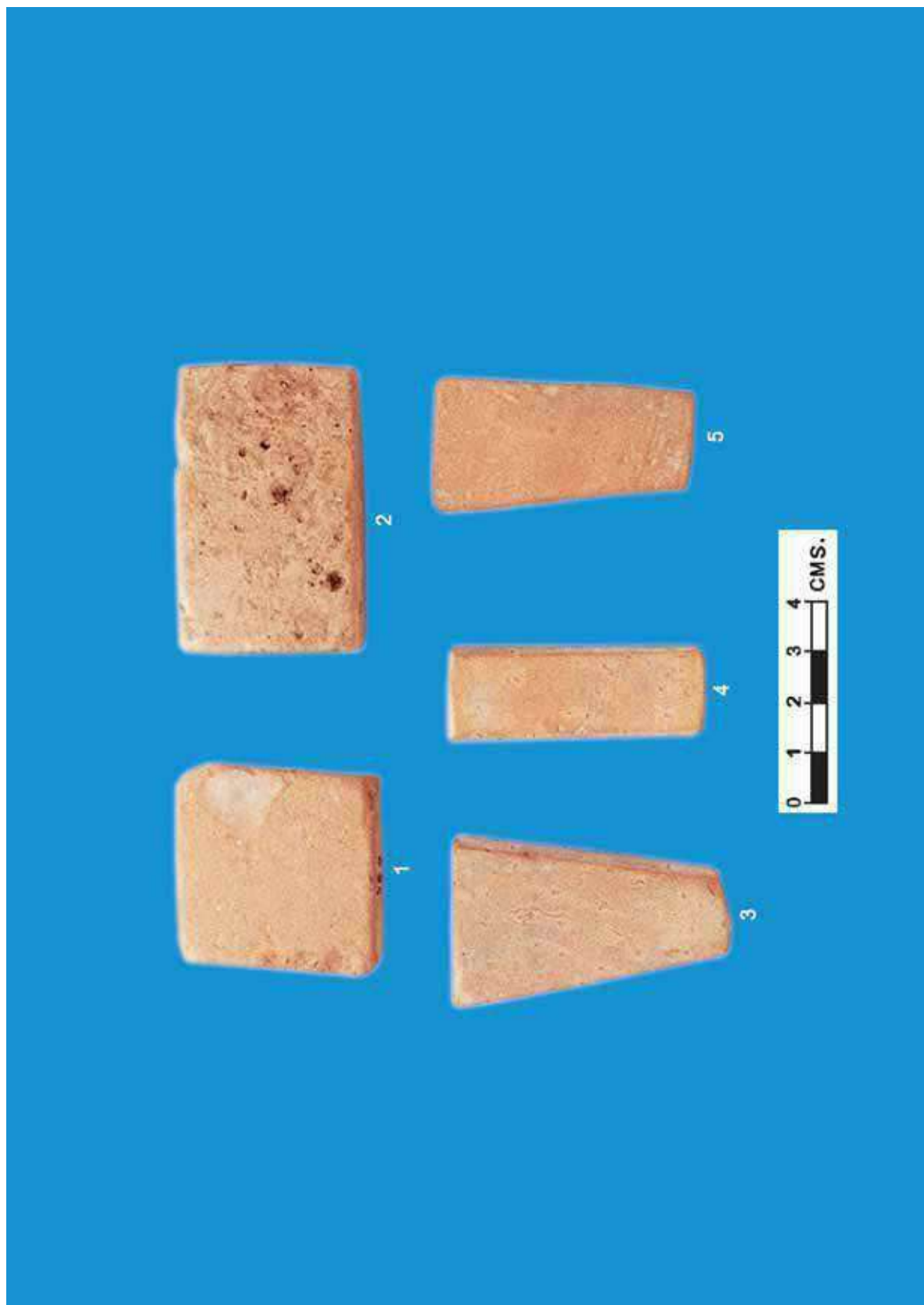


Fig. 21.67 Terracotta toy bricks

#### IV. RELIGIOUS OBJECTS

##### (i) CAKES

Kalibangan has yielded hundreds of cakes of terracotta. These are available in the early level and are profusely found in Harappan level. These are (1) Triangular, (2) Round ball-shaped, (3) *mushtika*-shaped with 3 to 4 finger impressions and (4) 'S' shaped.

In the excavations, triangular cakes are found incised as well. One cake has incised decoration with a horned figure on one side and having a goat being carried (probably for sacrifice) on other side, some others have nail impressions or a few lines. In one *mushtika* cake the mat impression is available which might have been accidentally impressed during its making.

While the triangular and round (circular) cakes are available in fire altars for offering or heating (as heat retainers), the ball and *mushtika* could have been used for offering to departed as these are used in the *sraddha* ceremony even to-day by the Hindus as *pinda* and *Dikar* (attendant).

The fragments of round (balls) used as road material also have been recovered from Phase IX at the street in various levels.

A large number of circular terracotta cakes are found in the fire altars of houses of the city area (KLB-1 and KLB-2).

But in the fire altars of KLB-3 only triangular and *mushtika* terracotta cakes have been found.

While in houses there is a separate room for a fire altar. In one house in KLB-2, three fire altars are available. These are simple fire altars, oval or round in shape with a stump in the centre filled with ash all around.

This type of fire worship was available on the top of the KLB-1 on platform, in KLB-3 in a room, which could be a fire temple as no other domestic architecture is found here. In KLB-2 it is available in rooms of the houses. It appears that the triangular cakes were used during the animal sacrifices as depicted in the scene engraved in a terracotta triangular cake having a horned figure on one side and a man carrying an animal on the other. Various types of terracotta cakes are available in all layers. While bathing platforms are available with fire altars at KLB-1 (Ritualistic area) no such feature is available in KLB-2 and KLB-3 which is purely ritualistic and devoid of any domestic architecture.

Round cakes have been found in the ashy accumulation of the fire altars in KLB-2.

Some of these cakes might have been used to keep the heat in the fire altars. A few of cakes are as below :-

## **TERRACOTTA CAKES**

**Fig. 21.68**

1. Terracotta ball-shaped cake; handmade, incompletely oxidized having dia. of 5.5 cm. From a late level of Period II. (KLB-2, Reg. No. 22003).
2. Terracotta triangular cake; handmade, incompletely oxidized having L & B 8.5 cm. each From a late level of Period II. (KLB-2, Reg. No. 22004).
3. Terracotta circular cake; handmade with decorated design on both sides, fully oxidized having dia. 10 cm. From a late level of Period II. (KLB-2, Reg. No. 22005).
4. Terracotta triangular cake; with round corners handmade, having L & B 11.0 cm.10.5 cm. From a late level of Period II. (KLB-2, Reg. No. 22006).



Fig. 21.68 *Terracotta cakes*

**Figs. 21.69, 21.69(a) and 21.69(b)**

Terracotta cake; triangular, broken, on one side incised horned figure and on the other side an incised design showing

a human figure carrying an animal for sacrifice, existing measurements, length 8.9 cm, width 5.9 cm and thickness 1.8 cm. From a late level of Period II. (KLB-1, Reg. No. 11535).





Fig. 21.69 *Incised terracotta triangular cake, both side views*

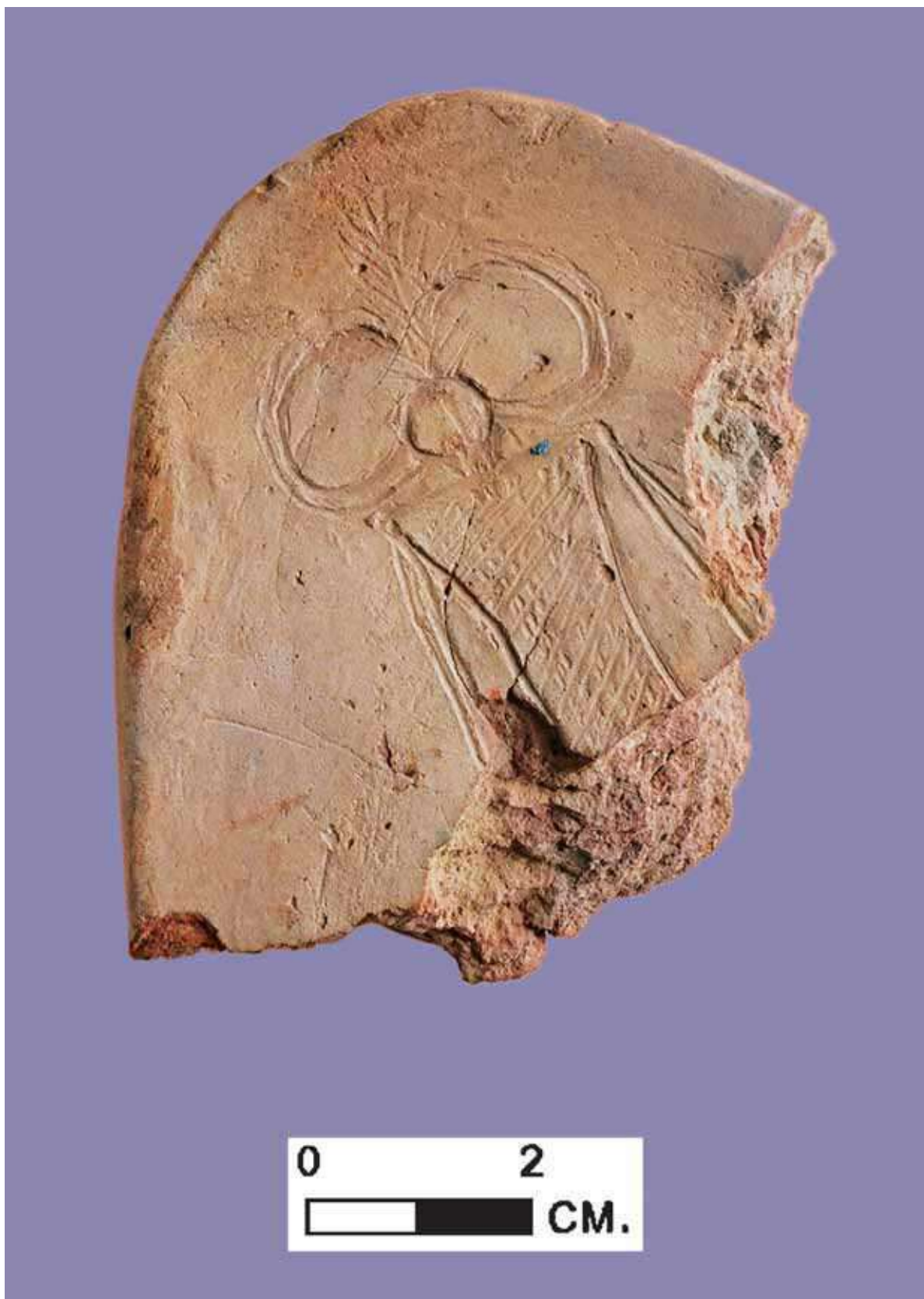


Fig. 21.69(a) *Incised terracotta triangular cake, obverse view*

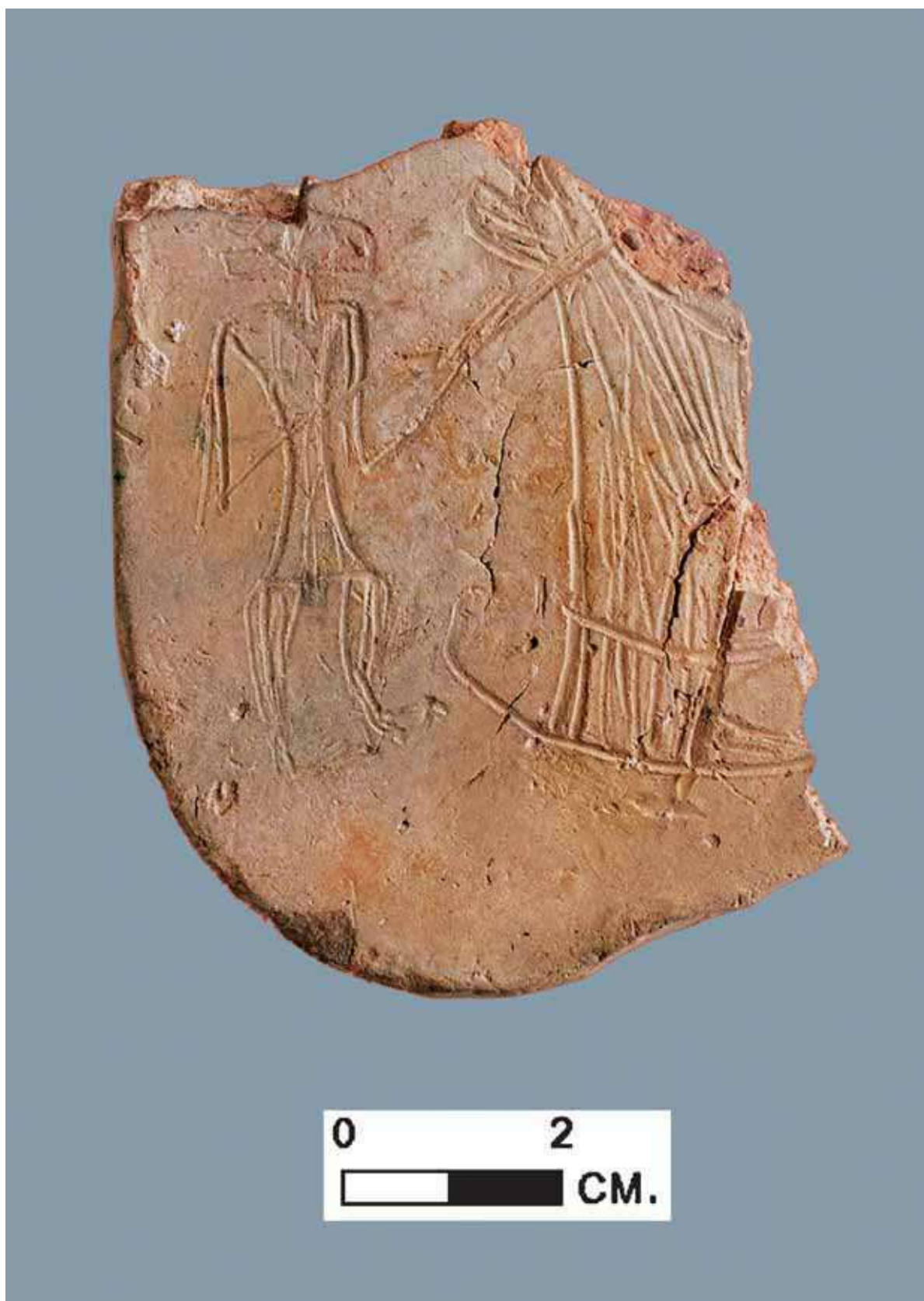


Fig. 21.69(b) *Incised terracotta triangular cake, reverse view*

**Fig. 21.70**

1. Terracotta, oval cake; handmade, circular in section, having finger impression on top, incompletely oxidized having L & B. of 10 x 6.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21973).
2. Terracotta, circular cake; lenticular in section, handmade, completely oxidized having dia. of 8 x 5 cm. From a late level of Period II. (KLB-2, Reg. No. 21974).
3. Terracotta, circular cake; small, handmade, having finger impression on both sides, having dia. of 5 x 5 cm. From a later level of Period II. (KLB-2, Reg. No. 21978).
4. Terracotta, circular cake; handmade, completely oxidized, having finger impression on both sides, having dia. of 9 cm. From a mid level of Period II. (KLB-2, Reg. No. 21979).
5. Terracotta, cylindrical cake, circular in section; handmade, oxidized, having dia. of 11 x 6 cm. From a late level of Period II. (KLB-2, Reg. No. 21980).





Fig. 21.70 Terracotta cakes

**Fig. 21.71**

1. Terracotta, cake; round *mushtika* having finger impression. From a late level of Period II. (KLB-1, Reg. No. 22007).
2. Terracotta, cake; round *mushtika* having finger impression. From a late level of Period II. (KLB-1, Reg. No. 19383).



Fig. 21.71 *Terracotta mushitikas*



**Fig. 21.72**

1. Terracotta, cake; circular, fragmentary having graffiti with finger impression. From a late level of Period II. (KLB-2, Reg. No. 196).
2. Terracotta, cake; square, fragmentary, having *chausar*-like design on one side. From an early level of Period II. (KLB-2, Reg. No. 20589).
3. Terracotta, cake; tiny, fragmentary, triangular shape with incised design. From a late level of Period II. (KLB-2, Reg. No. 4974).
4. Terracotta, cake; oval shape with finger impression on both sides. From a late level of Period II. (KLB-2, Reg. No. 20638).

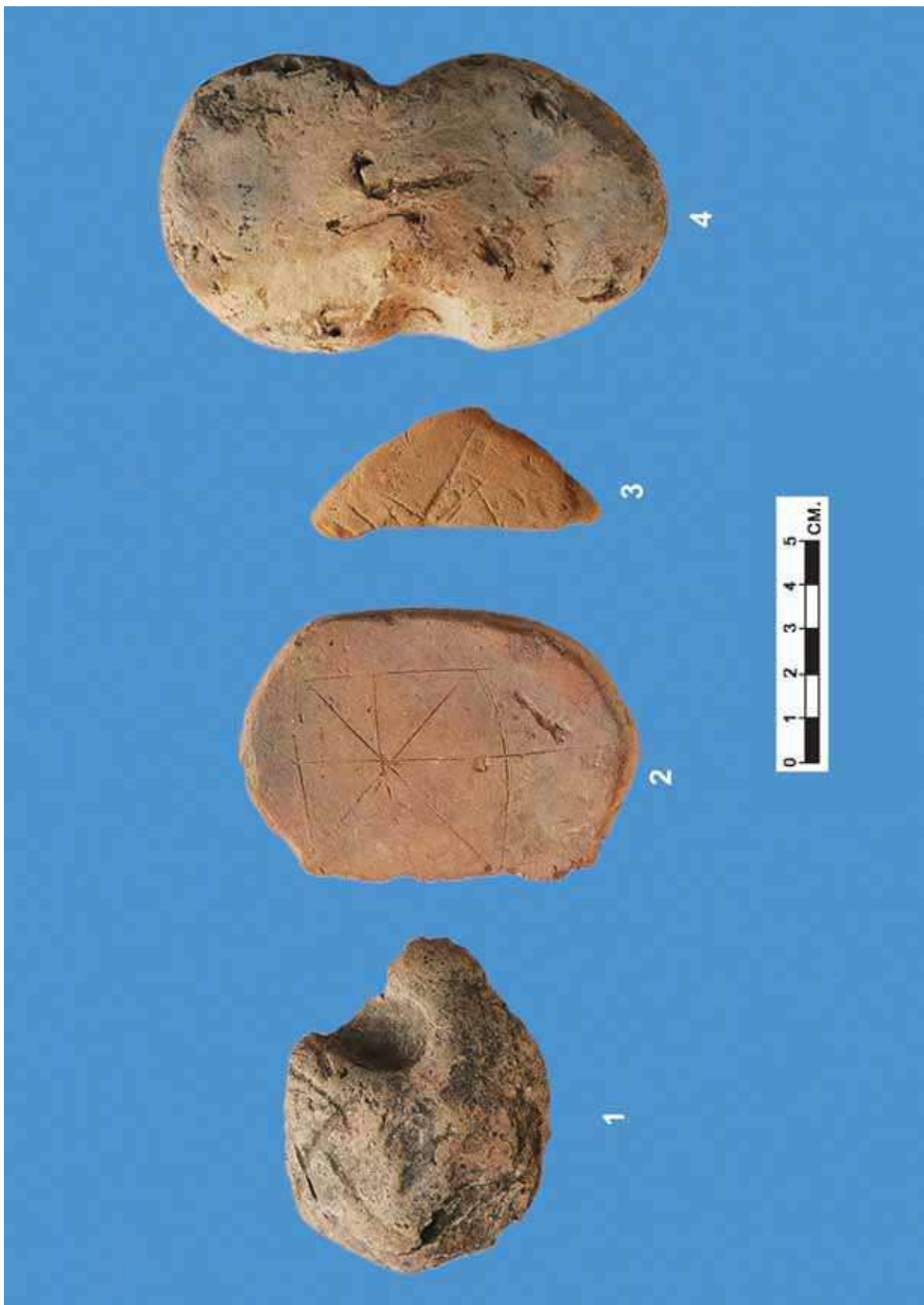


Fig. 21.72 Terracotta cakes

**Fig. 21.73**

1. Terracotta, cake; triangular, big size, length 15 cm. From a late level of Period II. (KLB-2, Reg. No. 21981).
2. Terracotta, cake; triangular, length 10 cm. From a late level of Period II. (KLB-2, Reg. No. 21982).
3. Terracotta, cake; circular with finger impression on one side, length 10 cm. From an early level of Period II. (KLB-2, Reg. No. 20514).
4. Terracotta, cake; triangular, length 9.5 cm. From a late level of Period II. (KLB-2, Reg. No. 20564).



Fig. 21.73 Terracotta triangular and circular cakes

### **Mini Cakes**

#### **Fig. 21.74**

1. Terracotta, cake; tiny, oval shape, having two finger impressions on both sides, incomplete oxidization. From an early level of Period II. (KLB-1, Reg. No. 16890).
2. Terracotta, cake; tiny, circular, having finger impression on one side. From a middle level of Period II. (KLB-2, Reg. No. 11125).
3. Terracotta, cake; tiny, ovoid, having impression on side. From a late level of Period II. (KBL-2 Reg. No. 11356).
4. Terracotta, cake; tiny, triangular. From a late level of Period II. (KLB-1, Reg. No. 22008).
5. Terracotta, cake; triangular. From a late level of Period II. (KLB-2, Reg. No. 20563).
6. Terracotta, cake; triangular. From a late level of Period II. (KLB-2, Reg. No. 22009).
7. Terracotta, cake; triangular. From a late level of Period II. (KLB-2, Reg. No. 2019).



Fig. 21.74 Terracotta cakes

**(ii) SHIVA LINGA**

**Figs. 21.75 and 21.75(a)**

Terracotta, Shiva *linga* ; *linga* with a  
*yon*i *peeth*, total height 4.5 cm, height of

*linga* 1.5 cm, dia 1.4 cm, dia of *yon*i *peeth*  
4.2 cm, long axis of *yon*i *peeth* 4.2 cm..  
From a late level of Period II. (KLB-1, Reg.  
No. 12765).



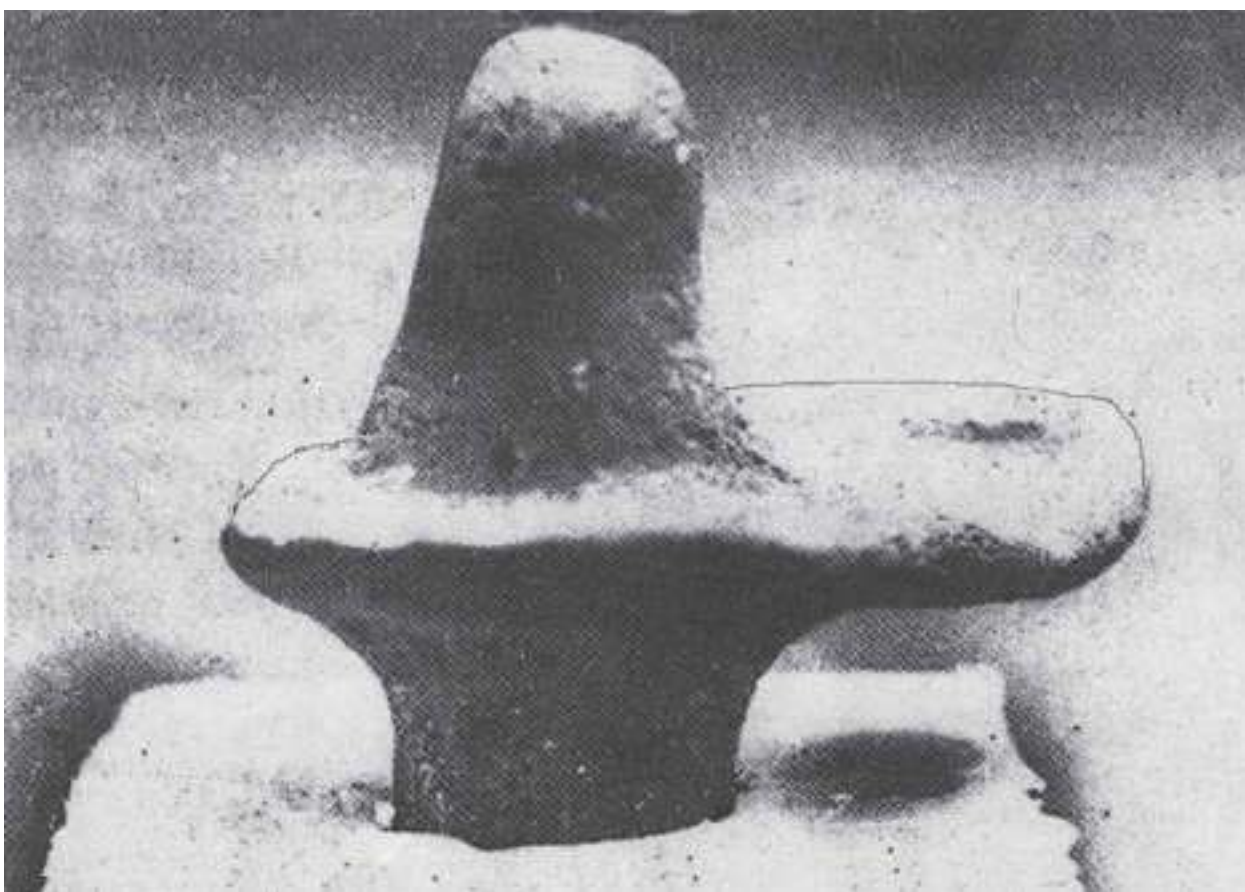


Fig. 21.75 *Terracotta Shiva Linga*



Fig. 21.75(a) *Top view of terracotta Shiva Linga*

**(iii) KERNOS**

**Figs. 21.76 and 21.76(a)**

Amongst the terracotta objects attention may be drawn to a kernow with seven lamps affixed to it. It is not unlikely that it was used on some ceremonial occasions and carried about on the head.<sup>10</sup>

1. Terracotta; fragment of a kernos, tubular ring broken and the surviving cup with a hole at the bottom has a dia. 2.7 cm and was joined with the tube by appliqué method, height 1.3 cm, red ware, well oxidized. From a late level of Period II. (KLB-2, Reg. No. 11485).

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<sup>10</sup> Lal, B. B. 1998. India, 1947-1997: New light on the Indus Civilization. p. 27, pl. IVB. Aryan Books International, New Delhi. For more details see- Pande, B.M. 1971. Harappan Ring Kernoi: A Study. *East and West, New Series Vol. 21* No. 3-4: 311 ff.

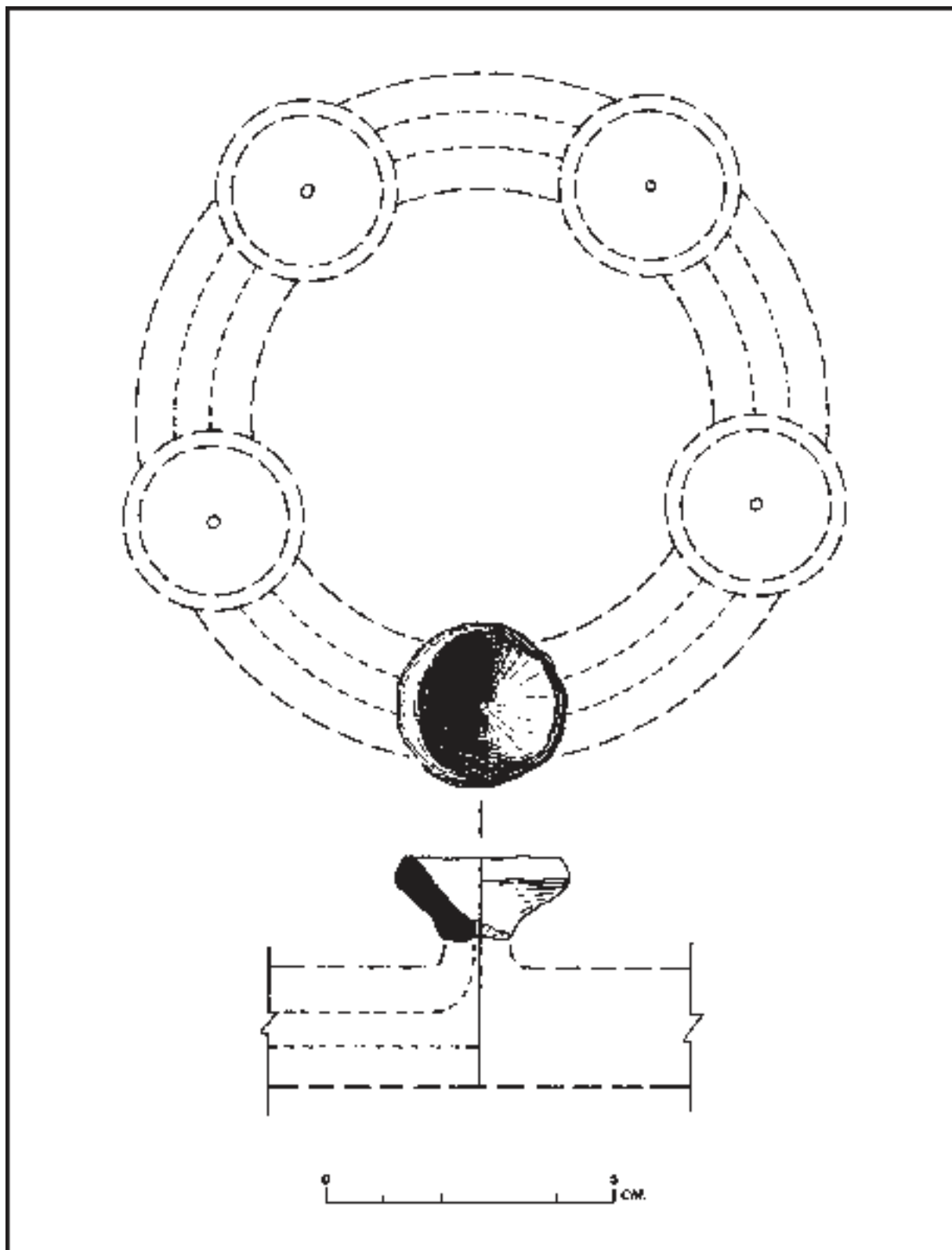


Fig. 21.76 Conjectural drawing of terracotta Kernos



Fig. 21.76(a) A view of a plasticene made kernos (modern)

## **V. AGRICULTURAL TOOLS;**

### **PLOUGH**

The excavations at Kalibangan has yielded number of terracotta hand modelled ploughs as product of play items

for children. The importance of these lies in the fact that these give an idea of plough-share used during Harappan period. A ploughed field with furrow-marks has also been found in the early Harappan level at Kalibangan.<sup>11</sup>

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<sup>11</sup> Lal, B. B. perhaps the earliest ploughed field so far excavated anywhere in the world. *Puratattva*, 4:1-3

**Fig. 21.77**

1. Terracotta, fragmentary plough with a hole. From an early level of Period II. (KLB-2, Reg. No. 11349).
2. Terracotta, fragmentary plough with a hole and an applique band on the plough share. From a late level of Period II. (KLB-1, Reg. No. 19290).
3. Terracotta, fragmentary plough with a hole. From a late level of Period II. (KLB-1, Reg. No. 19024).
4. Terracotta, fragmentary plough with a hole. From a late level of Period II. (KLB-2, Reg. No. 21017).
5. Terracotta, fragmentary plough with a hole. From a late level of Period II. (KLB-2, Reg. No. 20931).
6. Terracotta, fragmentary plough with a hole. From a late level of Period II. (KLB-1, Reg. No. 5346).





Fig. 21.77 Fragmentary terracotta ploughs

**VI. FURNITURE : COTS**

legs. From a late level of Period II. (KLB-2, Surface, Reg. No. 22011).

**Figs. 21.78 and 21.78 (a)**

1. Terracotta, cot; fragmentary with concave surface and thick pointed

2. Terracotta, cot; with concave surface and thin legs. From a late level of Period II. (KLB-1, Reg. No. 18495).



Fig. 21.78 *Terracotta cots*

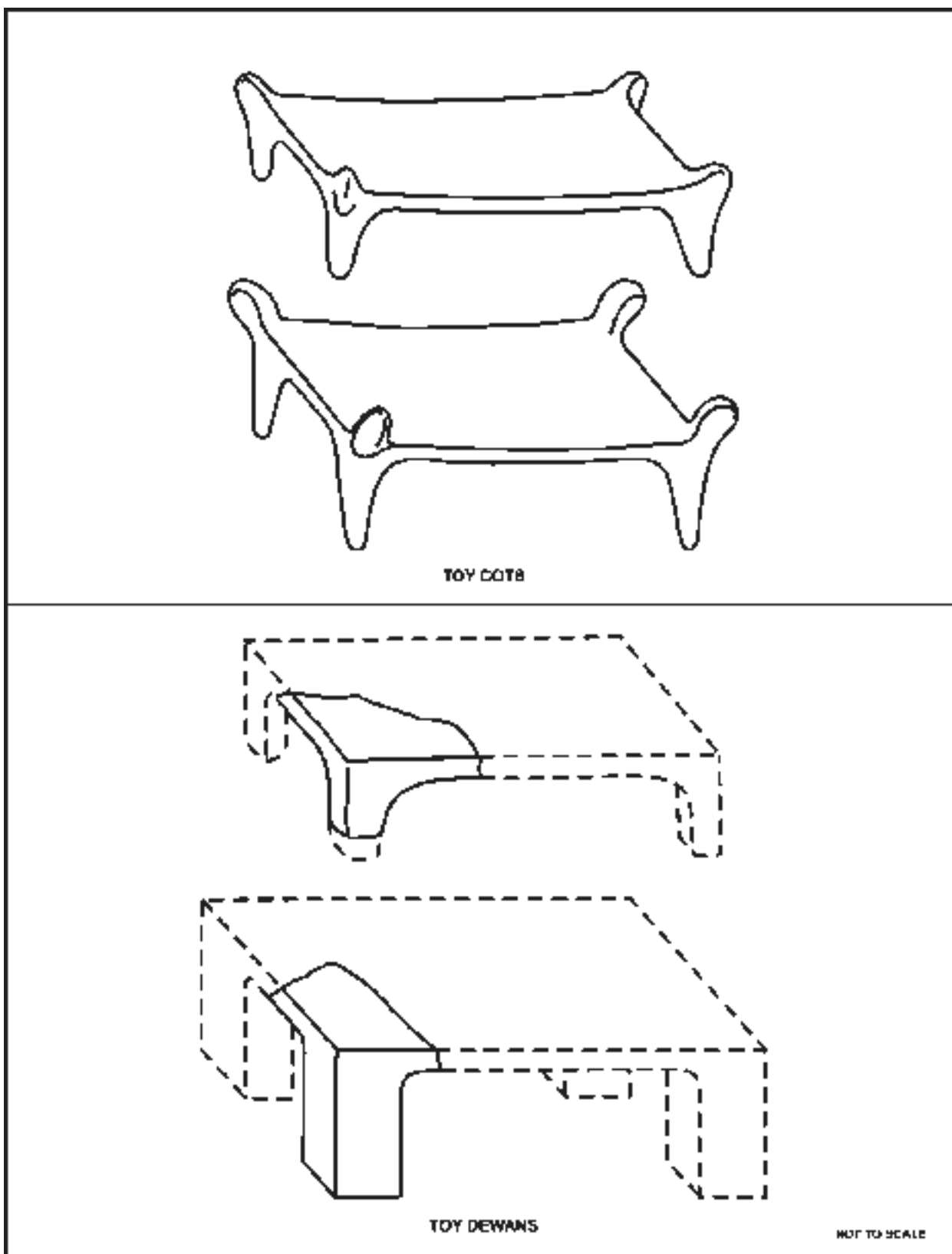


Fig. 21.78 (a) Conjectural views of terracotta cots

**Fig. 21.79**

1. Terracotta, cot; fragmentary with straight surface and thick square leg. From a middle level of Period II. (KLB-2, Reg. No. 11026).
  2. Terracotta, cot; fragmentary with straight surface and thick leg. From a middle level of Period II. (KLB-2, Reg. No. 18092).
  3. Terracotta, cot; fragmentary with straight surface and broken legs.
  4. Terracotta, cot; fragmentary with straight surface and broken legs. From a late level of Period II. (KLB-2, Reg. No. 15467).
  5. Terracotta, cot; fragmentary with straight surface and broken legs and pinched sides. From a late middle level of Period II. (KLB-2, Reg. No. 17176).
- From a middle level of Period II. (KLB-2, Reg. No. 22012).



Fig. 21.79 Terracotta cots

**Fig. 21.80**

1. Terracotta, cot; fragmentary, with one conical leg and pinched up corner. From a middle level of Period II. (KLB-2, Reg. No. 10489).
2. Terracotta, cot; fragmentary, with one leg and flat top. From a middle level of Period II. (KLB-2, Reg. No. 22014).
3. Terracotta, cot; fragmentary, with one broken leg and pinched up corner. From a late level of Period II. (KLB-1, Reg. No. 22013).
4. Terracotta, cot; fragmentary, with one conical leg and pinched up corner. From a late level of Period II. (KLB-1, Reg. No. 16845).
5. Terracotta, cot; fragmentary, with broken leg and flat top. From a late level of Period II. (KLB-1, Reg. No. 19381).





Fig. 21.80 Terracotta cots

## **VII. SHARPENERS**

### **Fig. 21.81**

1. Terracotta, sharpener; wedge-shaped, length 7.2 x 3.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18378).
2. Terracotta, sharpener; wedge-shaped, length 6.2 x 2.6 cm. From a late level of Period II. (KLB-1, Reg. No. 18375).
3. Terracotta, sharpener; wedge-shaped, length 6.3 x 4.2 cm. From a late level of Period II. (KLB-1, Reg. No. 842).
4. Terracotta, sharpener; wedge-shaped, length 6.4 x 3.7 cm. From a late level of Period II. (KLB-1, Reg. No. 964).
5. Terracotta, sharpener; rectangular-shaped, length 5.5 x 4.5 cm. From a late level of Period II. (KLB-2, Reg. No. 21871).
6. Terracotta, sharpener; rectangular-shaped, length 5 x 3 cm. From a late level of Period II. (KLB-1, Reg. No. 13518).
7. Terracotta, sharpener; rectangular, wide, length 6 x 5.5 cm. From a late level of Period II. (KLB-1, Reg. No. 13517).
8. Terracotta, sharpener; wedge-shaped, length 6 x 3.2 cm. From a late level of Period II. (KLB-1, Reg. No. 827).



Fig. 21.81 Terracotta sharpeners

**Fig. 21.82**

1. Terracotta, sharpener; wedge-shaped, broken and length 5 x 5 cm. From a middle level of Period II (KLB-2, Reg. No. 21872).
2. Terracotta, sharpener; wedge-shaped, broken and length 8 x 3 cm. From a late level of Period II (KLB-2, Reg. No. 21873).
3. Terracotta, sharpener; wedge-shaped and length 11.2 cm. From a late level of Period II (KLB-1, Reg. No. 16391)
4. Terracotta, sharpener; wedge-shaped, broken and length 6 x 7 cm. From a late level of Period II. (KLB-2, Reg. No. 20412).
5. Terracotta, sharpener; rectangular, broken shaped and length 5 X 5 cm. From a late level of Period II. (KLB-2, Reg. No. 13485).
6. Terracotta, sharpener; rectangular, broken shaped and length 4 x 9 cm. From a late level of Period II. (KLB-2, Reg. No. 21874).



Fig. 21.82 Terracotta sharpeners

# **VIII. CONES**

## **Fig. 21.83**

1. Terracotta, cone; broken base, having coiled incisions, length 6.2 cm. From an early level of Period II. (KLB-1, Reg. No. 17330).
2. Terracotta, cone; broken from the top, base, flat length 6.8 cm. From a late level of Period II. (KLB-1, Reg. No. 19184).
3. Terracotta, cone; ring base, hollow from within, length 6.8 cm. From a late level of Period II. (KLB-1, Reg. No. 5064).
4. Terracotta, cone; conical, broken from the top, flat base with hole, length 7.3 cm. From a late level of Period II (KLB-1, Reg. No. 6464).
5. Terracotta, cone; broken from the top, flat base, length 5.7 cm. From a late level of Period II. (KLB-1, Reg. No. 12103).
6. Terracotta, cone; broken from the sides, length 8 cm. From a late level of Period II. (KLB-1, Reg. No. 11949).
7. Terracotta, cone; having flat base, length 5.7 cm. From a late level of Period II. (KLB-1, Reg. No. 10325).
8. Terracotta, cone; broken, flat base, length 4.9 cm. From a late level of Period II. (KLB-1, Reg. No. 19362).





Fig. 21.83 Terracotta cones



**Fig. 21.84**

1. Terracotta, cone; with broken top, flat base, length 4.9 cm. From a late level of Period II. (KLB-1, Reg. No. 5193).
2. Terracotta, cone; broken with flat base, length 4.7 cm. From a late level of Period II. (KLB-2, Reg. No. 15722).
3. Terracotta, cone; with flat base, length 4.9 cm. From surface. (KLB-1, Reg. No. 21898).
4. Terracotta, cone; with broken top, flat base, length 6 cm. From a late level of Period II. (KLB-1, Reg. No. 11853).
5. Terracotta, cone; with a circular flat base, length 3.8 cm. From a late level of Period II. (KLB-2, Reg. 16395).
6. Terracotta, cone; with a roundish base, length 5.2 cm. From a late level of Period II. (KLB-1, Reg. No. 21875).



Fig. 21.84 Terracotta cones

**IX. TAKHTI**

**Fig. 21.85**

1. Terracotta, *takhti* : broken handle,

length 6.5 x 6.8 cm. From a late level of Period II. (KLB-2, Reg. No19885).



Fig. 21.85 *Terracotta takhti*

**X. TOY CRADLE**

**Figs. 21.86, 21.86(a) and 21.86(b)**

1. Terracotta, toy cradle ; oval in shape with raised concave sides and falt-7.

Terracotta, diadem (*vorla*) ; broken, with a flat knob and pinholed concentric circles near the edge. From a late level of Period II. (KLB-2, Reg. No. 21749).



*Fig. 21.86 Terracotta cradle*

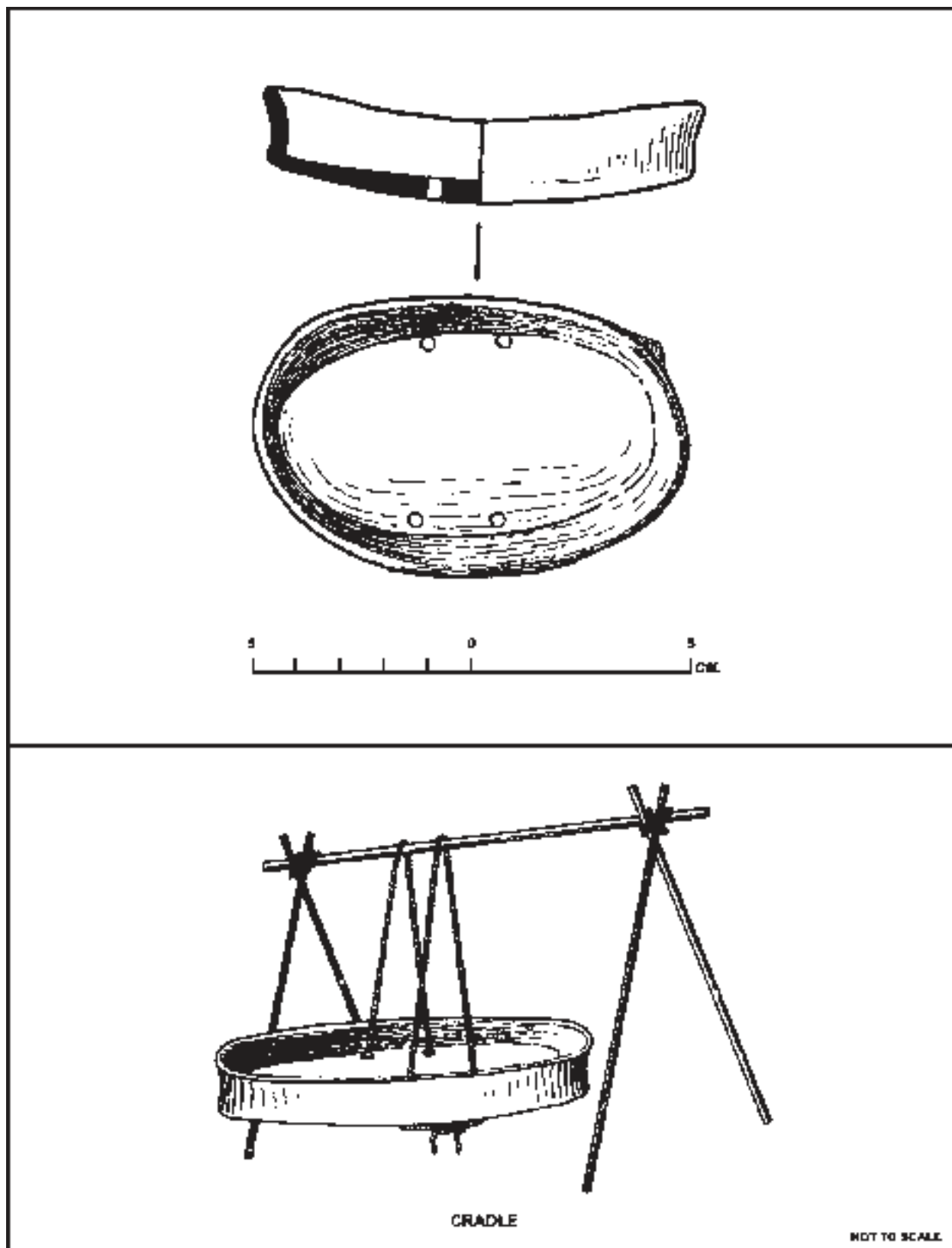


Fig. 21.86(a) Section, plan and conjectural view of a terracotta cradle





Fig. 21.86(b) A view of a cradle tied with a thread (modern)

## XI. DIADEM (*VORLA*)

**Fig. 21.87**

1. Terracotta, diadem (*vorla*); decorated with pinholed concentric circles and small knob. From a late level of Period II. (KLB-2, Reg. No. 9049).
2. Terracotta, diadem (*vorla*); broken, with pinholed design all over. From a late level of Period II. (KLB-2, Reg. No. 22015).
3. Terracotta, diadem (*vorla*); broken, with pinholed concentric Circles near the edge. From a late level of Period II. (KLB-1, Reg. No. 11372).
4. Terracotta, diadem (*vorla*); small, broken, without any decoration.
5. Terracotta, diadem (*vorla*); decorated with pinholed circles and nail impression. From a late level of Period II. (KLB-2, Reg. No. 9049).
6. Terracotta, diadem (*vorla*); broken with small knob, decorated with pinholed design From Surface (KLB-2, Reg. No. 21332).
7. Terracotta, diadem (*vorla*); broken, with a flat knob and pinholed concentric circles near the edge. From a late level of Period II. (KLB-2, Reg. No. 6683).

From a late level of Period II. (KLB-1, Reg. No. 7564).



Fig. 21.87 Terracotta diadems

## **XII. ALABASTER POTS**

### **Fig. 21.88**

1. Alabaster, disc; circular in shape. From a late level of Period II. (KLB-1, Reg. No. 19403).
2. Alabaster, pot; bowl with inverted rim and tapering sides. From a middle level of Period II. (KLB-2, Reg. No. 22017).
3. Alabaster, pot; having straight sides and inverted rim. From a late level of Period II. (KLB-2, Reg. No. 8198).
4. Alabaster, feeder; broken, having spout. From a late level of Period II. (KLB-1, Reg. No. 19401).
5. Alabaster, disc; From a late level of Period II. (KLB-1, Reg. No. 886).
6. Alabaster, pot; miniature, with broken rim. From a late level of Period II. (KLB-2, Reg. No. 22018).





Fig. 21.88 *Alabaster pots*

### **XIII. COMPARTMENTED POTS**

**Fig. 21.89**

1. Round shaped, pot with three compartments. From a late level of Period II. (KLB-2, Reg. No. 806).
2. Broken rectangular pot with compartments. From a middle level of Period II. (KLB-2, Reg. No. 14888).



Fig. 21.89 Terracotta compartmented pots



#### **XIV. CYLINDRICAL OBJECTS**

##### **Fig. 21.90**

1. Terracotta, cylindrical object; broken, length 11 cm and dia. 4.5 cm. From a late level of Period II. (KLB-1, Reg. No. 18905).
2. Terracotta, cylindrical object; length 5.7 cm and dia. 2.6 cm. From a late level of Period II. (KLB-1, Reg. No. 445).
3. Terracotta, cylindrical object; length 7.9 cm and dia. 2.9 cm. From a late level of Period II. (KLB-2, Reg. No. 22019).
4. Terracotta, cylindrical object; length 4.5 cm and dia. 2.4 cm. From a late level of Period II. (KLB-1, Reg. No. 22020).
5. Terracotta, cylindrical object; length 8 cm and dia. 3.3 cm. From a late level of Period II. (KLB-1, Reg. No. 19227).
6. Terracotta, cylindrical object; length 9.7 cm and dia. 3.6 cm. From a late level of Period II. (KLB-2, Reg. No. 17204).
7. Terracotta, cylindrical object; length 8.6 cm and dia. 3 cm. From a late level of Period II. (KLB-2, Reg. No. 1618).

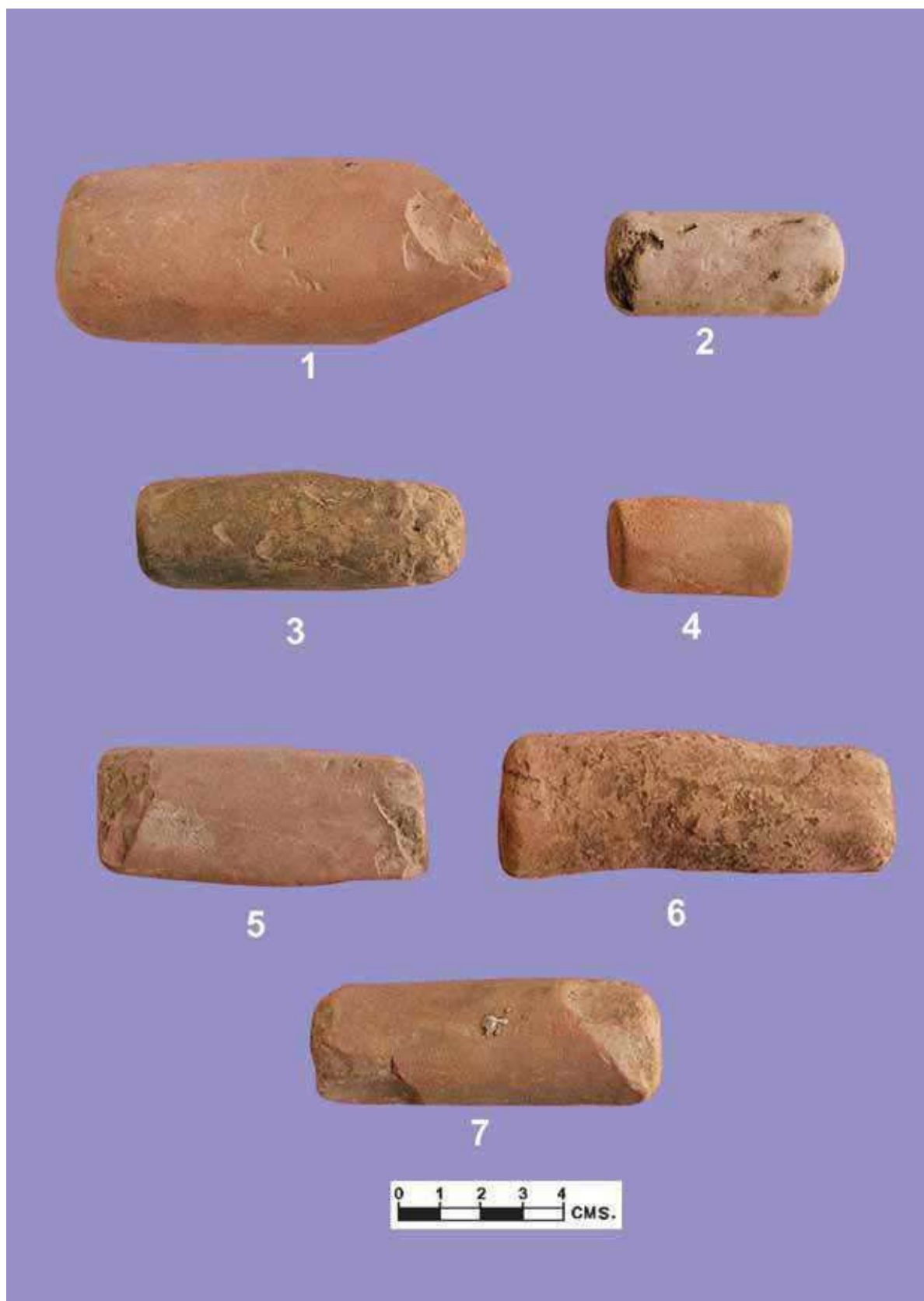


Fig. 21.90 *Terracotta cylindrical objects*

## 1. LOCATING THE BURIALS

Three seasons of systematic dig in the cemetery area at Kalibangan (Figs. 22.1 and 22.2) has enriched our knowledge in the technique of locating ancient graves, particularly for those areas where the climatic and geographical conditions similar to Kalibangan prevail. As it has already been written earlier elsewhere<sup>1</sup> that it was the salt action that played a major role in locating the Harappan graves at Kalibangan, there were other factors too which contributed towards this end. Each point is being described here in detail.<sup>2</sup>

### (i) Salt Action

Numerous white patches were noticed on the hard flat ground on the present flood plain of the river, nearly 300 m away from the citadel mound in the west-south-west direction. These patches consisting of loose earth, are caused due to the action of salt-petre. When water enters in the pit through the loose-earth, it dissolves salt-petre present in the soil. When evaporation sets in, salt solution rises upwards through the capillary action in the loose earth and reaches on the top. As the solution is exposed to the arid atmosphere of the area, after reaching on the surface of the pit, salts

get crystallized in the form of a thin sheet of whitish patch within the pit area only. Such salt actions are more vigorous after a brisk shower or after a misty night. As compared to the surrounding hard surface the deposition of salt layer is more in the pit area. Close observation of the area clearly reveals patches, almost rectangular or oval in shape, depending on the nature of the pits. In the beginning, trial dig of one or two, such patches revealed that these are grave-pits.

### (ii) Patches of Loose Soil

Presence of numerous patches of loose earth is another indication of graves in the cemetery area. Loose earth is formed due to the salt action. It is a well known fact that salt in solid state increases in volume. In the process of crystallization tiny crystals of salt that are formed, exert tremendous pressure on the soil, due to increase in their volume. It is this pressure that make the soil loose, thus forming a honey-comb like structure. This phenomenon is generally observed only in the pits and disturbed areas, because salt action will be more vigorous in such areas only.

### (iii) Difference in the filling of the pit

The graves at Kalibangan have generally not been filled with self same earth. The virgin soil in the cemetery area in this site consists of greenish loose

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<sup>1</sup> *Indian Archaeology – 1964-65, A Review.*

<sup>2</sup> Sharma, A.K. 1978-79. Locating the graves at Kalibangan, *Puratattva*, No. 9, New Delhi.

sand. The grave-pits have been generally filled either with local greenish sandy soil mixed with whitish speckled clay or with brown compact clay brought from elsewhere. When a particular area in the cemetery, where the presence of a grave is suspected on the basis of salt action, is scraped clean, a close examination of the area (in favourable light) marks out the difference in colour composition of the pit area from that of the virgin soil. This difference in colour and composition is due to the presence of foreign soil in the pits. Even nearly 5000 years have not been able to merge the pit filling with the natural soil of the area. By careful observation the area of the graves could be clearly demarcated.

#### **(iv) Sound**

On thumping, disturbed and undisturbed areas emit different sounds. Walking up and down in the cemetery gives two distinctly different sounds. At certain places the sound suddenly changes from high to low pitch. It becomes dull, heavy and hollow. This happens in the disturbed areas only. Natural undisturbed areas give a uniform sound, but the sound becomes dull due to the loose nature of the soil in pit areas. By carefully tapping, the outline of the graves could be roughly demarcated.

#### **(v) Ant Action**

Many a times cluster of ants along with honey-comb patches could be seen at different places in the cemetery area. Presence of graves could be suspected at such places. In the pit area due to the loose nature of the soil and dampness, ants prefer to burrow holes. In the process they bring soil from the lower level to the top. This generally

contains small grains of whitish clay (from the pit filling) and terracotta particles (probably pieces eroded from the pottery buried below). Digging on the basis of this indication has generally yielded good results.

#### **(vi) Negative Crop-marks**

At Kalibangan, in the fields adjacent to the known cemetery area, certain patches devoid of any vegetation were observed. Size and orientation of such patches gave a temptation to dig one of these. Surprisingly it came out to be a rectangular type of pot burial. Some more such patches were tried and they also came true to the expectations. It appears that the presence of harmful salts and their brisk crystallization in the pit area generally prevents the growth of vegetation in this area.

All these factors combined together help a lot in locating the graves. Generally one factor acts as a substitute to the other. In case none of these methods prove fruitful, the usual method of search by laying out squares in the suspected areas and direction is to be tried.

The methods enumerated above may not hold good everywhere. As it has already been said that under similar climatic and geographical conditions these methods, individually or collectively, may be of some help to the future excavators. In other conditions also they could be easily tried.

The Harappans at Kalibangan had meticulously planned the location and maintenance of the burial ground for the disposal of their dead and rituals connected with it. They choose a flat open land on the flood plains of the river, west-south-west of the habitational area,





Fig. 22.1 General view of the excavation

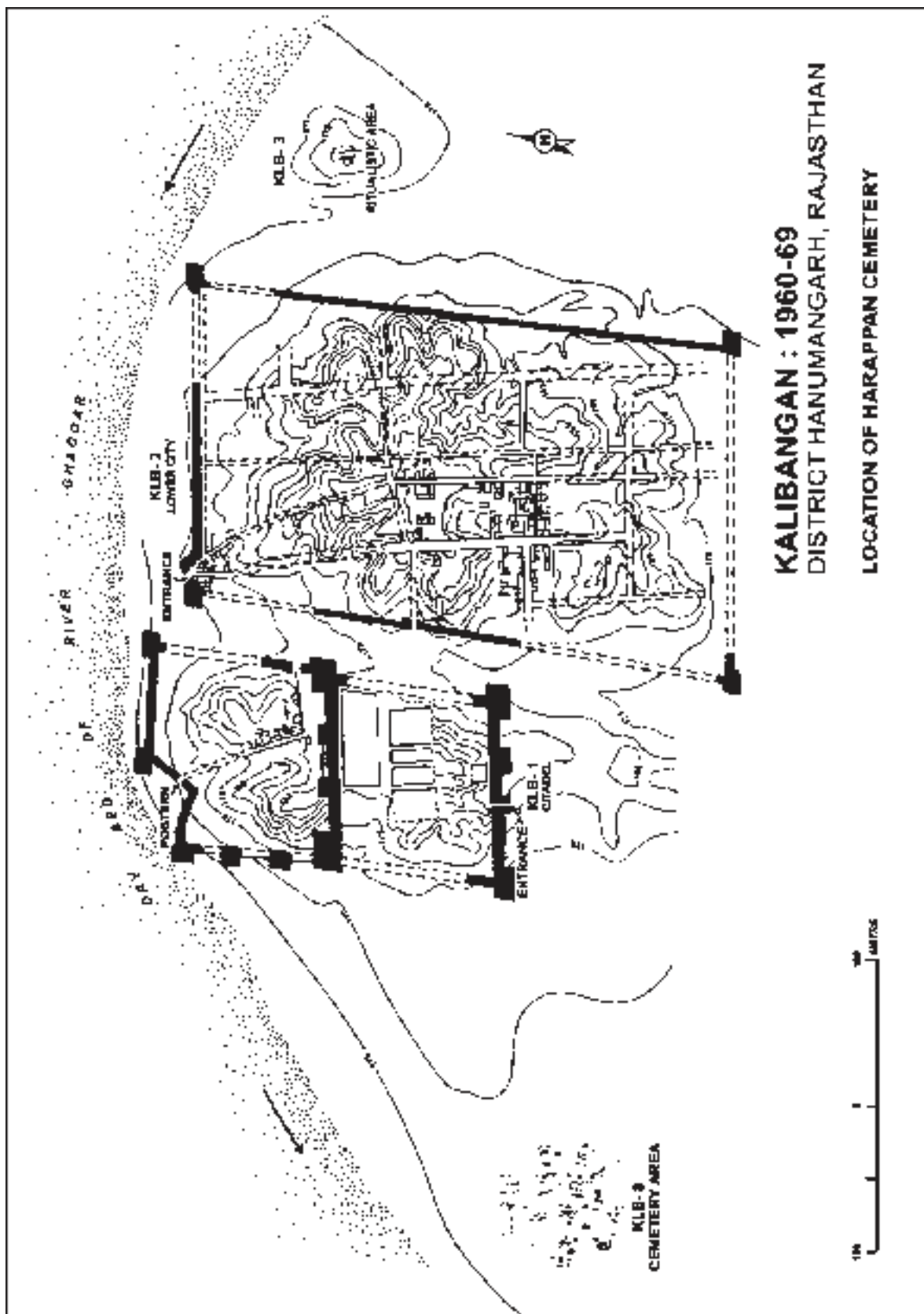


Fig. 22.2 Location of Harappan Cemetery (KLB-8)

at a respectable distance of nearly 300 m. The reasons to prefer this area were perhaps the following -

**(vii) Direction of wind**

At Kalibangan for the major part of the year as the wind blows from south-west to north-east, wind passing through the cemetery will not touch the habitation area - a point important from hygienic considerations.

This directional preference has also been observed at other Harappan sites, e.g. Lothal (south-west); Surkotada (north-west); Rupar (west); Dholavira (west); Harappa (west). Where west is the dominant direction.<sup>3</sup>

**(viii) Flow of the river**

As the cemetery is situated on the flood-plains downstream, the stream first passed by the side of the habitation before touching the fringes of the cemetery. The chances of spilled out flood waters that entered cemetery, reaching upto habitation were thus remote.

**(ix) Slope of the ground**

The ground selected had a slope of 2 to 3 m towards north. Incidentally, in *Satapatha Brahmana* one of the ideal conditions for a burial ground is that it should be sloping towards north.<sup>4</sup>

From the location of the graves it is evident that the Harappans at Kalibangan tried to maintain a well defined boundary as hardly any grave was noticed outside definite alignments. (Fig. 22.3).

**2. PLOTTING THE BURIALS**

The site comprises three closely

situated mounds. The extensive excavations have established that the occupation in western mound (KLB 1) dates back to an Early Harappan occupation. The central mound the deposit is mixed upto the middle. The easternmost mound has also mixed deposit. The cemeteries in almost all the excavated sites were located during the excavation.

It is evident from the extensive dig that two groups of people with some of the interrelated cultural traits were in occupation of these mounds. These were the Early-Harappans and the Harappans.

**A. Extended Inhumation**

Burial Nos. 4 & 5

Burial No. 8

Burial No. 9

Burial No. 10

Burial No. 11

Burial No. 12

Burial No. 26

Burial No. 27

Burial No. 28

Burial No. 29

Burial No. 31

Burial No. 32

Burial No. 34

**B. Rectangular Burial Devoid of any Skeletal Material**

Burial No. 14

Burial No. 19

Burial No. 22

Burial No. 30

Burial No. 33

<sup>3</sup> Joshi, J.P. *Harappan Architecture and Civil Engineering*. Rupa & Co, Delhi

<sup>4</sup> Macdonnell, A.A. and Keith, A.B. 1912. *Vedic Index*. London.



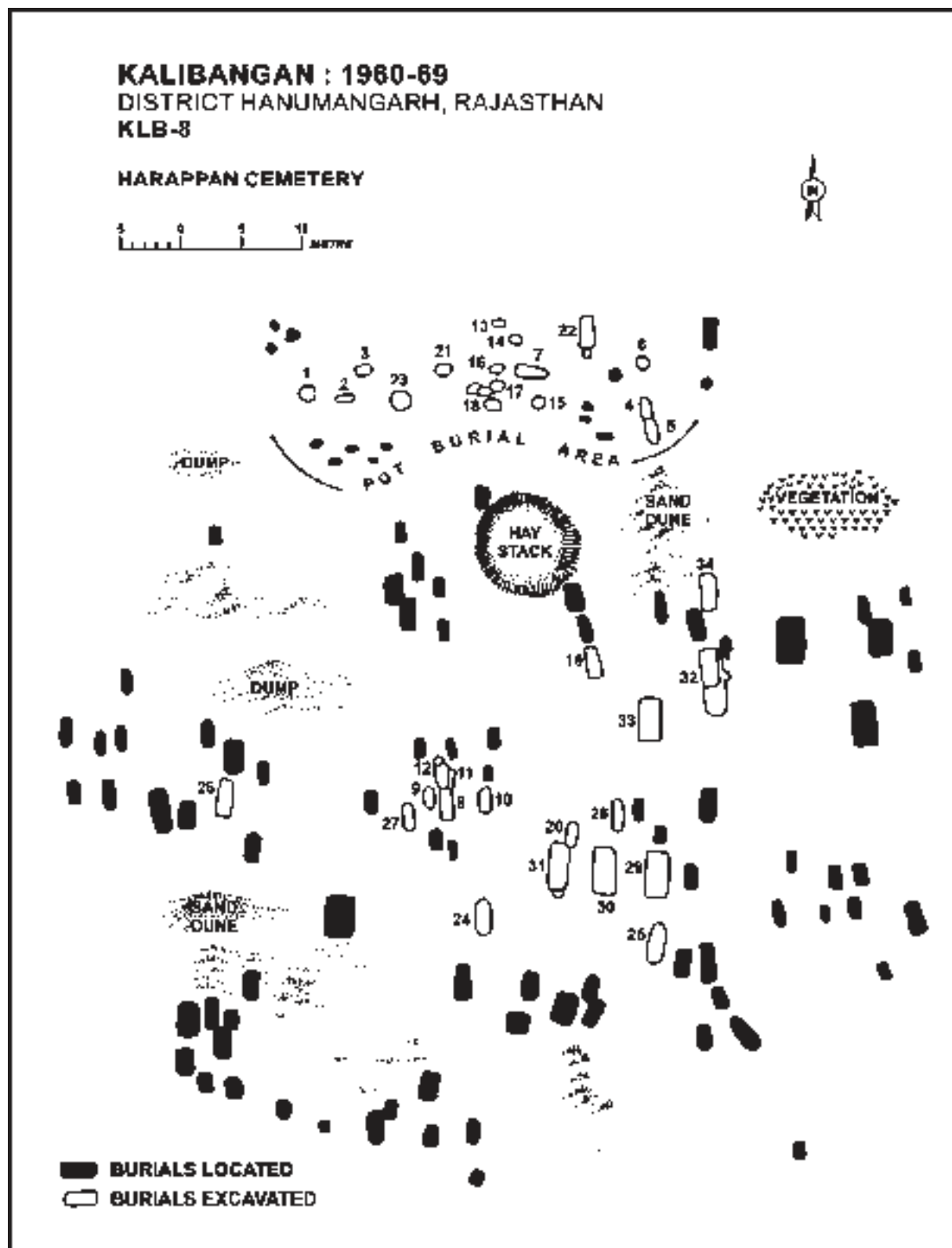


Fig. 22.3 KLB-8 Harappan Cemetery

### C. Pot Burials

Burial No. 1  
Burial No. 2  
Burial No. 3  
Burial No. 6  
Burial No. 7  
Burial No. 13  
Burial No. 16  
Burial No. 17  
Burial No. 18  
Burial No. 20  
Burial No. 21  
Burial No. 23  
Burial No. 24  
Burial No. 25 (Oblong Pot Burial)

So far, we have not been able to determine the mode of disposal of the dead practiced by the Early Harappan folks at Kalibangan. It is likely that some more extensive research might yield some evidence in this direction. It is a well known fact that the people of the Harappan Civilization practiced a typical burial custom as has been revealed by excavations of many Harappan sites. The Harappan cemetery at Kalibangan which is situated about 300 m west-south-west of the western mound (KLB-1) on the present flood plain of the river, has contributed something more in this direction. Apart from the typical Harappan extended inhumation in rectangular or oval pits, the cemetery at Kalibangan has yielded two new types of burials:

- (i) Pottery deposits in rectangular or oval pits.<sup>5</sup>
- (ii) Pot burials in circular pits.

All the three types of graves are located on a clear, hard and flat ground which gets submerged every year by the flood waters of the Ghaggar. The area

consisted of numerous whitish patches with loose earth, formed by the action of salt-petre, which the area has in abundance. Shining salt crystals could be seen when the sun rays are reflected by these crystals, in acute angles.

On the basis of surface indications, using different methods enumerated earlier, almost all the visible grave-pits could be plotted. (Fig. 22.3). In plotting the graves, help of various surface indications, particularly that of the white salt patches,<sup>6</sup> was taken. It has been made possible by locating various types of graves (exposed and unexposed) in the cemetery area and by plotting them on the drawing sheet, using the usual triangulation method of plotting, to roughly demarcate the extension of the Harappan cemetery at Kalibangan. Taking one of the nearest stone (dividing the revenue area into several 'Murabbas') as fixed point, two fixed points were taken near the southern fringe of the cemetery and the graves were plotted.

Four corners of each grave were taken as points (as visible to the naked eyes) to demarcate the rough outline of that grave. Different types of burials that could be located in an area of concentrated burials have been plotted while a few, lying scattered, have been omitted, as it was not possible to locate them properly due to extensive cultivation. Few rectangular pot burials and circular pot burials that lay scattered more to north of the cemetery area, have been omitted from the survey.

After the plotting, at a glance the plotted field gave some interesting and important points towards the demographic assessment of both, cemetery and habitation.

<sup>5</sup> Sharma, A.K. 1969. Kalibangan human skeletal remains: an osteo-archaeological approach. *Journal of the Oriental Institute*, Vol. XIX: 102.

<sup>6</sup> Sharma, A.K. 1979. Harappan Cemetery at Kalibangan – A demographic Survey. *Puratattva* No. 10.

Before we proceed to read the survey plan, it will be worthwhile to have a brief description of each type of burial in order to properly evaluate the results of the excavation.

**(1) Extended Inhumation in Oblong Pits: Figs. 22.4 to 22.51**

In an oblong pit oriented north-

south lengthwise, the body was laid in extended position with the head towards the north and legs towards the south. The funerary furnishings mostly in the form of earthen pots, were kept generally around the skull region. The pits were filled either with self same earth or mixed with compact white speckled clay, brought from the banks of the river, wherever it was available.

**(2) Rectangular or Oblong Grave devoid of any Skeletal Material: Figs. 22.52 to 22.62**

This type is represented by large rectangular or oval pits, generally of the size of 4 x 2 m with north-south orientation. These pits are generally very deep (1.75 to 2.00 m) and are invariably devoid of any skeletal material. They contain typical Harappan pots in varying numbers, almost always lying at the bottom of the pit except in some cases

where one or two pots may also occur at different levels. A typical feature of these burials is the presence of uniformly laid bands of fine sand, clay and watermarks on the bottom of the pit. These wind and water borne deposits and water marks clearly indicate that these pits were left open. Generally the pits were filled only to the extent that the filling covered the deposited pots and rest of the pit was left unfilled. The pots in these pits were those that might have been deposited after rituals from time to time.<sup>7</sup>

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<sup>7</sup> *Indian Archaeology - 1963-64 A Review*, New Delhi, 1969.

**(3) Pot Burials: Figs. 22.52 to 22.60 and 23.1 to 23.21**

In this type of burials a number of pots have been deposited in oval or circular pits, generally around an earthen urn. These pits are generally shallower than the pits of the first type. No skeletal material or ash was recovered from any of such pits or pots occurring in these pits. There is a specific area in the cemetery (north of the area where extended burial types are concentrated) where such pot burials are found in large numbers. Not a single burial of this type was encountered in the extended burial area. The possibility of having these in the extended burial area appears remote, as per surface indications.

Similar evidence has been referred to by Giorgio, Stacul in case of burials at Loebanr, Katelai and Butkara II in the Swat Valley.<sup>8</sup> He states that the wide spread existence of graves that are empty or which contain only some vases and totally lack any skeletal remains, may have been used for performing special ceremony connected with burials as same types of vases found in cremation graves were found in these graves.

It could be observed from the plan that generally the graves occurred in clusters, forming several groups. Taking into account only the extended burial area for study (the pot burial area that could not be fully plotted) atleast sixteen clusters of burials could be counted. There may be a few more hidden under the haystack, sand dunes or dumps.

It is to be noted that the area of circular or oval pot-burials is entirely

different from that of the extended burials. It has been found in the excavations that the rectangular or oblong grave pits devoid of any skeletal material also occur in the extended burial area apart from occurring separately.

In the area under discussion, in all 102 burials could be noticed easily. In a single group there are maximum ten burials, their number varying from group to group, but generally in the range of six to ten (size of the family also appears to be between six to ten, as could be deduced from the size of the houses and rooms unearthed). Each group consists of mostly extended human burials and at least one rectangular pot burial.

It appears that different groups of burials were meant for separate clan or families. Each clan or family was probably allotted a particular area in the cemetery for use by the members of that particular family only. It is generally in conformity with the common practice followed to this day. It is also observed that the area allotted to each family was almost of the same size. It is interesting to note that invariably each group of burial contained at least one huge, deep pit of the rectangular burial type devoid of any skeletal material. It has been observed after excavating a few such burials that they generally contained a large number of pots only. If we try to look into the sociological aspect of the presence of at least one rectangular burial in each group of burials, it may not be illogical to surmise that probably such type of rectangular burials were meant for depositing the earthen pots after performing some sort of ritual for the deceased of the same family. This

<sup>8</sup> Stacul, G. 1975. The Fractional Burial Custom in the Swat Valley and some connected Problems, *East and West, New Series*, Vol. 25, Nos. 3-4 (Sept. - Dec., 1975): 323.

hypotheses gains ground when we look into the nature of such burials and their peculiar mode of filling. It has been observed that generally these rectangular burial pits were left open for considerable time, after the pots were deposited in them. In course of time these pits got filled up by the action of nature, which is evident from the occurrence of thin and thick bands of clay and sand inside the pit. It appears that the circular pot burials were also a part of some sort of ritual connected with the dead. It might be that the pots were deposited inside such a pit after the body of the deceased was disposed of either by cremation or by some other method.

After properly scanning the extended burial area, 102 grave-pits could be plotted; of these clearly fourteen are of rectangular pit burial type. Thus there are 88 burials of the extended type, inside which human skeletal remains could be expected. The excavation of the Kalibangan mounds KLB I and KLB II has revealed at least nine good successive phases of Harappan occupational levels. If each occupational level is accounted for nearly 60 years, then on this basis, it could be deduced that the Harappan occupation at Kalibangan survived for nearly 600 years. The chronological horizon of the mature Harappan settlement (Period II) is from the 26<sup>th</sup> century to 20<sup>th</sup> century BCE. (Please see Chapter 3). This fact is corroborated by the <sup>14</sup>C dates also (see Chapter 3). Even if we take a modest view of five deaths per annum in such a big settlement, it comes to nearly 3000 deaths in the span of 600 year of Harappan occupation at Kalibangan. But unfortunately we are likely to get hardly 100 bodies only. Now certain basic problems arise:-

- (1) Was the death rate so low? This is highly improbable.
- (2) Did the population mostly consist of traders so that many of them died elsewhere on a business trip? We have no definite evidence to substantiate it.
- (3) Was there more than one burial ground which we have not been able to locate? Our failure to locate other Harappan cemeteries at Kalibangan could be a possibility. But what about other Harappan sites? So far we have not come across any excavated Harappan site which has yielded more than one burial ground of the Harappan period. Likelihood of our missing other Harappan cemetery at Kalibangan also seems to be a remote possibility.
- (4) Did the Harappans practice some other mode or modes of disposal of the dead also, apart from the known practice of burial? In the absence of any other factor or evidence, the presence of a large number of circular pit burials (yielding pots only) leads us to believe that the Harappans at Kalibangan practised other mode or modes of disposal of the dead also. The other modes may be cremation or throwing the body of the deceased in the waters of the Sarasvati (*nadī-pravāh*). Absence of any skeletal material or any trace of ash in the circular pits or in the pots contained therein, indicates that probably after disposing of the body, only pots were interred in these circular pits.

Now the question arises as to who were buried and who were disposed of otherwise? It is likely that there might have been at least two sets of people at Kalibangan (of course, this is purely a hypothetical presumption). One was the richer class and the other the poor class. Almost all the graves dug so far at Kalibangan have yielded very poor burial furnishings. In most of the cases it is only in the form of few simple undecorated pots. Only in some cases few antiquities (personal belongings) like shell bangles, beads and one or two gold beads were recovered from the graves. In one case only, the grave-pit was lined with eleven courses of mud bricks (max. available) on all four sides. This pit yielded quite a large number of pots (73), many of which were decorated.

It appears that the burials in this cemetery generally belonged to the poorer section of the Harappan society. The one lined with mud bricks might have belonged to some important person (chieftain or local head) of this group. The richer section of the society (or the other people) probably had a separate burial ground or might have practiced some other mode of disposal of the dead. This could be proved or disproved only after a thorough search of the entire area has been made.

A remarkable feature of the cemetery at Kalibangan is that the large and spacious area was neatly divided into two sections for the extended inhumation type and pot burials type. As stated earlier, in the area of the extended burials there were sub-areas demarcated for family groups. The grave-pits were neatly dug to a safe depth. Except few cases of overlapping in case of pot burials, there was hardly any case of one burial

cutting across or overlapping the other burials in extended type areas. These were in sharp contrast with the burials at Lothal.

At Lothal the cemetery was on a slightly raised ground, adjacent to the habitation. The area was very small and congested. This is probably due to the fact that enough open, flat and dry area was not available. There was also no specified area for groups of families. Due to little space available, graves were found overlapping and later burials cutting the earlier ones.

### **SOME SOCIOLOGICAL ASPECTS**

A close examination of different types of burial practices shows that for disposing of the dead, connected funerary goods and ritual practices, some sort of sociological norms were followed.

The grave-pits were neatly dug and bottoms were invariably covered with a thin carpet of hard speckled brownish clay. Normally the skeletons were kept in the centre of the pit, in supine position, with head towards north. The funerary furnishings in the shape of earthen pots, shell bangles, beads, bone points and in one case, a copper mirror, were deposited along with the deceased.

Some departures from the normal practice were also noticed, which appears to be in case of burials of persons dying unnatural death. There was also a case of extra-ordinarily rich burial.

In case of an important man's burial, the rectangular grave-pit 4 x 2 m on plan was lined on all four sides with typical Harappan mud bricks (40 x 20 x 10 cm).



The inner sides of the walls were plastered with mud and *chunam* plaster. The walls stood in conical fashion, with the inner space gradually widening towards bottom. The pit contained more than 70 pots of various shapes and sizes.

The skeleton of old man was placed over carefully arranged layers of platters in such a manner that no part of the body touched the ground below.

One grave-pit yielded 3 disarticulated skulls along with several other

fragmentary bones. It appears that the occupants of this grave probably died in some accident, in which different parts of the body were dismembered and as it was difficult to identify and separate them, it might have been thought proper to give them a combined burial.

The grave also yielded an earthen relic casket with a lid and contained a deciduous molar of a child. The rim of the casket and lid had four perforations at equidistance, to be used to secure the contents of the casket.

### 3. DESCRIPTION OF THE BURIALS

#### A. EXTENDED INHUMATION

##### 1. Burial Nos. 4 & 5 (Skl. No. 1) Figs. 22.4, 22.5 and 22.6

On the south-eastern corner of the quadrant 3 of square B 1, two grave-pits were noticed. The later grave numbered as Burial No.5 has disturbed the lower half of the earlier grave, Burial No. 4. Both the grave-pits are oriented north-west to south-east. As the bottom of Burial No. 5 is deeper than the bottom of Burial No. 4, it has disturbed the lower portion of Burial No. 4, cutting the two femerii of the skeleton lying in Burial No. 4 from the middle of the femoral shaft thus the parts below this region are totally missing. Working levels of both the grave pit are not present, as lot of erosion of the soil has taken place. As a result of which few of the pots from both the graves were peeping out from the grave pit into the surface. Both the pits have been cut through the brownish hard, loamy clay having a considerable percentage of sand and *kankar*.

##### Burial No. 4

Maximum available length of Burial No. 4 is 1.63 m. It is widest towards north and gradually narrows towards south — 1.43 m and 0.90 m respectively. The grave-pit contains an extended human skeleton along with eight pots all placed towards the skull region. Depth of the pit is not uniform. It is sloping from north to south. The skeleton also is kept in inclined position, north-west to south-east with skull on a higher plane and pelvic region on a lower plane. Almost all the pots

except the big vase have been kept either to the west or to the north-west of the skull. Pot is towards the north-east of the skull. Pot lying to the west of skull are big and small vases respectively. Pot is a tumbled down dish-on-stand, almost complete. Pot is a lid lying between the skull and the stem of dish-on-stand. Lids lying near the northern edge of the stem whereas a medium sized jar (vase) lying to the north east.

The skeleton is lying in such a fashion that it shows magnetic deviation of N 14°, 15' W. taking the three points bregma, centre of clavicles, and centre of both the thigh bones into consideration. Pots are lying at an average depth of 0.24 m. Maximum depth of the pit at the northern end is 0.45 m. It is 0.38 m at the southern end. The skeleton is lying in supine position with skull turned towards east and eye-sockets looking towards south-east corner. It is lying at a depth of 0.20 m. Ankle region is at the depth of 0.34 m and femur is at the depth of 0.40 m. Almost all the parts are extremely fragile and have disintegrated to a greater extent. Except the skull hardly any other part worth study could be lifted.

##### Burial No. 5

This grave pit is 2.22 m in length and maximum breadth at the centre is 1.40 m, narrowing down towards the ends. At the point where it has cut the femerii of Burial No. 4, the width is 0.90 m. The pit is uniformly deep throughout having depth of 0.40 m. It seems that the body of the deceased was kept after spreading some earth over the bottom which later got disturbed. No trace of the skeleton

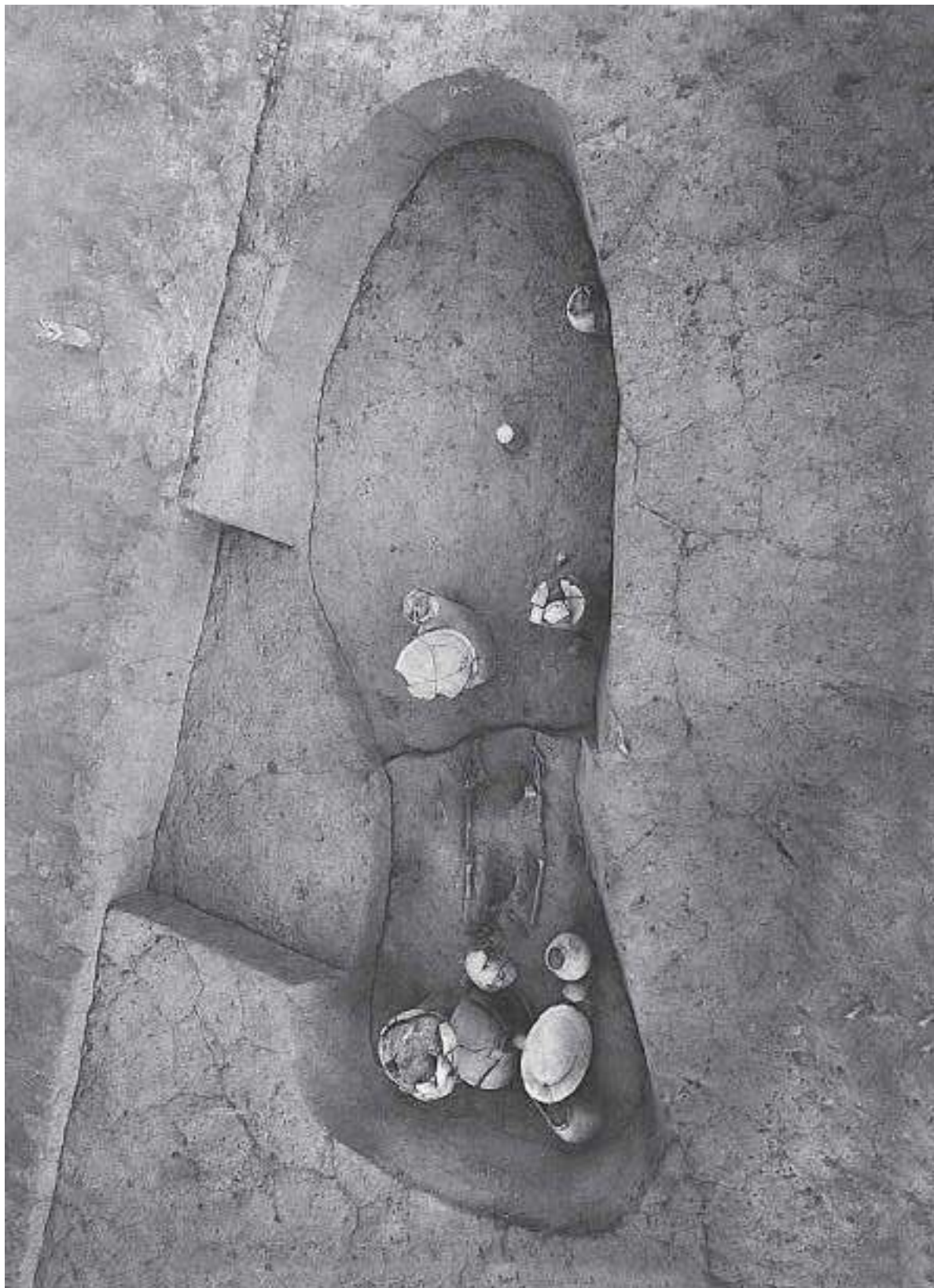


Fig. 22.4 KLB-8 Burial nos. 4 and 5





Fig. 22.5 KLB-8 Another view of Burial nos. 4 and 5

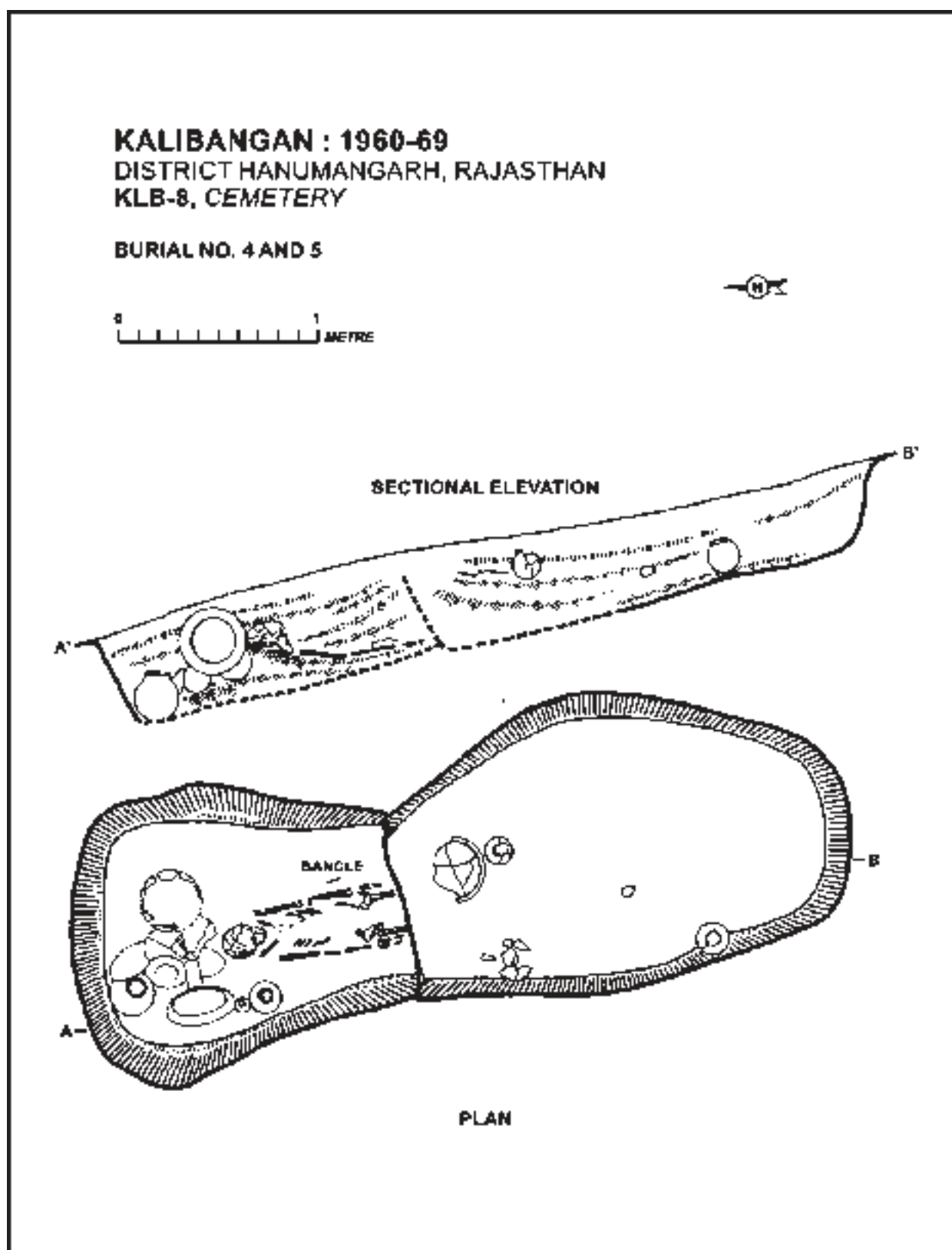


Fig. 22.6 more KLB-8 Sectional elevation and plan of Burial nos. 4 and 5

was found. The pit contains five pots. Three of the pots lying towards the north have all been kept at the same height and these are a plate or dish, *lota*-shaped plain vase and a lid. A small miniature vase is almost in the centre of the pit, while a *lota*-shaped vase lying at the south-western corner of the pit.

### Skull

Main axis of the skull is north-west to south-east with the eye-sockets facing to south-eastern corner. Though the skull has cracked into numerous small pieces except the facial parts, other parts are in fairly good condition and intact. Skull is more in length than in breadth. It is bending towards its left thus resting on it, norma-basalis position showing the norma-lateralis and superior aspects of the skull. Major portion of occipital bone is missing. Frontal and right parietal bones are intact. Forehead is more or less straight. Right squamous temporal, along with mastoid process and zygomatic arch is intact, though in pieces. Maxilla and zygomatic bone of both the sides are practically missing except the fragments lining the orbits. Greater wing of sphenoids on both the sides, left parietal, nasal bone and anterior nasal spine of maxilla, are missing. Left squamous temporal and zygomatic process are intact, upper margins of the eye orbits are sharp and parietal bone above the left eye orbit has broken into pieces. Right supra-orbital foramen is intact. Seven teeth on the left side of upper jaw and six on the right side are present. One molar of the right upper jaw has fallen and is lying near the left clavicle. On left side 2 incisors, canine, 2 premolars and 1 molar are present, while in left 2 incisors, canine, 2 premolars and 1 molar are present. Mandible is slightly displaced from its position and is sagging down thus

displacing its right head and coronoid process which are visible. Both are intact. Right angle is also intact. Body is damaged. It seems that the mandible was having all the sixteen teeth. 2 molars, 2 premolars, canine and 2 incisors from left and 1 incisor, canine, 2 premolars and one molar of right side are present. Sockets of the missing teeth are visible. Cusps of the sagittal sutures are intact, mastoid process is quite prominent and so also the chin. Bones of the skull are quite smooth, delicate and thin. The two clavicles could be noticed in the form of earth impressions only. Acromial and sternal ends of both are missing with only the shafts present. From the pectoral girdle a few tiny fragments of ribs and vertebrae are present and it is not possible to lift anything worth study. Both the hands are lying in articulated condition with their fingers stretched. Left humerus has broken into two pieces. Only the shafts of both are present while the proximal and distal ends are missing. Only two pieces of shaft of right radius, are present. Along with the ends middle of the shaft is also missing. Both the bones of the left forearm are present in the form of their shaft only but in articulated condition. Both have broken into two pieces each. Of the left hand bones only four fragments are present. Piece of a shell bangle is lying just over the left wrist region. Second and third metacarpal bones along with one phalanx each are present. A fragment of first metacarpal is also present. All the carpal bones are missing. Right hand is lying in prone position.

### Pelvis

From the hip bones nothing but tiny fragments giving an impression of the pelvis are present. A small portion of left ilium could only be seen properly. Hardly

any thing worth could be lifted. Both the thigh bones have been cut by the later grave-pit from the centre of the shaft and the remaining upper halves have cracked into tiny pieces. Both are in articulated condition. Head and trochanteric region have disintegrated. Maximum length of the skeleton-bregma to centre of the shafts of femurii = 0.82 m. Distance between the two femurii heads = 0.29 m. The skeletal remains belong to that of an adult (above 35 years) female.

## 2. Burial No. 8 (Skl. No. 2) Figs. 22.7 to 22.13

A grave pit in Quadrant 1 of Square A7 yielded remains of an extended human skeleton, oriented north-south, along with eight offering earthen wares, seven of which were placed on the northern side of the pit above the skull. Working level of the pit is not present. It has been cut through 0.13 m thick layer of loamy soil mixed with fine sand. Sides of the pit are slopy, wider towards the top and narrower towards the bottom. Maximum length of the pit, north-south, is 2.94 m. The pit is almost oblong slightly tapering towards south. Width varies at various points.

1. Width of the pit across the stem of dish-on-stand = 1.17 m
2. -do- at pelvic region = 1.11 m
3. -do- at toe points = 0.80 m

Except a *lota*-shaped vase, first to occur while scooping out the pit and placed east of left shoulder region just at the fringe of the pit, all other pots are placed on the bottom of the pit, at a lower level than the skeleton itself. The skeleton has been placed in the pit over a thin layer of the filling material. Pelvic region is on a higher level than the other parts. Both the upper and lower regions are sloping from the pelvic region thus making the skull and foot bones to lie at

a lower level as compared to other parts. Base of the dish-on-stand is at the depth of 0.85 m, while skull is at the depth of 0.75 m. Pelvis is at the depth of 0.52 m and calcaneus is 0.61 m.

A dish-on-stand is kept just to the north of the skull. Three vases, a lid, a small vase with two black bands and base of a goblet are lying in the north-eastern corner of the pit. The burial is a perfect example of an extended burial. Skeleton is oriented north-south with the skull towards north and toes toward south. It has been put in supine position. Magnetic deviation is N 7° 15' west, taking the central axis of the skeleton from bregma, 3<sup>rd</sup> lumbar vertebra, centre of pubic symphysis and centre of the toes. The body of the deceased was kept in the centre of the pit (east-west), slightly towards east. Toes are touching the southern edge of the pit.

1. Distance of eastern edge of the pit from the head of left humerus = 0.28 m
2. -do- western -do- right -do- = 0.295 m
3. -do- from right anterior iliac spine = 0.35 m
4. -do- eastern -do- left anterior superior iliac spine = 0.28 m
5. -do- -do- 5<sup>th</sup> finger of left foot = 0.03 m
6. -do- western -do- 5<sup>th</sup> finger of right foot = 0.02 m

Maximum length of the skeleton taking from bregma to the centre of the two ankles is 1.68 m.

The owner of this skeleton seems to have been a very tall and hefty fellow with enough of flesh and fat. Skull is long; shoulder is wide; ribs are broad and well developed and legs are sturdy. Both the legs and left hands are in fully stretched position. Right hand is bent towards left from the ankle region so that the distal ends of the right forearm bones and right hand bones (carpals, metacarpals and



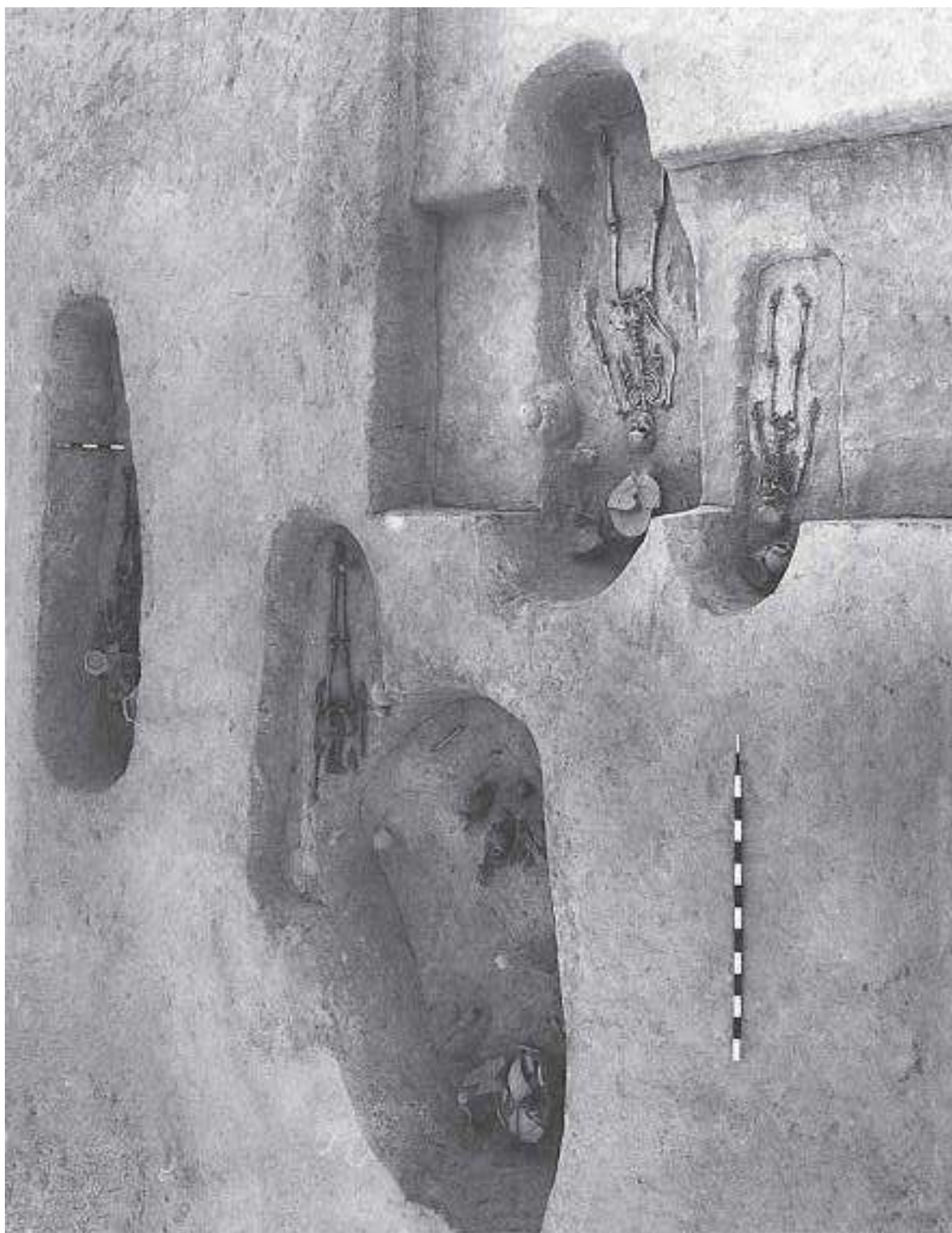


Fig. 22.7 KLB-8 Extended burials

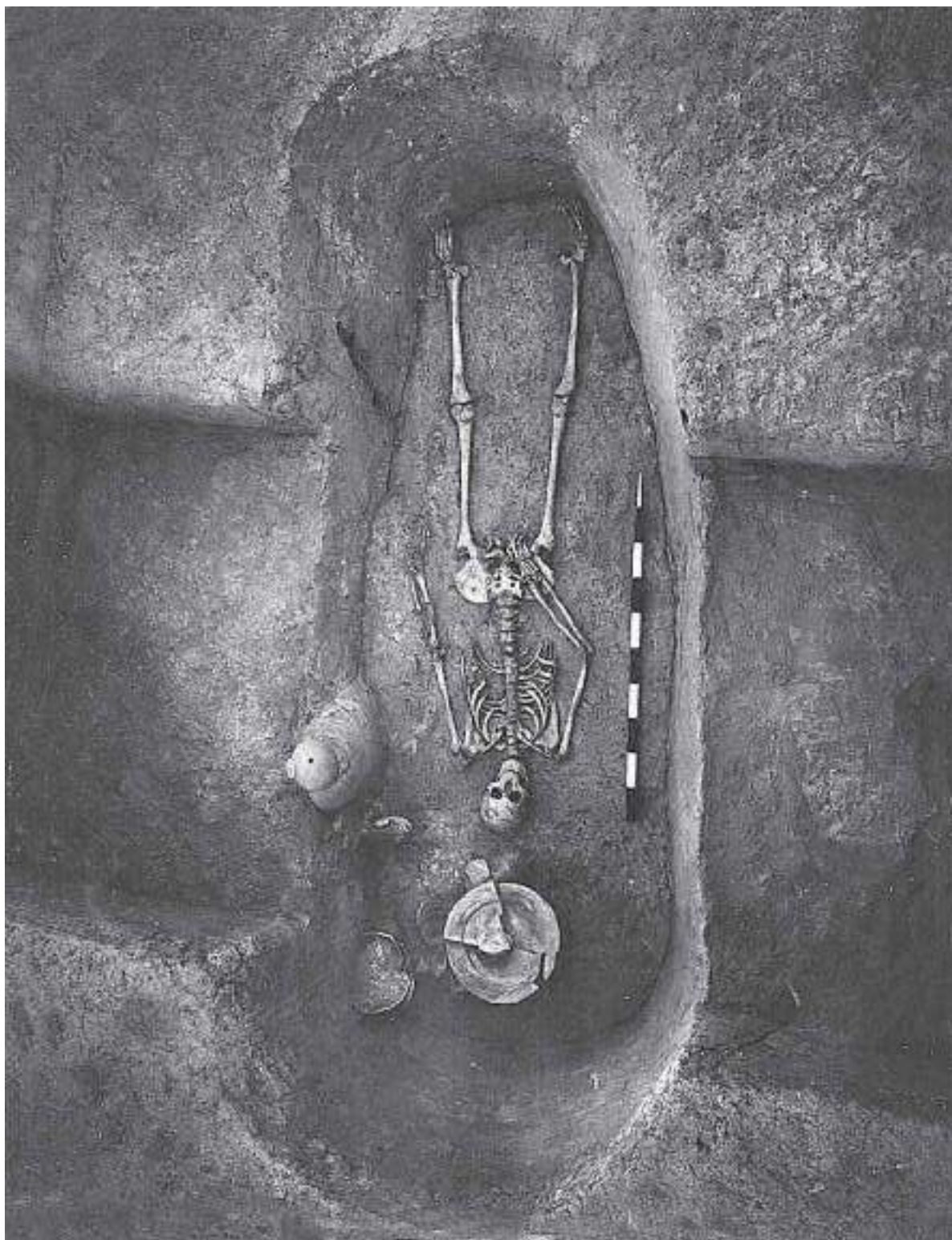


Fig. 22.8 KLB-8 Burial no.8

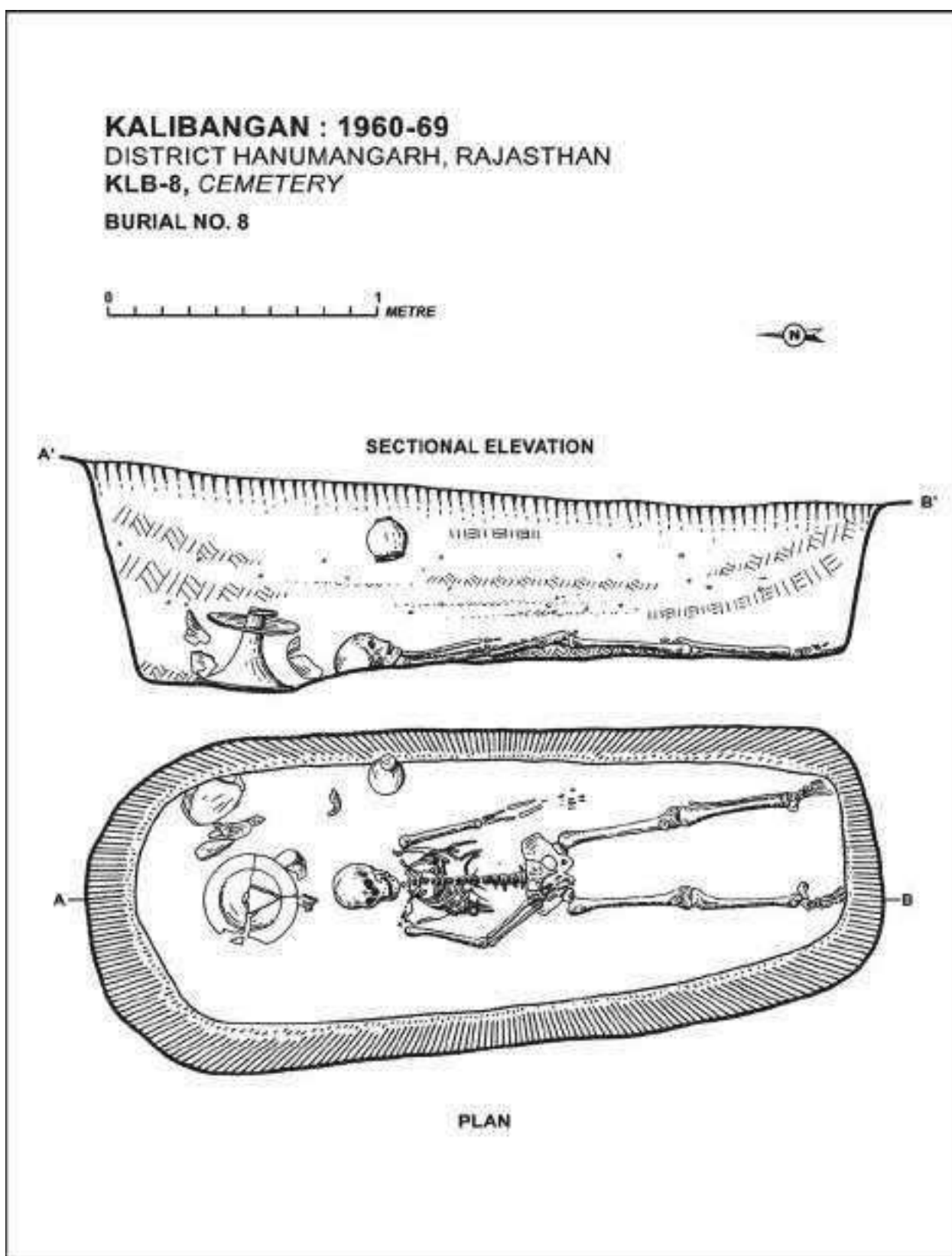


Fig. 22.9 KLB-8 Sectional elevation and plan of Burial no. 8



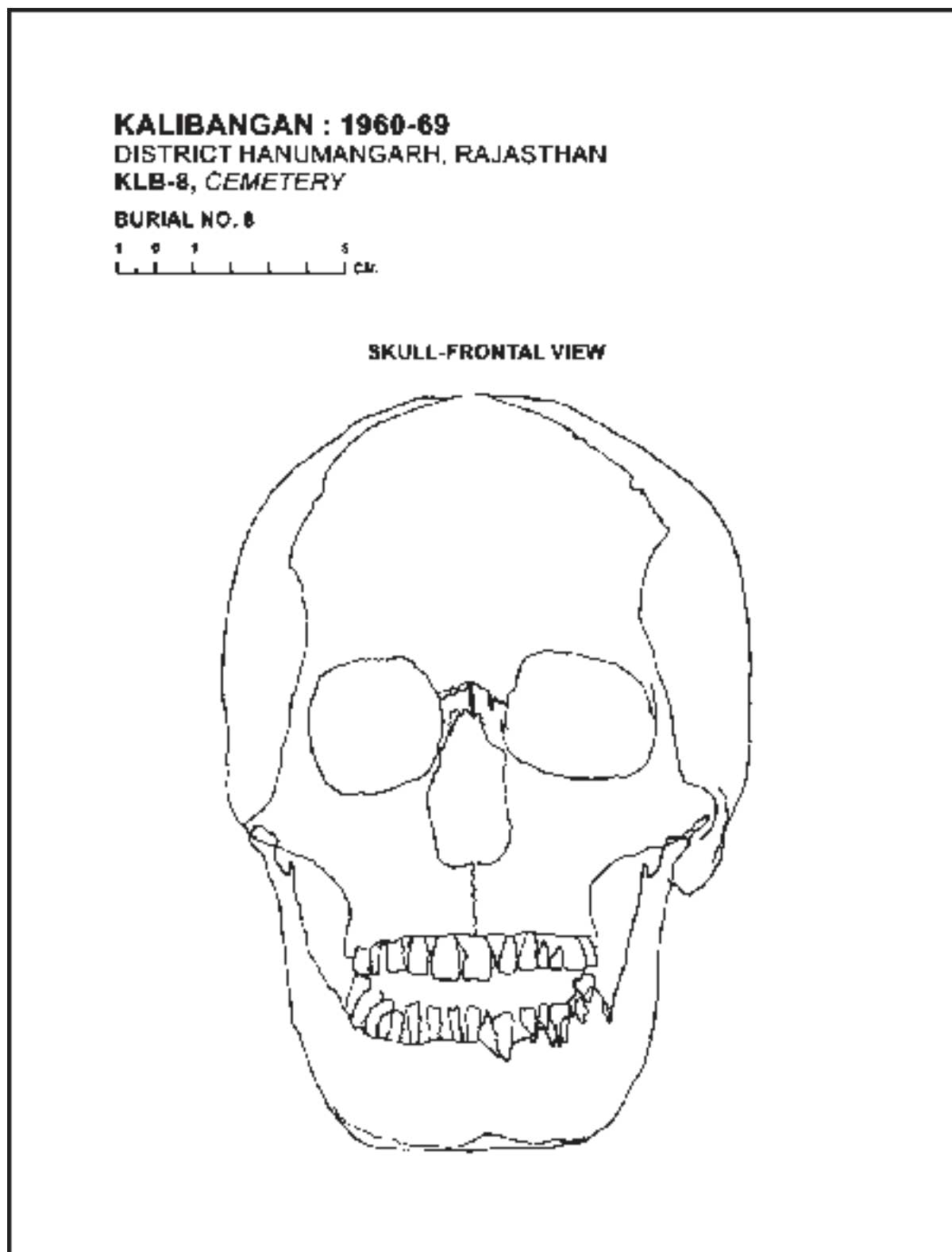


Fig. 22.10 KLB-8 A frontal view of a skull of Burial no. 8

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**  
**BURIAL NO. 8**

1 0 1 5  
L I N E C M.

**LEFT HUMERUS**

**ANTERIOR ASPECT**

**POSTERIOR ASPECT**

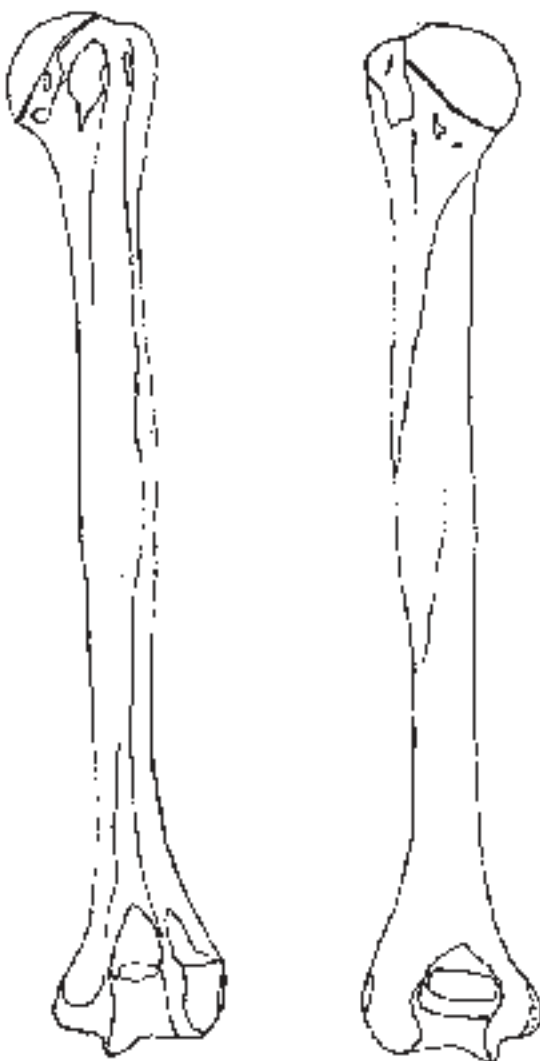


Fig. 22.11 KLB-8 Views of left humerus of Burial no. 8

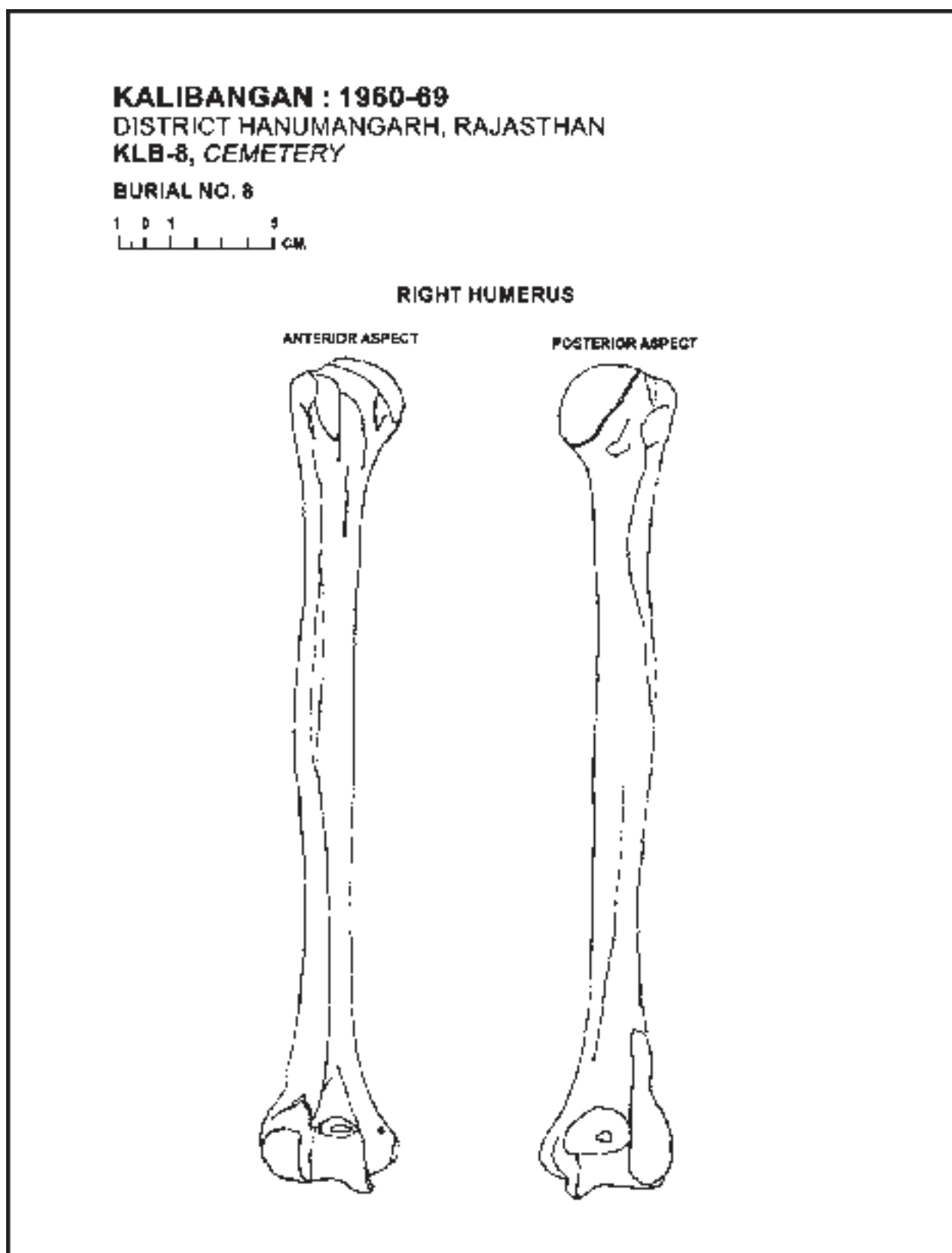


Fig. 22.12 KLB-8 Views of right humerus of Burial no. 8

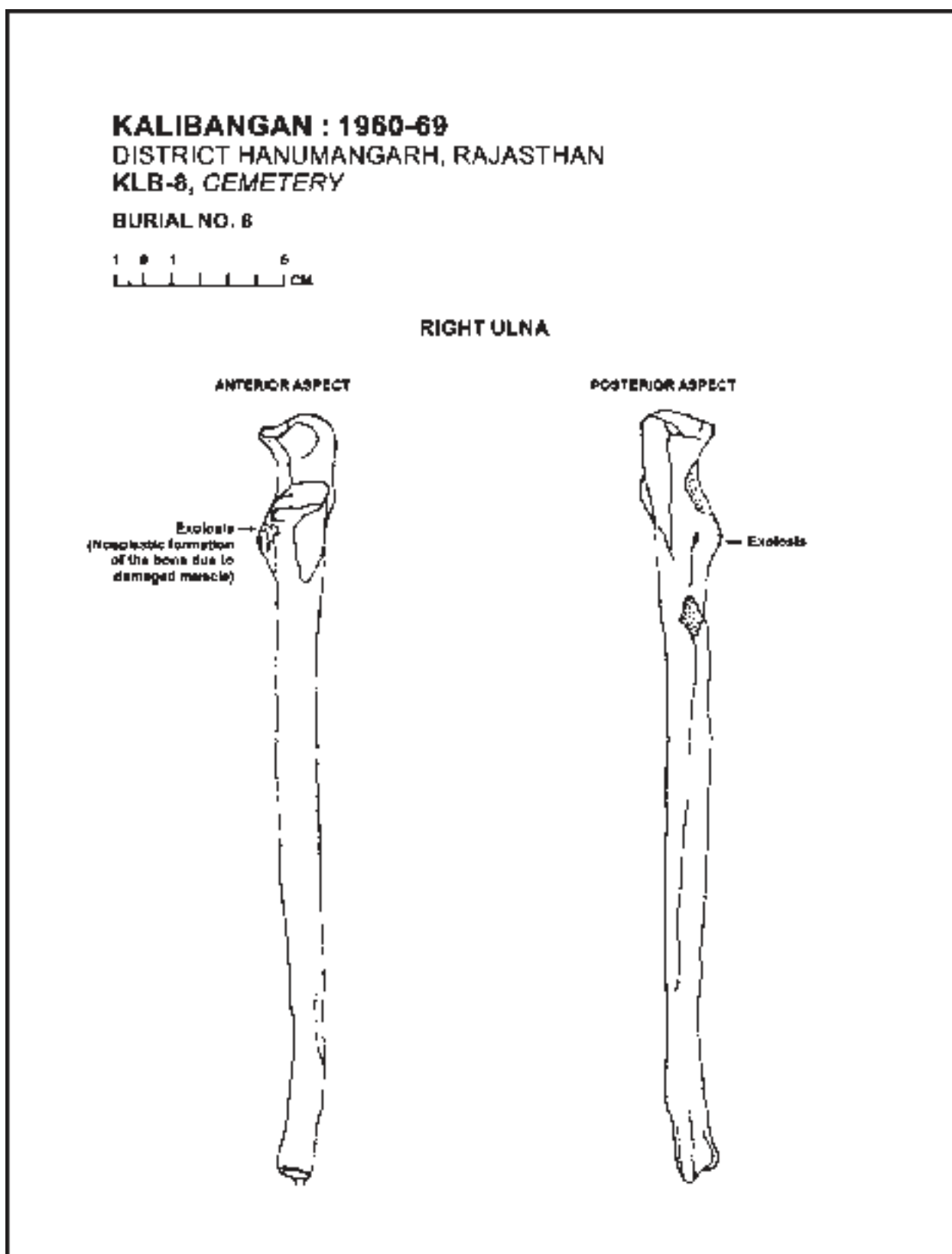


Fig. 22.13 KLB-8 Views of right ulna of Burial no.8



phalanx) are resting over the right iliac bone. Two carnelian beads, medium, barrel-shaped, towards the left and biconvex etched towards the right, are found in the neck region between chin and the sixth thoracic vertebra.

### **Skull**

Skull along with the mandible, is in perfectly good state of preservation except damage at the frontal process of maxilla, nasal bones and a pick axe mark on the frontal bone (caused while exposing the burial). The skull is long, smooth and thick. Frontal, occipital, parietal, temporal, squamous temporal, all are intact. (Fig. 22.10).

### **Frontal**

Forehead is prominent, receding and broad. Vault is prominent and so also the bregma point. Skull is put more or less in norma-lateralis position resting over its foramen magnum. Lambda point is prominent. Both the parietal along with their anterior inferior angles are intact. Sphenoid bones are in good condition including the greater wing and lateral pterygoid plate. Mastoid process on both the sides are intact and very prominent. Temporal line is prominent and well marked. Mandibular fossa and external acoustic meatus, zygomatic process, zygomatic bone, maxilla, frontal process of right maxilla, anterior nasal spine, a portion of nasal bone, infra-orbital foramen, eye orbits, all are intact on both the sides. Supra-orbital foramen is also intact. Face is broad and rough. Upper margins of the eye orbits are not sharp. Greater wing of sphenoid, lesser wing of sphenoid, lacrimal bone all are present. All the sixteen teeth of the upper jaw are present except a portion of right second molar, enamel of which is damaged. All the teeth are in perfect articulated

condition. Coronal, sagittal and lambdoid sutures are intact and prominent. Sagittal suture shows marked progress of fusion.

### **Mandible**

Mandible is intact and in perfect articulated condition. There is a wide gap between the upper and lower teeth suggesting that at the time of death the mouth was wide open. Head of mandible, coronoid process, angle and body all are intact. Head on either sides are lodged in their respective cavities of the skull, i.e. mandibular fossa. Chin is prominent and mental foramen on both the sides are present. All the sixteen teeth of the lower jaw are intact. Cusps of the teeth are considerably worn out particularly those of the molars and canines.

The skull is quite big, walls are thick, muscular ridges are well marked. Mastoid process and glabella are prominent. Tympanic part of temporal bone is quite big, upper margins of the eye orbits are not sharp and forehead is receding. Mandible, maxilla and their contained teeth are quite big.

### **Vertebral column**

Vertebral column is in perfectly articulated condition with almost all the vertebrae in good state of preservation. Portion below 6<sup>th</sup> cervical vertebra is visible in its anterior aspect. A portion of 6<sup>th</sup> cervical vertebra and above it are hidden under the lower jaw. Body and spines are intact. Body of 5<sup>th</sup> lumbar vertebra is damaged.

### **Sacrum**

Sacrum is present in articulated condition with all its 5 sacral vertebrae intact. Promontory is badly damaged. Auricular surfaces, pelvic sacral foramen, iliacus meatus and lateral

part, all are intact. Upper and lower epiphyses of vertebrae have united with the bodies.

Sacrum is big and narrower, upper part is curved and the curvature is more evenly distributed. Pelvic surface is facing less downwards. Auricular surface articulating with the iliac bone is longer extending along the sides of 1<sup>st</sup> to middle of 3<sup>rd</sup> vertebra. Upper surface of the 1<sup>st</sup> sacral vertebra occupies a larger portion of the base of the sacrum.

Maximum breadth of 1<sup>st</sup> sacral vertebra  
= 0.111 m

Maximum length of sacrum = 0.095 m

### **Coccyx**

Though it is present but hidden under the 2<sup>nd</sup> phalanx of the 1<sup>st</sup> finger of right hand.

### **Sternum**

Manubrium and upper third of the body of sternum are lying slightly displaced on the left borders of 7<sup>th</sup> to 4<sup>th</sup> thoracic vertebrae. They are in very delicate and disintegrated condition. Suprasternal notch is present along with the clavicular notches.

### **Ribs**

Ribs are present in fairly good state and are perfectly articulated. 12 of the right side and 11 of the left side are present. Head and shafts of most of them are intact. First and second ribs on both the sides are present.

### **Clavicles**

Both the clavicles are intact in articulated condition. Their acromial end, sternal end, deltoid region and sternomastoid regions are intact. Left clavicle is slightly damaged above the deltoid region.

### **Scapula**

Both the scapulae are present in articulated condition and their ventral aspects could be seen. Right scapula is in fairly good condition than the left. Coracoid process, superior angle of glenoid cavity, lateral borders, inferior angle of right scapula, are intact and so also the scapular plate. Coracoid process of left scapula is broken, while glenoid cavity, lateral border, plate and inferior angles are intact.

### **Humerus**

Both the humeri are present in articulated and prone position with their heads lodged in their respective cavities. Head, shaft, greater tubercle, ridge, medial and lateral epicondyles, olecranon fossa and trochlea of both are intact. Lateral supra condylar ridge of right humerus is damaged. Capitulum of left is also broken. Deltoid tuberosity is intact.

### **Fore-arm bones**

Right fore-arm bones are in fairly good condition than the left. Proximal end of right radius and ulna are properly articulated with the distal end of right humerus. Their distal ends are in badly damaged condition and represented in fragments. Head, biceps, neck and styloid process of right radius is intact though many cracks have developed. Olecranon, trochlear notch, coronoid, lower thirds of right fore-arm bones are resting over the right iliac bone. Left fore-arm has been kept on a higher level than the other parts of the body and due to the loose filling and pressure of the earth they have broken into several pieces and are in extremely disintegrated state. Head, neck and styloid process of left radius are totally missing. Biceps is intact along with the shaft which is broken into three pieces. Upper half of left ulna is totally

missing. Only lower half is present in extremely fragile condition and hardly anything intact can be lifted.

### **Hand bones**

Only few fragments of left hand bones are present in disturbed condition. Right hand bones are lying over the right iliac and pubic region in supine condition. All the metacarpals, carpals and phalanges are present with few damages here and there.

### **Pelvis**

Pelvic bones are lying in articulated condition, but are slightly flattened due to the pressure of the earth. Both the iliac bones are intact and in good condition. Erector spine, auricular surface, transverse abdominis, sartorius, greater sciatic notch, rectus femoris, iliac crest, anterior superior, anterior inferior, posterior superior and inferior spines all are intact. Both the acetabular cavities are intact. Both the pubic bones are pressed downwards getting detached from the ischium at the point of spincter urethrae. Pubic symphysis is dislocated. Pubic tubercle, crest, gracialis and rectus abdominis all are present in left pubic bone but right pubic bone is hidden under the right phalanges. Both the ischium are intact with their tuberosities, spines and gemallus superior. Iliac are not so vertical. Distance between the iliac crests is 0.21 m. Anterior superior iliac spines are near to each other = 0.302 m. Iliac fossa are deeper. Superior aperture of lesser pelvis is smaller and typically heart-shaped. Distance between the two pubic tubercles seems to be more. Ischiatic notches are narrow and deep and spines of ichia project inwards to a greater extent. Pubic arch is narrow, inferior aperture is small, ischial tuberosities are less everted. Margins of

the pubic arch are more everted. Acetabular cavities are quite big. Auricular surface of sacrum extends upto the middle of 3<sup>rd</sup> sacral vertebra.

### **Femur**

Both the femerii are in stretched, supine and articulated condition. They have cracked from many places and particularly it will be difficult to lift the head region of right femur. Heads of both are ledged in their respective acetabular cavities. Head, neck, lesser trochanters, shaft, intertrochanteric line, abductor tubercle, lateral condyles and epicondyles, patellar surface of both are intact. A portion of head of right femur, greater trochanter of left femur and medial epicondyle and condyle of right femur are damaged. Both the femerii are quite big and strong.

### **Patellae**

Both the patellae are in articulated condition and are intact. Apex and body are safe. They are lying above the patellar surface of the femur.

### **Leg bones**

Leg bones of both the sides are intact and in good condition. Lateral aspect of right tibia while the frontal aspect of left tibia and fibula are visible. Right fibula is hidden below the right tibia. Right tibia is broken into two pieces at the lower third. Tubercles of intercondylar eminence, medial condyle, lateral condyle, tuberosity, lateral surface of right and medial surface and anterior border of left and medial malleolus, all are intact. Head, anterior border, medial crest and later malleolus of left fibula is intact.

### **Foot bones**

Almost all the foot bones of both the feet except few of the phalanges are

present, right in prone and left in supine position. Calcaneus, talus, navicular and other tarsal bones of both the feet are present. Right calcaneus is damaged in the peroneal trochlea region giving an impression of false depression. Heads of metatarsal bone of the right foot are broken. 2<sup>nd</sup> phalanx of the 1<sup>st</sup> finger, 2<sup>nd</sup> and 3<sup>rd</sup> phalanx, of the 2<sup>nd</sup> finger, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> fingers of right foot are missing. Except first phalanx of first finger all other phalanges of the left foot have disintegrated.

### Measurements

1. Distance between the heads of two humerii = 0.36 m
2. Length of left humerii = 0.314 m
3. -do- right -do- = 0.317 m
4. Maximum distance (girth) between the last ribs = 0.29 m
5. Length of right radius = 0.252 m
6. Length of right ulna = 0.282 m
7. Length of right femur = 0.468 m
8. -do- left -do- = 0.467 m
9. -do- right tibia = 0.404 m
10. -do- left -do- = 0.406 m
11. -do- left-fibula = 0.368 m

A portion of occipital bone of another skull is lying near the eastern section of the pit north of the pot and east of the skull of skeleton No.2. Water marks with laminations on sand could be seen in the sections of the pit.

### 3. Burial No.9 (Skl. 3): Figs. 22.14 to 22.21

In Quadrant 1 of Square A7 grave of a human child is found. The grave pit is oriented north-south and has been dug through the top layer of brownish cloddy clay and then dirty greenish sandy loam. The more or less oblong grave pit's

maximum length is 1.61 m north-south and width is 0.58 m. The grave pit yielded an extended burial of a human child aged about 8 to 10 years along with four earthen pots kept towards the north of the skull. The skeleton is lying at the depth of 0.48 m and has been kept after spreading a thin layer of pit filling which consists of brownish cloddy clay mixed with greenish sandy soil. Pots and the skeleton have been kept in a slight slope from north to south. A small beaker is lying north-west of the skull, just near the edge of the pit. Two medium sized and a small vase respectively are resting on their sides in such a fashion that their mouths are facing the skull. On the top of these two vessels is resting a bowl or lid. The skeleton is lying in perfectly supine position with all the parts more or less articulated.

### Skull

Fortunately the skull is intact and in good condition except at one or two spots where it is slightly damaged. The skull is placed in norma frontalis position. It lies little twisted towards its left side. It is slightly dislodged from the vertebral column. Frontal, occipital, and right parietal bones are intact. Face is towards south-east with eyes looking towards south-eastern corner (i.e. towards burial No. 8). Frontal bone is slightly damaged just above the right fronto-zygomatic suture. It has developed several cracks. Forehead is more or less straight. Just above the glabella, on the forehead, there are three small holes one above the other in a semi-circular fashion. Lambda points are prominent.

Right parietal bone, squamous temporal, greater wing of sphenoid, mastoid process, zygomatic process are all intact. On the right squamous temporal bone just above the external acoustic meatus region there are three





Fig. 22.14 KLB-8 Burial no.9

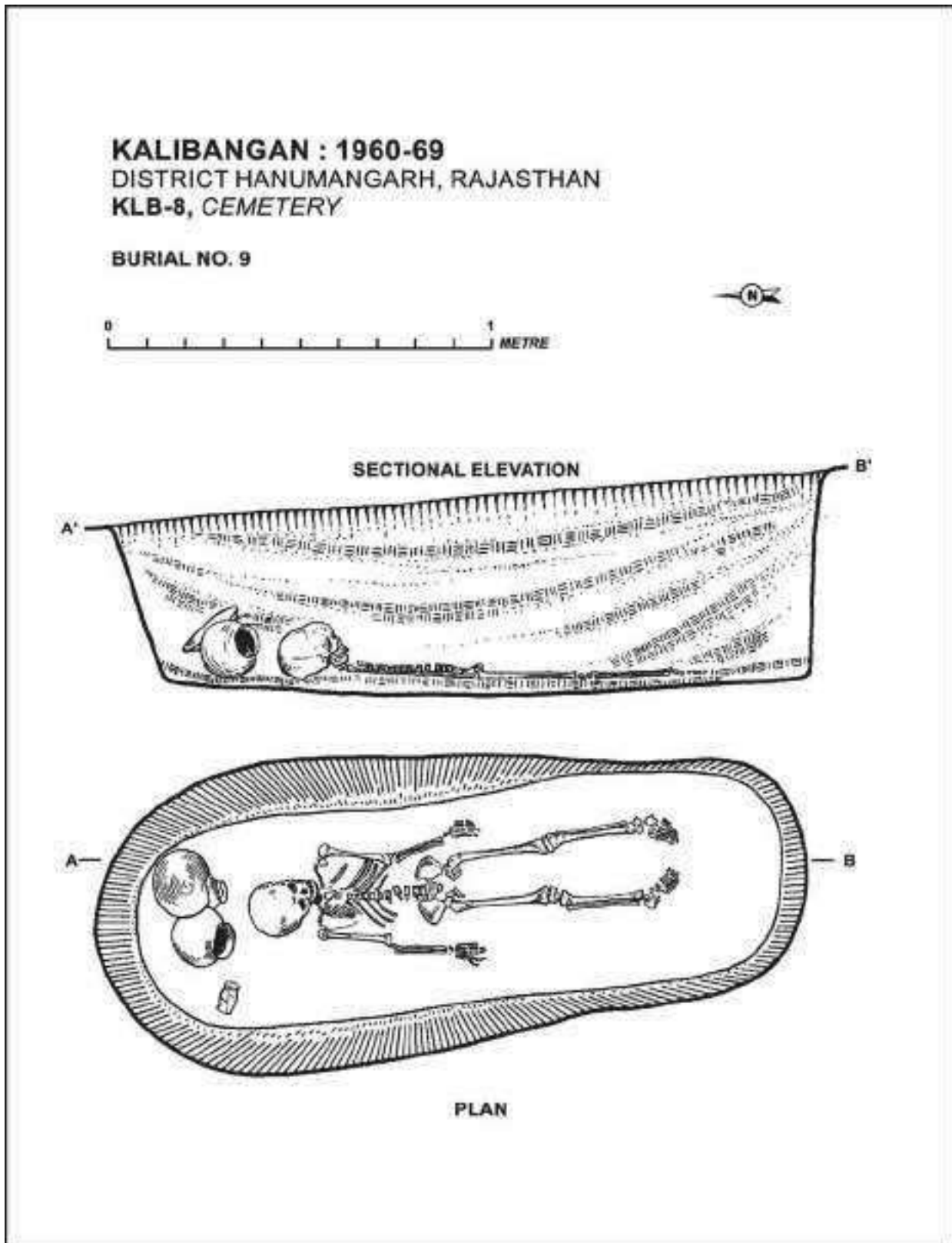


Fig. 22.15 KLB-8 Sectional elevation and plan of Burial no.9

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**  
**BURIAL NO. 9**



**RIGHT HUMERUS**

**ANTERIOR ASPECT**



**POSTERIOR ASPECT**

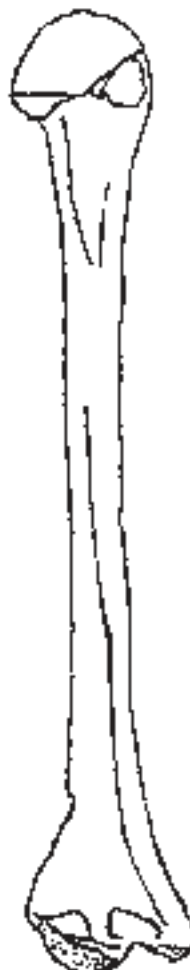


Fig. 22.16 KLB-8 Views of right humerus, Burial no. 9



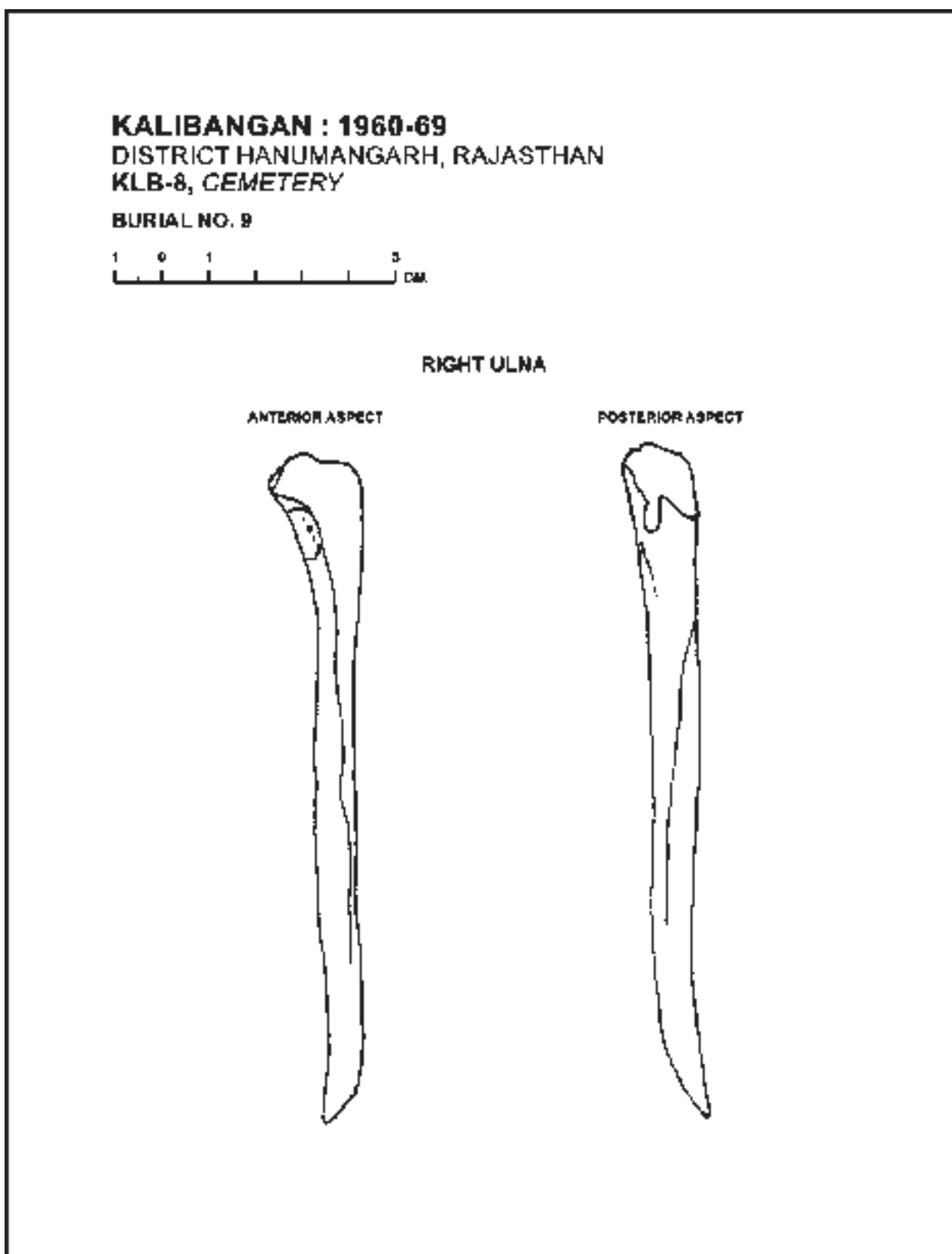


Fig. 22.17 KLB-8 Views of right ulna, Burial no. 9

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NO. 9**



**RIGHT RADIUS**

ANTERIOR ASPECT



POSTERIOR ASPECT



Fig. 22.18 KLB-8 Views of right radius, Burial no. 9

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**  
**BURIAL NO. 9**



**LEFT HUMERUS**

**ANTERIOR ASPECT**



**POSTERIOR ASPECT**



Fig. 22.19 KLB-8 Views of left humerus, Burial no. 9

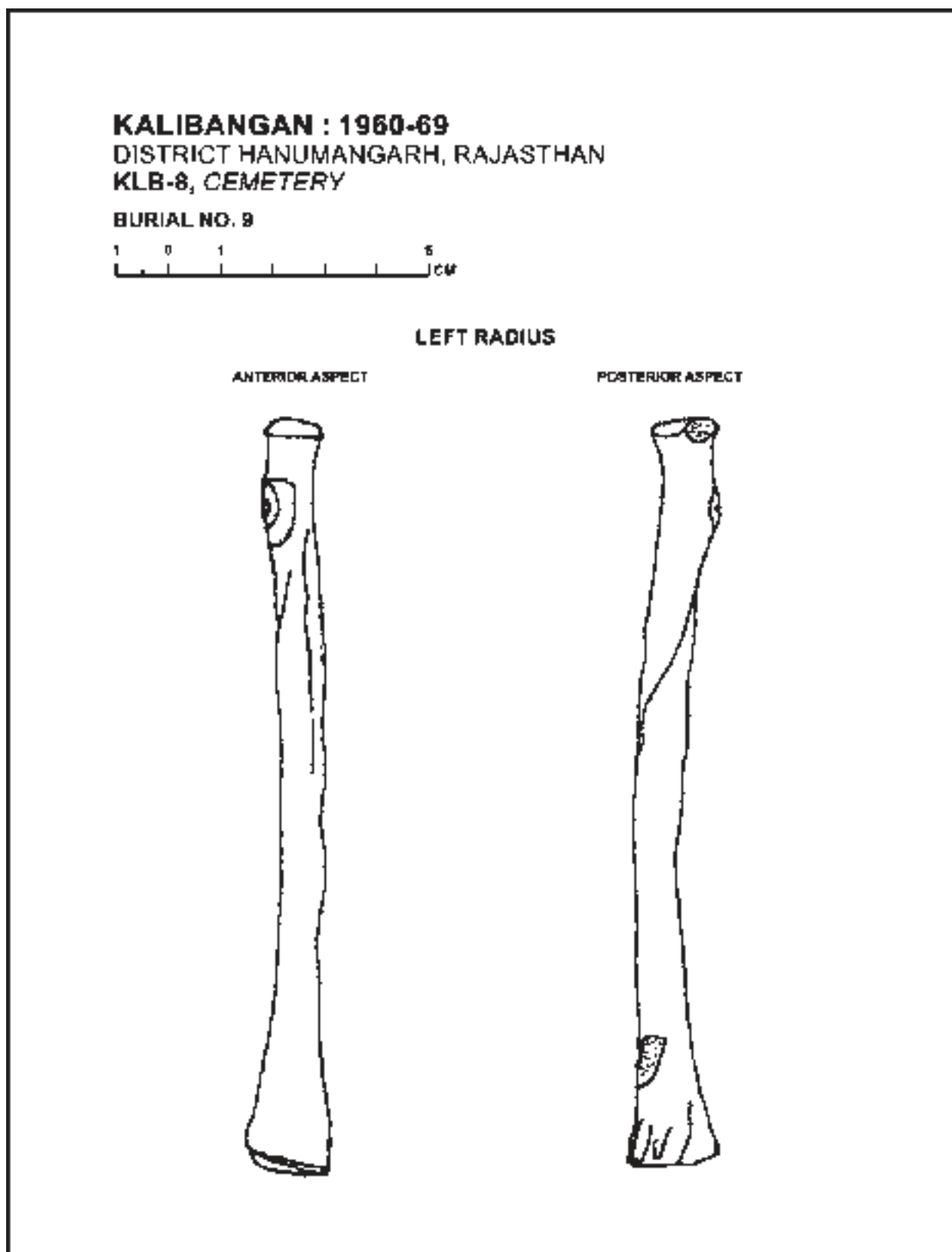


Fig. 22.20 KLB-8 Views of left radius, Burial no. 9

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**  
**BURIAL NO. 9**



**LEFT ULNA**

**ANTERIOR ASPECT**



**POSTERIOR ASPECT**



Fig. 22.21 KLB-8 Views of left ulna, Burial no. 9

small holes in inverted triangular fashion (two at the top and one at the bottom). Joining the two upper holes is a thick black streak probably caused due to burning by some red hot object. Left temporal bone, mastoid process, mandibular fossa and zygomatic process are intact but the squamous temporal and greater wing of sphenoid are damaged and practically absent. Facial bones are nicely represented and in good condition. Zygoma, maxilla, eye orbits, frontal process of maxilla on both the sides are intact. Nasal bone is in good condition along with the nasion point. Anterior nasal spine is missing. Supra orbital foramen are intact. Upper jaw has six teeth on each side — 2 incisors, canine, 2 premolars and one molar. Canine and premolars are milk teeth. Two new canines could be seen erupting to replace their milk brothers.

### **Vertebral column**

It is slightly curved and all the vertebrae are separate from each other with their spines intact. Atlas and axis are hidden below the skull. Only four of the sacral vertebrae are present and have not fused with each other. Coccyx is missing. Centre of the vertebrae and particularly those of the lower lumbar vertebrae have united with the arches (more than 6 years). Fusion of vertebral arches with the centre of sacral vertebrae is nearing completion (8<sup>th</sup> year). Parts of individual vertebrae have not united.

### **Sternum**

Only 1<sup>st</sup> and 2<sup>nd</sup> segments of sternum are lying on and above the 7<sup>th</sup> thoracic vertebra.

### **Ribs**

Almost all the ribs, on both the sides, are present either in full or in fragments. All are in their position.

### **Clavicles**

Both the clavicles are in articulation with their respective scapula and clavicular notch. Right clavicle is intact with its body, deltoid, acromion and sternal ends are intact. Sternal end of left clavicle is slightly damaged along with the body.

### **Humerus**

Both the humeri are in articulation with their respective glenoid cavities. Lower half of the left humerus is just touching the left rib. Head, neck and tubercles of both the humeri are intact. Left humerus has broken into two pieces from the centre of the shaft but coronoid fossa, epicondyles and capitulum are intact. Right humerus has cracked into several pieces particularly at the distal end. Coronoid fossa, epicondyles, capitulum and trochlea are damaged. Ossification at lesser tubercles is complete, (5<sup>th</sup> year). Head and tubercles have joined (6<sup>th</sup> year). Ossification at the lateral epicondyle region has not yet started (start at 12<sup>th</sup> year).

### **Scapula**

Both the scapulae are in articulation and only partially visible. Left scapulae is badly damaged and has disintegrated so much that hardly anything worth could be lifted. Right scapula is also damaged. Glenoid cavity, coronoid process and lateral border are intact. Scapular plate is broken at the inferior angle.

### **Bones of the fore arm**

Both the forearms are in articulated condition. Radius and ulna of the left fore arm are intact at their distal and proximal ends and shaft region. Head, biceps and styloid process of left radius are intact. Olecranon and head of left ulna are also intact. Radius

and ulna of the right fore arms are damaged, both at the proximal and distal ends. Head, neck and shaft of radius are intact but the distal end with the styloid process is broken. Shaft has also broken into two pieces. Both the ends of right ulna are badly damaged.

### **Hand bones**

All the carpal bones of the right hand have completely disintegrated whereas from the left hand only one or two are present. Metacarpal bones of both the hands are present with their ends disintegrated. 1<sup>st</sup> metacarpal of the right hand is badly broken. Both the phalanges of the right thumb are present while from the left thumb last one is missing. In the left hand all four fingers have their phalanges in toto. Third phalanges from each of the four fingers excluding the thumb are missing from the right hand.

### **Pelvis**

Hip bones are in articulated condition and are extremely fragile. It is very difficult to lift them intact. Right iliacus is slightly damaged at the point of transverse abdominis. Left Iliacus is intact. Auricular surface of both are in good condition. Greater sciatic notch of both are intact. Pubic bones have separated from the iliac thus partially breaking the acetabular cavities. Ischium and pubic bones have tumbled down. Iliac crests are intact. Pubic crests are intact along with pubic tubercles. Pubic and ischium have not fused on either sides. Inferior ramus of pubic and ramus of ischium have not united so far (in 8<sup>th</sup> year union completes). Pubic symphyses are totally separate.

### **Femur**

Both the femurii are more or less intact though they have broken into two pieces, each developing cracks. Head of

both are lodged in their respective acetabular cavities. Head, neck, greater and lesser trochanter of both are intact. Distal end of both have not fused with their respective shafts so far from the point of abductor tubercle. Condyles, epicondyles and patellar region of right femur are intact. Medial condyle of left is broken along with abductor tubercle. Patellar surface, lateral condyle and epicondyle are intact. Greater and lesser trochanter region have not joined the shaft completely (join at 18<sup>th</sup> year).

### **Patella**

Patella on both the sides are present in their position. Ossification is not complete (completes about the age of puberty).

### **Leg bones**

Both the leg bones are in articulated condition with slight damages at their ends. Medial condyle, lateral condyle and tuberosity of left tibia are intact. Lateral condyle of right tibia is missing while medial condyle and tuberosity are intact. Shaft of both are in good condition. Medial malleolus of both have disintegrated. Both the fibular bones are in good condition with their head, lateral malleolus and shaft intact. Groove of medial condyle of both the tibiae have not fused totally (fuse in 12<sup>th</sup> year).

### **Foot bones**

Tarsal bones of both the feet have disintegrated to a considerable extent and have become a lump of clay. All the metatarsal bones of both the feet are present in their position but with their upper ends broken. Only one phalange in each finger is present. Epiphysis of each phalange has appeared but not united so far (appears in 6<sup>th</sup> year and unites in 18<sup>th</sup> year). Both the toes are facing each other. Maximum length of the skeleton in in-situ



condition from the vault of the skull to the lateral tubercle of right talus is 1.07 m. Distance between the ends of clavicle = 0.185 m.

1. Distance between the head of two humerii = 0.245
2. Length of left humerus = 0.24 m
3. -do- right -do- = 0.24 m.
4. -do- left radius = 0.16 m
5. -do- -do- ulna = 0.18 m
6. Maximum distance between the ribs of two sides = 0.21 m.
7. Distance between iliac crests = 0.195 m
8. Length of right femur = 0.288 m
9. -do- left -do- = 0.284 m.
10. -do- right tibia = 0.244 m.
11. -do- left -do- = 0.243 m.
12. Length of right fibula = 0.213 m.
13. Length of left -do- = 0.213 m.

Magnetic deviation (north-south) = N 5°45' west. (Line through the thoracic vertebra, centre of pubic symphysis and centre of left and right toe).

The skeleton has been placed more or less in the centre of the pit. As the near ones of the deceased dug a pit which was not too deep and as the body was not too heavy they could lower it down from the surface itself. Even then on the whole the skeleton is more towards eastern side than the western.

1. Distance of eastern section from left humerus head = 0.085 m.
2. -do- western -do- right -do- = 0.22 m.
3. -do- eastern -do- left -do- = 0.69 m.
4. -do- western section from the right 5<sup>th</sup> finger (hand) = 0.10 m.

5. -do- western -do- right -do- = 0.20 m.

#### 4. Burial No. 10 (Skl. No. 4) Figs. 22.22 to 22.25

A grave pit found in quadrant 2 of square A7 yielded an extended human burial associated with as many as 20 pots, all put towards the head region in the northern end of the pit. The grave pit is exceptionally long as nearly one third of the space in length has been left vacant below the feet region on the southern end of the pit. The pit is semi-circular towards north. Its maximum length, north-south, is 4.66 m. The pit is perfectly oriented towards north-south. Its width varies at different points, broader towards north and narrower towards south.

1. Width of the pit at the points connecting jars = 1.56 m.
2. -do- passing through skull region = 1.44 m.
3. -do- distal end of femur = 1.30 m.
4. -do- toe region = 1.30 m.
5. -do- near the end (south) = 0.96 m.

Working level of the pit is not available as the top layers have been eroded. The pit has been cut as usual through layer 1 of brownish cloddy clay which is only 0.10 to 0.15 m. thick and layer 2 of dirty yellow loam mixed with greenish sandy material. Filling of the pit consists of a combination of both. Water marks can easily be seen on the bottom sides of the pit. Sides of the pit are slopy.

#### Pots

The pit contains as many as 20 pots, most of them in good condition and full, all placed at the northern end of the pit above the skull region and having greater

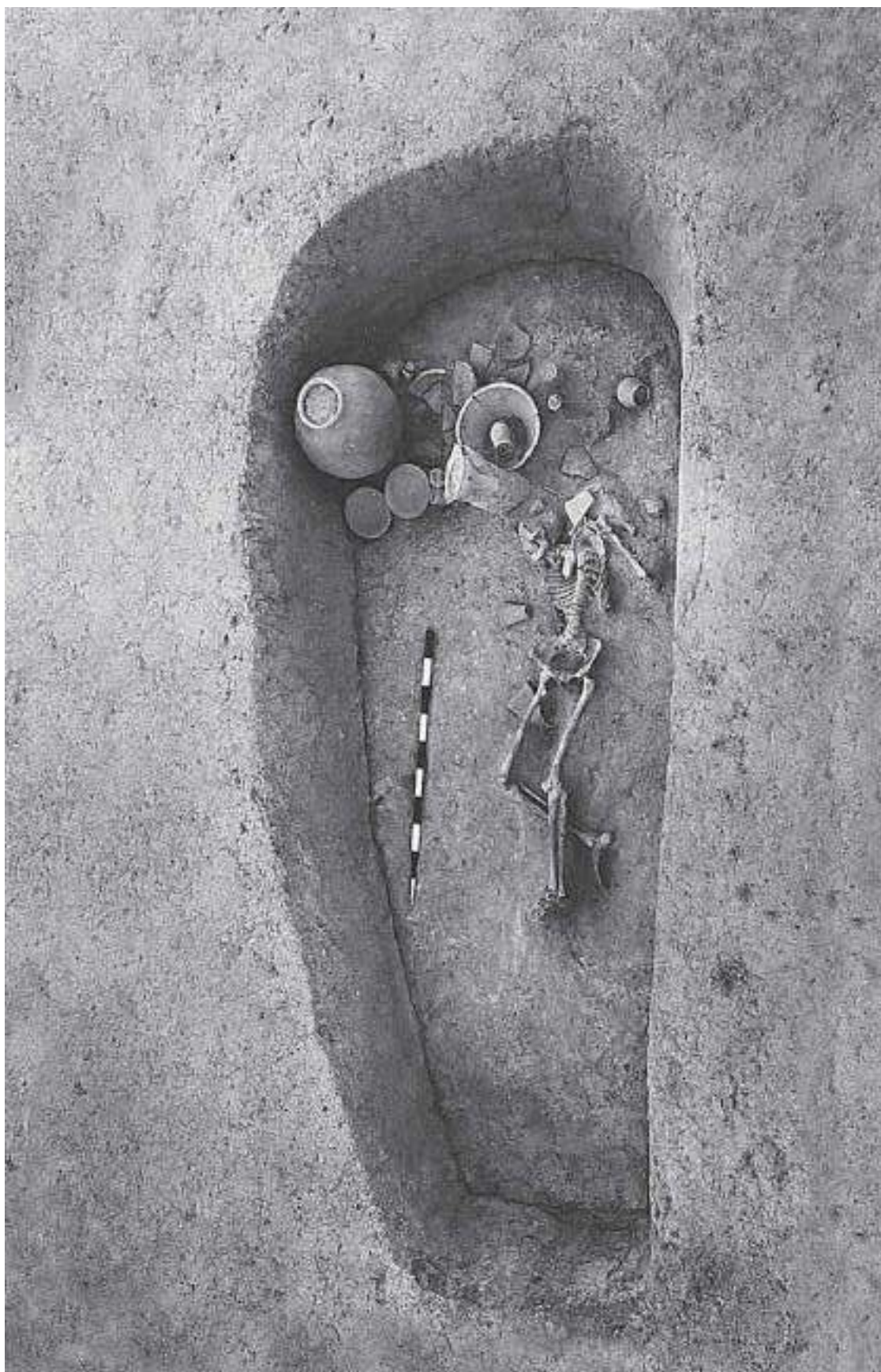


Fig. 22.22 KLB-8 Burial no. 10

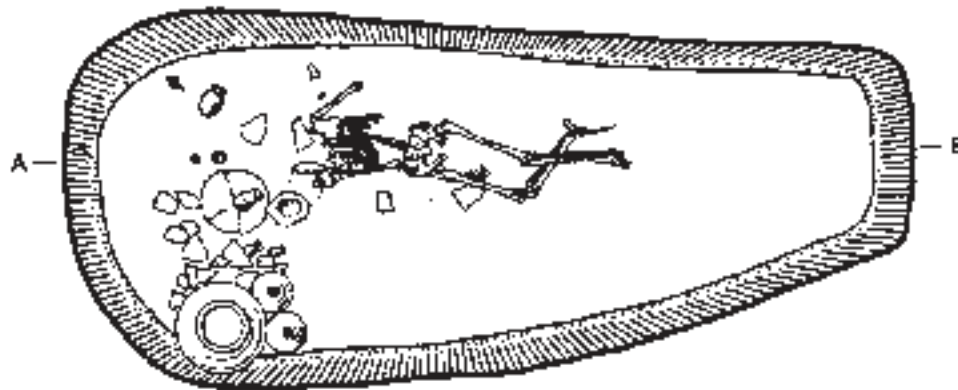
**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NO. 10**

0 1  
METRE



**SECTIONAL ELEVATION**



**PLAN**

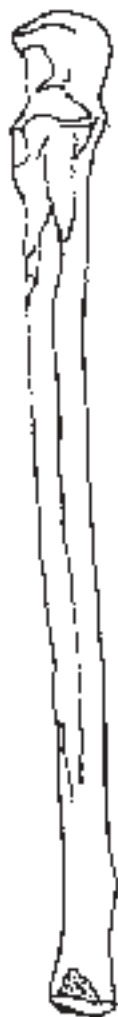
Fig. 22.23 KLB-8 *Sectional elevation and plan of Burial no. 10*

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**  
**BURIAL NO. 10**

1 0 1 5  
| | | | | CM.

**RIGHT ULNA**

**ANTERIOR ASPECT**



**POSTERIOR ASPECT**



Fig. 22.24 KLB-8 Views of right ulna, Burial no. 10

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NO. 10**

1 0 1 5  
| | | | | CM

**RIGHT HUMERUS**

ANTERIOR ASPECT

POSTERIOR ASPECT



Fig. 22.25 KLB-8 Views of right humerus of Burial no. 10



concentration on the north-western side. Only one pot could be seen towards the eastern side near a fine copper mirror (Fig. 22.23 and 25.1 No. 2).<sup>9</sup> While scooping out the pit first pot to make its appearance was a damaged cup-on-stand with its stem and base lying at the bottom and itself coming up at a higher level, is a problem. A portion of stem is lying on the south of right humerus. While a portion of vase is lying just above the vertebral column, where actually the skull should have been, major portion of the vase is lying to the north of the parent pot and below pot an intact big jar is placed just at the north-western corner of the pit. Lids are kept on the southern side of the jar. Beakers, almost intact, except one and all placed between the pots. A deep conical bowl put near the northern side of cup-on-stand. Inside the deep bowl is lying a big glass like beaker and beakers lying on the north-east of the deep bowl. A narrow bottomed vase lying near the eastern side of the pit is also found. Near this pot just at the north-eastern corner is lying a copper mirror with its handle towards the skull (south-west) and the looking part towards north-east at the depth of 0.52 m. A button based conical lid is placed at the north of the deep bowl. A bowl (shallow) between the jar and the deep bowl is placed. A broad based narrow necked vase is also there. A prototype of vase, lying north of the jar is seen. A vase below conical bowl and is medium bowl (vase) below a conical bowl a beaker with narrow neck is found.

### **The skeleton**

The skeleton remains in this grave pit belong to that of an adult female. It is a case of extended burial with the skeleton put in supine position from the

north to south. Skull is towards north and the legs are towards south. Whole of the skeleton is in slightly twisted condition towards right. Skull is slightly displaced after getting detached from the vertebral column and the chin is resting over the right shoulder region. Vertebral column, ribs and pelvis all are making a slight curve towards right. Left leg is in more or less stretched position but the right leg bones are bent towards left with right tibia and fibular passing below that of left. Right fore-arm is kept below the right hip bone and femur and so also the right hand bones. On the whole the skeleton gives an impression that the owner (lady) collapsed probably in sleep bent towards right and could be detected (by her near and dear ones) after few hours when rigor-mortis had already set in.

### **Skull**

The bones on the whole are in badly damaged condition and extremely fragile. The skull has broken into several pieces leaving only left half of the face and mandible intact. Chin is resting on the right shoulder region. From the position of the left half of occipital bone and left parietal bone it seems that probably due to very loose filling the skull collapsed towards left side after getting detached from the vertebral column, as due to the left side bent of the vertebral column all the weight of the skull was towards left. The skull gives an impression that, probably, it has been chopped off by some sharp broad bladed instrument, damaging nearly all of the frontal bone and right half of the skull. Left half of the occipital bone and parietal bones are intact and are lying below the left of the mandible. Left eye orbit is complete except at the

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<sup>9</sup> *Indian Archaeology -1996-97 A Review*, p.17.

point of frontal process of maxilla which is missing. Nasal bones and nasal spine are totally missing. Left maxilla is present along with the infra orbital foramen. Left zygomatic bone along with a piece of zygomatic process is present. Only a fragment of frontal bone, lining the upper margin of left orbit, is present. A portion of right maxilla lining the right upper jaw is also present. From the left half of the upper jaw last molar (3<sup>rd</sup>) is absent while 1<sup>st</sup> and 2<sup>nd</sup> are present with considerably worn out cusps. Both the premolars are present. Canine and incisors are missing though their sockets are intact. On the right side 1<sup>st</sup> incisor and a fragment of 2<sup>nd</sup> incisor are present with their enamels broken. Upper margin of the eye orbit is quite sharp and skull bones are comparatively thin and smooth. Only a portion of left coronoid suture is visible.

### **Mandible**

Mandible is in fairly good condition. Right head and coronoid process are hidden. Body and rami of the mandible are intact. Left head, coronoid process, angles and chin (mental protuberance) are intact. Chin is prominent and surface is smooth. Third left molar is absent. 2<sup>nd</sup> incisor is missing. Almost all the teeth on the right side are present though their enamels are broken. Left mental foramen is intact.

### **Vertebral column**

Right from the sacrum to the thoracic region the vertebral column is slightly bent towards right thus keeping the clavicles, scapulae and ribs of both the sides in bent position. All the five lumbar vertebrae are intact. Except the 1<sup>st</sup> all other 11 thoracic vertebrae are present and in perfect articulation. Spines of some of them are slightly damaged. Body is intact. None of cervical

vertebrae is to be seen. All the vertebrae are fully ossified.

### **Sacrum**

Sacrum is more or less intact and in good condition, properly articulated with the auricular surface of the hip-bones and promontory with the fifth lumbar vertebra. All the five sacral vertebrae are present. Auricular surfaces, promontory and foramen are present. Right iliacus region is broken slightly. On the whole sacrum is wider and shorter. Pelvic surface faces downwards making the sacro-vertebral angle more prominent. Auricular surface is shorter. Coccyx is only partly present. Ossification of sacrum is complete.

### **Sternum**

Due to the twisting of the body to the right, sternum has fallen to the right and is lying by the side of vertebrae. Xiphoid process is missing. Manubrium and body are also in badly damaged and disintegrated state. Supra-sternal notch is intact. Segments of body are totally ossified (25 years).

### **Ribs**

Due to twisting of the body right and left ribs are in different positions from each other. As the twisting has taken place to the right, right ribs are in folded condition, eleven of them are intact with their ends broken. 1<sup>st</sup> and 2<sup>nd</sup> are not visible. On the left side ribs have twisted and seven of them are present. Upper six are probably hidden below the scapula. Head and shaft are intact. One of the ribs is lying over the left scapula curved towards the glenoid cavity.

### **Scapula**

Ventral aspect of the scapulae are visible. Right scapula is almost hidden below the right ribs. Only the glenoid cavity and a portion of lateral border is



visible. Glenoid cavity is intact. Major portion of left scapula is intact except the inferior angle. Corocoid process, glenoid cavity, supraspinatus and infraspinatus meatues are present. Borders are intact in articulated condition.

### **Clavicles**

Both the clavicles are present in articulated condition and have shifted to the right due to the bending of the neck region to this side. Acromial and sternal ends, deltoid, coronoid tubercle and trapezius of both the clavicles are intact.

### **Humerus**

Both the humerii are present in articulated condition. Right humerus is lying below the ends of the right ribs with its both the ends complete. Head, anatomical and surgical neck, greater and lesser tubercles, medial and lateral epicondyles, trochlea and capitulum, all are intact. Shaft is also intact. Humerus has cracked into three pieces, one at the surgical neck region and the other at the lateral supra condylar ridge point. Head is lodged in the glenoid cavity. Left humerus, though badly damaged, is present in articulated condition and is fragile. Head, anatomical neck and greater and lesser tubercles are broken. Surgical neck is intact and so also the shaft though It has cracked from at least three points in the centre. Distal end is also broken with portion below coronoid fossa lying to the left of the centre of the shaft.

### **Fore arm bones**

Left fore arm and hand bones are completely missing. Right fore arm bones are intact and present in articulated condition, passing below the right iliac bone. Only olecranon process of right ulna is visible while rest of the part is hidden. Radius has broken into two pieces from the point of pronator quadratus. Head,

neck, biceps and shaft, are intact. Distal end is also intact except the brachio-radiatus region which is damaged.

### **Hand bones**

All the bones of the right hand are present in good state. Carpals and metacarpals are passing below the gluteal tuberosity region of the right femur and are lying in prone position with the first finger on the top. All the carpal and metacarpal bones are present. Two phalanges of the thumbs and three of each fingers are present. Phalanges of the thumbs are riding over the 1st phalanges of other four fingers. Last two phalanges of the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> fingers are pointing towards the pubic region while the 2<sup>nd</sup> is pointing towards the distal end of left femur. Phalanges are thin and delicate.

### **Pelvis**

Pelvis is in perfect articulated condition and is more or less intact though broken at few points. Inside the two acetabular cavities are lodged the respective heads of femurii. Both the iliac bones are in good condition and are considerably curved. Auricular surface, greater sciatic notch, erector spine, rectus femoris, posterior superior spine, and posterior inferior spine, anterior inferior spine, gluteus minimus and gluteus maximus, all are intact in both the iliac bones. Anterior superior spine of right iliac is intact while that of the left is damaged a little. Crest of both the iliac bones are intact. Both the pubic bones are partly damaged. The portion of pubic forming the part of acetabular cavity is intact on both the sides. Pubic crest and pubic tubercles of both the sides are broken, particularly that of the right side. Pectineus and gracilis surfaces are intact. Left ischium is more or less intact though it has developed two major cracks.

Femoral surface of both is intact. Left ischium is damaged at the point of sphincter urethrae (the point where it joins the pubic bone). Portion between the pubic tubercle and a little above ischiatic tuberosity of right ischium is completely detached and damaged. Tuberosity of left ischium is intact. Lesser sciatic notch, spine of ischium and coccygenus of both the sides are intact. All the centres in the pelvis have completely ossified. Both the acetabular cavities are perfectly intact.

Muscular impressions on the pelvic bones are not so well marked. Distance between the two iliac crests is 0.269 m. Anterior superior iliac spines are further apart having a distance of 0.253 m. The superior aperture of the lesser pelvis is circular in outline. Cavity is wider and shallower, Sacrum's upper part is straight. Sciatic notches are wider and shallower. Inferior aperture is quite large, pubic arch is wider. Ischial tuberosities are everted. Obturator foramen is small and nearly triangular. Auricular surface of the sacrum is limited to the first and second sacral vertebrae.

### **Thigh bones**

Both the thigh bones are lying parallel to each other in articulated condition. Shaft and proximal ends of both are intact except few damages but the distal ends are heavily damaged. Head, neck, greater and lesser trochanters, and intertrochanteric line of right femur is intact. Above the lesser trochanter region a major crack is present. Medial and lateral condyles, medial and lateral epicondyles of both the femurii are broken. Patellar surface of right femur is intact. Quadratic tubercle region is damaged. Gluteal tuberosity of both are intact. Heads of

both are lodged in their respective acetabular cavities.

### **Patella**

Right patella is missing, while left patella is intact in articulated condition and has moved a little to the right due to slight twisted condition of the left leg. Apex and body are intact.

### **Leg bones**

Right leg is in bent position towards the left so that the right tibia and fibula are passing below the upper third of the left leg bones. Left leg is in stretched supine position whereas the right is in prone position. Right tibia and fibula are practically intact except damage at the medial condylar region of tibia. Lateral condyle tubercles, tuberosity, medial and interosseous borders, shaft, medial malleolus and shaft of right fibula are in good condition. Left tibia has broken into two pieces from the middle shaft and distal end is intact but the proximal end is damaged. Tuberosity is intact but the condyles are damaged. Upper half of left fibula is extremely fragile, practically missing, except few fragments. Lower half is intact and in good condition with its lateral malleolus safe.

### **Foot bones**

Right foot is in prone position and at considerably lower level than the left. Except slight damages to calcaneus, head of talus, navicular and medial cuneiform, almost all the carpals and metacarpal bones and phalanges are intact. Both the phalanges of the right toe are present resting over the other four. Left foot bones are in extremely damaged condition and in supine position pointing upwards. Phalanges are totally missing.

### **Measurements**

1. The skeleton and the pots are all lying at the same depth = 0.48 m. The body of the deceased was put after

spreading some filling on the bottom of the pit.

2. Maximum length of the skeleton from occipital to lateral tubercle of left calcaneus = 1.42 m

Due to twisted condition of skeleton the magnetic deviation north-south of the skeleton (central axis of skeleton taken from centre of pubic symphysis, 1st lumbar vertebra) is N 12°, 30' E

3. Distance between the head of two humerii = 0.32 m
4. Maximum length of right humerus = 0.291 m.
5. -do- radius = 0.234 m
6. Distance between the greater trochanters of two femurii = 0.235 m.
7. Length of right femur = 0.423 m.
8. -do- left -do- = 0.417 m.
9. -do- right tibia = 0.37 m.
10. -do- -do- fibula = 0.36 m.
11. Length of right foot from lateral tubercle of calcaneus to last phalanx to toe = 0.232 m

The skeleton is lying more towards the eastern side than the western side of the pit.

1. Distance of eastern section from the head of left humerus = 0.33 m.
2. -do- western -do- right humerus = 0.78 m
3. Distance of western section from the right anterior superior iliac spine = 0.75 m

4. -do- eastern section of -do- = 0.325m
5. Distance of eastern section from distal end of left fibula = 0.36 m.
6. -do- -do- the distal end of left tibia = 0.69 m.

### 5. Burial No. 11 (Skl. No. 5) Figs. 22.26 to 22.32

In the baulk between A7 Qd. 2 and B7 Qd.1 a grave pit disturbed by another grave pit on its north-western side was located and is numbered as burial No. 11. Orientation of this grave pit is more or less perfectly magnetic north-south. Maximum length and breadth of the grave pit are 2.60 m and 1.26 m respectively. On removing the filling of the grave pit which consists of brownish cloddy clay it yielded an extended human burial at the depth of its skull region towards north and the feet towards south. Putting the string in the centre of the first available vertebra (5<sup>th</sup> lumbar), centre of pubic symphysis and on the tip of the right toe, deviation from the magnetic north is N 3°30' west. The skeleton has not been put directly on the bottom of the pit. Before lowering the deceased in the grave some brownish cloddy clay was spread. As already mentioned this burial has been disturbed on its north-western side by another burial numbered as Burial No. 12. The disturbance has taken place starting from the tip of left humerus, chopping out the left and right scapulae, skull along with mandible, both the clavicles, major portion of sternum, six of the left and nine of the right ribs, right humerus, and all the vertebrae above 9<sup>th</sup> thoracic vertebra. Half of the 8<sup>th</sup> thoracic vertebra has also been chopped off. At the joints complete parts are missing leaving the other parts intact such as left humerus and right radius and ulna

heads. Two sharp cut marks on the 9<sup>th</sup> thoracic vertebra, on remaining left and right ribs and chopping marks on the neck region of the beaker lying on the right side of the skeleton near the western edge of the pit are evidences of disturbance after burial. Nearly 1.55 m. area in length of the pit has been disturbed. Due to disturbance towards the head region, all pots, if there were any, are missing. Two pots, a vase and a beaker, lying near the western edge of the pit away from the right hand have tumbled down to their right. The skeleton is lying in extended supine position. It has been put more towards the eastern side of the pit thus leaving more space towards the western side of the pit.

Distance of left hand (4<sup>th</sup> finger) from eastern section of pit = 0.23 m.

Distance of right hand (4<sup>th</sup> finger) from western section of pit = 0.57 m.

Distance of western section from the head of left tibia = 0.28 m.

Distance of eastern section from the head of right tibia = 0.58 m.

Distance of western section from left toe = 0.41 m.

Distance of eastern section from right toe = 0.41 m.

Breadth of the pit at the head of tibia region = 1.05 m.

Breadth of the pit at the distal end of tibia = 0.90 m.

Only three full pots are available in this grave, two have been mentioned above and one miniature vase lies just by the side of right foot, 0.11 m away from right tarsal bone. All the three pots are on a higher level than the skeleton itself, i.e. 0.20 m, from the present surface. Maximum available length of the skeleton

from the head of left humerus to the toe of right leg is 1.67 m. while the maximum breadth at the distal ends of ulnae is 0.43 m. Both the legs have been put very close to each other and the phalanges of the right foot are riding over those of the left foot. Vertebral column from 9<sup>th</sup> thoracic vertebra to sacrum and coccyx is present in good condition. General condition of all the bones is good. Spines and body of the vertebrae are present. 8<sup>th</sup> to 12<sup>th</sup> thoracic and all the five lumbar vertebrae are present. Sacrum is present in good condition with its pelvic surface visible. The five sacral vertebrae forming the sacrum have fused. Promonotory is intact and so also the lateral part which is visible. All the four pairs of pelvic sacral foramina are intact. Pelvic surface is evenly curved. It is long and narrow. Coccyx is present and all the coccygeal vertebrae have fused. The narrow, blunted apex at the inferior end of sacrum is articulated with the coccyx.

### **Ribs**

Seven and four rib shafts are present on the left and right sides respectively. Head and neck regions have been chopped off by Burial No. 12.

### **Sternum**

Of the sternum, body portion below the notch for the 4<sup>th</sup> costal cartilage is present along with the xiphoid process. Manubrium is totally missing. Portion of the body has fallen towards the right and is resting on the 9<sup>th</sup> and 10<sup>th</sup> thoracic vertebrae.

### **Arms**

Both the hands are lying in their normal stretched position by the side of the pectoral and pelvic girdles. All the parts present are in good condition and are articulated with their respective parts. Left hand is complete. Humerus



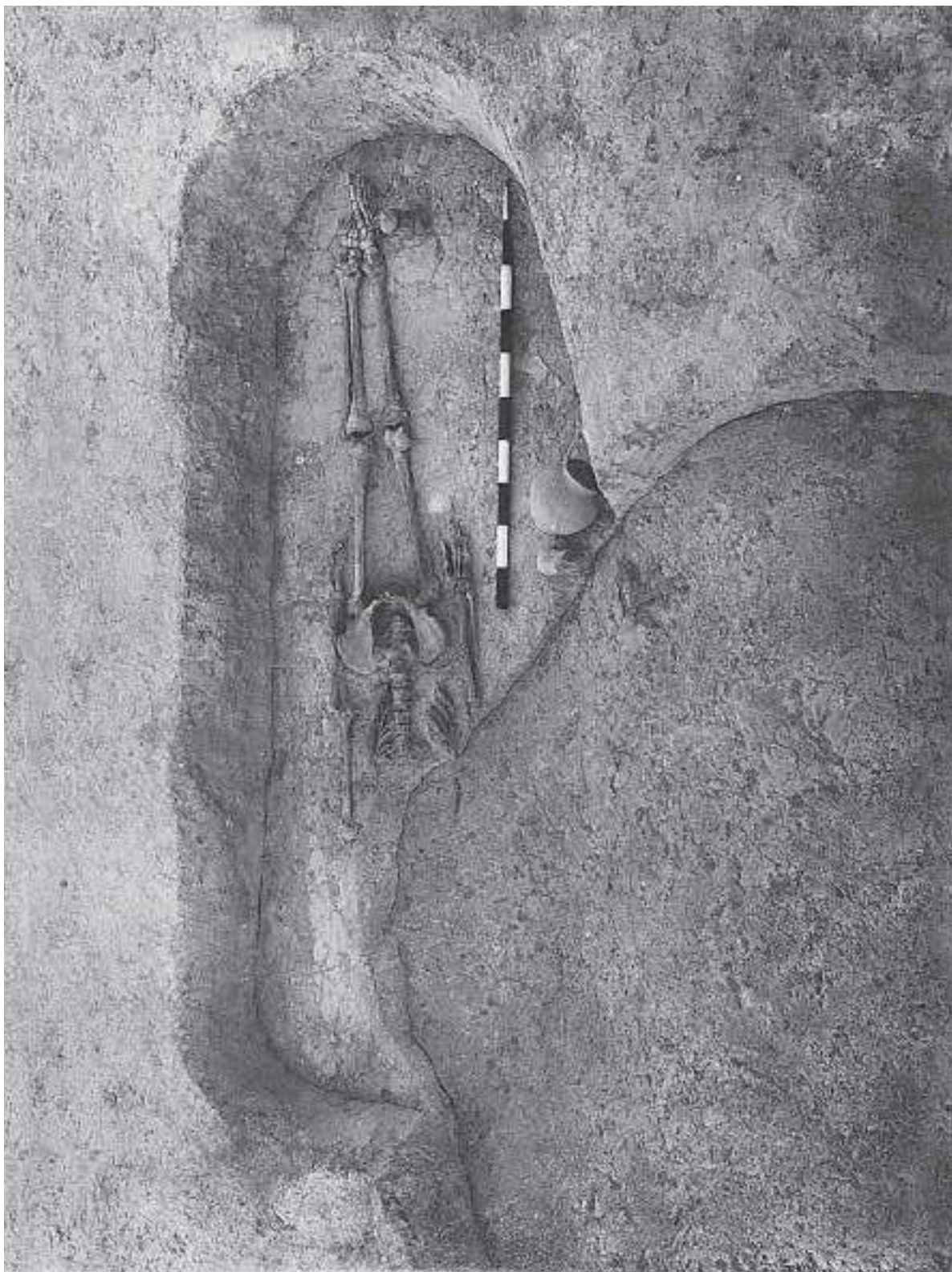


Fig. 22.26 KLB-8 Burial nos. 11 and 12

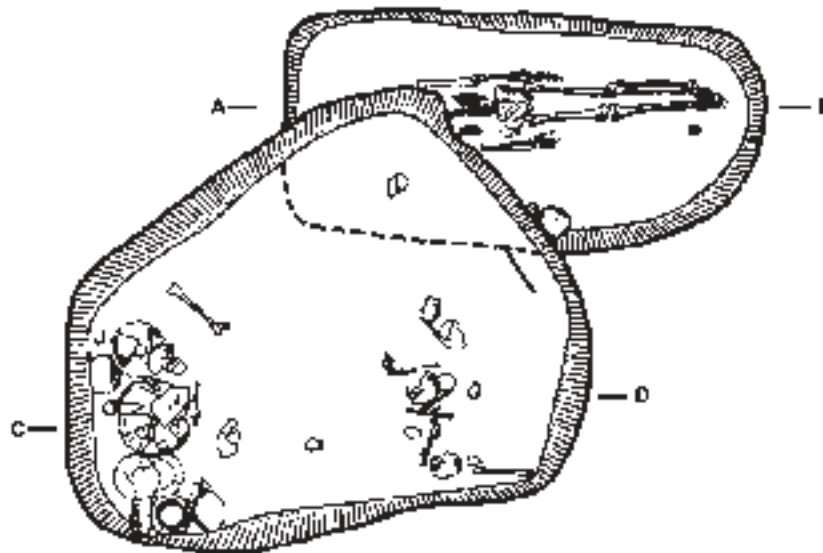
**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NOS. 11 AND 12**

0 1  
METRE



**SECTIONAL ELEVATION**



**SECTIONAL ELEVATION**

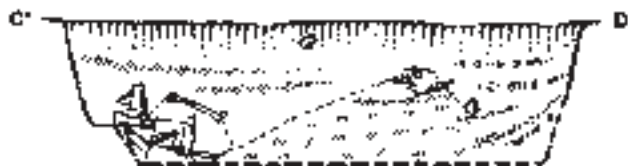


Fig. 22.27 KLB-8 Sectional elevation and plan of Burial nos. 11 and 12

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**  
**BURIAL NO. 11**

1 0 1 5  
CM

**LEFT RADIUS**

**ANTERIOR ASPECT**



**POSTERIOR ASPECT**



Fig. 22.28 KLB-8 Views of left radius of Burial no. 11



**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NO. 11**

1 0 1 5  
L I N E C M.

**RIGHT RADIUS**

**ANTERIOR ASPECT**



**POSTERIOR ASPECT**



Fig. 22.29 KLB-8 Views of right radius of Burial no. 11

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**  
**BURIAL NO. 11**

1 0 1 5  
CM

**LEFT ULNA**

**ANTERIOR ASPECT**

**POSTERIOR ASPECT**



Fig. 22.30 KLB-8 Views of left ulna of Burial no. 11

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NO. 11**

1 0 1 0  
| | | | |  
CM.

**LEFT HUMERUS**

**ANTERIOR ASPECT**

**POSTERIOR ASPECT**

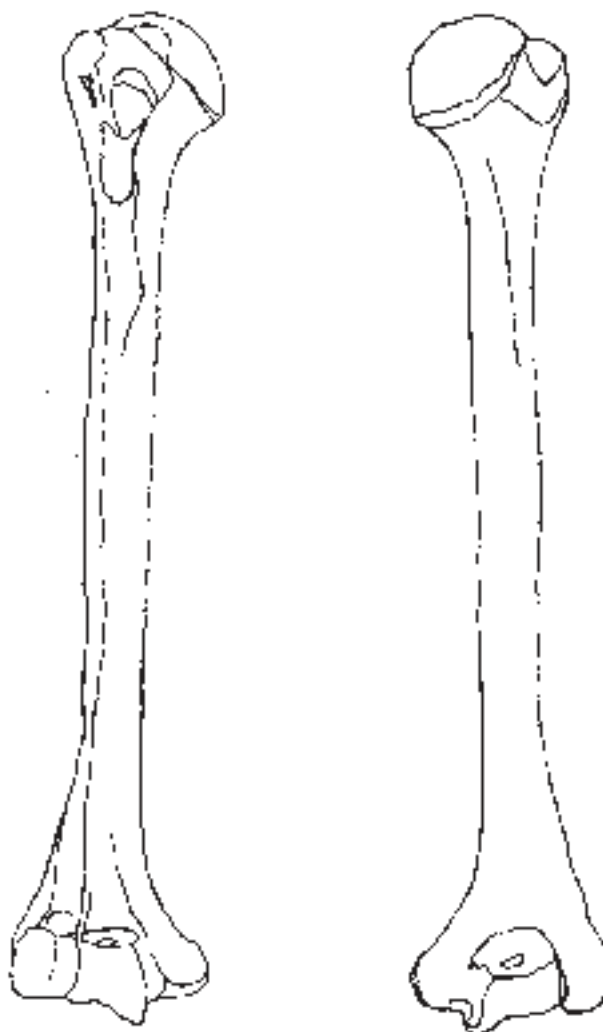


Fig. 22.31 KLB-8 Views of left humerus of Burial no. 11

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**  
**BURIAL NO. 11**

1 0 1 5  
L I L I L I L I C M

**RIGHT ULNA**

**ANTERIOR ASPECT**



**POSTERIOR ASPECT**



Fig. 22.32 KLB-8 Views of right ulna of Burial no. 11

is in good condition with its anterior aspect visible. Above the deltoid, surgical necks and greater tubercle is in good condition. Lesser tubercle and tuberosity sulcus are slightly damaged. Shaft and deltoid tuberosity are in good condition. At the distal end lateral supra condylar ridge, coronoid fossa medial epicondyle are in good condition. Left hand is in the prone position while right is in supine position. Left fore arm and hand bones are lying on their lateral sides twisted slightly towards the pelvis, so that the shaft of radius is riding over the shaft of ulna. Actually radius and ulna are crossing each other. Head, neck, biceps, shaft and styloid process of left radius are intact. Above the styloid process it is slightly damaged. Olecranon, trochlear notch, coronoid process, shaft and head of left ulna are intact. Head of radius and trochlear notch of ulna are articulated with the trochlea and capitulum of humerus. Right fore arm bones are also intact and in good articulated condition. Biceps and head of radius is riding over the coronoid process of right ulna. Proximal and distal ends and shafts of both are intact.

### **Hand bones**

Dorsal aspect of right hand bones is visible. All the eight carpal bones of right hand are in good condition and properly articulated with the metacarpal bones. All the five metacarpal bones are in good state of preservation with the 4<sup>th</sup> riding over the 5<sup>th</sup>. Of the fourteen phalanges thirteen are present. The missing one is the third phalynx of the third finger. Head, shaft and base of each is intact. Fourth and fifth fingers are curved from the point of middle phalynx and are thus passing below the first phalynx of second and third fingers. Left hand has been kept in lateral position, so that the 2<sup>nd</sup>

metacarpal bone is riding over the 3<sup>rd</sup>, 3<sup>rd</sup> over the 4<sup>th</sup> and 4<sup>th</sup> over the 5<sup>th</sup>. Trapezium, trapezoid and scaphoid are slightly damaged. Bases of 1<sup>st</sup> and second metacarpal bones are damaged. Heads are intact. All the phalanges are present.

### **Pelvis**

Hip bones are in fairly good state of preservation and in perfect articulated condition with the left and right femur and sacrum. Internal surface of both the hip bone, is visible on the plan. Iliac plates are wide and flat with their iliac crests intact. Erector spine is also in good condition. Auricular surface, greater sciatic notch, rectus femoris are intact. Ilium, ischium and pubic bones are intact. Pubic tubercle and pubic crest of left pubic bone is intact whereas that of right are broken. Spine of ischium of both the sides are intact and so also the tuberosities. Both the acetabular cavities are intact. Anterior superior and inferior spines and posterior superior spines are intact. Obturator externus of both the sides are wide. Left ischium has cracked into three major pieces at the point of puborectalis and ridge of sacro-tuberous ligament. Right pubic bone has cracked getting separated from the right iliac bone at the point of obturator internus. Sacroiliac joints are intact. Gap at the pubic symphysis is more. Muscular impressions on the pelvic bone are well marked. Anterior superior iliac spines are not much apart. Distance between the two iliac crests is 0.26 m. Curves of the crests are pronounced. Superior aperture of the lesser pelvis is heart shaped. Distance between the two pubic tubercles is approximately 0.035 m. Sciatic notches are deep and 'V' shaped. Depth of pubic symphysis is more. Ischial tuberosities are straight. Margins of the pubic arch are more everted. Acetabula are quite

big. Obturator foramen is nearly oval in outline.

### **Femur**

Both the thigh bones are in perfectly articulated condition and in good state of preservation. Head of both the femurii are lodged in their respective acetabular cavities. Head, greater trochanter, neck, lesser trochanter, inter trochanteric line, shaft, abductor tubercle, medial and lateral condyles and epicondyles and patellar surfaces of both the thigh bones are intact. Left femur has developed several cracks at the points of inter trochanteric line and below it and along the patellar surface. Both the femurii have completely ossified from all five centres.

### **Patella**

Both the patellae are intact and more or less in position. Right one is slightly disturbed and resting over the lateral epicondyle. Facets and apex are intact.

### **Leg bones**

Bones of both the legs are in articulated condition though they have cracked at several points. Proximal and distal ends of tibia and fibula are intact. Tubercles of intercondylar eminence, lateral condyle of tibia, medial condyle, tuberosity, shaft, anterior border, medial surfaces and medial malleolus of both the tibiae are intact. Left tibia has cracked above and below the point at tuberosity. Right has cracked from seven points. Three of the cracks are above the point of tuberosity while three at the shaft region and one just above the distal end. Head, medial crest, apex, surfaces and lateral malleolus of the left fibula is intact. Right fibula is not visible. Shaft of left fibula is broken into four pieces twice above the medial crest and twice above the triangular subcutaneous area.

### **Foot bones**

All the foot bones including phalanges of both the feet are present. Right foot is in prone while the left one is in supine position. Tarsal bones of both the feet are present in articulation with the distal ends of their respective tibia, fibula and metatarsal bones. Phalanges of the left foot are hidden below those of the right. Second and third metatarsal bones of the right foot are broken. 1<sup>st</sup> metatarsal and its phalanges are riding over the left ones. Three phalanges of each finger of the right foot are present.

### **Measurements**

Length of left humerus	= 0.34 m.
Length of left radius	= 0.27 m.
Length of right radius	= 0.27 m.
Length of left ulna	= 0.26 m.
Length of right ulna	= 0.29 m.
Length of right femur	= 0.47 m.
Length of left femur	= 0.48 m.
Length of right tibia	= 0.415 m.
Length of left fibula	= 0.40 m.
Distance between olecranon process of right and left ulna	= 0.34 m.
Distance between the greater trochanter of two femurii	= 0.26 m.
Maximum distance between the ribs of right and left (girth of pectoral girdle)	= 0.24 m.
Distance between two ischiatic tuberosities	= 0.08 m.

The skeletal remains belong to that of an adult male on the basis of the characters shown by its pelvis.

The skeleton is nearer the eastern side of the pit leaving enough space for the persons, who came to bury the dead, to stand and lower down the body in the

grave. While lowering the body inside the pit they must have faced towards east.

#### **6. Burial No. 12 (Skl. 6), Fig. 22.33**

In quadrant 1 of square A7 to the west of Burial No. 11, a grave pit was detected. This grave pit numbered as Burial No. 12 is unusually broad as it has disturbed north-western corner of Burial No. 11. From the characters shown by this grave pit, it can be attributed to be belonging to three persons who probably died together in some fatal accident and after their demise their kith and kin buried them together. This pit is also oriented north-south. Maximum length of the pit is 3.0 m whereas the width varies at different points where it has cut the Burial No. 11. Maximum width east-west taken from the left humerus head of skeleton No. 5 to the western end is 2.30 m.

Western corner to olecranon process of right ulna of Skl. No. 5 = 1.90 m.

Western corner to the point where it has cut the northern end of Burial No. 11  
= 2.20 m

East west line passing over the stem of Dish-on stand = 1.70 m.

Distance between the cut neck of pot of Burial No. 11 and western section of the pit = 1.40 m.

As usual in this grave pit also the filling consists of brownish cloddy clay mixed with greenish sandy soil. Water marks could be seen in the pit very clearly. While scooping out the pit material a small vase with long neck and simple rim was encountered at the depth of 0.05 m more or less in the centre of the pit. In this pit almost all the skeletal material is lying at a higher level than the pots. The south-western end of the pit consist of almost all the skeletal material out of which

important to mention are the three human skulls, two of which are lying in norma lateralis position showing their right lateral aspects while the third one is in norma occipitalis position. All the three skulls are lying on a slope starting from skull No. 1 lying near the eastern edge of the pit (0.13 m from the western edge) (0.52 m from the southern edge) to skull No. 3 which is lying at a distance of 0.82 m from the western edge and 0.55 m from southern edge of the pit. Skull No. 2 is lying in between skull No. 1 and 3 at a distance of 0.53 m from western and 0.73 m from the southern edge of the pit. Along with the skull are lying a number of loose bones in disarticulated condition forming a sort of dump.

#### **Skull No. 1**

It is lying in norma lateralis position resting on its left side. The skull is in fairly good condition, and does not seem to belong to that of a full grown adult. It is facing towards north with its vault towards west. Right parietal and zygomatic regions are badly damaged and number of pieces are missing. The skull had developed innumerable cracks. Frontal and occipital bones are in fairly good condition. Right zygomatic process, zygomatic bone, right edge of the right eye orbit, mastoid process, greater wing of sphenoid, squamous temporal and right half of the maxilla are totally missing. None of the teeth of the upper jaw are visible in in-situ condition. Left half of the skull seems to be fairly intact. Fortunately nasal bone is present. Upper margin of the eye orbit is sharp and forehead is almost vertical. Anterior nasal spine is missing. Frontal process of maxilla on both the sides are intact. None of the sutures show any sign of ossification. The skull seems to be more in length than in breadth. Towards the





Fig. 22.33 KLB-8 Burial no. 12

occipital region of this skull (towards south) a badly damaged scapula, a portion of a rib and femur are lying almost at the same level. Only the scapular plate and the inferior angle is present while rest of the parts are totally missing. Size of scapula is small. The femur has cracked into three major pieces and is extremely fragile. Proximal and distal ends are broken, shaft is present. In front of the skull No. 1 another femur is lying with its proximal end towards skull No. 2. This femur is also small. Head, neck, greater and lesser trochanteric regions are intact where as the distal end is missing. Below this femur No. 2 a small tibia is lying, north-south. It has cracked into several pieces with its distal and proximal ends missing. Between femur No. 2 and tibia few vertebrae and Iliac pieces of a small pelvis are lying. Only the erector spine and iliacus is present while margins are damaged. In front of skull Nos. 2,3 to 4 vertebrae are lying in badly damaged condition and slightly articulated. Between the skull No.2 and tibia mentioned above, three ribs and delicate ulna, are lying. Head of ulna is missing, shaft is intact and olecranon and coronoid process are hidden below the tibia. To the south of skull No. 2 just near the occipital region, iliac portion of another small pelvis is lying. Its auricular surface, iliacus, rectus femoris and erector spine region are intact. Margins are damaged.

### **Skull No. 2**

It is also lying in normal lateraltis position resting on its left side. This skull is more or less intact as compared to other two skulls. Frontal, occipital parietal bones are intact. Forehead is more or less straight. Both the eye orbits are complete. Upper margins of the eye orbits are not sharp. Right mastoid process, squamous temporal, greater wing of sphenoid,

maxilla, zygomatic bone, nasal bone, frontal process of maxilla and anterior nasal spine, all are intact. Only right second molar tooth is present in the upper jaw. Right zygomatic process it totally missing. None of the sutures show any remarkable sign of fusion. Foramen magnum is intact. Length of the skull is more than the breadth. Towards the north-east of skull number 2, are lying a mandible showing its dorsal aspect, two scapulae pieces and two humerii pieces. All these bones are lying jumbled up together. Mandible is more or less intact and in good condition. Both the heads, right angle and body, all are intact. Left angle is damaged. One scapula is lying towards the north and the other towards the south of the mandible. Of the first scapula a portion of shaft, acromian process and coronoid process are present. Inferior angle and lateral borders are broken. Only the coronoid process of the second scapula is visible. Shaft portions of the two humerii are present. Ends are missing.

### **Skull No. 3**

This skull is lying in norma occipitalis position with its vault towards north and face towards south. Occipital bone is badly damaged and is broken into several pieces. Foramen magnum is missing and so also the right mastoid process. Left mastoid process is represented partially. Right zygomatic process and temporal bones are missing. Left zygomatic process along with zygomatic bone, is intact. Maxilla is partially present in damaged condition along with two left molars, 2 premolars, canine and both the incisors. All the teeth of the right half are missing. Left temporal, squamous temporal and greater wing of sphenoid are present. The skull belongs to an adult. Touching the occipital region of this skull is lying one

shaft portion of radius in three pieces. Just to the north-east of skull No. 3 is lying a medium size 'lota' vase on its side with its mouth facing east. To the south of skull No. 2 is lying another miniature vase, resting on its sides and facing east. To the south-east of skull No. 3 at the distance of 0.25 m from pots of Burial No. 11, is lying shaft portion of a femur at the depth of 0.43 m. Towards the eastern corner of the grave pit, where it has disturbed Burial No. 11, is lying a portion of dish. Almost all the pots of this grave pit are found at the northern end of the pit along with one femur. The position of the pots shows that they are kept systematically and whatever damage is done, has been caused by the pressure of the earth and water. The systematic arrangement of these pots at the northern end of the pit clearly proves that this is a regular human burial and not a dump of skulls and other parts. The femur is lying little away from the dish-on-stand in north-east-south-west direction. It is in good condition with its head, neck, lesser and greater trochanters, condyles, patellar surface and shaft intact. Dish-on-stand is kept in perfect position as in case of other burials. Dish has collapsed after breaking into five major pieces. Stem and base are intact. There is a long beaker and a simple bowl to the north of dish-on-stand. Another beaker is lying to the west of the bowl. To the west of dish-on-stand is a big jar represented in numerous pieces as it has tumbled down. To the west of this jar are lying two deep bowls almost complete, pot (big) and to the west of these pots are lying three more pots out of which one is a flat rimmed wide mouthed 'handi' and other two are bowls used as lids. To the east of pot is a broken lid. All the pots of this side are at an average depth of 0.58 m. Two more pots and some long bones of a child came

out below skull no. 2. The pots are straight rimless glass (casket) with their lids. On examination it was found that the rimless lid is having 3 perforations in the rim portion. Four more pots also came out below other pots mostly beakers and lids. This is probably the earliest evidence of a relic-casket in India.

### **7. Burial no. 26 (Skl.9), Figs. 22.34 and 22.35**

An oblong extended pit in north-south orientation yielded seven pots at its northern end and an extended human skeleton in the rest of the pit. The pit has been dug with rounded sides giving it a shape of a coffin. Maximum length of pit is 3.25 m and is widest at the centre measuring 1.28 m. It is almost uniformly deep 0.90 m. The sides of the pit are more or less straight. Eastern section shows, just at the skull region, another pit running obliquely almost to the bottom towards the southern side. This second pit shows laminations deposited by water and wind. These laminations run right over the pelvic region and below and watermarks are visible on the floor of Burial No. 26 all along the left leg region and also to the left of it. Rest of the pit shows the usual deposit filled by human agency. From the nature of the filling it seems logical that the pit was filled more towards the northern half slowly sloping to south and thus the lower half of the skeleton was only slightly covered. The filling consists of brownish cloddy clay mixed with greenish sand. In this case the common yellow speckled material 'chunam' is missing. Due to the compact nature of the filling i.e. cloddy clay, which did not allow water to seep in easily, the skeleton is found in a better state of preservation. All the seven pots have been placed to the north of the skeleton. A globular vase with wavy incised designs





Fig. 22.34 KLB-8 *Burial no. 26*

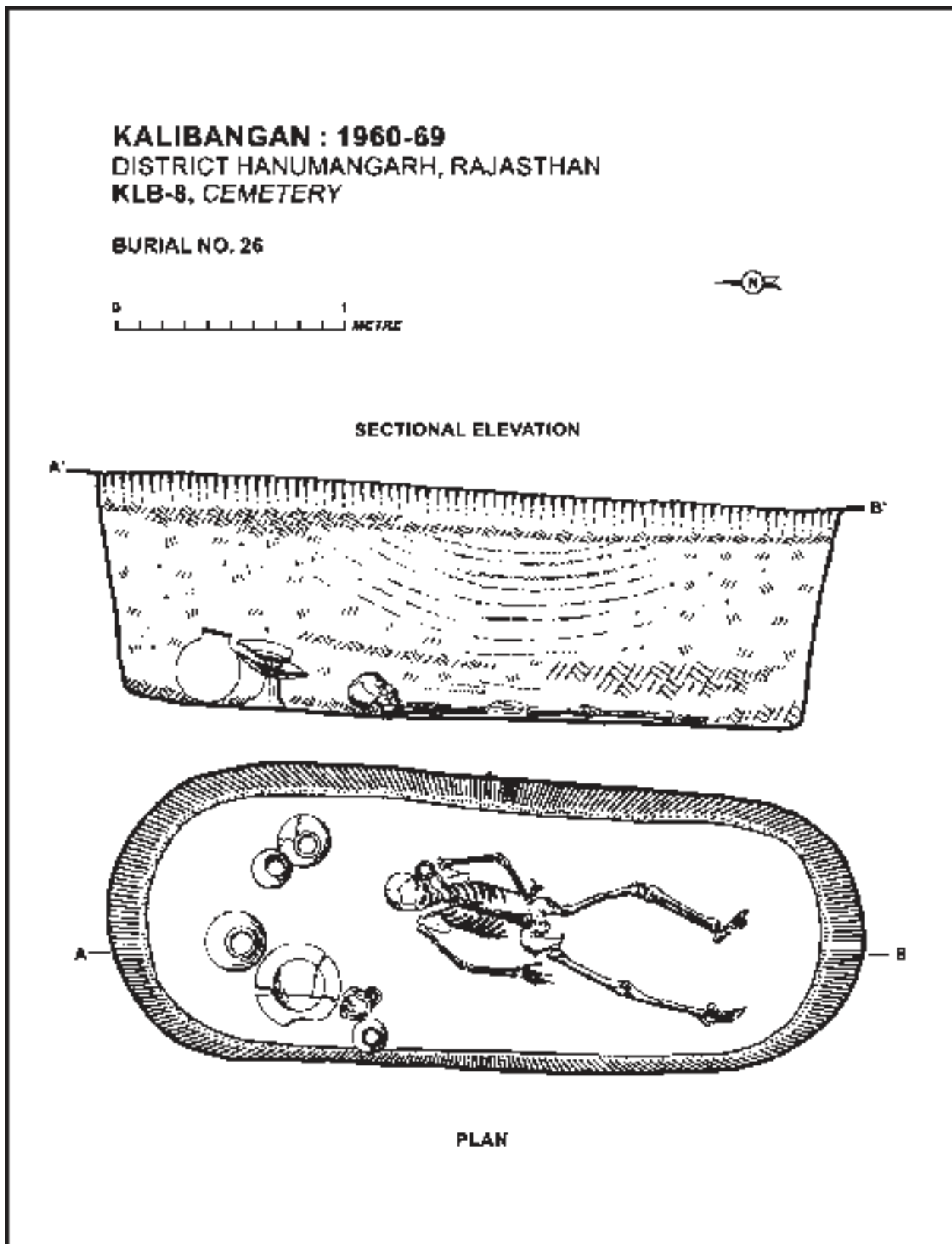


Fig. 22.35 KLB-8 Sectional elevation and plan of Burial no. 26

at the waistline over the unslipped portion. Another vase of smaller size than the first is also there. A lid, a dish-on-stand, a bowl, a miniature goblet, a vase with no painted or incised designs are found. The filling of the pit below the pelvic region towards the south yielded some foreign bones which includes a mandible (belonging to that of a strong and healthy human being) femur pieces, radius and ulna fragments. Surprisingly the colour of these bones differs from those of the skeleton. Colour of these foreign bones is that of charred bones. The radius and ulna fragments were lying at the pubic symphysis region in more or less vertical position and due to these foreign bones, left ischium, pubic and right ischium are badly damaged and missing. These bones have probably caused damage to the head of left femur also. The skeleton is lying in supine position oriented north-south with all its parts in articulation. The skull is towards north, facing south and feet towards south. Right hand is in supine position while the left is in prone position with the hand bones badly twisted to left. This twisting is due to the pathological deformity of the hand as the person was a crippled fellow (Fig. 22.35). This pathological deformity is also supported by the short radius and ulna of the left as compared to that of the right. Right leg is lying in supine position while the lateral aspects of the left leg is visible in *in-situ* condition.

### Skull

Skull is in articulated and well-preserved condition except for a portion of the right maxilla, which has disintegrated. It is resting over the occipital bone. Frontal, parietal, occipital, sphenoids; all are intact. Skull is quite big with less marked muscular ridges. Squamous temporal is small and its

margins are more or less smooth. Forehead is broad and receding. Both the eye orbits, their margins, zygomatic process, zygomatic bone, maxilla, nasal bone, anterior nasal spine, mastoid process, of both the side are in good condition. Nasal bridge is considerably curved. External acoustic meatus on right is intact, left one is hidden. All the sixteen teeth of the upper jaw are intact. Snout displays a marked degree of prognathism, coronal and sagittal sutures have fused to a considerable extent. Temporal lines are well marked. A shell bangle is lying on the left side of the skull with one of its sides just touching the left external acoustic meatus region. Internal diameter of the bangle is 6.5 cms while the external diameter is 7.7 cms. It is a complete shell bangle with opening. Position and diameter of the bangle suggests that it was worn by the deceased in its left ear with the help of a thread and thus instead of calling it to be a bangle it can easily be called as *Bala* (ear ring) which many tribal people and Kashmiri folk still use. Mandible along with all the sixteen teeth is in good condition. Condylar and coronoid processes, angles and body, all are in good condition. Condylar processes are lodged in their respective mandibular fossae. Chin is protruding and well marked having a conical shape. From the advanced stage of ossification of various sutures and complete eruption of teeth the individual can be assigned to be above 30 years of age. Skull is quite big with thick skull bone, forehead is broad and receding. Mastoid processes are prominent but the upper margins of the orbits are sharp. Vault is rounded. Teeth are quite big. Facial bones are rough. The skull shows predominantly male characters. Vertebral column is in supine position with all its vertebrae in articulated

condition. From atlas to sacrum all vertebrae are present. Coccyx is missing. Only the bodies of the vertebrae are visible in in-situ condition. Sacrum is in articulated condition but below the 1<sup>st</sup> segment, portion below the second pelvic sacral foramen on the left sides is missing. Promontory, iliacus meatus are intact. Sacrum is wide and long. Curvature of the parts is more evenly distributed. Pelvic surface is facing upwards. Auricular surface extends up to the sides of the 3<sup>rd</sup> sacral vertebrae. Upper surface of the body of the 1<sup>st</sup> sacral vertebra occupies a larger portion of the base of the sacrum due to the great size of the body of the fifth lumbar vertebra. These facts point towards typical male characters of the sacrum. All the segments of the sacrum have fused totally.

### **Sternum**

The sternum is lying over the 4<sup>th</sup> to the 10<sup>th</sup> thoracic vertebrae. Both 4<sup>th</sup> and 10<sup>th</sup> are half covered. Manubrium, body and xiphoid, all are intact. Suprasternal notch, clavicular notch, notches for costal cartilages are intact. All the segments have united (25 years). Xiphoid process is not completely fused with the body (below 40 years).

### **Ribs**

9 of the right and 10 of the left ribs are present in articulated condition. Their heads, shaft and angles, all are intact. Maximum distance (or girth of the chest) between the external margins of the rib is 0.25 m.

### **Clavicles**

Both the clavicles are in good articulated condition with their acromial end coming upto the 4<sup>th</sup> thoracic vertebra. Sternal ends are articulated with their

respective scapulae. Their deltoid portion and tubercles are intact.

### **Scapula**

Both the scapulae are lying in supine position and are in perfect articulation. Right scapula is in extremely fragile state. 1<sup>st</sup> acromian, supine, lateral borders and a major portion of the body are damaged. Glenoid cavity is also damaged. inferior angle is intact. Left scapula is in fairly good state of preservation. Its acromian, coracoid process, glenoid cavity, body, borders and inferior angle, all are intact. Few cracks have developed near the inferior angles over the body.

### **Humerus**

Right humerus is lying in prone state. Its distal end is badly damaged. Head is lodged in its glenoid cavity. Anatomical neck, tubercles, shaft, deltoid tuberosity, are intact. Trochlea, capitulum and condyles are damaged. Left humerus is also lying in prone state with its lateral aspect visible. This humerus is in good state of preservation with its shaft. Distal and proximal ends are intact. Even lateral supra condylar ridge is intact. Head is articulated with its glenoid cavity.

### **Forearms**

Right forearm bones are in disintegrated condition. They are lying in supine position. Proximal and distal ends of both are almost missing. Only a portion of the shaft of ulna can be seen. Left forearm bones are lying in prone position and are in good condition. Head, neck, styloid process and shaft of radius are intact. Ulna has also got its shaft, distal and proximal ends intact.

### **Hand bones**

Hand bones of the right side are lying in supine position. Few of the carpals have disintegrated while all the



metacarpal bones and phalanges are present in good condition with heads of few damaged. Left hand bones are lying in twisted condition, out curved towards the left. Carpal bones are resting over the outer border of the left hip bone and are riding over each other. Only three of the metacarpal bones and phalanges from 3<sup>rd</sup> to 5<sup>th</sup> finger are visible. Their position suggests the crippled state of the left hand. Near the distal end of the right ulna is lying a valve of fresh water mussel just touching the bone.

### Pelvis

Pelvis is lying in supine condition but is badly damaged, both the iliacus are intact. Anterior superior spines, anterior inferior supines and posterior, superior and inferior spines of both the hip bones are present. Body of ilium has cracked at several places. Auricular surface of both is well marked and broad. Right acetabulum is intact while the left is slightly damaged. Both the pubic bones are missing and so also the left ischium bone. Right ischium is intact. Spine and tuberosity of right ischium are present. Muscular impressions on the pelvic bones are marked. Distance between the two anterior superior iliac spine is 0.26 m. Auricular surface of the sacrum extends upto the 3<sup>rd</sup> sacral vertebrae. Curves of the iliac crests are well pronounced. These points are indicative of male characters.

### Femur

Anterior aspect of right femur is visible in *in-situ* condition. It is long and stout. Head is properly lodged in its acetabular cavity. Trochanters, neck, shaft, patella surface, medial and lateral condyles are present. Left femur is lying on its lateral side. Apparently it seems to be weaker than its counterpart. Head is damaged.

This femur has broken into two pieces at the middle of the shaft. Neck, lesser trochanter, patellar surface, medial condyle and epicondyle, abductor tubercle, all are intact. Both the patella are in articulated condition with their facets, apex and body intact. Of right tibia ventral side is visible. It has cracked into three major pieces but is in articulated condition. Condyles, medial border, and medial malleolus, all are intact. Right fibula is hidden below the tibia. Left tibia has broken into two major pieces. It is also showing its ventral aspect. Its shaft, medial border, malleolus, are intact. Left fibula is broken into three or four major pieces at the proximal end. Its head, posterior border, apex and lateral malleolus, are intact. Left foot bones are lying in articulated condition. Its plantar aspect is seen. Calcaneum, talus and other tarsal bones are intact. All the five metatarsals are present with their distal ends slightly damaged. Only the rudiments of all the phalanges are present lying over each other. These retarded rudimentary phalanges show some pathological deformity of the left foot. Right foot bones are also in articulated condition. Tarsal bones are all present while the 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> metatarsals have disintegrated and also the phalanges. 1<sup>st</sup> and 2<sup>nd</sup> metatarsal and their phalanges are present in good condition.

### Measurements

1. Maximum length of the skeleton from lambda to calcaneus (right) = 1.455 m.
2. Shoulder width (from tip of coronoids) = 0.206 m.
3. Maximum length of left clavicle = 0.137 m.
4. -do- humerus = 0.292 m.
5. -do- right -do- = 0.293 m
6. -do- -do- ulna = 0.241 m.

7. -do- left -do-	= 0.205 m.
8. Maximum length of left radius	= 0.206 m.
9. -do- right -do-	= 0.234 m.
10. -do- right femur	= 0.403 m.
11. -do- right tibia	= 0.353 m.
12. -do- left fibula	= 0.325 m.
13. -do- left tibia	= 0.354 m.
14. -do- left femur	= 0.405 m.
Angular deviation from true north	= 10° E

(Bregma, centre of chin, centre of 1st sacral vertebra, centre of calcaneum of feet)

### 8. Burial No. 27 (Skl. 8), Figs. 22.36 and 22.37

Burial No. 27 is an extended human burial with only the pit displaying the character of an extended burial. The human skeleton has been put in the grave on its northern side in crouching position. The pit has yielded seven pots. A gloublar bowl lying just north of the right foot bones, touching the northern edge of the pit, a dish-on-stand with black bands at the rim of its base and dish, scattered in pieces on the side and above the skull, five pots were exposed below the leg region. The pit has been dug in perfect north-south orientation having maximum length of 2.68 m. The pit is wider towards the north gradually narrowing down towards south. At its northern end it is 1.18 m in breadth whereas at its southern end it is 0.89 m broad. The skeleton is lying in south-north orientation with the skull towards south facing west and the legs towards north. It is lying in inclined position with the skull at a lower level than the limbs. Maximum depth of the pit is 0.42 m from the present surface level. Filling of the

pit consists of the common yellowish speckled '*chunam*' mixed with greenish sand. As the pit is shallow and filling is loose, considerable amount of water and air used to seep in quickening the process of decomposition and disintegration. Almost all the parts of the skeleton are in extremely fragile condition.

At first sight the skeleton gives an impression that the owner was put inside the pit without caring for the usually practiced norms. He has been just hurriedly dumped in the same fashion in which he expired. From the position of various parts it is not difficult to deduce that this burial is a case of a man who probably suffered an attack of paralysis thus twisting and weakening almost all parts of the body. Atleast the position of the limbs and pelvis give enough ground for this idea. Hands and feet are lying in badly twisted condition in which a normal man's body cannot be put even due to rigor-mortis. After the death of the person the question of stretching the limbs and other parts does not arise as it is not possible to do so due to the pathological deformity of the bones.

The skeleton is lying on its ventral side exposing its posterior or dorsal aspect. The skull is resting on its fronto-lateral side.

### Skull

The skull is in extremely fragile condition having developed numerous cracks all over the surface. Frontal, parietal, occipital, squamous, sphenoid, all are intact. Right parietal is slightly damaged. Foramen magnum is in good condition. Right zygomatic process, zygomatic bone, mastoid process, suprameatal triangle, extra acoustic meatus, margin of the eye orbits, all are intact. Left maxillary bone is slightly damaged and disintegrated. Only two of



Fig. 22.36 KLB-8 Burial no. 27

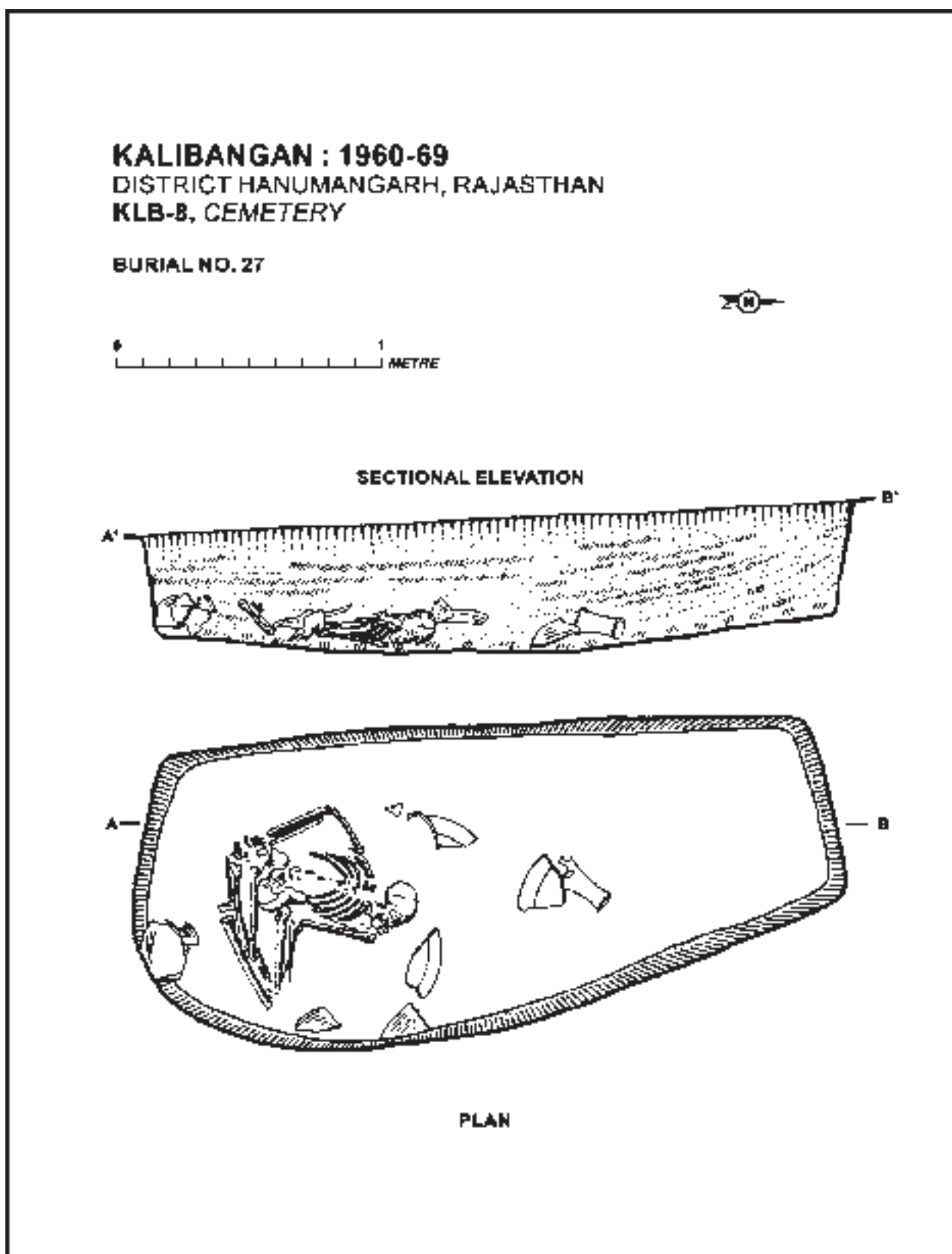


Fig. 22.37 KLB-8 Sectional elevation and plan of Burial no. 27



the right upper molars are visible in *in-situ* condition showing only slight wear and tear. Nasal spine and nasal bone seem to be intact. The skull is quite small as compared to the size of the limbs. Coronal, lambdoid and sagittal, none of these main sutures show any advanced degree of obliteration. Size of maxilla is very small. Muscular ridges on the skull surface are not prominently marked. Tympanic part of the temporal bone is small with smooth margins. Mastoid process is less prominent. Upper margin of the orbit tends to be sharper. Of the mandible only the portion above the right angle is visible, with rest of the portion hidden below the right clavicle and scapula. Coronoid and condylar process of this side are intact. Almost all the vertebrae, right from the atlas to coccyx, are present. Spinous tubercles of the sacrum and its fourth segment are damaged. Sacrum is considerably curved inwards. Nine ribs from both the sides are intact and present in articulated but extremely fragile condition. Head and angle are in good condition. Only the right clavicles, acromial end is visible while the rest is hidden below the right scapula. Left clavicle is hidden below the left ribs. Acromial end and deltoid portion of the right clavicle is intact. Dorsal aspect of right scapula is visible. It has cracked into several pieces but is in articulated condition. Body, inferior angle and acromian are intact, but the spine is damaged. Only a portion of the body and inferior angle of the left scapula is visible, rest is hidden below the left ribs. Both the hands are in good articulated condition. Right forearm is folded at right angles to the right humerus from the elbow region and the right hand bones are resting over the right knee. Right humerus has cracked into pieces but head, neck, tubercle and medial condyles are

intact. Lateral aspect of the right hand bones are visible. Right ulna is crossing over the right radius. Both the bones are heavily damaged. Head and neck of radius are missing. Biceps are present. Styloid process is damaged. Proximal end of right ulna is in slightly good state but head region had disintegrated. Right carpals have completely disintegrated while few of the metacarpal bones are present riding over the right knee. The hand bones of right are twisted downwards giving the appearance of a crippled hand. Left humerus is in articulated condition with its upper 3<sup>rd</sup> hidden below the left ribs are jutting out of the left ribs. Shaft is intact but its capitulum, condyles and trochlea are badly damaged. Left fore-arm is making an angle of nearly 70° with its humerus with their distal ends coming near the left hip bone and fingers resting over the left hip region with the thumb and the second finger virtually gripping the head of the left femur. Proximal end of left ulna is damaged. Head and shaft are intact. Radius is in fairly good condition with its shaft, head, neck and styloid process intact. Left carpal bones have completely disintegrated. Metacarpals and phalanges are poorly represented. Phalanges of all the fingers are twisted to the left almost touching the left toe region.

### **Pelvis**

External surfaces of the hip bones are visible in *in-situ* condition. Pelvis is in considerably curved position bringing the posterior superior spines of the two sides very close to each other. Both the hip bones are extremely fragile and in badly damaged condition. They are resting on their anterior, inferior and superior spine regions. Bodies of the ischium (both) are intact with several cracks. Posterior inferior spine of right is damaged.

Margins are intact. Pubic bones and glenoid cavities on both the sides are hidden. Biceps and tuberosity of ischium is intact on both the sides.

Distance between the posterior superior spines = 0.82 m. Both the legs are in folded condition. Head of right femur is lodged in the glenoid cavity. Shaft has cracked into several pieces. Greater and lesser trochanter are slightly damaged. Distal end has disintegrated so much that it is almost missing. Anterior aspect of right femur is visible. Bones of the right leg are folded upwards making an angle of roughly 30° with the femur. Both, right tibia fibula are in badly damaged condition. Distal half of right fibula is totally missing. Upper end is hidden below the fingers of right hand. Of the right foot bones, only a portion of calcaneus and cuboid bone is present. Head of left femur is slightly displaced from its position. Shaft has cracked into several pieces. This femur is folded in such a fashion that upper half is touching the margins of the pubic bone. Lesser trochanter is intact. Distal end seems to be fairly intact as it is hidden below the right leg bones. Left patella and proximal end of left tibia and fibula is also hidden. Left leg bones are in fairly good state of preservation. Shaft and distal end of left tibia is intact. Shaft and lateral malleolus of left fibula is present. Of the left foot bones only a portion of calcaneus is present while rest are missing.

The skeleton seems to belong to a person below 20 years of age and probably a female.

### Measurements

Maximum length of right humerus = 0.312 m.  
-do- ulna = 0.264 m.

-do- left radius = 0.236 m.  
-do- left tibia = 0.368 m.  
-do- left femur = 0.435 m.

Angular deviation from true north = 15° East

(Bregma, spine of 1<sup>st</sup> sacral vertebra)

### 9. Burial No. 28 (Skl. No. 10), Figs. 22.38 and 22.39

Burial No. 28 is an elongated oblong pit which has yielded a human skeleton buried in extended fashion along with fifteen pots. Twelve of the pots are concentrated towards the north of the skull and one is just near the southern fringe of the pit. The pit is in perfect north-south orientation lengthwise. Its sides are circular with almost straight section. Maximum length of the pit is 2.77 m., whereas maximum width at the centre is 0.97 m. The pit is not uniformly deep. Most of the pots have been kept at a lower level than the skeleton. Pots are lying at the depth of 0.70 m from the present surface level. It seems that first the pit was dug with uniform bottom, pots were placed over the natural soil and then the rest of the pit was filled up to 13 to 14 cm with the hard compact clay mixed with yellowish speckled '*chunam*'. Over this 13 cm thick filling, the body of the deceased was kept. Filling of the pit consists of the yellowish or dirty white spackled '*chunam*' mixed with compact hard clay and greenish loose sand. Twelve of the pots are lying towards the northern end of the pit at various levels. A dish-on-stand with its base resting over two lids numbered as 7 and 8 which are again lying over two goblets numbered as 9 to 10. On the southern side, base of a dish-on-stand is resting over a medium sized vase. On the eastern side of the dish-on-stand is lying a bigger vase. To the north-east of pot are lying

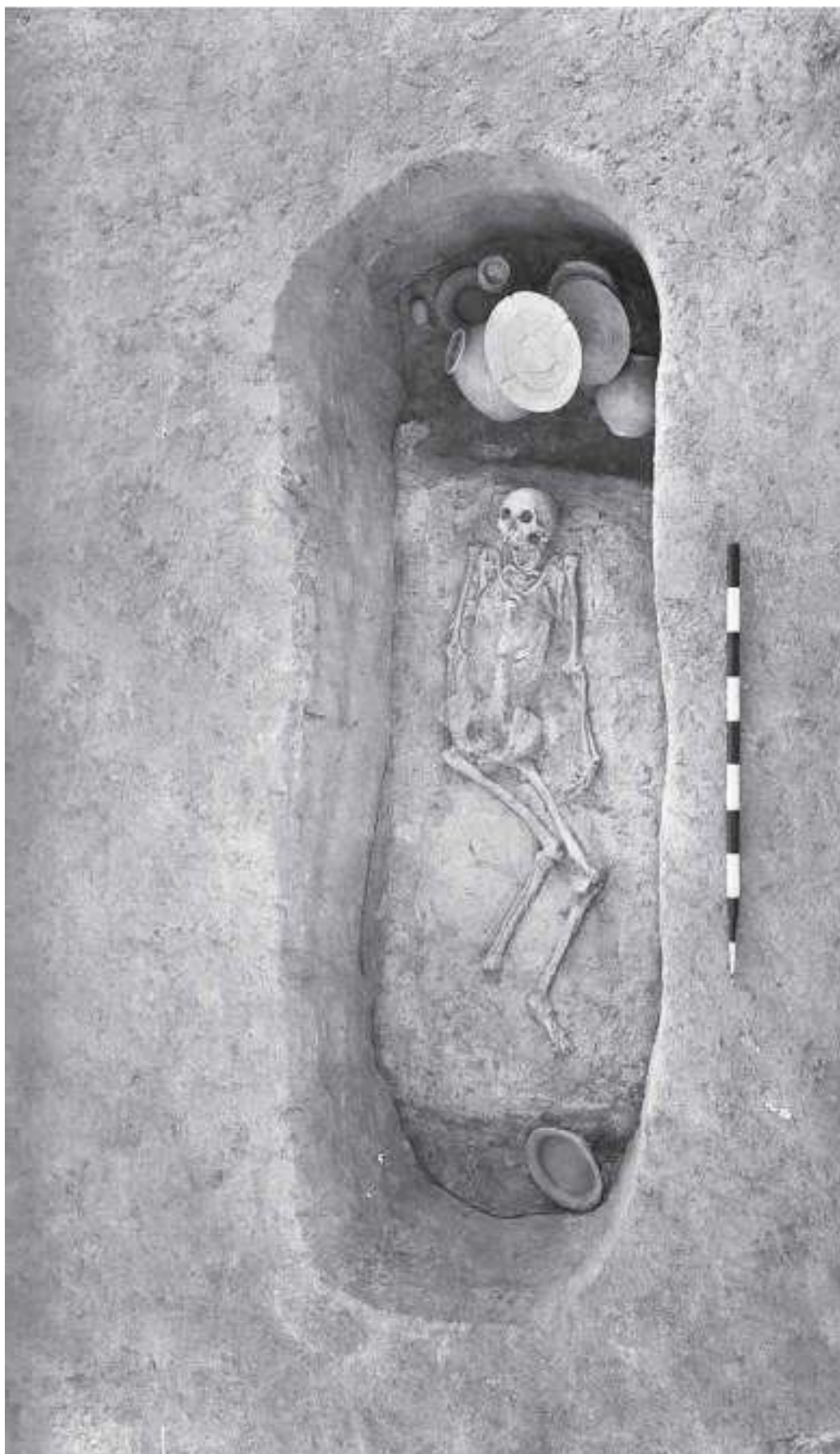


Fig. 22.38 KLB-8 Burial no. 28



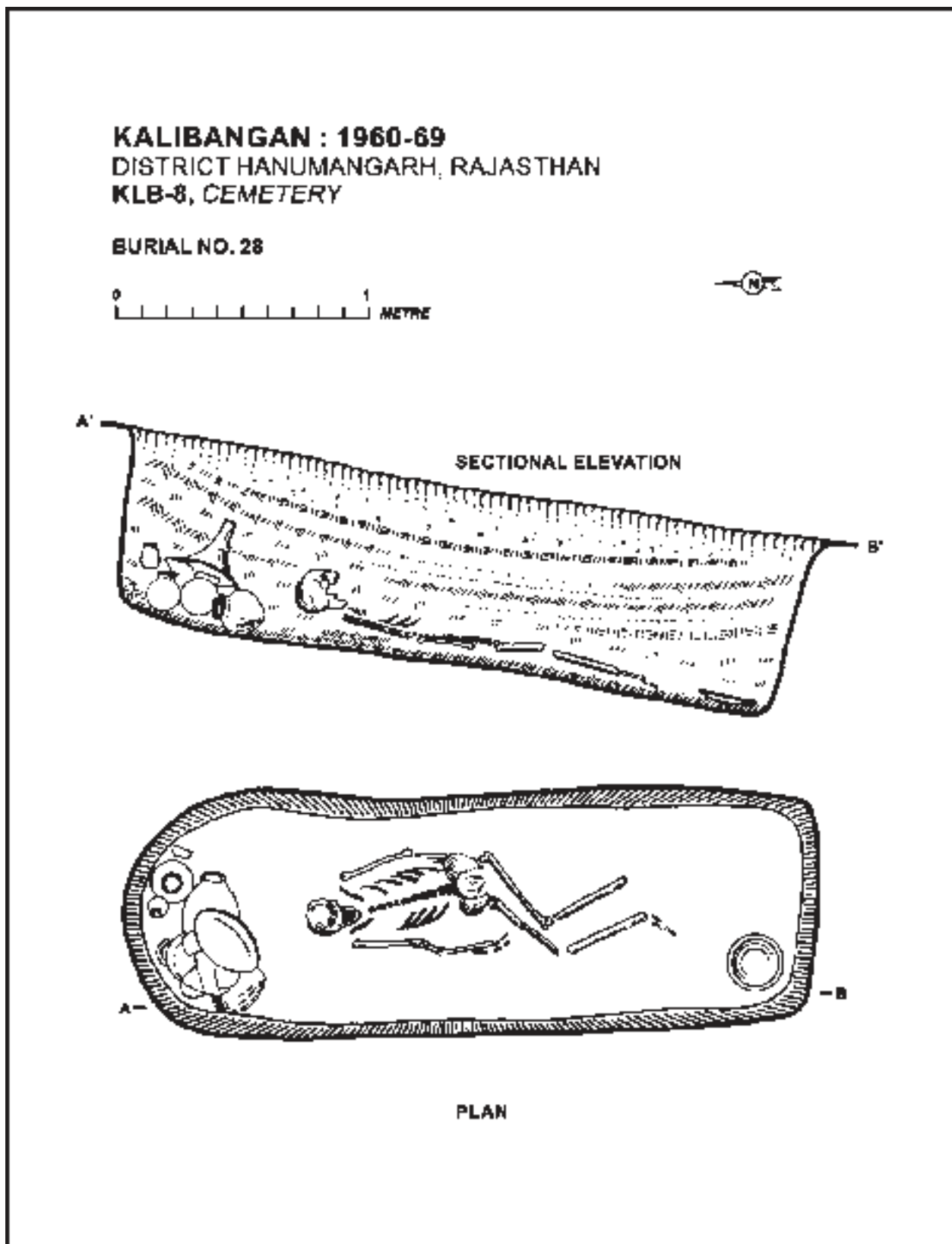


Fig. 22.39 KLB-8 Sectional elevation and plan of Burial no. 28

pots which are a 'lota' shaped goblet, a cup shaped bowl (cup of cup-on-stand) and a miniature wine cup. A cup lying to the east. A miniature glass lying below, a flat based deep bowl lying near the south-western fringe of the pit, south of the right foot bones. Pots were found on the northern side at lower levels. The skeleton has been placed in north-south orientation with the skull towards north facing south and looking upwards, and the legs towards the south. Both the hands are lying in stretched condition but the legs have been slightly folded towards right side bringing the two knees nearer to each other. On the whole the skeleton is lying in supine position. Judging roughly from the obliteration of the coronal and sagittal sutures and from the marked wear and tear of the cusps of the teeth, the skeleton can be assigned to that of an adult above 40 years of age. As the pots to the north of the skull were placed just over the natural soil, very near to the skull, at a lower level, due to the pressure of the filling material the skull has slid downwards allowing the condylar and coronoid process along with the ramii of the mandible to make 90° angles with the zygomatic process of the skull. The skull is in fairly good state of preservation except for the maxilla, nasal bone and interior nasal spine which are heavily damaged. Skull is resting over the occipital bone. Frontal, parietal, occipital, temporal, squamous, all are intact. Both the eye orbits are in good condition. Mastoid process, zygomatic bone, zygomatic process, external acoustic meatus, all are intact on both the sides. All the eight teeth of the right sides are present. Two incisors of the left side are missing whereas the rest are present. Cusps of teeth are worn out to a great extent making the surface almost smooth-advanced age. Mastoid process is

prominent, upper margins of eye orbits are round. Temporal bones are quite broad and their margins are rough, suggestive of the male characters. Coronal and sagittal sutures have almost fused showing the advanced age of skeleton. Temporal lines are well marked. Below the bregma points occipital bone on both the sides have depressed making two pits. Mandible is intact and in good condition. Condylar and coronoid process, ramii, body, angles are all intact. All the sixteen teeth are present. Facial bones are quite rough with well marked muscular impressions. Forehead is broad and receding.

All the vertebrae right from the atlas to caudal are present in extremely fragile and disintegrated condition. Coccyx is missing. Sternum has completely disintegrated. 8 ribs on the left side and 10 ribs on the right side are present in fragmentary state. Only their impressions in the earth are left. Both the clavicles are present in fairly good state of preservation. Sternal ends of both are damaged while the acromial ends, deltoid and body are present. Both the clavicles are in perfect articulated condition. Scapulae are also in articulated condition but are very fragile. Glenoid cavities are damaged. Lateral borders are intact. Acromion and coracoid process are damaged. Both the hands are lying in prone position in articulated condition. Right humerus has cracked into several pieces. Proximal end is totally disintegrated. While the shaft and distal end are intact, trochlea, capitulum, condyles and epicondyles are also intact. Right radius and ulna are lying in prone position and are in fairly good condition with only the proximal end of the radius slightly damaged. Head, neck, biceps and shaft of radius are intact. Styloid process, shaft and proximal end of right ulna are

intact. Right hand bones are present. Only 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> fingers and their phalanges in curved condition are visible. Proximal and distal ends of the left humerus are in damaged condition. Shaft is intact. Only the upper half of the left radius and ulna are visible while lower halves are hidden below the left hip bone. Visible portions of these two bones are in good condition. Left hand bones are also hidden below the left hip bone and head of the left femur. To the left of the left humerus is lying a complete shell bangle, oval in shape, touching the lower half of the humerus. Another shell bangle is found just below the left hip bone in the wrist region of the left hand. Pelvis is in extremely disintegrated and fragile condition. It has cracked into so many pieces that hardly anything worth study could be lifted. Only the mud impression of ischium, ilium and pubic bones are left. Pubic symphysis is present. Pelvis is broad and shallow with the upper borders of the ischium curved inside. Iliac bones are hidden below. Right acetabular cavity is damaged while the left one is intact. Posterior, superior and inferior spines of both the hip bones are present. Distance between the two posterior superior spines is 10.7 cms. Auricular surface of both are intact.

Both the thigh bones are lying slightly folded towards the right side. Right thigh bone is badly damaged with its distal end almost missing. It has broken into two major pieces from the centre of the shaft. Head, neck and intertrochanteric line are damaged. Lesser trochanter is intact. Right patella is missing. Left femur is also in extremely disintegrated and fragile state. Head, neck and greater trochanter have disintegrated. Distal end is in fairly

good state. Medial condyle and abductor tubercle, both are intact. Left patella is in good condition with its apex, body and angle intact. Both the tibiae are in extremely fragile condition. They are represented in several pieces and only their impression on the earth is left. Same is the case with the left fibula. Right fibula is not visible. Left foot bones are totally missing while the right foot bones are lying in prone position. Tarsal, metatarsal and phalanges are represented only by fragments. Only 1<sup>st</sup> and 2<sup>nd</sup> fingers are visible.

### Measurements

Distance between the two shoulders	= 0.215 m.
Length of right clavicle	= 0.134 m
-do- left -do-	= 0.135 m
length of left humerus	= 0.31 m
-do- right radius	= 0.251 m
-do- -do- ulna	= 0.248 m
-do- -do- femur	= 0.41 m
-do- left femur	= 0.414 m
-do- -do- tibia	= 0.354 m
-do- -do- fibula	= 0.342 m
Angular deviation from true north	= 21° W

(Bregma, glabella, centre of 1<sup>st</sup> sacral vertebra)

### 10. Burial No. 29 (Skl. No. 11), Figs. 22.40 to 22.43

A rectangular mud brick burial chamber having north-east, south-west orientation containing an extended human skeleton and a number of plain and decorated pots was exposed. The size

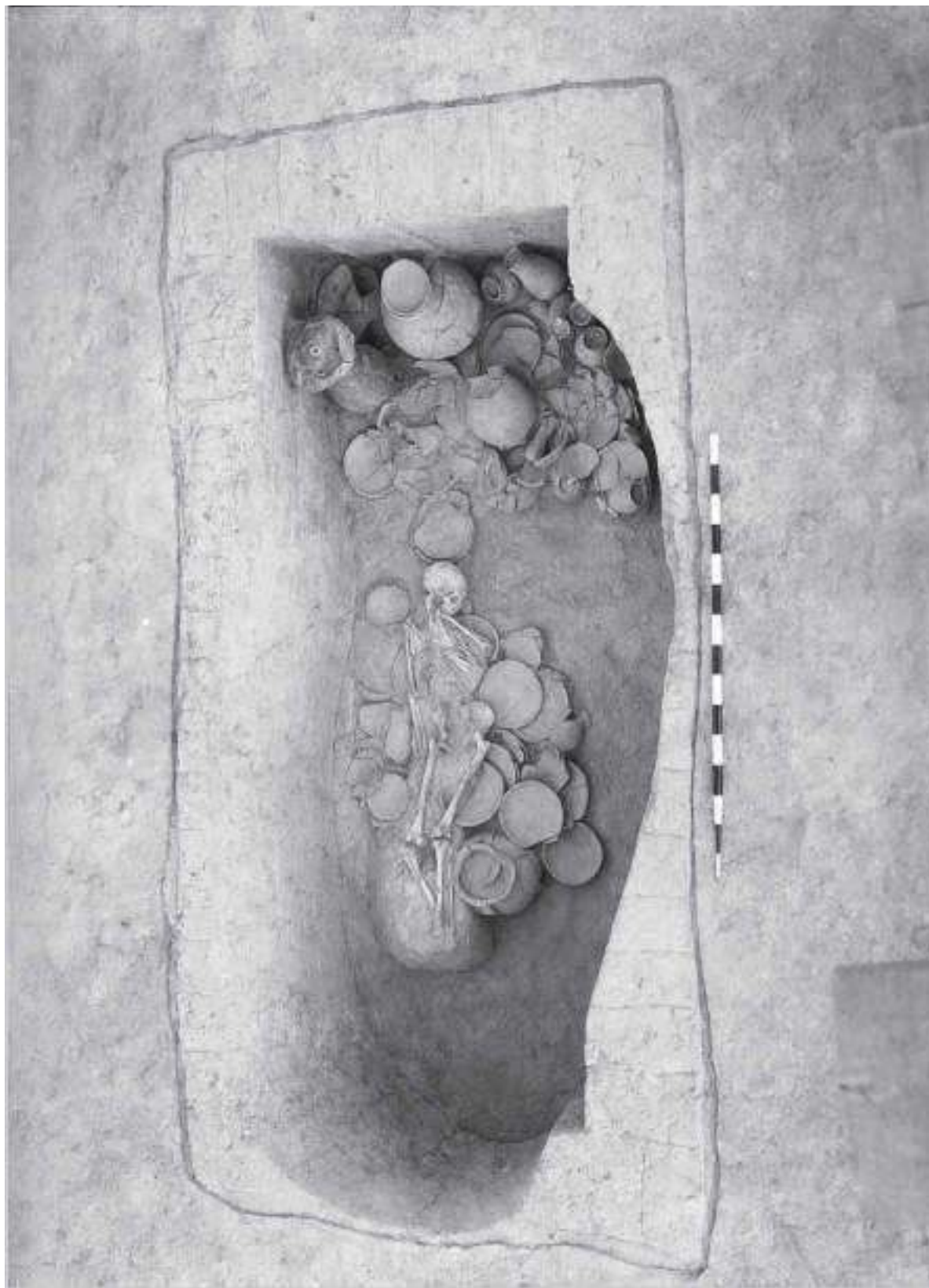


Fig. 22.40 KLB-8 Burial no. 29



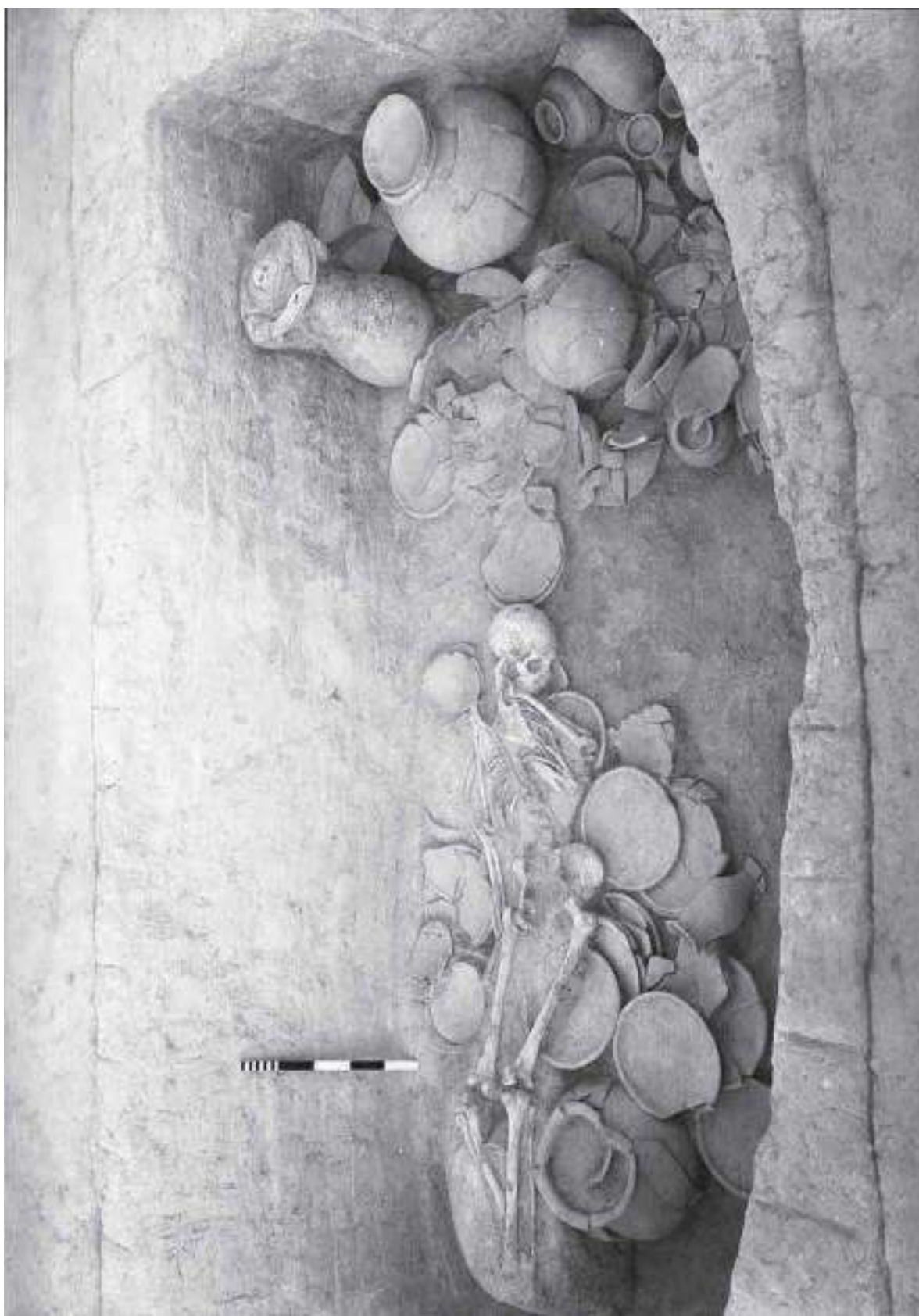


Fig. 22.41 KLB-8 Close-up of Burial no. 29



Fig. 22.42 KLB-8 Another view of Burial no. 29

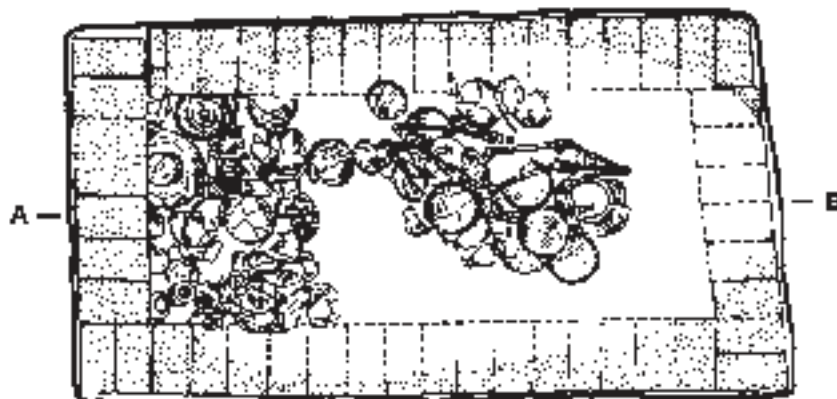
**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NO. 29**

1 0 1  
METRE



**SECTIONAL ELEVATION**



**PLAN**

Fig. 22.43 KLB-8 Sectional elevation and plan of Burial no. 29



of the bricks used is 7.5 x 20 x 40 cms. From the arrangement of the things, it seems that first a rectangular pit of 4.10 x 2.10 m was dug and then it was lined on all the four sides with at least eleven available courses of mud brick walls with all the bricks put in headers towards the pit. The brick chamber measures 4 m x 2 m externally. Internally it is 3.20 x 1.28 m. The walls are leaning inwards making the pit narrower towards top and wider towards the bottom. The skeleton has been put over a number of platters towards the eastern portion of the pit leaving enough empty space to the west of the skull and the body as a whole. After the construction of the wall, plaster of '*chunam*' mixed with compact clay was applied on the inner sides of the walls. Thickness of the plaster varies from 2 to 3 cms from bottom to the top. Composition of plaster and binding material is almost same. After the application of the plaster it seems that it was allowed to dry and only after the plaster has dried, the pots and the body were interned in the pit. This argument is supported by the fact that the pots which are touching the plaster and reclining against the wall have not left any mark and impression over the plaster which would have been the case if the pots would have been placed when the plaster was wet. The pots have been placed in two groups. One group consists of the pots (including the painted ones) that have been placed to the north of the skeleton and in the northern 1/3 of the pit. The other group consists of mostly plates and lids, a jar and a vase kept in the centre of the pit over which the body of the deceased has been placed in north-south orientation with the skull towards north and feet towards south. After placing the body the pit was filled with brick-bats, speckled '*chunam*' mixed with little of greenish

sand. The space which was left empty between the original pit and the brick wall has been filled with the self same pit material. Binding material has been applied only between the two layers of bricks. Between the bricks of the same layer hardly any binding material has been used. Total 70 pots were recovered from the burial.

### **Northern group**

A simple dish-on-stand, a painted long globular jar with painted lid, a big jar with a lid on it, painted globular vase with black bands, bowl-shaped jars with long necks, gourd-shaped jar with flaring rim, gourd-shaped jar with tapering bottom and short neck, long vase with constricted neck and flaring rim, deep lid, a small glass, a vase in pieces; 16, 18, 21, 29, 30, 31, 33, 35, 36, 37 – all plates, lids, a vase with short neck and tapering bottom, a bowl like thing, painted globular vase, a deep bowl, vase with constricted neck, painted cup-on-stand, a medium sized jar, beautifully decorated jar with carination on the neck region and having human and animal designs painted all over the body.

### **Group 2**

Twelve lids, plate over which skull is resting, plate over which left hand and chest are resting, flaring base, constricted neck vase, sixteen plates, a big jar on west of left tibia and fibula, a casket like thing between the two tibia.

Bottom of the pit is of greenish sand. Almost all the pots have been placed right over the natural soil without putting any filling material. The pit is almost uniformly deep throughout with the maximum depth 0.86 m.

The skeleton is lying over a number of pots directly. The absence of any filling

material between the various parts of the body and the pots over which the skeleton is lying, suggests that the body of the deceased was put right over the pots, most of which are plates and dishes except two towards the leg region, one of which is a big jar over which the left leg is resting and the other is a casket like glass between the two legs. The skeleton is lying in extended position with its skull towards north facing west and legs towards south. It is lying on its ventral side with its left normal lateral view visible. The skeleton is lying in a slope with legs at a higher level and major part of skull lying over the natural soil. Right hand is in extended condition whereas left hand is folded upwards with fingers passing below the mandible. Legs have been placed in such a fashion that the distal ends of tibia and fibula of both the legs are crossing each other. Left tibia is riding over the right leg bones.

### **Skull**

Skull is lying on its right side with its left lateral aspect upwards. It is in extremely fragile condition. Left temporal bone has got pressed downwards taking with it the left zygomatic process and zygomatic bone. Chips from left temporal bone have flaked out. Frontal bone is in extremely damaged state with pieces from various points missing. Portion above the right eye orbit is totally missing. Left parietal bone is also damaged. Occipital bone is in comparatively good condition with chips from various spots missing. Left eye orbit is totally missing. Left parietal bone is also damaged. Occipital bone is in comparatively good condition with chips from various spots missing. Left eye orbit is intact and its upper margin is sharp. Fortunately nasal bone is intact but anterior nasal spine is missing. Left

maxilla is in good condition. Left mastoid process, mastoid portion, mandibular fossa, parietal notch and external acoustic meatus are intact. Due to the caving in of head of left humerus between the upper and lower jaw most of the incisors of left side and one incisor of right are visible. Left mastoid process is quite prominent. Coronal and sagittal sutures have fused to a great extent indicating the advanced age of the person. Forehead is broad and sloppy. Coracoid process of the left scapula is badly damaged. Left condylar process is present but coronoid process is totally missing. Three left molars are visible. They show a marked degree of wear and tear.

### **Scapula**

Both the scapulae are lying in perfect articulated condition. Their dorsal aspects are visible. Both are very fragile and are damaged from various points. Glenoid cavity, suprascapular notch, spine, inferior angle, lateral border and body of left scapulae are intact. Acromian process is damaged. Right scapula, glenoid cavity, spine, acromian process, lateral borders and body are in good condition. Acromial angle is damaged. Vertebral column is represented only by the mud impressions of several vertebrae. Most of the lumbar and sacral vertebrae are completely missing whereas the rest are represented only by fragments. Spines are broken. Seven ribs of the right side and 10 ribs of the left side are present in articulated condition. Ribs are fragile and hardly anything worth study could be lifted. Left hand has been folded upwards in such a fashion that the radius and ulna are lying below the left humerus. Head, anatomical and surgical neck and shaft of the left humerus are intact. Distal end is damaged. Epicondyles, trochlea,

olecranon fossa and lateral supra condylar ridge are damaged. Visible proximal ends of the left radius and ulna are intact. None of the hand bones of left side is visible. Right hand is in stretched position. Humerus is in fairly good condition with its head lodged in the glenoid cavity. Shaft, lateral supra condylar ridge medial epicondyle and trochlea are intact. Right radius and ulna are intact. Coronoid process of right ulna is damaged. Proximal end of right ulna is lying over the proximal end of right radius. Most of the hand bones are present. Carpals, metacarpals and phalanges are lying below the right femur.

### **Pelvis**

External surface of both the pelvic bones are visible. Both the hip bones are lying in perfect articulated condition. Only the mud impressions of the hip bone is left. Pubic bones are hidden. Greater sciatic notch of right ilium is present. Acetabular cavities are more or less intact. Pelvis is not much curved.

Distance between the anterior superior spines of the two sides is 28.0 cms.

Distance between the tuberosity of ischium is 9.5 cms.

Both the femurii are lying in articulated condition with their posterior aspects visible in in-situ condition. Both are in extreme fragile condition and are broken from several points. Heads of both are lodged in their respective acetabular cavities.

Left head, neck, greater and lesser trochanters, quadrate tubercle, are intact. Shaft is badly damaged, particularly the linea aspera region. Distal end is intact. Popliteal surface, condyles, abductor tubercle are intact.

Right head, neck and greater trochanter are intact. Lesser trochanter, intertrochanteric crest and quadrate tubercle are damaged. Shaft is in comparatively good condition than that of the left. Linea-aspera is intact. Popliteal surface, condyles and abductor tubercle are intact. Left patella is present in articulated condition. Right patella is hidden below. Leg bones are in extremely damaged condition. Distal ends are practically missing. Condyles of both the tibiae are present. Distal end and shaft of left fibula is badly damaged. Anterior border and medial surface of left tibia is present. Except one or two phalanges and pieces of tarsal bones, foot bones of both the sides have completely decomposed. On the whole the skeleton is in extremely fragile state and as most of the bones are lying right over the pots it is doubtful as to how much could be lifted intact. In the absence of any earth between the bones and the pots, that can support the fragile parts, it is practically impossible to lift the parts intact.

### **Measurements**

Maximum length of the skeleton  
= 1.535 m

(Bregma to ankle region)

Maximum length of left humerus  
= 0.305 m.

-do- right -do- = 0.315 m

-do- -do- radius = 0.270 m

-do- -do- ulna = 0.268 m

Maximum distance between the acromium of the two scapulae  
= 0.435 m

Maximum girth of the pectoral region  
= 0.320 m

-do- length of right femur = 0.457 m

-do- -do- left -do- = 0.455 m

Maximum distance between the inferior angles of the two scapulae  
= 0.185 m

Total Pots = 70  
 Angular deviation of skeleton from  
 true north = 19°E  
 (centre of skull and ankle region)

**11. Burial no. 31 (Skl. No. 7),  
 Figs. 22.44 to 22.46**

Burial No. 31 is a rectangular huge pit 4.04 m in length north-south, 2.08 m in width (northern section) and 1.35 m in depth from the present surface level. The sides of the pit are sloping towards the bottom making the floor of the pit narrower than the top. Filling of the pit consists of greenish sand mixed with whitish speckled *chunam* and chunks of brownish cloddy clay. Percentage of hard brownish clay dominates the filling material. This brownish clay at times gives false impression of mud bricks. This grave pit has disturbed two other burials of the extended type, one i.e. no. 35 at its southern end and the other i.e. 36 at its north-eastern corner. Pit No. 35 has been more or less completely encroached by the rectangular grave leaving only 0.44 m of southern end of grave to tell its fate. This extended burial is 1.22 m in width. In the southern section of the extended burial Burial No. 35 expresses itself nicely by its different filling material which consists of a mixture of greenish sand and whitish *chunam* chunks totally devoid of any brownish cloddy clay. This extended burial is 1.22 deep (from the present surface level). As this burial pit is deeper than the extended Burial No. 35 it is quite clear that the contents of the extended burial have been cut through and disturbed by the rectangular burial. It is just likely that we may get the portions of the skeleton which was lodged in Burial No. 35 after the filling is removed. Possibility of getting pieces of tibia, fibula and foot bones can not be ruled out.

The rectangular pit has disturbed another extended Burial No. 35 at its north-eastern corner. Only the central half of the extended pit has been cut. This Burial No. 36 is oriented north-west to south-east. Its maximum available length is 3.02 m and width is 1.10 m. filling of this pit is also the same as that of Pit No. 35.

The rectangular pit has yielded a number of pots lying jumbled up at the north-eastern side of the pit, and a portion of human skeleton almost in the centre of the pit. The pots occur at various levels, but mostly on the bottom of the pit i.e. over the greenish sand. The sections of the pit show water and wind borne deposits (lamination right from the bottom to various heights at various points). The action of water could be clearly seen all around the skeleton and the pots. The laminations formed by the water action are more distinct towards the pots on the plan. Most of the pots are lying in broken condition and the laminations run right through the filling of the pots and at various points between the various bones of the skeleton. A big globular vase lying at a higher level than the other pots, a beautiful painted cup-on-stand with rough circles and dot designs on the exposed surface of the base and cup. A globular vase with a short neck and painted upto the waist line. At the neck region various black bands and an irregular line of loops run. Below it are the semicircles running at regular intervals and joined by a black band.

Though the designs have been made over a thin red slip (Harappan) they are typical Early-Harappan of fabric 'A', a bowl in pieces, a small vase, flat-bottomed miniature jars, a bowl as it is buried below other pots, a big bowl piece, a number of



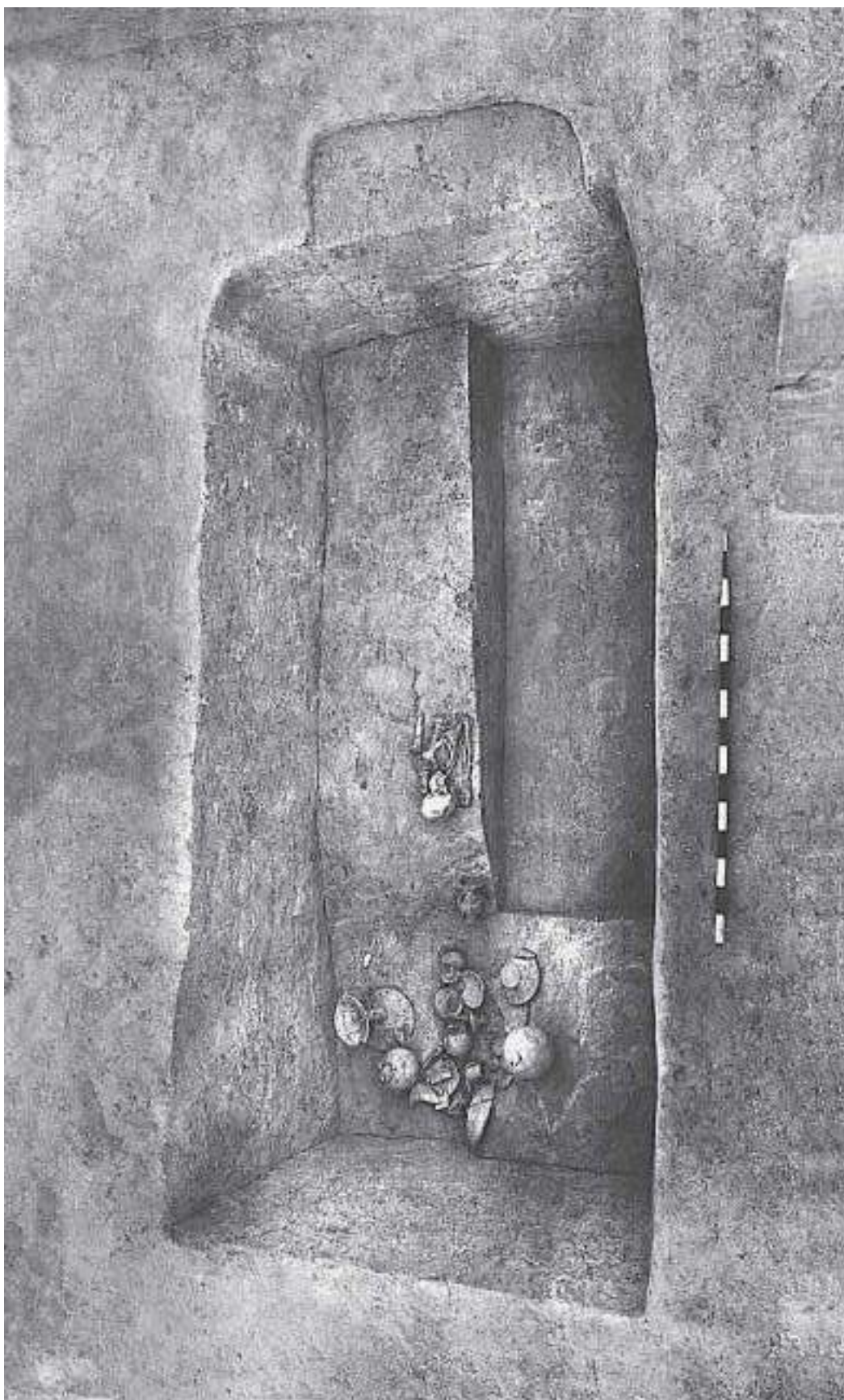


Fig. 22.44 KLB-8 Burial no. 31



*Fig. 22.45 KLB-8 Close-up of Burial no.31*



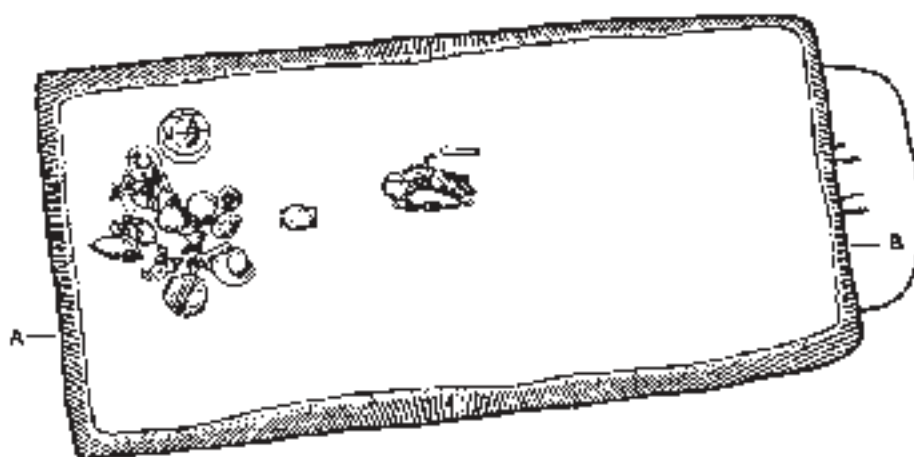
**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NO 31 AND 35**

0 1  
METRE



**SECTIONAL ELEVATION**



**PLAN**

Fig. 22.46 KLB-8 Sectional elevation and plan of Burial nos. 31 and 35



pieces and is a big vase, a vase, a globular button-based goblet and is painted, whereas goblet. Between two beautiful complete cups (just like ice-cream cups) with 15, is a dish, beautiful complete cups (just like ice-cream cups) with black bands at the outer surface, a dish, a complete beautiful flower vase with short carinated neck and curved ring base. This vase is beautifully decorated on its outer surface throughout. This flower vase is lying towards the north of the skull, 0.32 m away. A pot was recovered while lifting the skeleton. To the south-east of cup-on-stand is lying a valve of fresh water muscle.

Apart from these pots and potsherds occurring only at the north-eastern side of the pit, rest of the pit is totally devoid of any pottery. From the condition of the pots and marks of water action and the laminations running over and inside the pots it seems that after the placement of these pots the pit was never filled up for a considerable time and the pots remained exposed to the action of sun and rain. This exposure has caused considerable damage to the beautiful decorations on the pots and it is very difficult to save the paintings as the slip flakes out with the adhering earth itself.

### **The Skeleton**

Nearly upper half of a human skeleton is found in this pit, 1.53 m away from the northern section and 0.47 m from the eastern section. The skeleton remains have not been put right on the bottom of the pit but there is a deposit of 0.21 to 0.23 m in between the skeleton and the bottom of the pit. This deposit is also of the filling material of this Pit No. 31. It shows clear layers of laminations and intermittent sand deposits. The laminations are also running right inside various parts of the skeleton in the

available space with bones. The skeleton is lying in perfect north-south orientation with the skull towards north looking west. Except for the lower half of a femur lying by the side of the skeleton the rest of the available parts are in perfect articulated condition. This skeleton seems to be a foreign one, probably the cut away portion of either Burial No. 35 or 36. The skeleton is represented above the elbow region. No cut mark could be noticed in any of the available parts. The articulated condition of the various available parts except the femur suggests that it was disturbed shortly after burial when the entire flesh has not decomposed. At the lower end, the skeleton has been probably cut below the right elbow, (with the right hand folded upwards) right ribs and below the 2<sup>nd</sup> lumbar vertebra. Except for the first left rib, the rest are missing. The available maximum length of the skeleton is 0.51 m. The skeleton is lying on its dorsal surface with the skull resting on its right side after getting tilted towards right exposing almost all the vertebrae. The skull is in fairly good state of preservation due to the compact nature of the soil that filled the pit though the pit remained exposed for a considerable period. It seems, it was later on filled as the laminations totally stop occurring at the height of 0.85 cms. from the bottom of the pit. During the period of exposure the pit was getting filled naturally by the stuff lying on the edges of the pit. Left lateral aspect of the skull is visible. Frontal parietal, occipital, temporal bones are in good condition. Portion just above the left mastoid process is damaged while excavating (mastoid portion and parietal notch portion). Left mandible fossa, zygomatic process and left squamous parts are intact. Left suprameatal triangle is slightly damaged. External

acoustic meatus is intact. The sutures are distinctly visible and none of them show any marked degree of obliteration. Left sphenoid, zygomatic bone, maxilla, nasal bone and eye orbits are intact. Fore-head is broad and receding. Anterior nasal spine is intact. External occipital protuberance is prominent. All the teeth of the left upper jaw are present. 1<sup>st</sup> incisor of the right upper jaw is missing while rest seem to be intact. Mandible is in good and articulated condition with all its 16 teeth intact. Left coronoid and styloid process, angle and body of the mandible are in sound state. Chin is protruding. Upper jaw shows a marked degree of prognathism. Upper margins of the eye orbits are not sharp. Nasal bridge is considerably curved. Skull bones are rough and thick displaying distinct muscular impressions. All the parts have developed several cracks. Vertebral column upto the 2<sup>nd</sup> lumbar vertebra is intact with spines of the vertebrae intact. Only 1<sup>st</sup> left rib is present. Right clavicle is present below the right half of the mandible slightly disturbed from its position. Deltoid and acromial ends are intact. Sternal end is hidden below the vertebral column. 1<sup>st</sup> right rib is present while 2<sup>nd</sup> to 11 are lying intact in articulated condition with the lower ends of the shaft broken. They seem to have been damaged when the skeleton got disturbed from its original position. Sternum is in good condition with the manubrium and body intact. It is in more or less in its position but the body has slipped towards the right. Suprasternal notch, clavicular notch and notches for the cartilages are intact. Ossification between various fragments of the body is complete.

Right hand bones are all lying in good articulated condition. Fore-arm is folded

upwards so that the fingers are lying to the right of the skull. Right humerus is complete with its head, anatomical neck, tubercles, shaft and the distal ends in good condition. Anterior aspect of the humerus is visible. Posterior aspect of right forearm is visible. Both radius and ulna are intact and in articulated condition. All the carpals and metacarpals are present. 1<sup>st</sup> finger is hidden below the second while the rest are visible. The fingers are twisted to the left from the second phalange in case of 4<sup>th</sup> and 5<sup>th</sup> fingers. Third phalange of each finger is lying buried downwards below the skull. To the left of the vertebral column just below the 1<sup>st</sup> left rib, is lying the lower half of a femur (probably right) in two pieces. Its anterior aspect is visible. Patellar surface, condyles and tubercles are intact.

The burial Pit No. 35 was also only partially filled (probably from the western side) because the southern section shows a concave depression where a series of concave depositions have taken place forming laminations. The bottom of the concave being at the height of 0.58 m from the bottom of this pit.

### Measurements

Maximum length of right humerus	= 0.314 m
-do- -do- radius	= 0.238 m
-do- -do- ulna	= 0.270 m

After lifting the pots, while examining their contents, Pit No. 35 yielded thirteen micro barrel-shaped beads - 3 gold, 3 jasper, 3 agate, 2 carnelian and 2 steatite.

### 12. Burial No. 32 (Skl. No. 12), Figs. 22.47 to 22.49

Length of skeleton from ankle of right foot to bregma-1.75 m. First a rectangular pit has been dug quite deep. On the

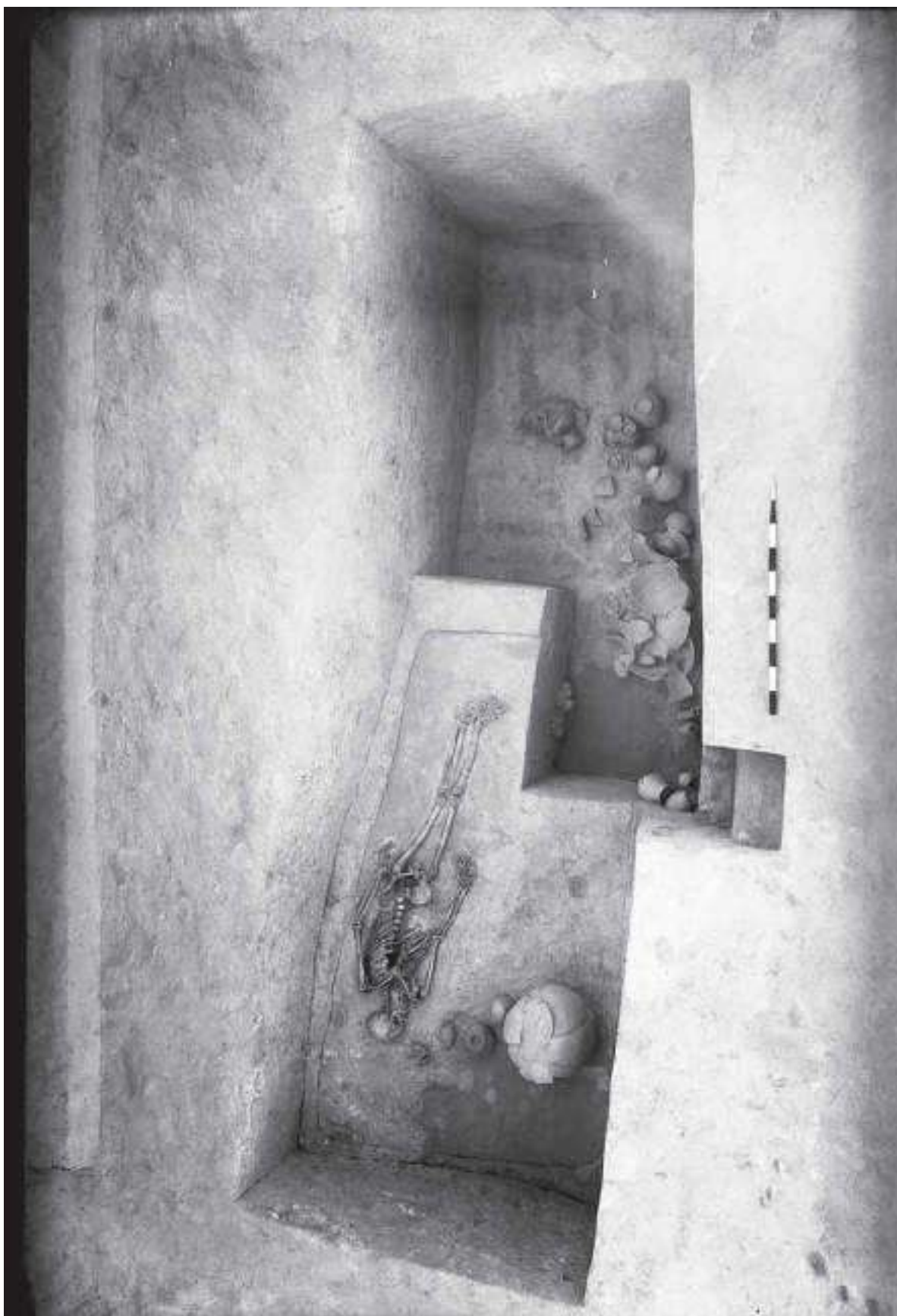


Fig. 22.47 KLB-8 Burial no. 32



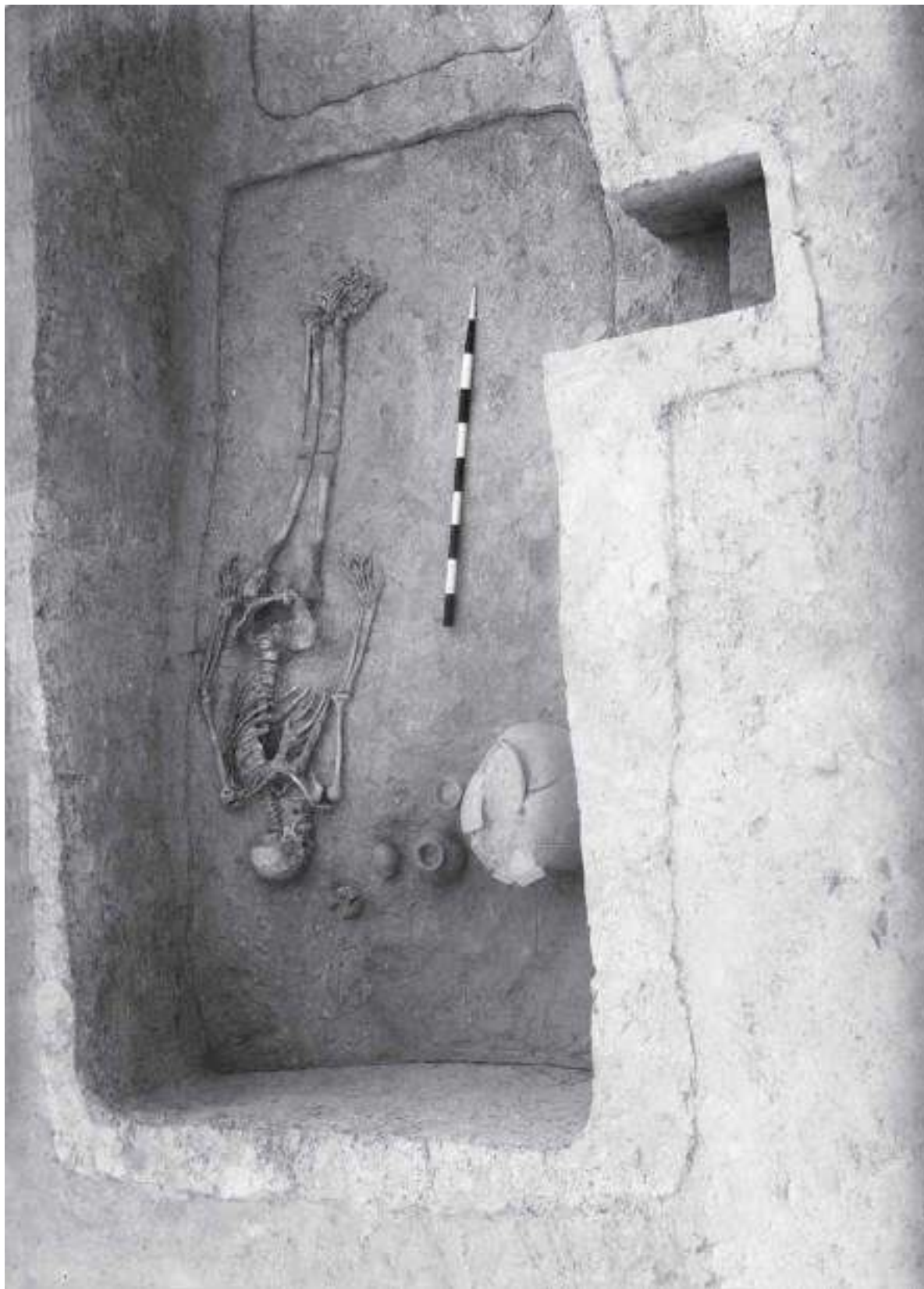


Fig. 22.48 KLB-8 Close-up of Burial no. 32

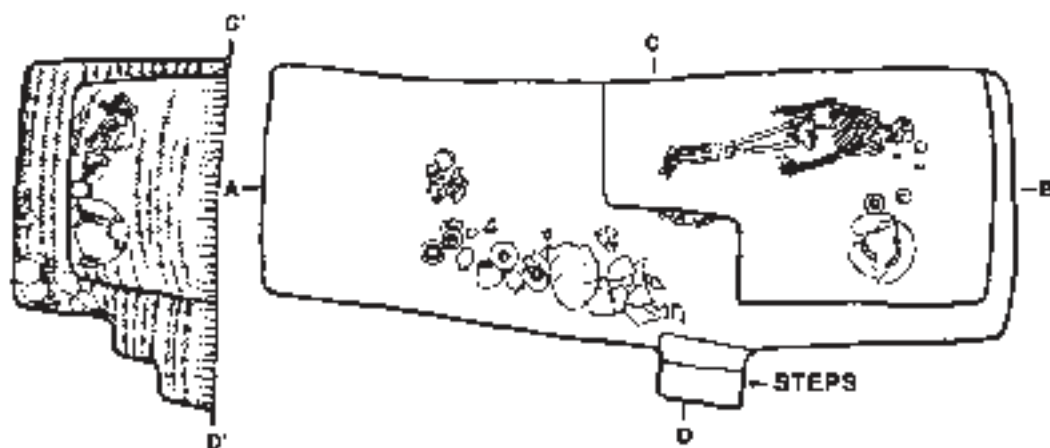
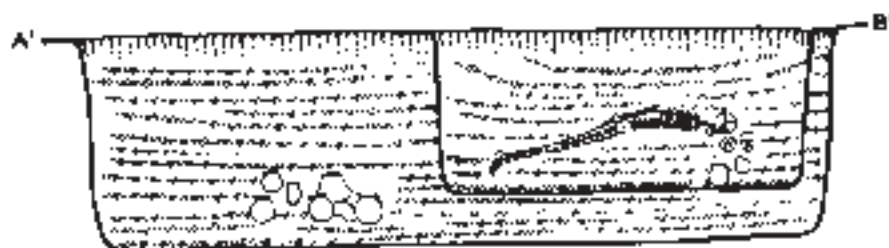
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**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**BURIAL NO. 32**

0 1  
 METRE



**SECTIONAL ELEVATION**



**PLAN**

Fig. 22.49 KLB-8 Sectional elevation and plan of Burial no. 32

eastern side of the pit near the centre two steps have been provided to get down inside the pit. The steps are outside the pit line. Pots were deposited inside this huge deep rectangular pit. Only the southern half of this pit has been exposed and northern half could not be exposed as the pits and skeleton belonging to pit B are lying at a higher level. The pit was not filled up after depositing the pots. It got filled up by natural agencies. The pots consist of 'S' shaped jars of various sizes, a big pot, cup-on-stand, a base for a round-bottomed jar, a rimless jar and its lid. It appears that after a lapse of time, inside pit A another pit was dug in the northern 2/3 of the pit A. The later pit was dug in such a way that it did not disturb the outer edge of the earlier pit. Inside the later pit, i.e. pit B a human skeleton, five pots and pieces of shell bangles were deposited. Almost all the pots are lying to the east of the skull. The skull is facing east. Incidentally these five pots have been kept in such a position that the smallest is near the skull and biggest (jar) away from it. From the arrangement, it appears that they have been arranged in receding fashion. Between pot 1 and 2, pieces of shell bangles are lying. The skeleton is lying adjacent to western edge of the pit, with the right ankle almost touching the edge of the pit. It has been kept on a slope so that the right half of the body is at a higher level than the left half. Skeleton on the whole is lying in supine position. Right hand and legs are in prone whereas left ones are in supine position. Almost all the bones are in good articulated condition. Bones are very thick and sturdy.

### **Skull**

Skull is thick, long, rough with prominent muscular impressions on it. It

is lying in norma lateralis position with right lateral aspect visible. In the neck region were found two small beads, one a barrel-shaped banded agate and the other a gold bead. Upper and lower incisors and canines are charred. Just below the right mental tubercle of the lower jaw, black burning marks could be seen.

Foreheads is broad and receding, edges of the eye orbits are not sharp but curved, nasal bone is high and long with very little depression for the bridge. Mastoid process is very prominent. A portion of zygomatic process is broken. Anterior nasal spine of maxilla is intact. Maxillary bones are in good condition. Occipital bone has deep muscular markings. Nuchal lines of occipital and external occipital protuberance are very prominent. Temporal lines are very prominent. Lower portion of coronal suture shows marked degree of fusion. Sagittal and lambdoid sutures also show some degree of fusion. Parietal sutures have also considerably fused (35 to 40 years). All the 32 teeth are present. Teeth of the upper jaw are lying right over those of the lower jaw indicating that when the person died his mouth was tightly closed. Lower jaw is in good condition. Head of mandible, coronoid process, angle, mental protuberance are in good condition. Vertebral column is in good shape and condition. Sacrum is big and narrow, and is less curved-male. Coccyx has almost fused with the sacrum-late period of life. On the right side eleven ribs are present whereas on the left side 12 ribs are present. Both the clavicles are in articulated condition with acromial, deltoid and sternal ends intact. In the sternum the manubrium has not fused with the body. Various segments of the body have fused - 25 years. Xiphoid

process is also in the process of fusion with the body – about 40 years.

### **Scapula**

Only a portion of both the scapulae are visible. Ventral aspect of left is visible while the dorsal aspect of right is seen.

### **Humerus**

Both are in articulated condition. Right humerus is lying on its lateral side whereas left is lying on its posterior side with anterior aspect visible. Both have cracked from several points. Right radius and ulna are in prone position whereas left ones are in supine. Left ones have broken into two from the middle of the shaft. All the fusion points of humerii and tibia and fibula have closed. Right hand bones are lying in prone position with finger slightly curved towards left. Phalanges are very long. Left hand bones are in supine position with thumb and inner two fingers lying in stretched condition whereas in the rest of the two fingers, second and third phalanges are curved considerably towards right. From the condition of the fingers it appears that man died due to excessive pain which was probably caused due to burning. Sixth rib shows black burning mark at the end. End phalange of the middle finger also is slightly charred.

### **Pelvis and Thigh bones**

Pelvis is in good condition. Almost all the parts except the left pubic bone which has broken and fallen between the two pubic regions, are in good condition. Bones of the pelvis are strong and are having well marked muscular impressions. Distance between iliac crests is considerable. Curves of the crest are well pronounced. Cavity is narrow and deep. Pubic arches are not surrounded. Depth of pubic symphysis is more. Acetabular cavities are big and wide in

which are lodged the heads of respective femurs. At the anterior superior spine region of the left Iliac bone black burning mark is present. This mark is not present on the right side. Both the thigh bones are in proper articulated condition. Lateral aspect of right and anterior aspect of left is visible. Inter trochanteric lines on both are very prominent. Distal ends of both the femurii have decomposed leaving only mud impressions. From the point below articularis, condyles and patellar surface have disintegrated. Some burning marks could also be seen in the anterior side of the left femur. Just below the intratrochanteric line, one black mark is present while another is in the middle of the shaft.

### **Tibia and fibula**

Both the leg bones are in articulated condition. Upper third of the bones of both the legs have decomposed. Left fibula is hidden below the left tibia. Left tibia is almost fully covered with burning marks except the distal end. Leaving the upper 3<sup>rd</sup> decomposed part, rest of the shaft of left tibia is having numerous burning marks. Right leg bones do not show any burning marks. Foot bones from both the legs are lying on lateral sides. Almost all the phalanges and other bones of the right foot are present. Most of the bones of the left foot were damaged while digging. Over the right thumb of the foot are lying the other fingers whereas in case of left foot thumb is on the top.

Length of	right	humerus	= 0.335 m
-do-	left	-do-	= 0.336 m
-do-	right	ulna	= 0.297 m
-do-	left	ulna	= 0.295 m
-do-	right	radius	= 0.275 m



-do-	left	-do-	= 0.273 m
-do-	right	femur	= 0.472 m
-do-	left	-do-	= 0.470 m
-do-	right	tibia	= 0.395 m
-do-	left	-do-	= 0.405 m
-do-	right	fibula	= 0.405 m

Width of shoulder (acromian to acromian of scapula) = 0.325 m

The skeleton belongs to a middle aged man who appears to have been a victim of fire.

### **13. Burial No. 34 (Skl. No. 13), Figs. 22.50 and 22.51**

It is a typical Harappan burial of the extended type containing a skeleton in north-south orientation with the skull towards north and legs towards south. The skeleton has been kept on the western side of the pit in supine position. Just above the skull region are kept four pots, a big jar, a button-based glass and two '*lotas*'. Two pots are lying in the north-eastern corner of the pit, whereas the seventh one is in fragments. In all there are seven pots. The pit has been dug in a triangle like manner, i.e. broader towards the top and gradually becoming narrower towards the bottom. It is 3.80 m wide at the top whereas only 3.00 m wide at the bottom. The filling of the pit consists of brownish clay chunks mixed with greenish sand. On the northern side, the pit has been purposely over cut to show the natural sand. The skeleton has not been put directly over the natural soil but has been put after laying a little of filling of brownish clay chunks.

Maximum length of the skeleton from bregma to the end of phalanges of legs in in-situ is 1.45 m. The skull is lying in supine position, resting on occipital bone. From the top its norma-frontalis view is

visible. Due to the presence of the earth the maxilla has broken into two halves, the left one is displaced and has moved down on the mandible. Nasal bones are present, eye orbits are complete with sharp edges, forehead is smooth and sloping. Skull bones are very smooth, without any marked muscular ridges. All the sutures are wide open and none of them show any marked degree of fusion. Several cracks have appeared on the skull, left zygomatic process is missing whereas right one is present. Maxilla consists of 14 teeth. Third molar, both on the maxilla and mandible have not erupted. None of the teeth show any marked sign of wear and tear. Cusps are sharp and deep. Left parietal bone from the mastoid process upwards shows a black streak indicating the burning mark. Mastoid process on both the sides are big and strong. Temporal lines are not very prominent. Anterior coronal spine is missing. Mandible on both sides are intact. Mandibular protuberance and angles are in good condition. The skull bear all the infantile characters. Age is about 16 to 18 years.

### **Scapula**

Both the scapulae present in articulated condition have been brought so near the chin that the deltoid cavities and acromian process are lying just below the chin region. Spines and angles are in good condition. All the centres of the scapula are ossified – 16-18 years of age. Various epiphyses are in the process of joining.

### **Handbones**

The hands have been placed in such a way that upper ends of humerus of right hand is lying over the left. They have been brought so close and just below the chin region that this position could be achieved only if the body is tied with a

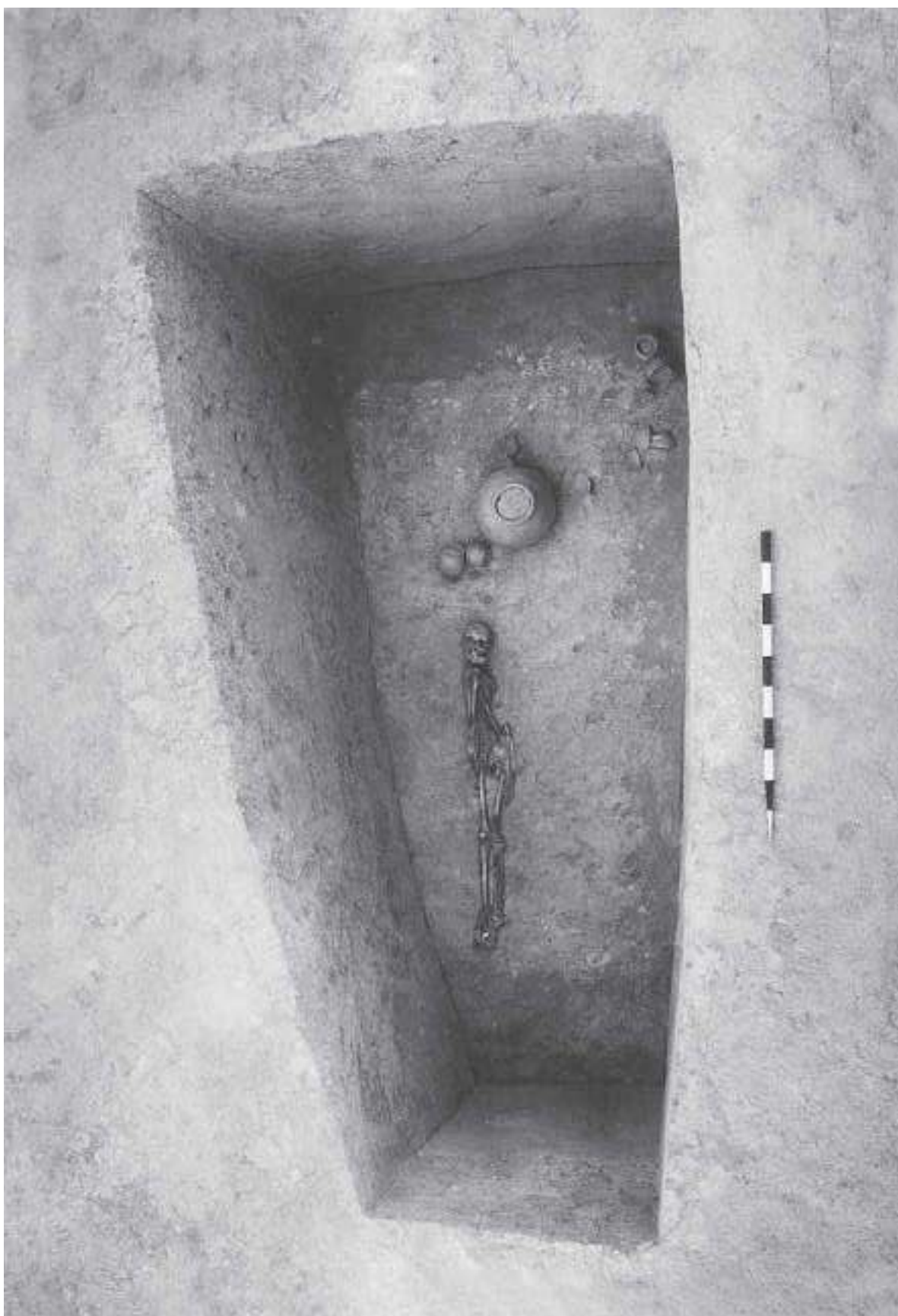


Fig. 22.50 KLB-8 Burial no. 34

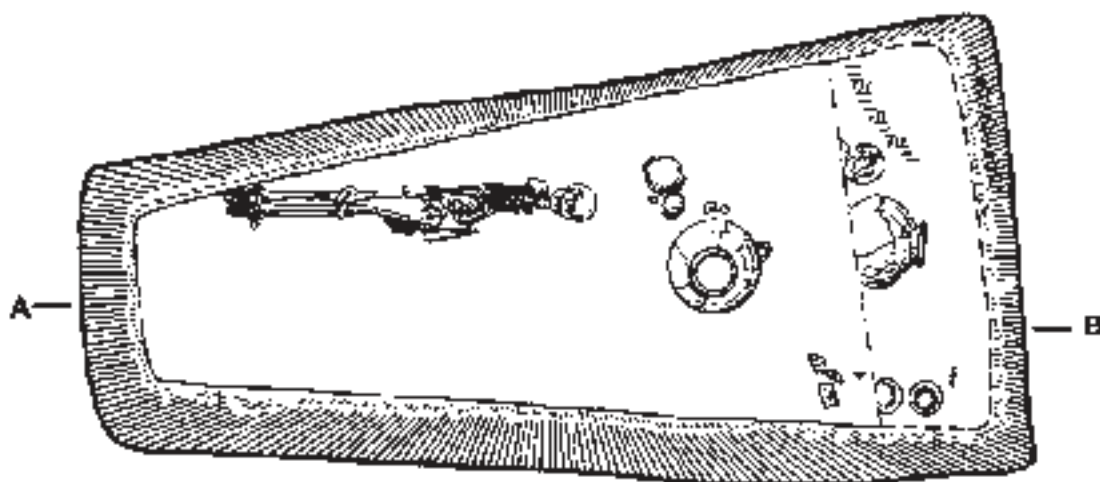
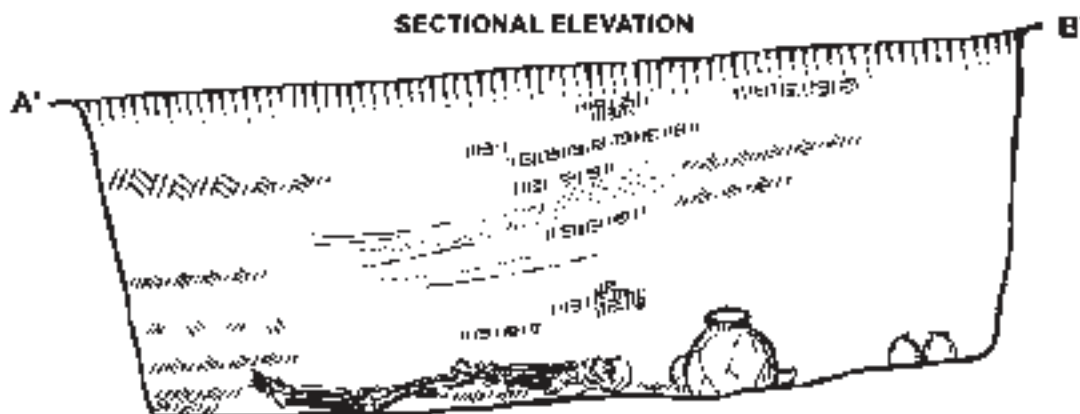
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**KLB-8, CEMETERY**

**BURIAL NO 34**

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METRE



**SECTIONAL ELEVATION**



**PLAN**

Fig. 22.51 KLB-8 Sectional elevation and plan of Burial no. 34

rope at the time of burial or before the rigor-mortis has set in. Both the humerii are lying in lateral position and are almost intact.

Length of right humerus is 0.275 m. Heads of humeri have so far not united with their respective shafts – below 20 years. Medial epicondyle have not united with shafts – below 20 years, but the lateral epicondyles have united – 16<sup>th</sup> to 17<sup>th</sup> year. Right radius and ulna are lying in prone position and have broken from several places. Left ones are in supine position and slightly displaced whereas right ones are in articulated condition. Head of radius have not fused with shafts – below 18 years. Styloid process of radius have not fused – below 20 years. Styloid process of ulna have not joined with shafts – below 20 years. Olecronon process of ulna have joined – 16 years.

Length of left radius = 0.192 m  
Length of right radius = 0.194 m  
Length of right ulna = 0.220 m  
Length of left ulna = 0.218 m

All the hand bones of left hand are present in prone position. Fingers are slightly bent towards right. One or two phalanges of right hand are visible below the right femur. Right ribs nine in number are lying over each other whereas left ones, also nine are lying in flexed condition. In both cases they are intact.

### **Vertebrae**

Only four lumbar vertebrae are visible, while others are hidden below the ribs and humerii. Spines of vertebrae are intact. A part of sacrum is visible and is not so much curved. Auricular surface and iliatus meatus are present.

### **Pelvis**

Hip bone is in badly damaged condition. Major portion on the right side

is hidden below the head of right femur. Left ilium has cracked into several pieces. As acetabuli, the triangular scale of bone and the acetabular part of the pubic has fused with the main part, it is indicative of the individual attaining puberty.

### **Leg bones**

Both the legs are lying in supine position. Femurii have cracked from several places. Head of femurii have not joined yet with their respective shafts and necks, so also the lesser trochanters – below 18<sup>th</sup>-19<sup>th</sup> years. Medial and lateral epicondyles have so far not fused with their shafts – below 18-20 years.

### **Tibia**

Both the tibiae have broken from several points and are very fragile. Medial and lateral condyles have not fused with the shafts – below 20 years. Medial malleolus in both have not fused with the shafts – 18 years.

### **Fibula**

Both the fibulae are in articulated condition but have cracked from several places and each are available in 4 big pieces. Head of fibulae have so far not fused – below 20 years. Lateral malleolus regions are in the process of fusion but not totally fused- below 18 years. Almost all the foot bones are present except some of the phalanges. Both are in supine position and well preserved.

Length of left femur = 0.402 m  
-do- right femur = 0.405 m  
-do- left tibia = 0.315 m  
-do- right tibia = 0.323 m

- do- left fibula = 0.303 m
- do- right fibula = 0.293 m

Only the right patella is present lying over the proximal end of femur. Left has fallen on the right side.

From the above description it appears that the skeleton belongs to a person aged about 15 to 16 years. It is difficult to say at present anything about the sex. Skull bones are very smooth but forehead is gradually sloping. From

the condition and position of the bones of the trunk region, it appears that the hands and pectoral girdle region was tied with rope. Presence of burning mark on the left temporal bone is another interesting feature. This feature has been observed in the skull of a child in burial No. 9. Eastern part of the pit is vacant indicating that while putting the dead body in the grave-pit, depositors stood in the vacant space and were facing west.

**B. RECTANGULAR BURIALS DEVOID OF ANY SKELETAL MATERIAL\***

**Burial No. 14; Fig. 22.52**

Outline of grave pit is rectangular. Major axis NS. Measures 2.50 m in length and 1.08 m in breadth. This is completely disturbed. Excepting for a piece of rib

bone and 4 pieces of pottery two lids and two goblets are Harappan. The pit was empty. Depth of the pit was 0.11m. The pots were almost visible on the surface. There has been extensive denudation of the soil, which perhaps explain the lack of any human skeletal remains.



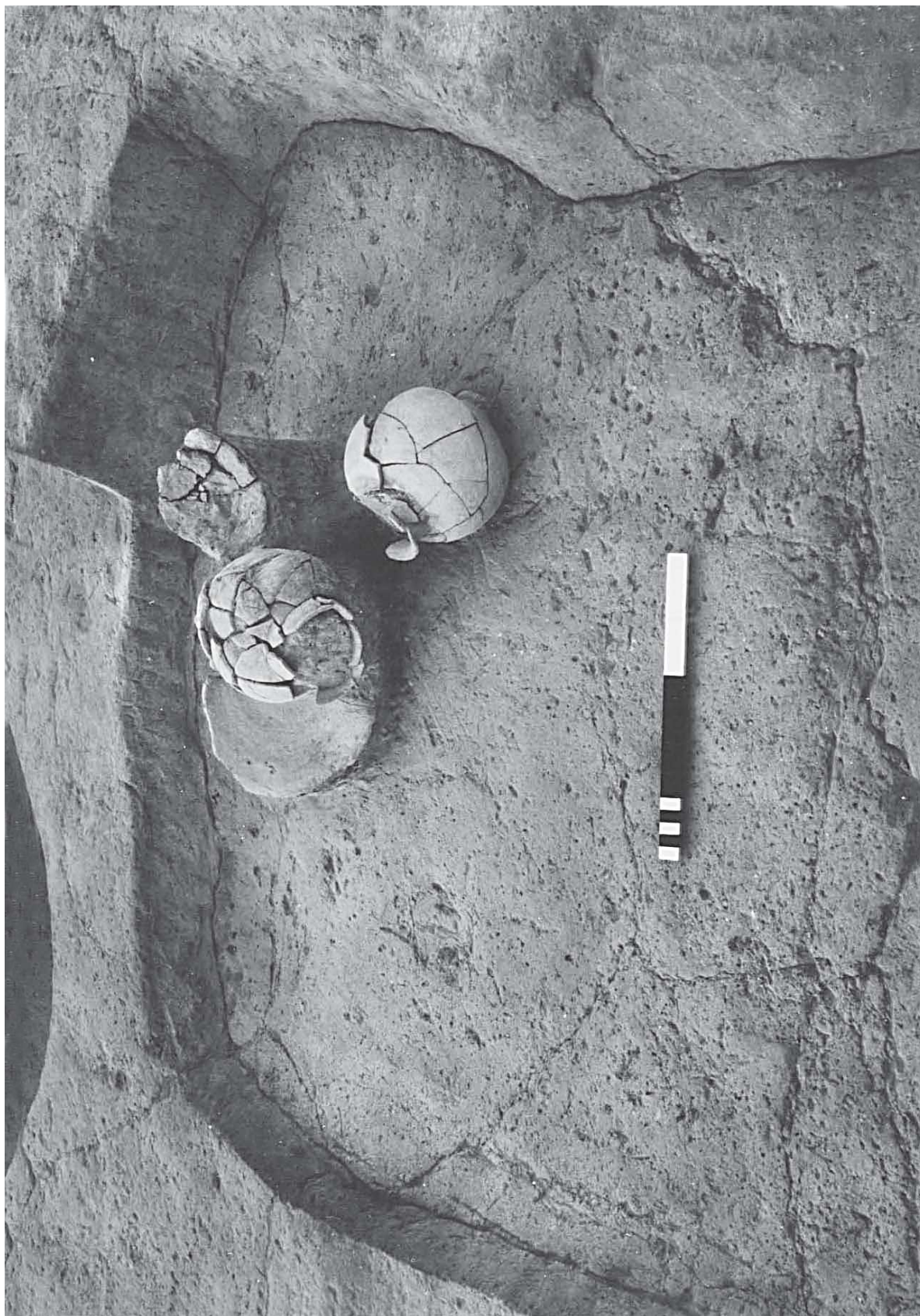


Fig. 22.52 KLB-8 Burial no. 14



**Burial No. 19; Fig. 22.53**

This is a rectangular pit measuring 3.75 m x 1.30 m and 0.75 m deep. The major axis was found to be north-south. Over the pit was found a layer of loamy sandy earth to a depth of 0.25 m. This was the sealing layer of the burial. This could have been aggradational. Filling inside the burial was brownish in colour and compact in texture. Perhaps mud brickbats were used to fill up the burial. In this respect the burial differs from the circular ones. The burial goods were confined to an area of 2.35 m x 1.35 m, concentration of the pots being found in the NW corner and south western corner. SE corner is almost empty.

Shapes of pottery include internally beaked dishes or platters, shallow lids or dishes, handled cup, vases, perforated jar, dish-on-stand, cup-on-stand, long narrow constricted necked gourd like beakers, trough, etc. The perforated jar was found placed inside the trough and inside the perforated jar was a small vase. So far in no burial of the Harappan culture this type of perforated vase has been found.

Although there is no regularity in the placement of pots, most of them are in clusters and tilted or found on their sides; - few of them upright - a sort of alignment along the edges of the burial could be discerned. The burial contained 41 pots in all. No skeletal or cranial remains were found.

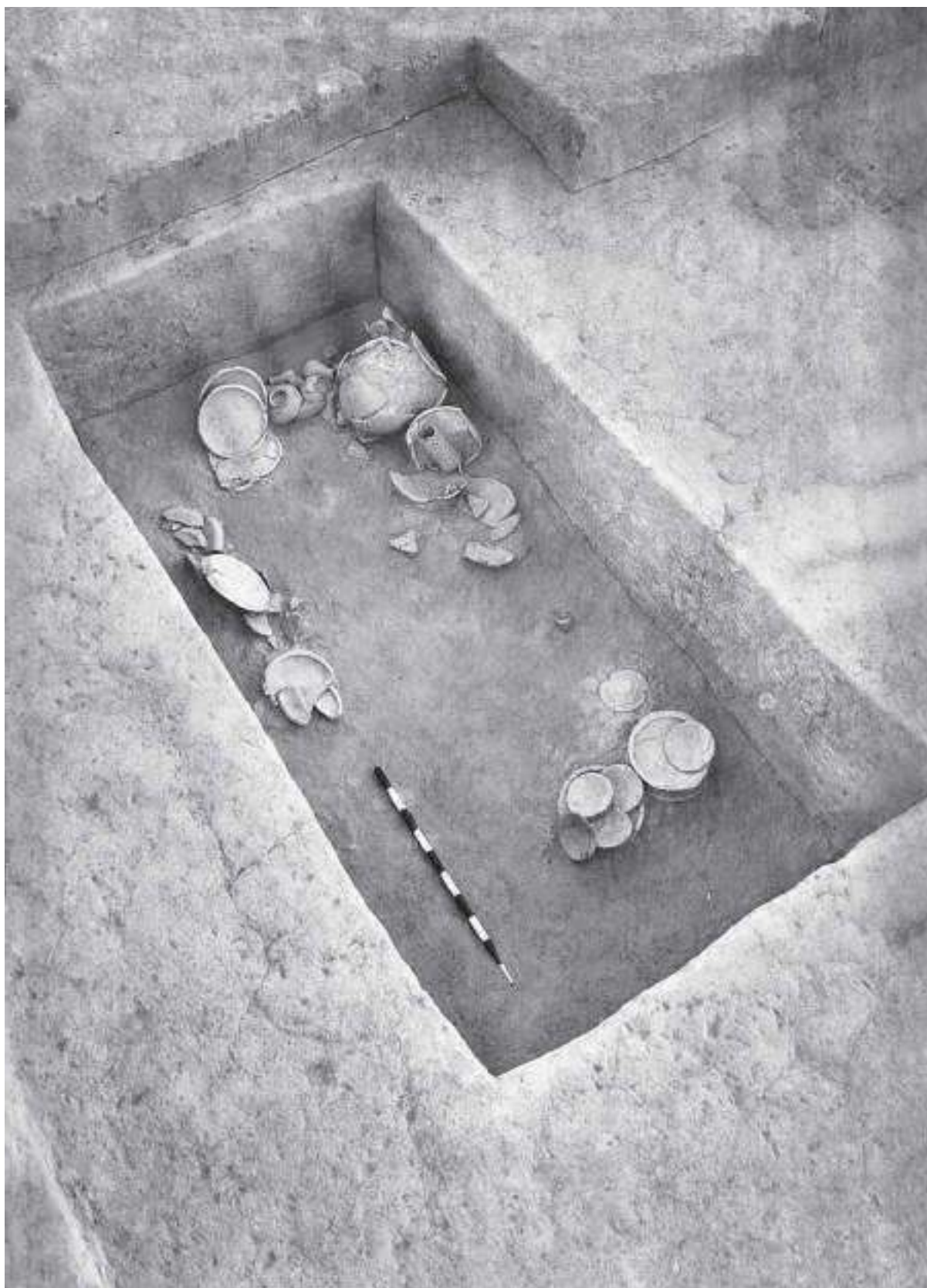


Fig. 22.53 KLB-8 *Burial no. 19*

**Burial No. 22; Figs. 22.54, 22.56, & 22.57**

Rectangular in shape measuring 4.30 m x 2.00 m and depth 1.20 m and similar to Burial No. 19. It appears that brickbats (mud) have been piled up especially along the sides (south, east and west) and the central portion filled up with brickbats and earth. The piling of the brickbats was not found right upto the top. The burial goods consisting mainly of pots were found concentrated

on the north. Besides a fragment of a shell bangle, a carnelian and a number of steatite disc beads were found. A small fragment of a gold foil was also found. Shapes of pottery included: jar or urn, platters, lids, casket, goblets, dish-on-stand, etc. No skeletal or cranial remains were traced. This burial had major axis of N-S. This was also found to have been partially cut away on the southern end by a later circular pit of a 'pot' burial, viz, Burial 23. Total no. of pots are 25.

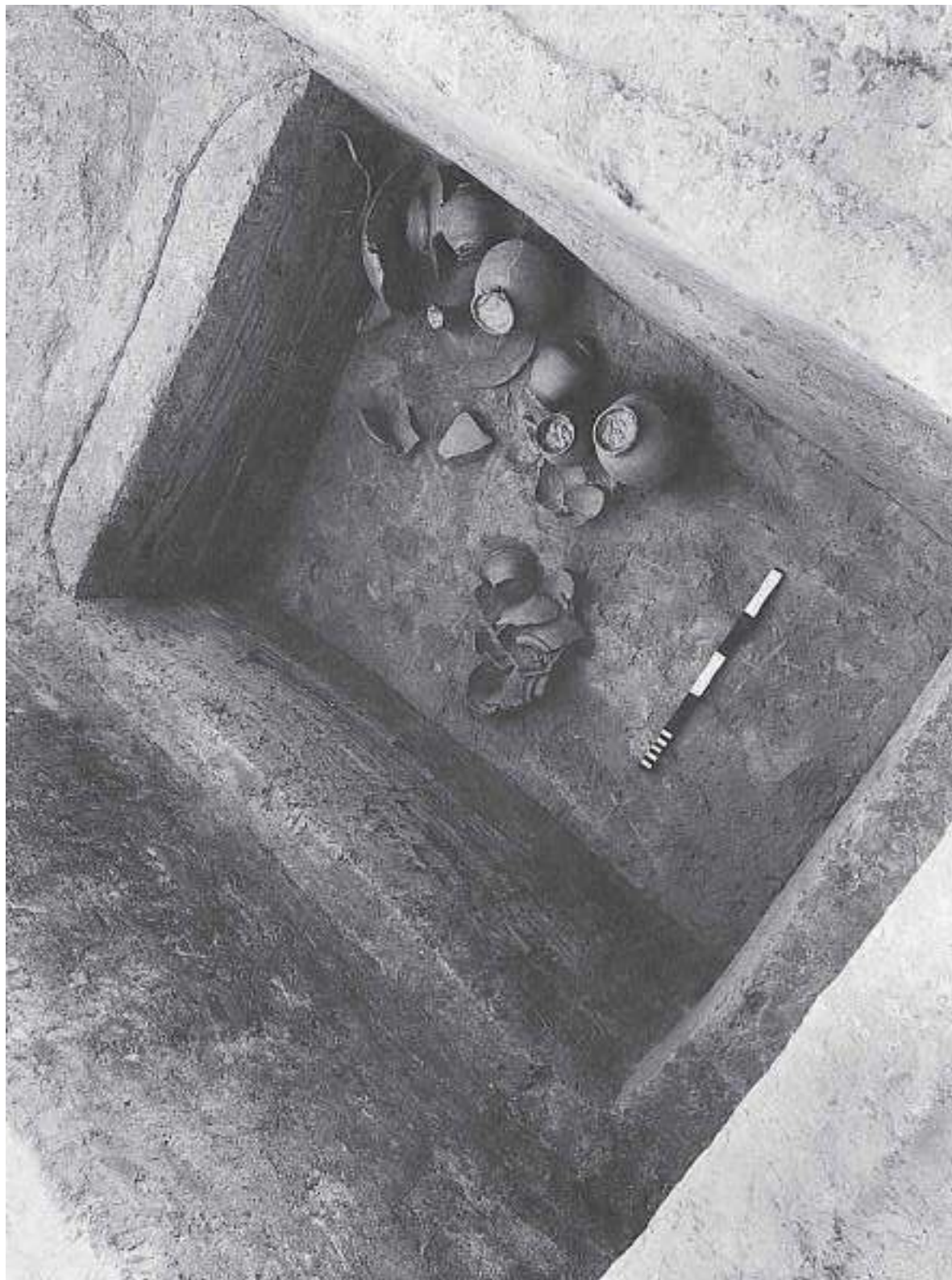
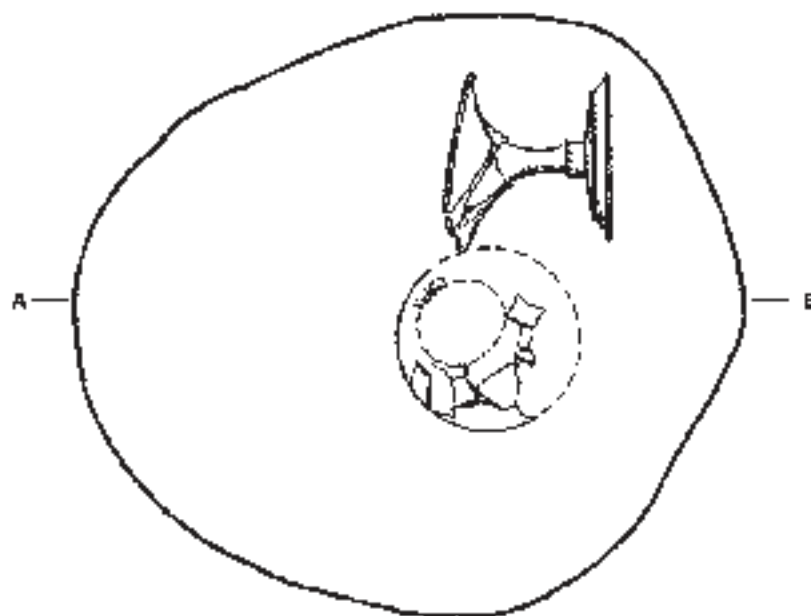
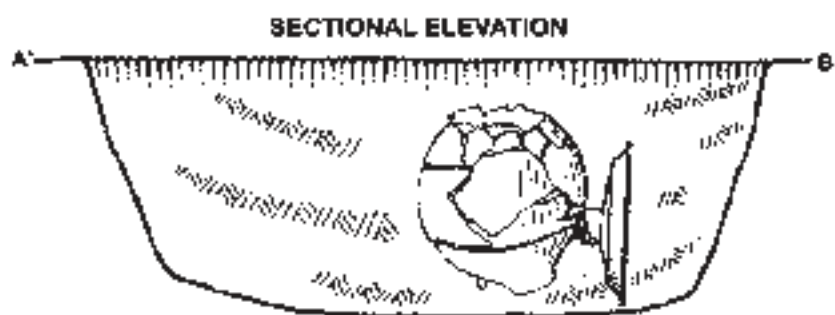


Fig. 22.54 KLB-8 Burial no. 22



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POT BURIAL NO. 23



**PLAN**

Fig. 22.55 KLB-8 Sectional elevation and plan of Pot Burial no. 23

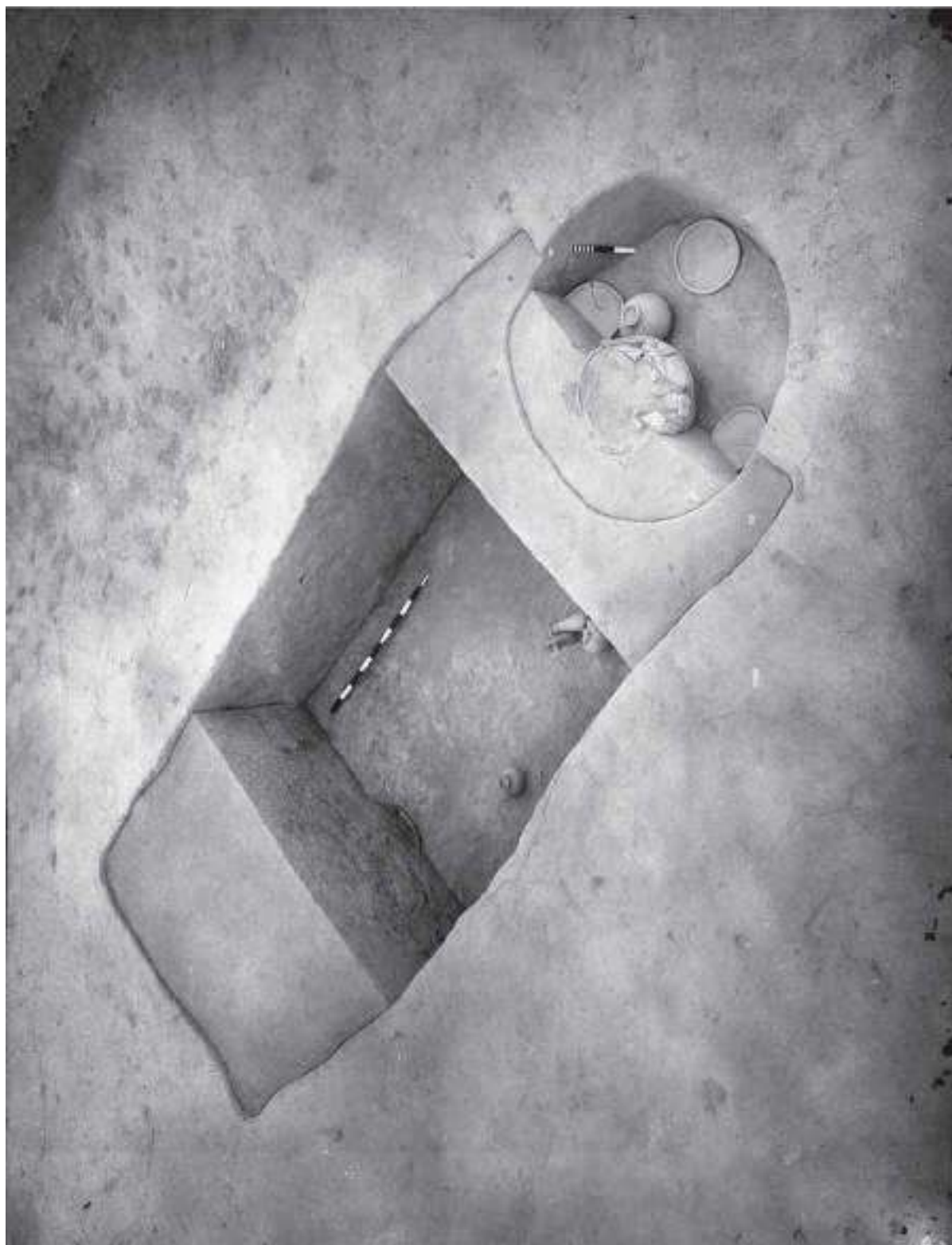


Fig. 22.56 KLB-8 Burial no. 22 and Pot Burial no. 23

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

BURIAL NO. 22 AND POT BURIAL NO. 23

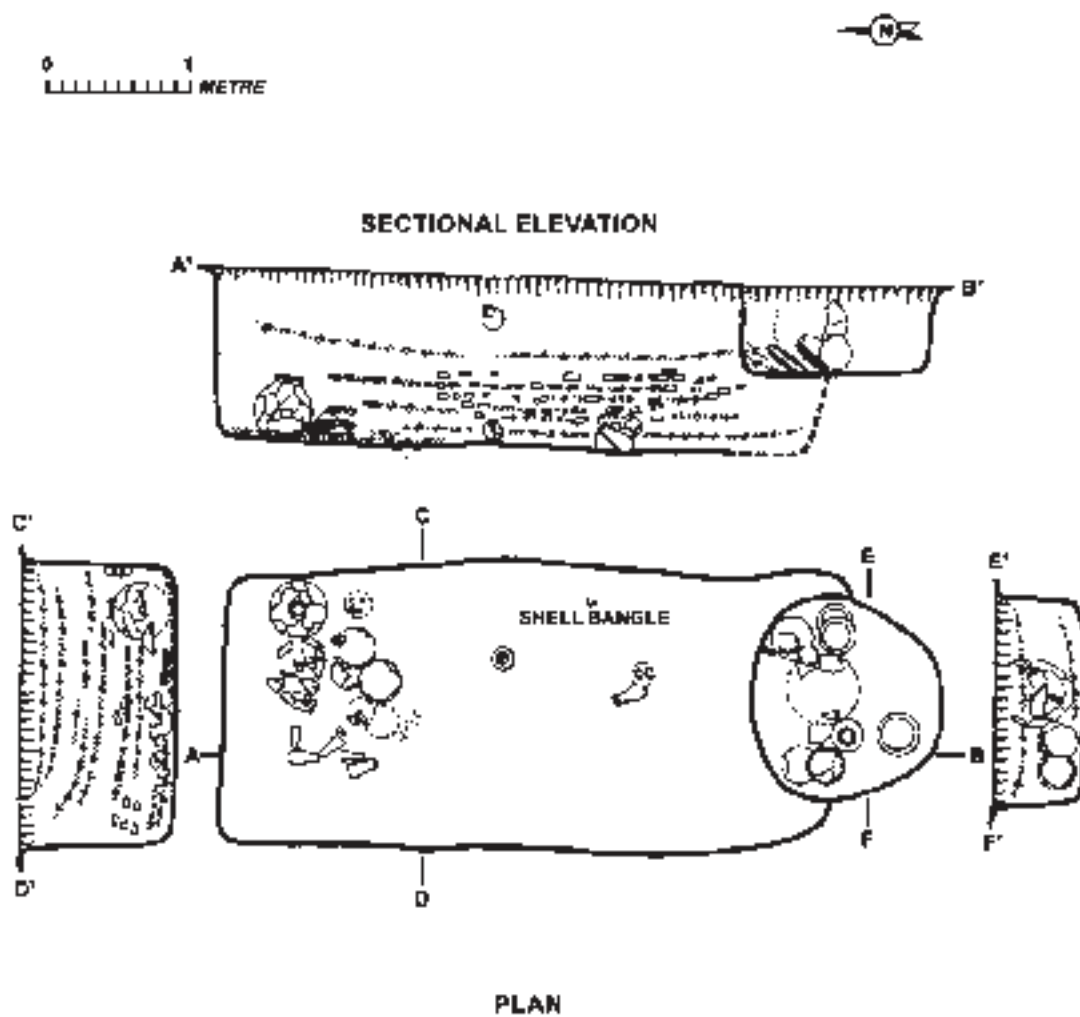


Fig. 22.57 KLB-8 Sectional elevation and plan of Burial no. 22 and Pot Burial no. 23



**Burial No. 30; Figs. 22.58 to 22.60**

A rectangular pit was dug in the natural soil. This pit is one of the three huge rectangular pits to occur during excavations. It is 4.0 m in length, 2.30 m in width and 1.65 m in depth from the present surface level. Filling of the pit consists of speckled clay (*chunam*) mixed with sand and brownish chunks of compact clay and brickbats of the same material. The eastern half of northern section (north eastern) show laminations starting at the height of 0.60 m from the bottom of the pit. These laminations are occurring just above pots and form a tumulus or dome shaped appearance over the pots that are concentrated on the north-eastern corner of the pit. These laminations do occur on the floor of the pit leaving only 1/3 northern side devoid

of them. The laminations consist of same regular layers as in case of Burial No. 25. The pit has not yielded any skeletal material. Except the northern and north-eastern side of the pit the rest of the pit is absolutely empty. A plate first to occur at a higher level in the northern section and the laminations suddenly stop near it after dipping from the north-eastern corner. A big jar, a dish, around which the rest of the pots are congregating, is a dish-on-stand. Below the jar are lying two fine cups and glasses. A flat dish lying near the dish-on-stand. Glasses or wine cups lying close to each other. Glasses with constricted necks. A small vase, a flat bottomed vase, whereas a globular round vase. The sides of the pits are sloping towards the bottom, making the floor of the pit narrower than the top.

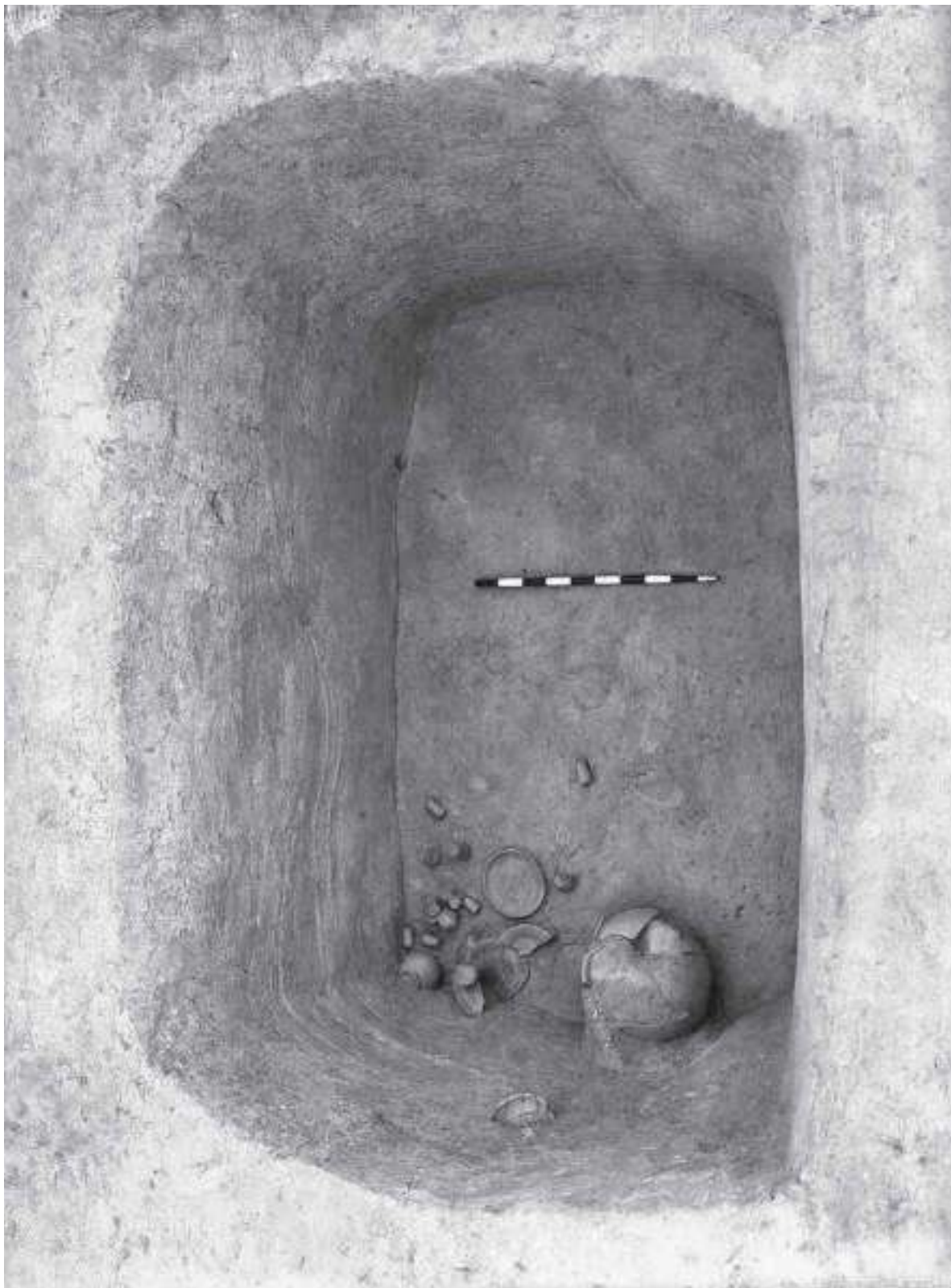


Fig. 22.58 KLB-8 Pot burial no. 30



Fig. 22.59 KLB-8 Close-up of Pot Burial no. 30

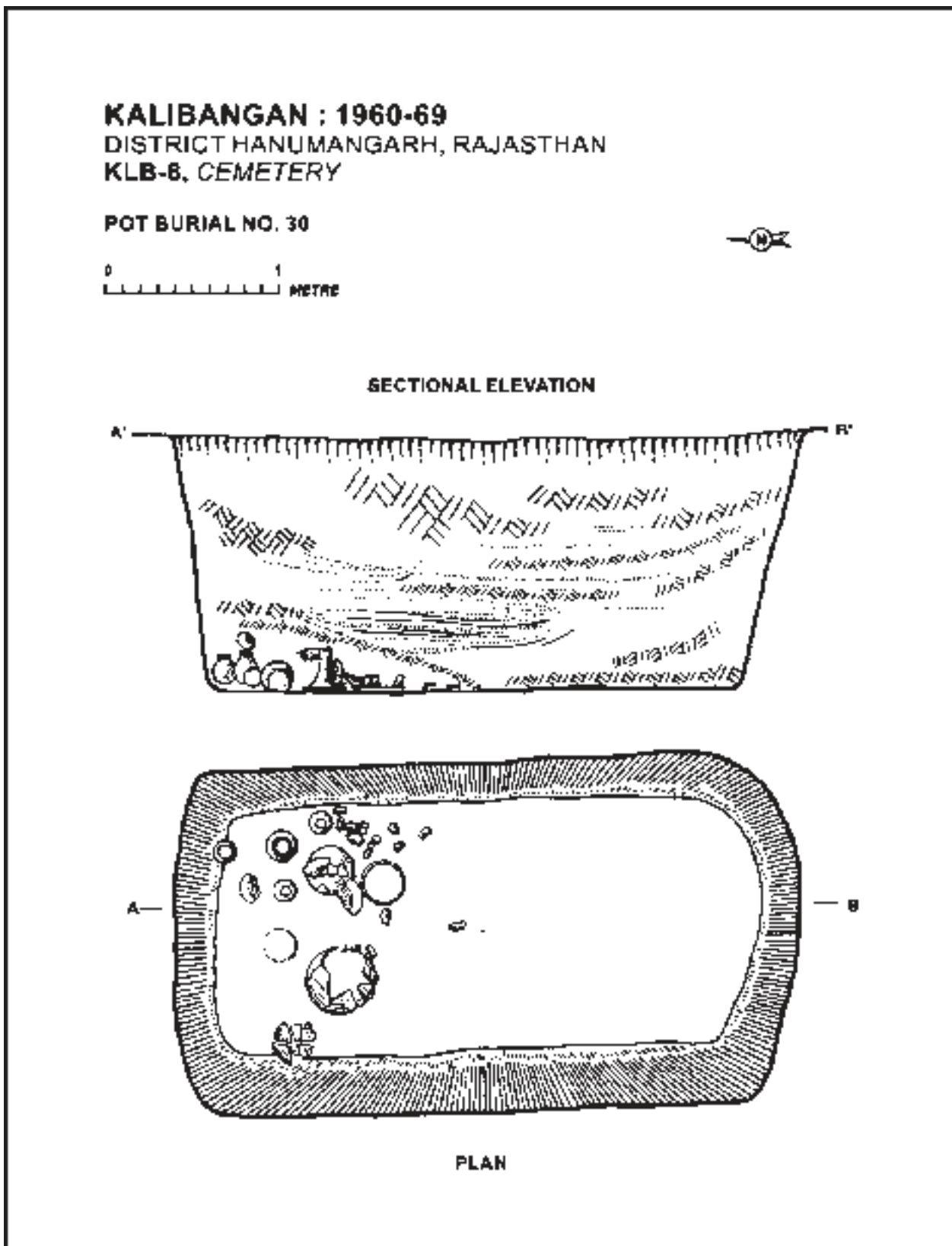


Fig. 22.60 KLB-8 Sectional elevation and plan of Pot Burial no. 30

**Burial No. 33; Figs. 22.61 and 22.62**

It is rectangular pot burial full of complete and broken pots which are scattered throughout the pit and start occurring from a depth of 1.12 m from surface. The assemblage mostly consists of dish-on-stand, cup-on-stand, plates (shallow), thin-glasses, narrow mouthed jar, "S" shaped jars, a *handi*, straight necked jar and few shell bangles. Almost all the pots, except a few, are lying on the bottom of the pit. The pit has 78 pots that could be counted. From the nature of the filling of the pit, it is evident that

after depositing the pots inside the pit, it was left exposed. Only a little of earth was put in order to cover and conceal the pots. Later on the pit got filled up by natural agencies and so we get in the section water and wind borne deposits (laminations). None of the pots are painted and all are plain slipped Harappan wares. Due to heavy salt action after the exposure, slip is quickly peeling off, leaving a dull red surface over the pots. At the northern end of the pit the pots have been arranged in a straight line, east-west and a little above this line the pit ends.



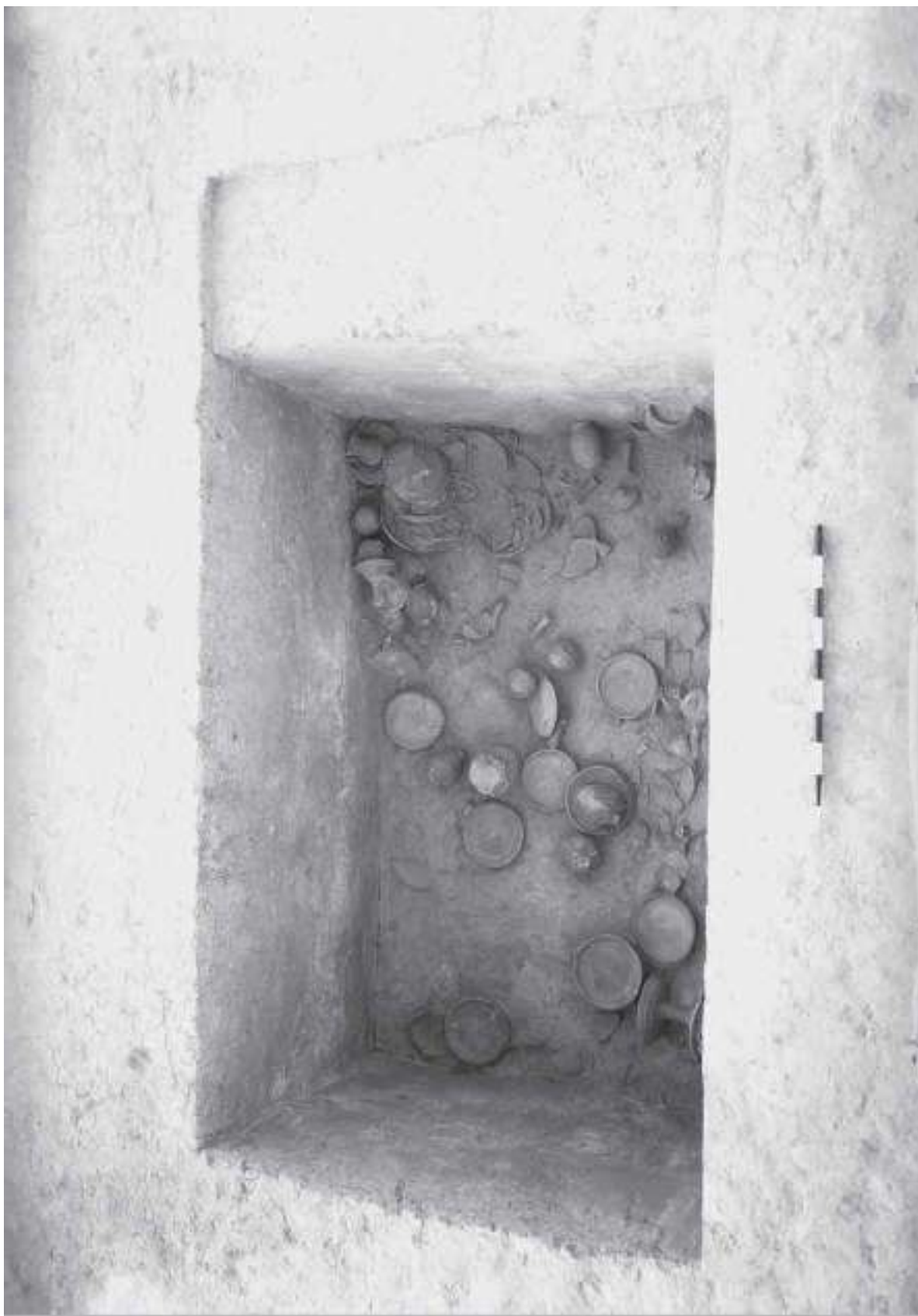


Fig. 22.61 KLB-8 Pot Burial no. 33

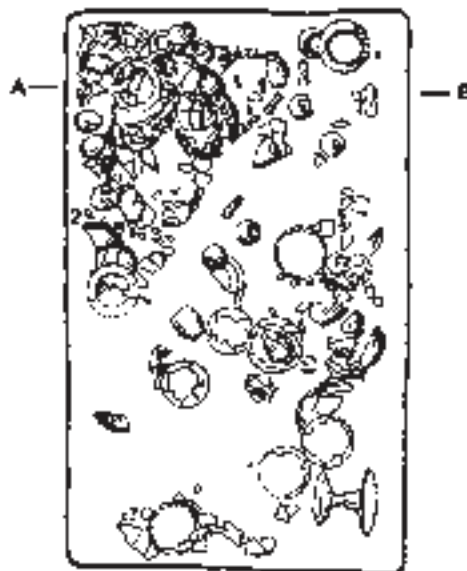
**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**POT BURIAL NO. 33**

0 1  
METRE



**SECTIONAL ELEVATION**



**PLAN**

Fig. 22.62 KLB-8 Sectional elevation and plan of Pot Burial no. 33



### **C. PALAEO-PATHOLOGICAL STUDY**

Disease and injury reflect the happenings in one's life, which at times get recorded in bones, sculptures and other artistic creations. The pattern of disease or injury is influenced by the people's occupations, their habits of diet and at times by climatic environments. Palaeopathology attempts to study such abnormalities reflected in the morphological and anatomical features. Some of the deformities may be from birth itself. Such abnormalities can be studied mostly through the skeletal remains recovered from various archaeological excavations. At times, the sculptors and painters also depict such abnormalities in their creations namely the coins, sculptures and paintings.<sup>10</sup> Depiction of prominent ribs and emaciated body in various images of Brahmanical deity Chamunda points to chronic malnutrition. A painted limestone statue from Egypt

belonging to c. 2500 B.C. depicting dwarf Seneb and his family is a good example of achondroplasia.

In the study of palaeopathology it is difficult to be too precise in arriving at conclusions. This is made difficult particularly in the absence of deep clinical knowledge and training. Even then some attempt can be made. In the great majority of skeletons no trace of the cause of death is present, only those are recorded in bones which effect it.

Human skeletal remains excavated during 1962-63 season were examined in the laboratory at Nagpur. During the course of study, the author noticed certain pathological and other interesting features, some of which are described below. Skeletal material excavated during 1963-64 season could not be studied as the same were transferred to the Anthropological Survey of India, Calcutta.

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<sup>10</sup> Gourerich, J. 1965. *Recorded in clay...Abbrttempo, Book 1. London.* pp. 16-21; Fuchs, J. 1966. *Blind Minstrels and Harpists of Ancient Egypt.* pp. 26-31.

## Case-history

### Case 1. *Hydrocephaly and Trephining*<sup>11</sup> : Fig. 22.63

The huge globular size of the child's skull suggests a case of hydrocephaly, caused due to excessive accumulation of water in brain-cells. This swelling and accumulation of water results in severe pain.

The right side of the child's skull from Burial No. 9 shows three small trephined holes on the squamous temporal (ear region), above the right acoustic meatus. The black streak joining the upper two holes and running up to the right opisthocranium point might have been caused by some hot pointed instrument.

The burning mark and the holes suggest that probably some sort of primitive surgical operation<sup>12</sup> was performed on the skull of the child in order to give him relief from severe pain, caused by the swelling of the skull.

This also accounts probably for the presence of more than usual sutural or wormian bones<sup>13</sup> on the same skull. Trephination has been earlier observed in one of the human skulls from Burzahom, a neolithic site in Kashmir and at Lothal. At Lothal the operation was performed on the right parietal bone of a child of about 9-10 years age. As per Dr. S.K. Basu, "the right parietal shows a deficiency anteriorly at the anterior and lower quadrant almost mid way between the parietal eminence and the squamous - parietal suture. In the absence of any bony repair one would conclude that the

person did not survive long after the cut was effected or the cut was made post-mortem.

At Burzahom in the hyperdolichranic female skull from Burial No. 7, belonging to the Neolithic levels, on the left parietal bone between bregma and lambda, seven finished circular holes with diameters varying from 8 mm. to 13 mm. and four unfinished circular depression ranging in diameters varying from 8 mm to 13 mm. and four unfinished circular depression ranging in diameters between 7 mm to 10 mm., were noticed. Incidentally this was painted with red-ochre solution. From the nature of the cutting none of the perforations seem to be of *ante-mortem* origin. These trephinations appear to have been made with some sharp instrument with circular edges, when the bone was green as the margins of the perforations do not show any osteogenesis in the form of callous formation. The exposed diploic spaces of the spongy inner table show no signs of closing. The cutting edges of the circular openings are neither smooth nor beveled indicating that these perforations were made post-mortem. In this case, unlike that of Kalibangan skull, as the perforations were made post-mortem, when the bone was still green, they were certainly not for the sake of any surgical operation but appear to be connected with some sort of magico-religious belief. Probably they were made to obtain roundels for use as amulets. These holes were made when the skeleton was re-exposed after the decomposition of the flesh, to be treated with red-ochre solution. De-Morgan<sup>14</sup> has mentioned

<sup>11</sup> Morgan, D. 1959. Prehistoric Man, Trepanning or Trephination in ancient and modern times. *Man* 59: 93.

<sup>12</sup> Johnston, T.B. etc. 1958 *Gray's Anatomy*. London. p.341.

<sup>13</sup> Sharma, A.K. 1967. Neolithic Human Burials from Burzahom, Kashmir. *Journal of the Oriental Institute*, Vol. XVI, No. 3: 341. Baroda.

<sup>14</sup> Morgan, D. - op. cit.



Fig. 22.63 KLB-8 Close-up of Case I, Trephination

that “the Neolithic people cut circular portions from skulls – trepanned them, not with any surgical end in view as is in this operation to-day, but in order to obtain fetishes for these circular pieces were pierced with holes that they might be suspended or worn as part of necklace”

Gillman has described a series of cases of cranial perforations from Michigan. These have always been

regarded as post-mortem cuts made for the purpose of cranial amulets.

The evidence of trephination for medical purposes at Kalibangan is the earliest instance of a surgical operation in the world and goes back to the middle of third millennium B.C. The above instance of trephination substantiate the later literary references to surgery practiced in India.

**CASE II- CONGENITAL PERFORATION<sup>15</sup> :** olecranon fossa region of the humerus.  
**Fig. 22.64**

The socket of the distal end of the arm bone is sometimes perforated into a small hole called epitrochlear foramen. Certain jobs that require vigorous use of elbow modify the perforation due to repeated impact of the olecranon and coronoid processes of the ulna on the

Both the humerii from Burial No. 8 and left humerus from Burial No. 11 show such enlarged perforations. The presence of such enlarged perforations in both the humerii suggest that the man (the skeleton is that of male) was engaged in such a type of work such as wood cutting, which required vigorous use of both the hands.

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<sup>15</sup> Gillman, H. 1882. *On the prehistoric trephining and cranial amulets, North American Ethnology*. Washington.



Fig. 22.64 KLB-8 *Close-up of Case II-congenital perforation*

**Case III - *Exostosis*<sup>16</sup>: Fig. 22.65**

At times plastic formation of bone, resulting in extra growth, takes place due to some injury. This is due to clotting of blood on the damaged muscle. This phenomenon has been observed in the

proximal end of right ulna belonging to the skeleton from burial No. 8, in the form of a craggy mass of bone on the upper part of shaft. Result was a triangular out-growth as compared to the normal one on the right, illustrated in Fig. 22.65.

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<sup>16</sup> Wells, C. 1964. *Bones, Bodies and Disease*. pp. 135-137. Frederick A. Praeger, London.





Fig. 22.65 KLB-8 *Close-up of Case III- Exostosis*

**Case IV - Sharp cut marks :** the knee at the medial condylar regions.  
**Fig. 22.66** The cut is 3 cm deep and nearly 9.5 cm long. The wound does not show any sign of healing. It appears that the man was hit by some sharp instrument like copper axe, with great force and probably, he died due to excessive bleeding. It is interesting to note that the size of the copper axe found from excavations at Kalibangan nearly fits in with the size of the cut.

This is a case of man who was probably murdered. Skeleton of a male adult was recovered from Burial No. 11. Due to later disturbances, the skull, a part of pectoral girdle and right humerus were missing. A close examination of the left femur and tibia revealed sharp vertical cut marks on the inner side of



Fig.22.66 KLB-8 Close-up of Case IV - sharp cut marks

**Case V - Dental Attrition<sup>17</sup> : Fig. 22.67**

Right first and second molars (both the third molars have not erupted) and premolars of mandible from skeleton belonging to Burial No. 12 show marked attrition of the cusps. The attrition is not uniform on all the teeth. Left teeth are relatively free from any marked wear and tear. The attrition of right molars and premolars can be attributed to two causes, namely habit of using left side more for chewing and secondly coarse food mixed with powdered stone grains. Presence of powdered stone may be due to use of crumbly sand stone grinders. This is also supported by the recovery of grinders of sand stone from Kalibangan excavations.

Incidentally it may not be out of place to mention here that in all the skeletons recovered from the excavation, teeth are present in good condition even in the skeletons of persons of advanced age. From this general absence in ante-mortem loss of teeth in Kalibangan skeletons even in that of grown up adults, it can be inferred that the Kalibangan Harappans were at least not vigorous flesh eaters.

Anadi Pal<sup>18</sup> who studied the permanent dentition of 314 individuals represented by skeletal remains unearthed from Harappa (63), Mahenjodaro (15), Kalibangan (4), Lothal (13) and Rupar (11), Burzahom (9), Nagarjunakonda (23), Nevasa (7), Pandu-Dhibi (5), Brahmagiri (8), Maski (132) and Kumbhar Tekri, Ujjain (24) came to the

conclusion that "From the frequencies of all the morbid characters taken together it can perhaps be inferred that the dental health of the ancient Indians was better than that of the contemporary people of Europe and Egypt."

As the number of skeletons studied from Kalibangan was only four (though atleast 13 skulls were handed over to Anthropological Survey of India) conclusions arrived at for all the Harappan material can not hold good for the entire Kalibangan material. As the Harappan sites studied are located in different geographical and slightly different climatic zones, naturally having different food habits, the collective conclusion is likely to give a distorted picture.

According to Pal amongst the Harappans incidence of dental carries was less than 2 percent which is almost equivalent to among modern Indians (2.2 %). Ante mortem tooth loss was 2.1%, alveolar abscess was almost nil, i.e. 0.1 % and pulp exposure through attrition 0.5 %. Harappans showed dental calculus (tartar) - a yellow hard mass formed mainly by the deposition of calcium on some of the teeth, usually at the margin of the gums; in different degrees i.e. none in 34.6 % cases, slight in 54.8% cases, medium in 8.9% cases and marked in 1.6% cases. This was much less as compared to those of Early Historic people who had marked degree of tartar deposition.

Harappans generally have smaller teeth. Brace<sup>19</sup> observes that in South Asia the smallest teeth appear in the north

<sup>17</sup> Wells, C. op. cit., p.71.

<sup>18</sup> Pal, A. 1981. 'Dental health in Ancient India. *Journal of the Indian Anthropological Society*, Vol. 16, No. 2,

<sup>19</sup> Brace, C.L. 1977. Technology versus tooth size in Australasia. *Abstracts of the 74th annual meeting of the American Anthropological Association*.

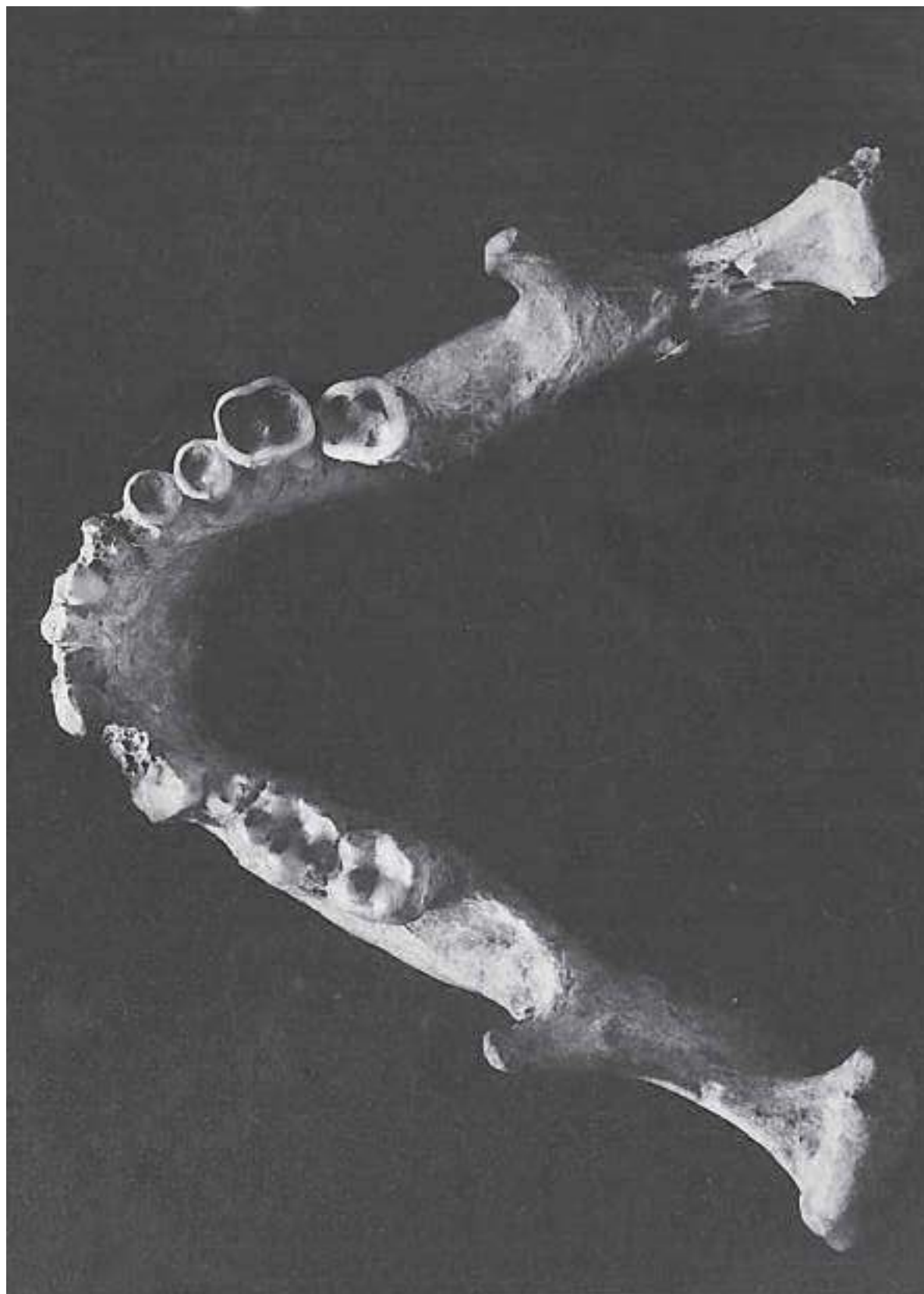


Fig. 22.67 KLB-8 Close-up of Case V- dental attrition

and north-western sectors of the Subcontinent. Teeth became larger in the western and central Deccan, the largest teeth being found in southeastern India and Sri Lanka (Brace and Montagu 1977)<sup>20</sup>. Brace (1975) observes that “the longer the period of a time a population has enjoyed the benefits of technology, particularly where that concerns food preparation, the smaller are its teeth”.

On the basis of these observations Kennedy<sup>21</sup> states that these observations confirmed by studies of ancient human dentitions from South Asia, correlate with the archaeological thesis that higher technologies, including “those relating to food production and preparation, are of greatest antiquity in northern India” and Pakistan, as attested by the emergence of the Harappan culture by 3000 B.C.

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<sup>20</sup> Brace, C.L. and Montagu, A. 1977. Human Evolution. *An introduction to Biological Anthropology*, 2nd edition. New York.

<sup>21</sup> Kennedy, K.A.R. 1982. Skulls, Aryans and Flowing drains : the interface of Archaeology and skeletal Biology in the study of Harappan Civilization. In Possehl, G.L. (ed.), *Harappan Civilization*. New Delhi.

**Case VI – *Burning mark*<sup>22</sup>: Fig. 22.68**

Left humerus of the skeleton from Burial No. 10 shows a circular burning mark, on the posterior side of the middle

of the shaft. It appears to be an accidental burn mark and might not have been fatal. The skeleton is of a female. Burial No. 9 and Burial No. 32 also display burning marks at several places in the body.

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<sup>22</sup> *Indian Archaeology -1964-65,–A Review.*





Fig. 22.68 KLB-8 Close-up of Case VI—burning marks

**Case VII – case of crippled man : Figs. 22.69 and 22.70**

An oblong Burial No. 26, oriented in north-south direction, length-wise, yielded a human skeleton buried in extended fashion with the torso and right leg bones lying in supine position whereas the bones of the left leg resting on their left sides. The legs were folded towards right thus bringing the knees nearer to each other. The skeleton was placed in the southern 2/3<sup>rd</sup> of the grave pit whereas northern 1/3<sup>rd</sup> part was left for depositing funerary goods. Seven earthen pots were deposited in this space above the skull region.

A closer examination showed that the skeleton belonged to male adult of about 30 years of age. At a glance the in-situ condition of the skeleton revealed that the individual was a crippled man, showing marked pathological deformities of the radius, ulna and hand bones of the left side. The left hand was placed in prone position with the carpels and metacarpels badly twisted to left outwards so that the thumb bones rested below the bones of the rest of the

fingers. Fingers were twisted outwards from the point of the second phalanges.

A comparison between ulna and radius bones of the two sides showed that the left radius was smaller from its right counter-part by 2.8 cms. (20.6 and 23.4 cms. respectively), similarly left ulna was shorter by 3.6 cms. From its right counter-part (20.5 and 24.1 cms. respectively).

The position of different bones and their size shows that the left side of the person was deformed.

In case of left foot bones, it was noticed that, though all the metatarsal bones were present, phalanges were represented only by rudimentary bones. These were riding over each other. These retarded rudimentary phalanges indicated the pathological deformity of the right foot.

Left femur and tibia were shorter by 0.2 cm. and 0.1 cm. respectively in comparison to their right counterparts. Interestingly, the fellow adorned a complete large shell ear ring, having internal diameter 6.5 cm. and external diameter 7.7 cm. in his left ear.



*Fig. 22.69 KLB-8 Close-up of Case VII-The crippled man*



Fig. 22.70 KLB-8 Close-up of Case VII—The crippled man

**Case VIII - A paralytic man, Fig. 22.71**

In another case a skeleton was found carelessly dumped upside down in a crouching position, with head towards south. The funerary goods consisted of only 3 pots. The position of the limbs and torso indicate that probably the man was a paralytic case. Rigor-mortis has also set in before the body was deposited in the grave.

**DISCUSSION**

Excavation of Harappan cemetery at Kalibangan, in many respects, is of great significance. Apart from the known mode of disposal of the dead it has revealed two hitherto unknown methods in Harappan context. Demographic survey of the cemetery area has also given the approximate number of different types of burials. Osteo-archaeological study of the skeletal remains, though unfortunately only of one season, has thrown light on the pathological aspects of the Harappans buried there. As the entire field note was prepared when the burials were lying *in-situ* after exposing them, it was not possible to take measurements of the skull, though *in situ* measurements of other parts of the body could be taken. In the absence of measurements of the skull, it is not possible to say anything about the racial composition of those who were buried. But taking into account the maximum *in-situ* length of the skeletons (of course including all possible errors due to cracks and minor displacements) and the *in-situ* maximum length of the right humerus, the average height of adult males as per Pearson's formula varies from 1.75 m to 1.55 m whereas those of females from 1.45 m to 1.55 m. This clearly indicates that they were people of good height. It appears the life

expectancy did not exceed beyond fifty-five to sixty years as majority met death during their middle ages. But this has to be seen from the point of view that a good number of them were abnormal cases.

A look at Table 1 shows that so far as grave furnitures are concerned, leaving pottery, other antiquities were only few. They mostly consisted of ornaments like beads, bangles and rings. Only in one case of a female burial a copper mirror was found. The number of pots interned varies from three to 70 so far as extended burials containing human skeletal remains are concerned. In almost all the cases the number never exceeded beyond 20 except in case of the old chieftain who was given a ceremonial burial inside a mud-brick chamber or *bhumi griha*. In his case 70 pots, many of them painted ones were interned and the body was laid over dishes or plates. In the burial of all types painted pots were rare. So far as the type of pots were concerned 'lota' shaped vase, always more than one, lids and bowls were a must, followed by jars, glasses and dish or cup-on-stand. Perhaps drinks loving guys, were always males, who were offered wine cups, in one case beautifully painted ones. Total absence of any wine cups in female burials indicates that social norms did not permit woman to enjoy intoxicating drinks as is the custom even these days in orthodox Indian families!

Wearing of shell or conch bangles by ladies is a very ancient Indian tradition and this has been amply proved through skeletal remains where the bangles have been generally found in the wrist region. Even to-day, the '*Lambadi*' women profusely display such bangles in their arms and hands. For every married Hindu Bengali woman, wearing of conch bangles





Fig. 22.71 KLB-8 Close-up of case VIII-A paralytic man

is a must as an auspicious sign. Total absence of any weapon of attack and defence from the burials at Kalibangan, signifies that the Harappans were a peace loving people as they were leading a life of prosperity through ample agricultural products, plenty of trade in and outside the country. They had a well organised society, where rule and norms were strictly enforced by the intelligent governing body.

Existence of elaborate ritualistic pot burials of different types indicates that they had much respect for the departed ones in whose remembrance and honour, periodic rituals were performed with meticulous precision. At Kalibangan, disturbance of the earlier graves by later ones is of rare occurrence, as was the case at Lothal where a very limited area was available for burial ground, whereas at Kalibangan plenty of open and level ground in the desired direction on the left bank of the Saraswati, was available to be used as cemetery. Whatever disturbance was caused to earlier grave was inadvertent and not due to paucity of virgin area. As the cemetery was on the flood plain of the river, naturally flood waters, leveled up the markings of the graves, generally in the form of tumulus and after deposition of fresh silt over them, they were not visible after few seasons, except those where some sort of more durable markings were placed. As the cemetery was at a safe visible distance from the habitation, they could keep a watch over grave-robbers (in search of precious material), if there were any. But evidence show that these days graves were not robbed as none of the pits show any sign or robbers trench.

In case of extended human internments, how is it that in almost all cases they appear to be burials of abnormal cases i.e. of persons who died unnatural death or of those who had one or the other pathological abnormality<sup>23</sup>. Skeleton No. 3, child was suffering from hydrocephally. Trephination marks and the burning marks on the squamons temporal above the right acoustic meatus indicate that some primitive surgical operation was performed. The child did not survive after the operation. The evidence of trephination for medical purpose at Kalibangan is the earliest instance of a surgical operation in the world going back to the middle of third millennium B.C. Burning marks were observed in case of Skeleton Nos. 5 and 13 which appear to be cases of fire accident. Skeleton No. 6 was a case of a murdered man who was attacked with a copper axe. Left femur and tibia had sharp vertical cut marks on the inner side of the knee at the medical condylar regions. The cuts were 3.0 cm deep and nearly 9.5 cm long. The wound did not show any sign of healing indicating that the man did not survive the attack. Skeleton No. 8 was a case of crippled man whose left-hand bones were twisted due to deformity. Left radius and ulna were shorter by 2.8 cm and 3.6 cm respectively as compared to their right counterparts. In case of left foot bones, though all the metatarsal bones were present, phalanges were represented only by rudimentary bones. Skeleton No. 9 was a paralytic case. The body was dumped in the grave-pit upside down with the head towards south as against the normal direction of north. Burial No. 12 which

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<sup>23</sup> Sharma, A.K. Kalibangan human skeletal Remains, an Osteo-Archaeological approach. *Journal of the Oriental Institute*, Vol. XIX:102



yielded three skulls along with fragmentary bones and one earthen relic casket containing molar of a child, was a case of burials of persons who probably died in an accident. Burial No. 4 and 12 were disturbed by other burial pits.

Now the question arises at to what happened to persons dying natural death who obviously form the majority in any society? How were their bodies disposed of after death. If we look into the demographic survey of burials in the cemetery area at Kalibangan the number of extended type burials, most certainly containing skeletal remains, are far less as compared to the size and span of Harappan habitation at Kalibangan. In the cemetery, the area of extended burials and circular or oval pot-burials are different. The pot burial area lies to the north of the extended burial area whereas the large rectangular or oblong pits devoid of any skeletal remains, generally, were found in the extended burial area. In all eighty-eight extended burials could be noticed, generally these burials were found in groups. In all sixteen groups of burials were plotted. Each group contained six to ten extended burials and at least one large rectangular pit. It appears that different groups were meant for different families. The area of each group was almost of the same size. The large pits were left open which got filled up in course of time as is evidenced from the occurrence of thin and thick bands of clay and sand inside the pit, in the form of laminations. These pits contained only large number of pots. It appears that these pits were meant for depositing the earthen pots after performing some sort of ritual connected

with the disposal of the dead. Fourteen such pits were counted<sup>24</sup>.

The excavation in the general habitation area (KLB-2) at Kalibangan has revealed nine occupational phases. If each occupational level is accounted for nearly sixty years, then it could be said that the Harappan occupation at Kalibangan survived for about six century. As per latest C14 dates with MASCA corrections the Mature phase of Harappan culture at Kalibangan is ascribable from *circa* 2600 to *circa* 1900 B.C. (See Chapter 3). Even if we take a modest view of five deaths per annum in such a big settlement, it comes to nearly 3000 deaths in the span of the Harappan occupation at Kalibangan. But hardly 100 extended burials are likely to be encountered in surveyed area of the cemetery. The question arises whether there were more than one burial grounds which we have not been able to locate. Suppose this could be a possibility at Kalibangan then what about other Harappan sites. So far, none of the excavated Harappan sites has yielded more than one cemetery of the Harappan period. Did the Harappans practise some other mode or modes of disposal of the dead, apart from the known practices of burial? In the absence of any other factor or evidence, the presence of a large number of circular or oval pot-burials leads us to believe that the Harappans practiced other mode or modes for disposal of the dead also. The other modes may be cremation and/or throwing the body in the waters of Sarasvati. Absence of any skeletal material or any trace of ash in the pot burials indicates that probably after disposing of the body only pots were interned in these pits. However

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<sup>24</sup> Stacual, G. 1975. The Fractional Burial Custom in the Swat Valley and some Connected Problems. *East and West, New series, Vol. 25, Nos. 3-4*, (Sept. – Dec. 1975).

the occurrence of a few patches of burnt earth in the cemetery area suggests that cremation too might have been practised though much more evidence is required to duly substantiate it. In this context, it may be well worth while to refer to the evidence of cremation at Tarkhanwala Dera, encountered recently.

It appears the practice of extended burial was adopted for unnatural cases i.e. persons dying in accidents, murders and those who were looked down by the society as cursed ones on account of their deformities like the case of crippled man, paralytic man, disabled man, etc. and for some important persons in the society. But, for the important persons in place of a simple oblong pit, special graves like the brick lined one at Kalibangan, a wooden coffin at Harappa<sup>25</sup> in cemetery R-37, made of rose wood and *deodar*<sup>26</sup> were used. Persons disposed of otherwise who were definitely in greater numbers, cremation appears to be the likely mode of disposal for a larger section of the society and it is for this reason that we get, in all the Harappan sites, lesser number of extended human burials containing skeletal remains as compared to the size of the site and its population. Charred patches of earth and tiny fragments of charred bones, which remained exposed to the atmosphere, are hardly likely to survive after centuries.

If we look into the literary evidence we come across in *Atharvaveda Samhita*<sup>27</sup>

a reference to a burial where the trunk of a tree was used as coffin. In chapter XVIII 2.25 it is stated “may the tree not oppress them, nor the great Goddess Earth”. This is probably a reference to a coffin burial.

Burials in different forms were known in India from very early times as mentioned in *Atharvaveda* 5.30.14 (*manu bhumigraho bhuvāt*) and 18.2.34-

ये निख्रान्ता ये परोप्ता ये दग्धा ये चोद्धिताः ।  
सर्वस्तिनम्न आ वह पितृद्विषे अत्तवे ॥

O Agni ! bring all those *pitrs* here in order that they may partake of the offering, those (*pitrs* whose bodies) were buried or cast aside (*Paroptah*) or burnt with fire (*Agni - dagdha*) or deposited above (on trees or in caves) *Uddhitah*.

In *Rigveda* (VII 89.1) the sage prays ‘O Varuna may I not go to the Earth House’.

In the *Rigveda Samhita* and *Atharvaveda Samhita* we find mention of a house of earth (*bhumi-griha*) for burial. Burial No. 29 at Kalibangan, where the body and pots were laid inside the sun-dried brick chamber is an example this of *Bhumi-griha*.

Amongst Hindus, where due to some reason or the other the entire body could not be consigned to the flames, there is practice of *Mukhagni* i.e. putting fire in the mouth and then disposing of the unburnt body by throwing it into the river. This

<sup>25</sup> Wheeler, R.E.M. 1947. Harappa. 1946: The Defences and Cemetery R 37. *Ancient India, No.III: 58-130, Pl. XXXVB*

<sup>26</sup> Chowdhary, K.A. and Ghosh, S.S. 1946. Plant Remains from Harappa, *Ancient India, No. VII.*

<sup>27</sup> Kane, P.V. 1953. *History of Dharmasastra, Vol. IV.* Bhandarkar Institute Press, Poona.

process leaves burning marks on teeth, and at restricted places of mandible and maxilla. Burial No. 32 at Kalibangan is one of such cases.

Harappans were very meticulous about the location of the cemetery area. At Kalibangan it is located to the south-west of the habitation area, on the left bank of Sarasvati, far away from the living quarters and farthest from the sacred, religious spot at KLB-3, where large number of fire-places were located<sup>28</sup>. It is an open ground where the sun shines directly on it, and it slopes towards the north. The water flowing from the river and the wind blowing from north-east passes through the cemetery only after they had crossed the religious and habitation areas. Being an arid land there is high percentage of salt in the soil which gets deposited in the form of white patches over the ground.

*Satapatha Brahmana*<sup>29</sup> prescribes a four-corner mound facing south-east, ground inclined to the north, out of sight of the village, in a peaceful spot amid beautiful surroundings or on barren ground. In *History of Dharmasastra*, Kane describes, "the site of cremation should be surrounded by a thicket of trees, but it should be so open that the sun shines directly on it at mid-day. It should be saltish land or land sloping to the north or it may be all level ground".

All this I have mentioned not because I wish to state that the Harappan way of disposal of the dead was guided by the

norms laid down in the above-mentioned texts, which many scholars still believe to be late creations, but to point out that traditions die hard and in India oral traditions passed on from generations to generations, from remote past. While analyzing the results of the excavations we should not be guided only by the theories propounded by earlier scholars but must keep our minds open to various oral traditions, ancient texts and present-day practices in the society. With the advancement of research many theories which were taken for granted have been proved wrong.

Classic examples of how misinterpretations of field data and morphometric data can lead to incorrect conclusions have been shown by Kennedy<sup>30</sup>. (1982). So-called massacres at Mohenjodaro – Chatterjee and Kumar<sup>31</sup> (1973) ascribe certain incomplete and distorted burials found in the ruins to the aggressive acts of invading Aryans, a view proposed earlier by Wheeler<sup>32</sup>. Dales<sup>33</sup> argues on archaeological grounds that actual dates for the Harappan civilization and the arrival of Aryans cannot be established. He goes on to note that armed invasion is not indicated by the presence of extensive destructive levels at the site, that there is no evidence that the skeletons belong to a single period of time and therefore no proof of a single tragedy, and that only two of the skeletons bear evidence that a massacre had occurred at their place of deposition. Finally,

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<sup>28</sup> *Indian Archaeology – 1969-70 – A Review*,

<sup>29</sup> Macdonnell, A.A. and Keith, A.B. 1912. *Vedic Index*. John Murray, London.

<sup>30</sup> Kennedy, K.A.R. 1982. Skulls, Aryans and Flowing drains : the interface of Archaeology and skeletal Biology in the study of Harappan Civilization. In Possehl, G.L. (ed.), 1982. *Harappan Civilization*. New Delhi.

<sup>31</sup> Chatterjee, B.K. and Kumar, G.D. 1973. *The Racial Affinities of the Builders of the Harappan Culture*, paper read at the 9th International Congress of Anthropological and Ethnological Science, Chicago.

<sup>32</sup> Wheeler, R.E.M. 1952. Archaeology and Transmission of Ideas, *Antiquity* 26: 180-92.

<sup>33</sup> Dales, G.F. 1964. 'The Mythical massacre of Mohenjo-daro', *Expedition* 16(3): 36-43.

weapons and armour are not associated with any of the skeletons.

Another classic example is Guha's<sup>34</sup> attempt to account for the low incidence of mesocrany and brachycrany in Harappan cranial series by hypothesizing the intrusion of foreign racial elements. Although there has been an awareness for a century that changes in cranial form are reflective of environmental shifts of which nutritional stresses are perhaps most important in affecting growth<sup>35</sup>, the use of the cranial index as a guide to population identity continues to be used by some writers upto the present time. One is also aware that brachycranialization had continued as an evolutionary trend in world populations during the past 10,000 years. Brachycrany which is evidenced in low frequency in cranial specimens from Harappa and Lothal cannot be cited as a hall mark of racial identity for segments of those populations, once one understands the demographic distribution of meso- and brachycrany beyond the Himalayas. Cappieri<sup>36</sup> writes:-

- (1) There is no evidence of brachycephalic populations in the period covered by my study (the Harappan period) which might have influenced the local fundamental dolichocephally, and
- (2) There is no element proving migration of population from one region to another in the period mentioned. I calculated for the 11 essential characters 469 differences of mean between each local series of crania and all the others, mutually and inversely. Most differences - 83.4 - were 'not

significant' and such a high value proves the genetic and somatic homogeneity of all these (specimens) as a simple population.

Recognition of the evolutionary fact of brachycranialization bears upon the question of the biological identity of the ancient Harappans who, it now appears from multivariable analysis, were a relatively homogenous population<sup>37</sup>. The so-called foreign elements are better attributed to immigration of ritual peoples or possible nomadic groups coming from outlying Harappan townships, hamlets and grazing areas. One recognizes a biological continuum of many of their morphometric variables in the modern populations of Punjab and Sind. Harappans were a relatively stable population inhabiting the northern and north-western sectors of the subcontinent for several millennia prior to their climatic movement of urbanization and commercial influence.

Allchin<sup>38</sup> rightly says - "The Indian civilization arose on Indian soil as an organic process, it was not primarily superimposed from outside, even if external stimuli may have contributed." According to the latest researches by Alan R. Templeton, Professor of Biology in Arts and Sciences at Washington University, genetically, race does not exist in humans. After analyzing DNA from global human populations that reveal the patterns of human evolution over the past one million years, he has shown that while there is plenty of genetic variation in humans, most of the variation is individual variation. In his paper titled

<sup>34</sup> Guha, B.S. 1935. The Racial affinities of the People of India. *Census of India* 1931: III-A: 2-22.

<sup>35</sup> Boas, F. 1912. Changing Bodily form of Descendants of Immigrants. *American Anthropologist* 14: 530-62.

<sup>36</sup> Cappieri, M. 1970. The Population of the Indian Civilization. *Field Research Projects, occasional papers* 11, Miami.

<sup>37</sup> Dutta, P.C. 1972. The Bronze Harappans: A Re-examination of the Skulls in the Context of the Population Concept. *American Journal of Physical Anthropology* 36:391-96.

<sup>38</sup> Allchin, F.R. 1982. The legacy of the Indian Civilization. In Possehl, G.L. (ed.), *Harppan Civilization*. New Delhi.



“Human Races : A Genetic and Evolutionary perspective<sup>39</sup>” he says that while between population, variation exists, it is either too small which is quantitative variation, or it is not the right qualitative type of variation – it does not mark historical sublineage of humanity. Using the latest molecular biology techniques, Templeton has analysed millions of genetic sequences found in three distinct types of human DNA and concludes that, in the scientific sense the world is color-blind. Race is a real cultural, political, and economic concept in society but it is not a biological concept. His results showed that 85 percent of genetic variation in the human DNA was due to individual variation. A mere 15 percent could be traced to what could be interpreted as “racial” differences. The 15 percent is well below the threshold that is used to recognize race in other species.

Before the discovery of bones of *Equus caballus* Linn i.e. true horse at Surkotada<sup>40</sup> (a Harappan site in Kutch), and later on at Kalibangan, all earlier scholars – both archaeologists and

zoologists have firmly believed that true horse was not known to Harappans and it was introduced in India by so called Aryans who invaded India and overpowered Harappans. But even after half a century of this theory, the discovery of horse bones has conclusively proved that the earlier findings and results were totally erroneous. So in case of disposal of dead by Harappans there is no harm in accepting the facts, as in the cemetery area at Kalibangan charred patches of earth, clear evidence of burning, were noticed by the excavator and author of this report.

In order to have better and fuller knowledge regarding disposal of the dead during Harappan times and related social customs, it would be worth while to locate the cemetery area in some other important Harappan site as well, like Dholavira<sup>41</sup>, and Rakhigarhi<sup>42</sup> meticulously map the whole area and expose a fairly large number of burials. Detailed study of skeletal remains apart from telling about the morphological composition of the society, would be useful for making palaeopathological studies.

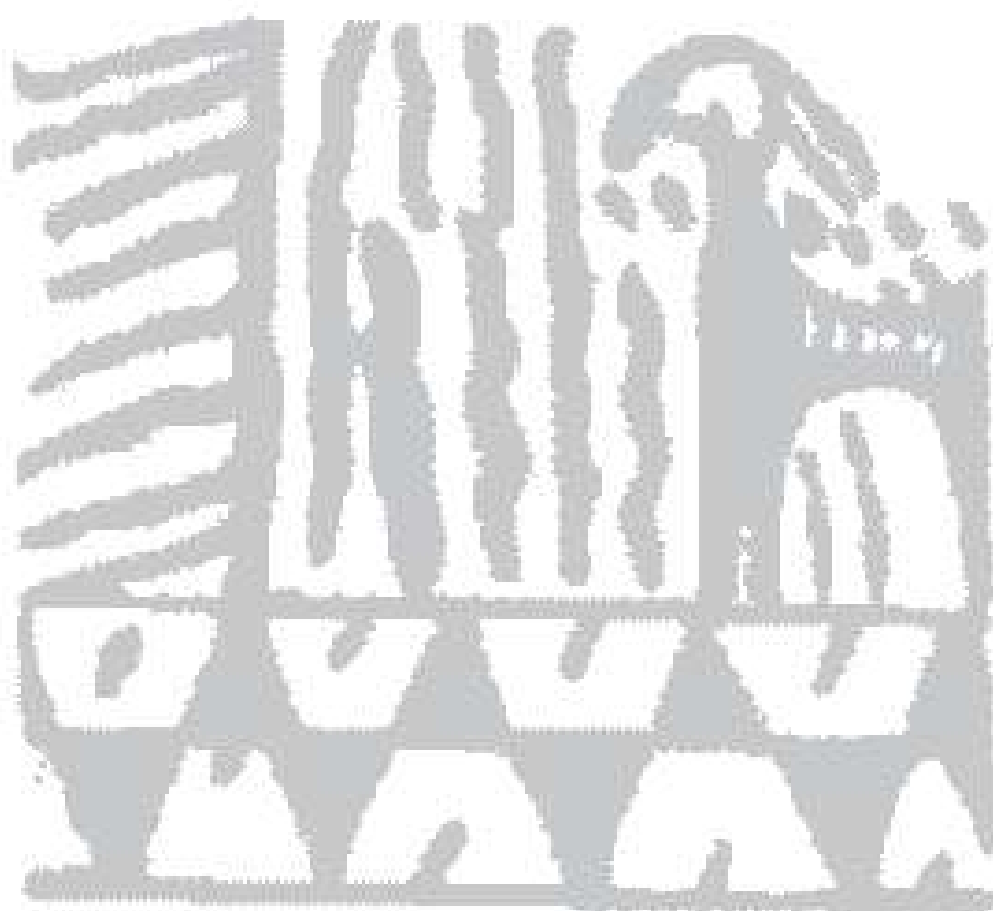
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<sup>39</sup> Alan, R. 1988. Templeton, Human Races: A Genetic and Evolutionary Perspective. *American Anthropologist*.

<sup>40</sup> Sharma, A.K. 1993. ‘Harappan Horse was buried under the dunes of .....’, *Puratattva*, No. 23.

<sup>41</sup> Bisht, R.S. 2014. How Harappans Honoured Death at Dholavira, in *Sindhu-Saraswati Civilization: In Commemoration of S.R. Rao* (Nalini Rao ed.) pp. 265 - 318, D.K. Printword, New Delhi.

<sup>42</sup> Nath, A., Walimbe, S.R., Garge, T.M., Mushrif-Tripathy, V., Dehuri, R., Malik, A. 2015. Harappan Interments at Rakhigarhi, *Man and Environment*, XL(2):9-32.



## 1. INTRODUCTORY, Fig. 23.1

The cemetery was located in an almost plain ground about 300 meters west-south west of the citadel mound (KLB-1). The first to appear in the trial trench was a pot burial (Burial 1) with all burial features (urn, associated pottery, etc.). Later in few day's time a few feet to the south-east of the Burial-1 an extended burial of the Harappan times was also encountered. Thus the presence of a Harappan cemetery consisting of two types of interment was confirmed. Then, in order to execute concentrated work a separate grid was laid out, which was numbered as KLB-8. Thirty metres to the south of Burial -1 a number of extended burials were discovered in course of time.

The general outline of the pits of the burial is almost circular with a tendency to become somewhat ovalish, the diameters varying from 1.30 m to 2 m (E-W) and 1.17 m to 2 m (NS). Depth of the pits vary from 0.30 m to 0.63 m. In 5 burials the urn was invariably found to have been placed nearer the western periphery and not in the centre of the pit.

None of the urns, excepting that in Burial -1 which had a triple lid covering, were closed with any sort of dish or lid. The urn in Burial - 1 bore also a prefiring graffiti mark. The mouths of the urns were so narrow that it could not have been

possible to inter inside any cranial or skeletal remains in full. Strangely enough none of these urns contained any bone remains. The only exception was Burial-3 where in the much damaged and broken urn a tooth (molar) and a few fragmentary bones were recovered. Probably, these could have come with the earth filling. At the upper level of Burial-13, towards the eastern end two long bones were found. But then Burial-13 did not contain any urn.

Inside the burial pits a number of associated pots were found. Their frequency ranged from 7 in Burial - 2 to 29 in Burial -16. These were found placed around the urn. (where the urn was present) but never on the rear side of the urn. Maximum concentration was on the eastern end of the pit.

Shapes were all Harappan and included, on a broad classification, dish-on-stand, cup-on-stand, goblets, beakers, vases, dishes and platters, lids, jars, etc. Some of the shapes are unique e.g., the tall or high necked jars in Burials- 6 and 7, wide mouthed storage jar in Burial-7, a globular vase with featureless rim and with a ledge in the shoulder (Burial-6) and cup like lid in Burial-6.

Other finds from these burials were beads of agate (banded) from burial 1, carnelian beads from burial 7; bead of

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<sup>1</sup> Pot Burials 24 and 25 are by A.K. Sharma.



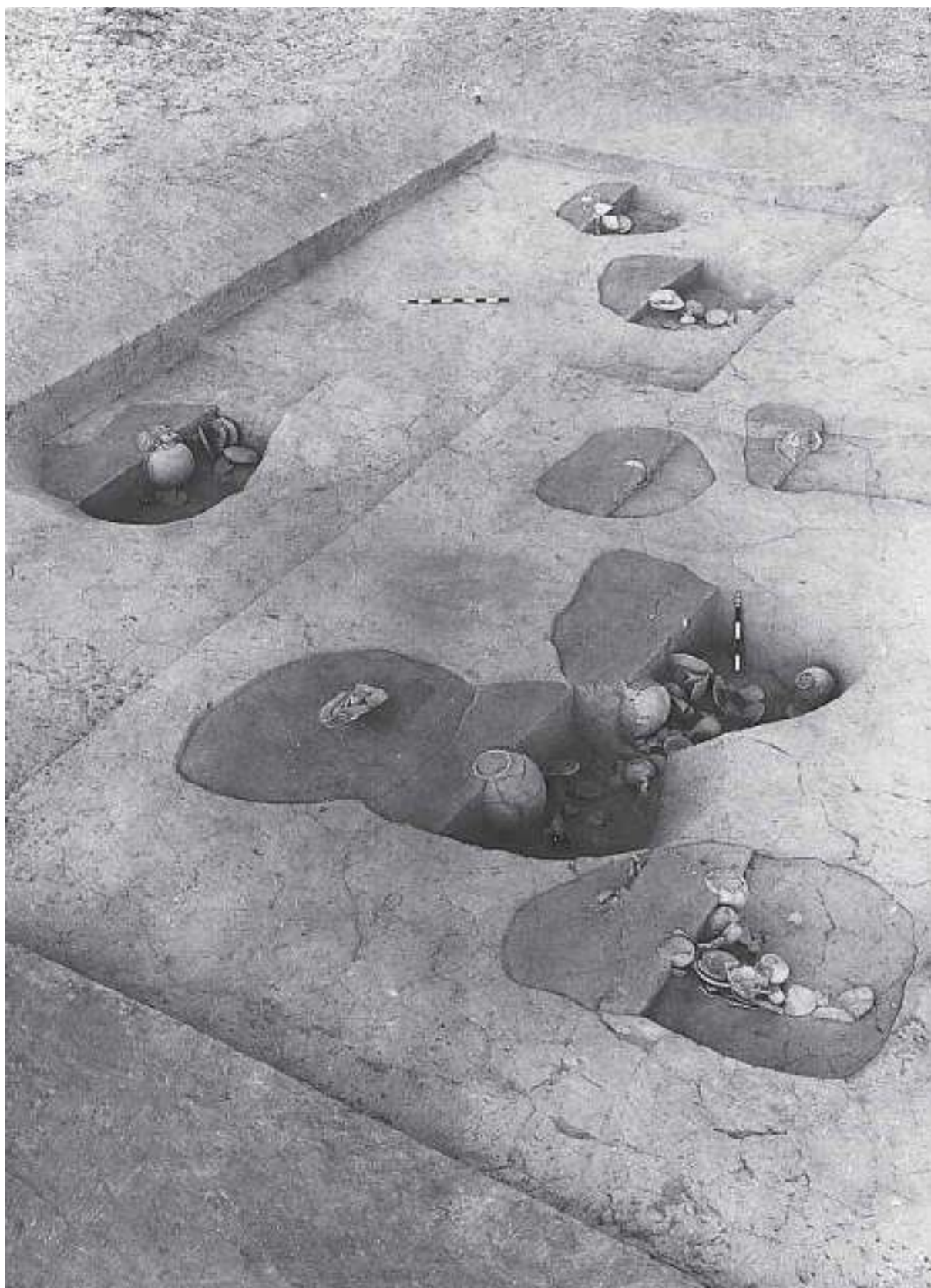


Fig.23.1 KLB-8 Pot burials

jasper from Burial-7; and shell bangles (one complete from Burial-6) and 16. Two unique faience (?) objects, one an earring and the other a plumb-bob were recovered from Burial-6.

The cemetery area had been subject to extensive denudation and in some places accumulation, resulting in the absence of any definite sealing layer for the Burials. The accumulation over Burials-1,2 and 3 would appear to be agradational. Hence it would be difficult to ascertain the definite chronology of the burials here. However, a relative

sequence of chronology among Burials-6, 7 and 17 could be formulated in as much as these overlap each other.

Burial-6 has been partially cut by Burial-7 on the east and Burial-17 on the north. Stratigraphically, Burial-7 is later than Burial-6. The pit line on the western end stops short of the bottom of Burial-6 and the pots lying at the bottom of this burial are undisturbed. Burial-17 has partially cut Burial-6. Thus it would appear that Burials-7 and 17 are contemporary while Burial 6 is earlier to them.

## **2. DESCRIPTIONS OF POT BURIALS**      pottery was found behind the urn.

### **BURIAL No. 1, Fig. 23.2**

Shape of the pit is roughly circular. East-west and north-south diameters measuring 2.00 and 1.90 m respectively. It was dug to a depth of 0.63 m to enter the urn. To a depth of about 0.20 m from top it is shallow and then gradually the sides straighten away. There was only one urn, a red ware, covered with triple lids. This was found to be more towards one side, nearer the western extremity and not in the exact centre of the pit. Several associated pottery were found placed almost around the urn, the major concentration being on the eastern half. The urn was globular with a ring base. It had a prefiring graffiti mark – several cross lines enclosed in a rectangle. No

The pit contained 23 pots including the urn. All of them were red ware. They were found concentrated beside the dish-on-stand on the west. A number of dishes, one above the other, were found fallen in a vertical position lining the western end of the pit. From the nature of fall of these and the broken dish of the dish-on-stand one could infer that these lids or dishes were originally placed over the dish-on-stand and they got disturbed during the process of filling.

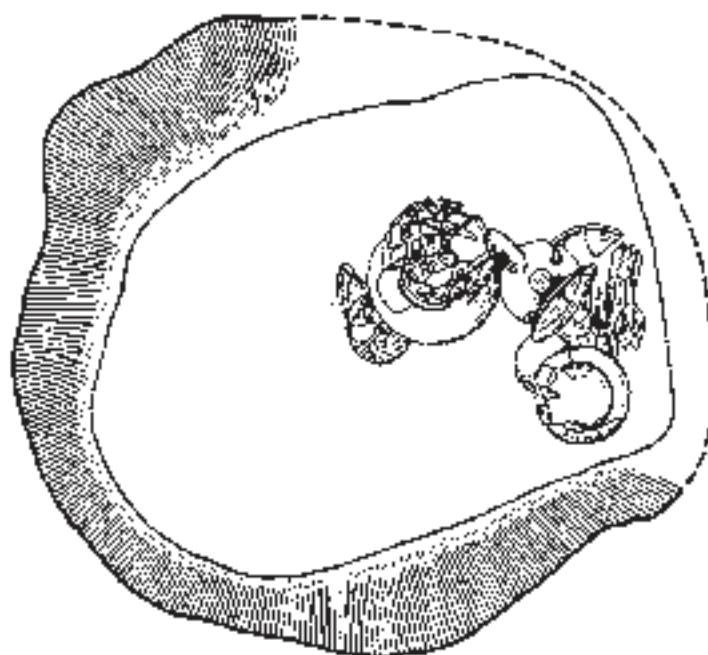
Besides these a single bead-bicone barrel of banded agate was also noticed.

The whole pit was found to have been sealed by a layer of brownish grey earth and sand to a thickness of 0.21 m.

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**POT BURIAL NO. 1**

0 1  
METRE



**PLAN**

Fig. 23.2 KLB-8 *Plan of Pot Burial no. 1*

**Burial No. 2, Figs. 23.3 and 23.4**

The shape of the pit is circular, diameters along the cardinal directions measuring roughly 1.30 and 1.32 m. The pit had been dug to a depth of 0.45 m. There was no urn inside this burial. The inter mark was found confined to the northern half of the pit.

A total number of 7 pots were found here.

Shapes include dish-on-stand, Harappan goblets and jars.

A few fragments of human bones were recovered from the filling. These, in all probability have come along with the earth filling of the pit.





Fig. 23.3 KLB-8 *Pot Burial no. 2*

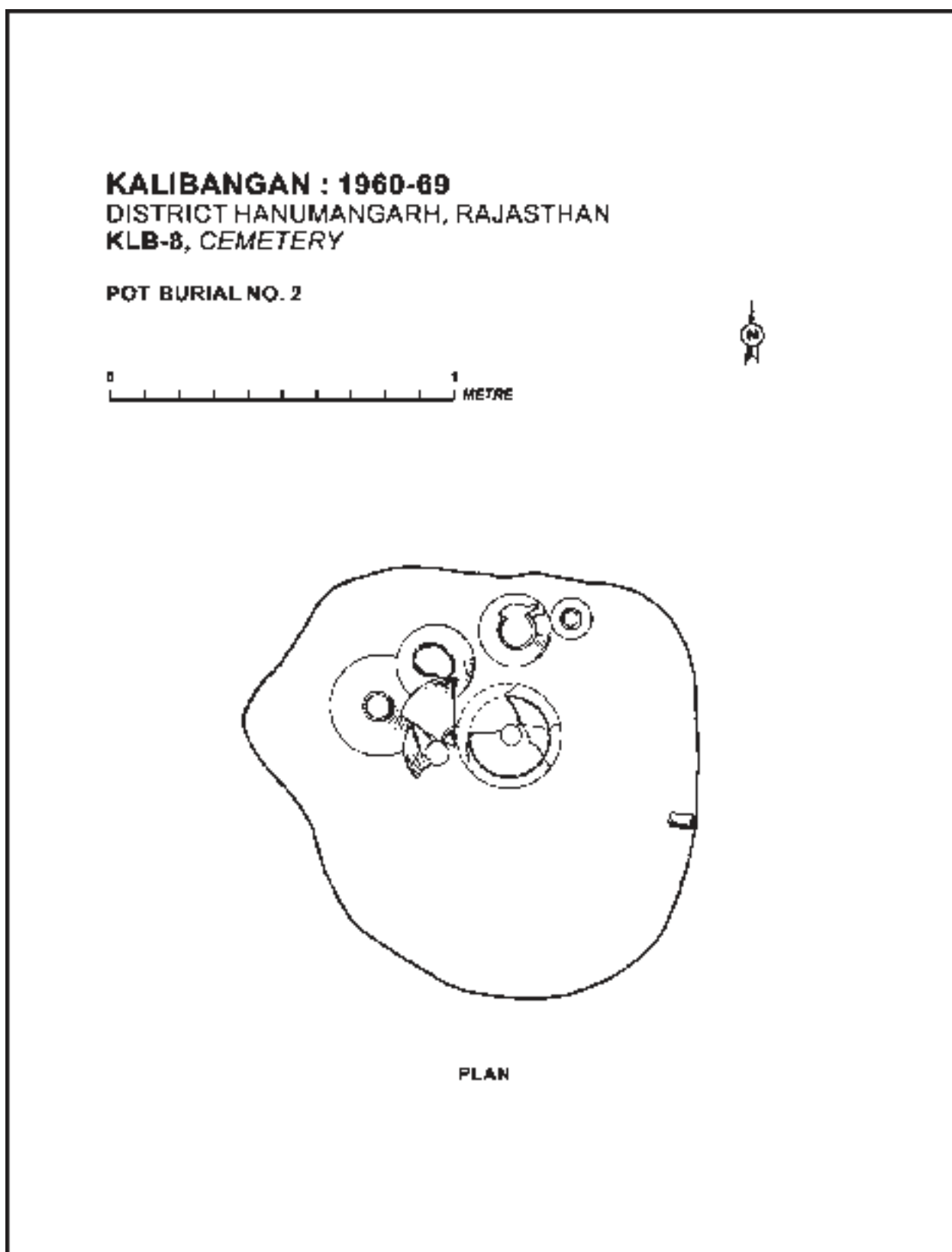


Fig. 23.4 KLB-8 *Plan of Pot Burial no. 2*



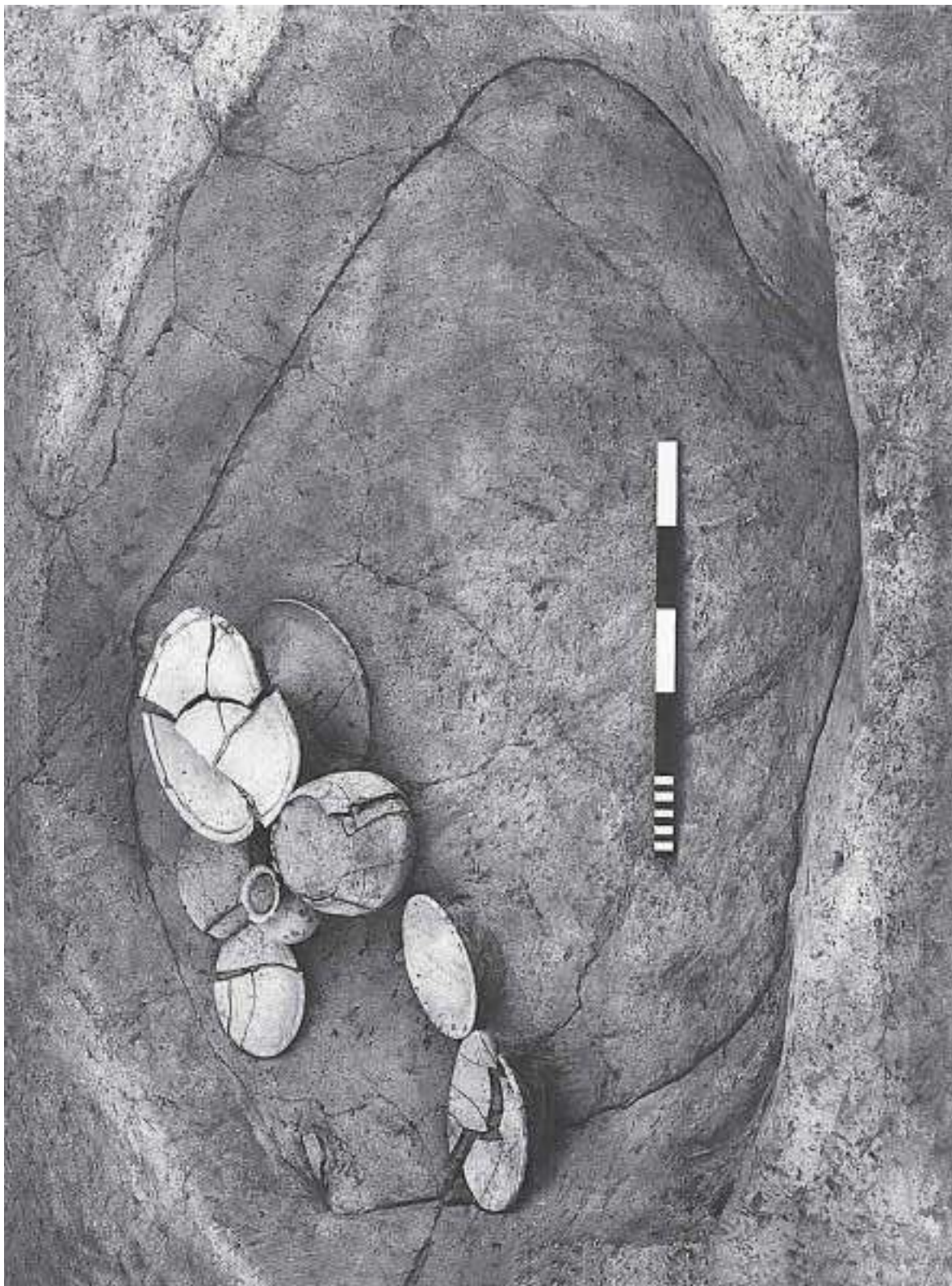
**Burial No. 3, Figs. 23.5 and 23.6**

Shape of the pit is also circular with a tendency to become somewhat oval in shape, diameter being 1.56 m and 1.60 m EW & NS. Depth of the pit is 0.47 m from the surface level. The interment is confined to the western half, the eastern half being empty. Probably this space served the purpose for some body to get into the pit for arranging the interment.

A peculiar feature of this burial is that under the top layer of interment

there was a secondary layer of pottery. The upper layer of pots were placed exactly over the lower ones. The urn was found in the lower level. This was completely broken and had fallen towards the west. A few big pieces of pottery were found sticking over from the sides of pit. It would be seen that while digging this pit the earlier burial had got disturbed.

The pots placed beside the pit were more than 20 in number.



*Fig. 23.5 KLB-8 Pot Burial no. 3*

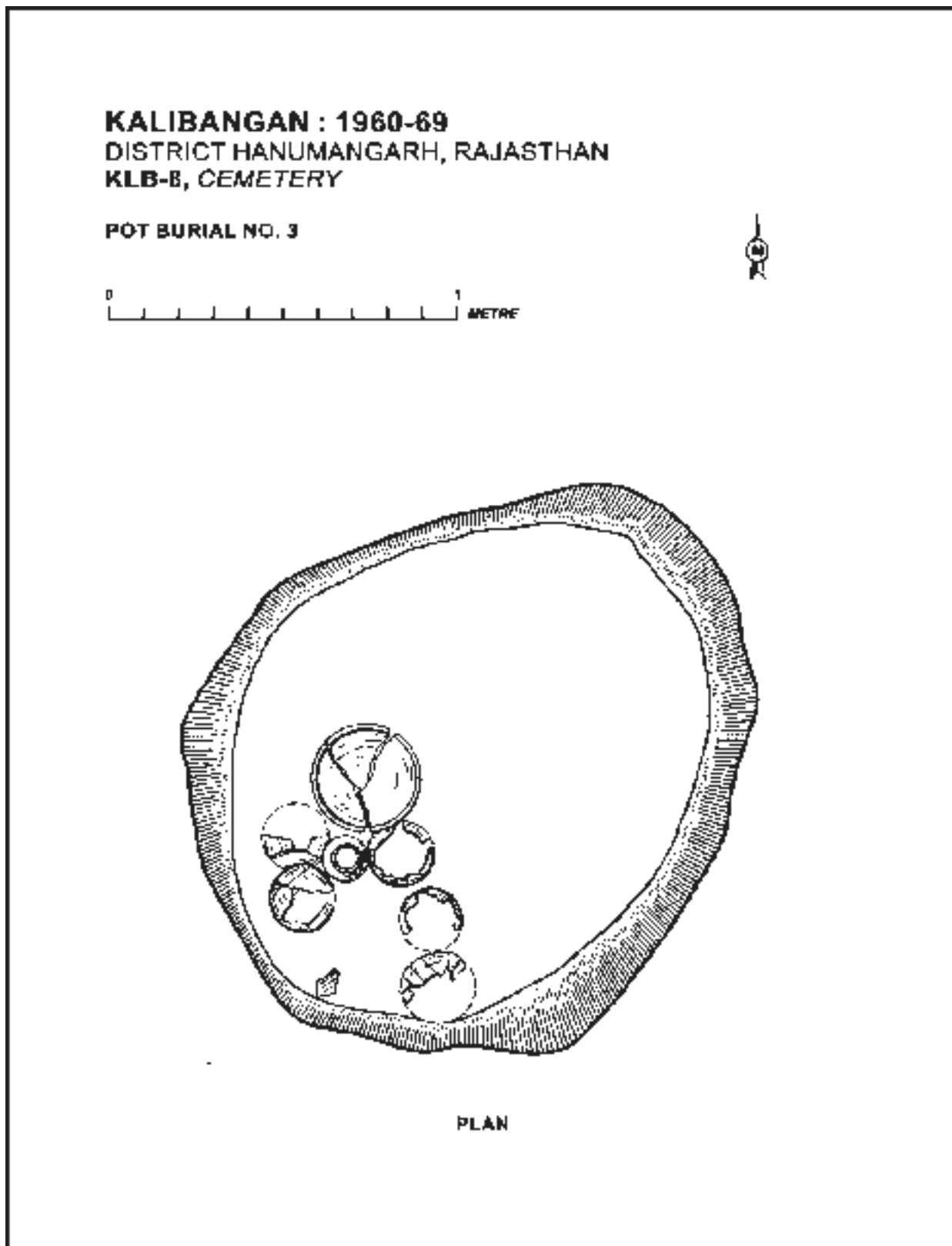


Fig.23.6 KLB-8 Plan of Pot Burial no. 3

**Burial No. 6, Figs. 23.7 and 23.8**

Shape of the burial pit is roughly circular tending to be ovalish. Diameters along NE-SW – 1.60 m and NW-SE 2m. Depth of the pit is 0.60m. It has been cut by later pits on the north and east Burials 17 and 7 respectively.

The urn inside the pit had been placed towards the western periphery away from the centre. The shape of the urn is somewhat fusiform. It has developed many cracks probably due to the weight of the filling and also perhaps due to tectonic movements. Excepting for a small pot on the NW nearly at the top and a cup

-on-stand in front of the urn on the west placed at the bottom of the pit, all the attendant pottery were found concentrated on the eastern side.

Two interesting faience objects were found here. They were found hemmed by dishes or lids and a Harappan goblet near the urn. One resembles a miniature dish-on-stand. In all probability this was worn as a ear ornament and the other of a peculiar shape worn in all probability as a pendant.

Total no. of pots obtained 21.

Most of the shapes are Harappan.





Fig. 23.7 KLB-8 Pot Burial nos. 6 and 7

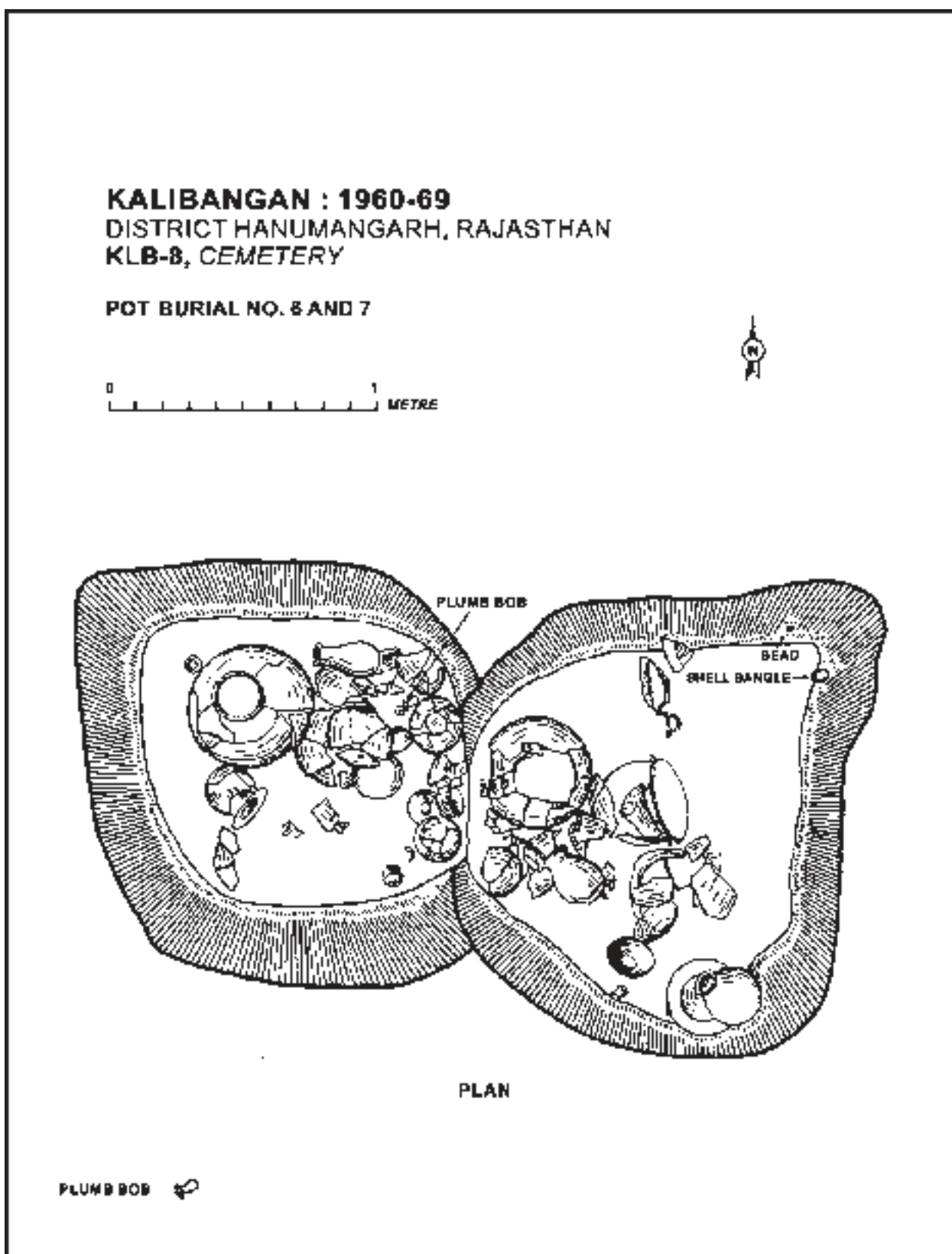


Fig. 23.8 KLB-8 Plan of Pot Burial nos. 6 and 7

**Burial No. 7, Figs. 23.7 and 23.8**

Slightly ovalish pit in outline, the diameters along the cardinal direction being 1.75 (NS) and 1.45 m (EW). It is 0.53 m deep. Here also, just like Burial-6, the urn was found placed near the western extremity of the pit away from the centre. The associated pottery was found all around excepting at the rear of the urn. Urn itself had been damaged and the broken pieces had fallen inside the urn which would clear that this was placed empty. There was no lid. Most of the pottery were broken and damaged.

This must have happened during the course of filling.

Besides pottery, 5 beads of carnelian, one of jasper and a complete shell bangle were obtained from this burial.

Among pottery shapes particular mention may be made of a high necked, flanged jar with carination at the waist and lower body and a flat base.

The shapes are Harappan.

This pit has partially cut the earlier Burial No. 6.

Total no. of pots numbered 17.



**Burial No. 13, Figs. 23.9 and 23.10**

Its outline is definitely ovalish in shape, measurements along the cardinal direction 1.17 (NS) and 1.81 m (EW). Depth 0.60 m.

In this burial we encountered pottery at two levels. One almost at top level: all the pots placed in a line along the EW axis. The second layer was encountered at a depth of 0.25 m from top. An urn was also found though broken. As in the case of other burials the urn here also was found placed towards west removed from the centre. Associated pots were found

all around. It is rather strange to find two levels in the placement of attendant pottery and the urn to be found on the lower level. A similar affinity was noticed in Burial-3. In this respect this differs from Burials-6, 7 and 1. The associated pottery is very closely arranged touching the urn. Only in this burial two long bones touching the eastern periphery of pit were found. They could have come into the pit along with filling or is this burial a fractional burial? The bones were found at the top level. Almost touching this burial on the east we encountered another burial which was not opened. In the cup- on-stand we found another shell. No. of pots are 21.

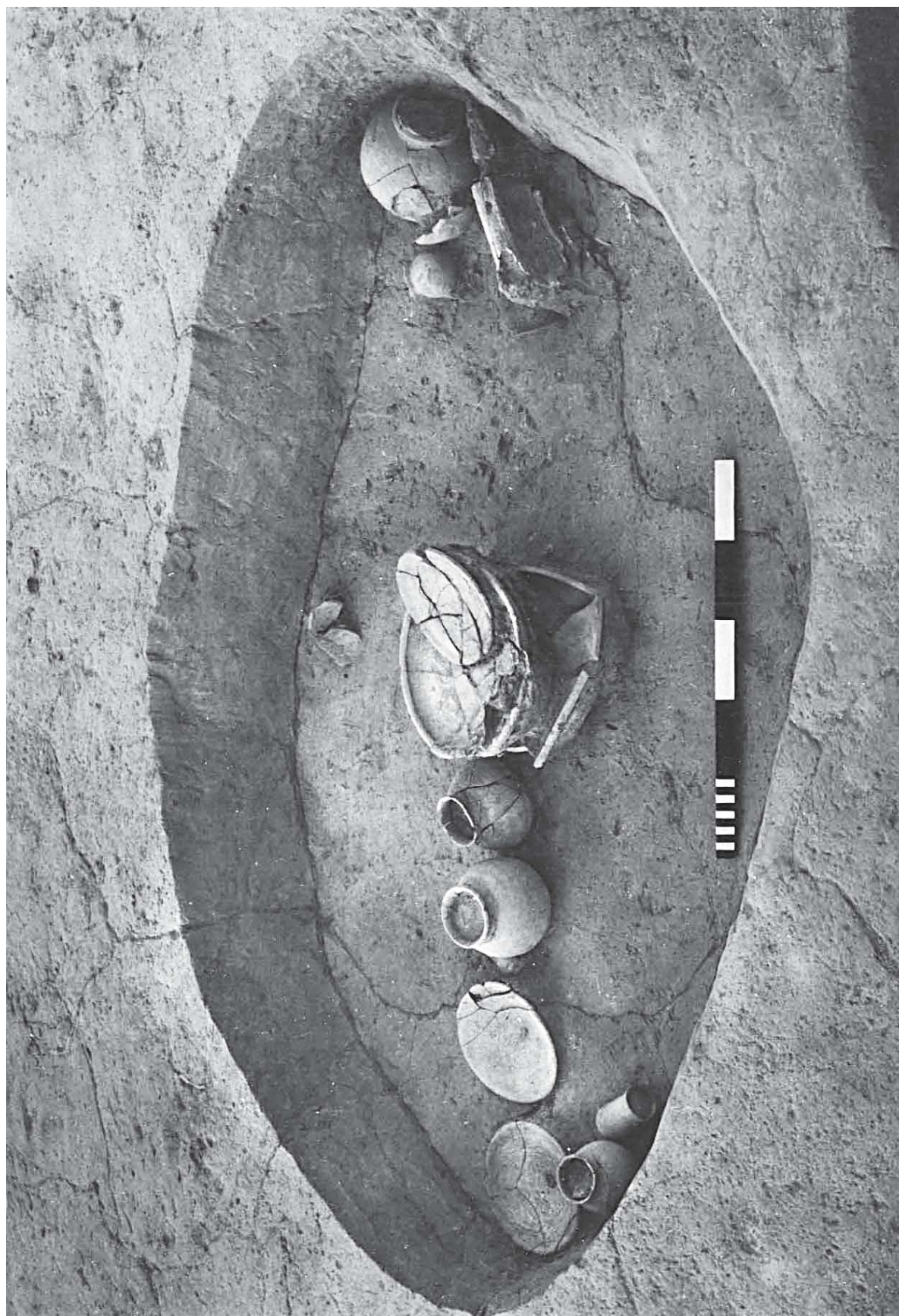
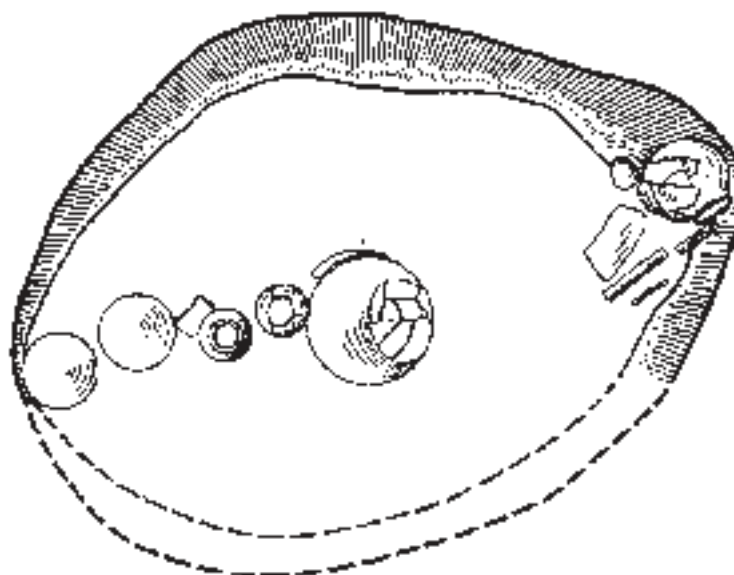


Fig. 23.9 KLB-8 Pot Burial no. 13

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**POT BURIAL NO. 13**

0 1 METRE



**PLAN**

Fig. 23.10 KLB-8 *Plan of Pot Burial no. 13*

**Burial No. 15, Figs. 23.11 and 23.12**

It is an irregular pit which is 1.75 m long and 1 m wide. It is a very shallow pit which yielded few fragmentary potsherds. Out of which only a shallow

plate could be marked out which was jutting out from the present surface. The pit is located on the northern end of the cemetery area where most of the pot burials were found. No other antiquity was recovered from the pit.





*Fig. 23.11 KLB-8 Pot Burial no. 15*

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**POT BURIAL NO. 15**

0 1 METRE



**PLAN**

Fig. 23.12 KLB-8 *Plan of Pot Burial no. 15*



**Burial No. 16, Figs. 23.13 and 23.14**

This is somewhat circular with a projection on the north-west. Diameter's NS 1.75 and 1.45 m EW. It is 0.30 m. deep. Some of the pots were visible on top surface and the broken pieces of pottery amply justified the inference that this burial had been subjected to denudation and disturbance.

All the shapes are Harappan. Most of these pots are broken. A small piece of bone which could have come with the filling was encountered near a pot at the bottom of the pit. One of the shell bangle broken in 3 pieces was also found. No urn was encountered. No of pots interred were 29.

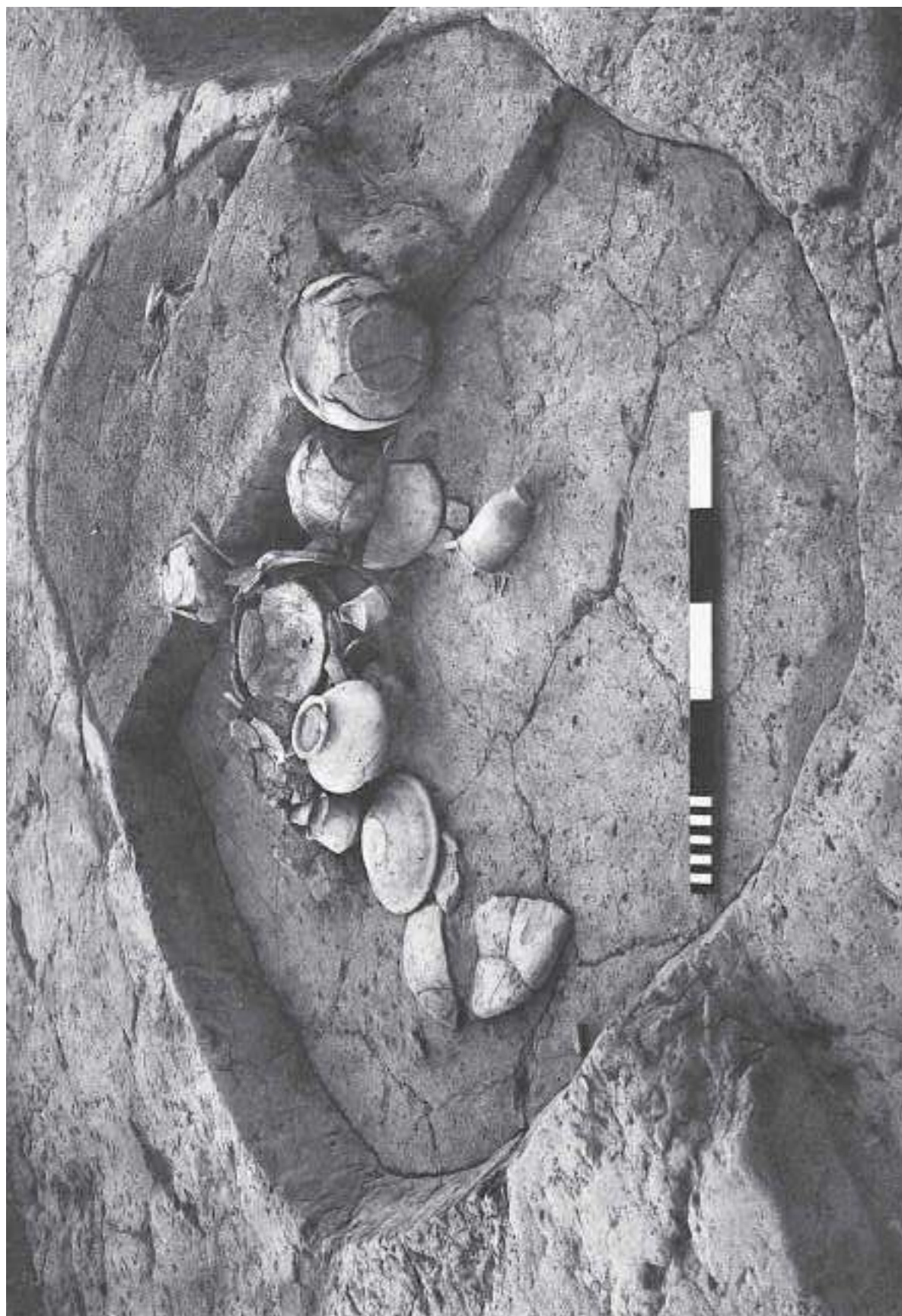


Fig. 23.13 KLB-8 Pot Burial no. 16

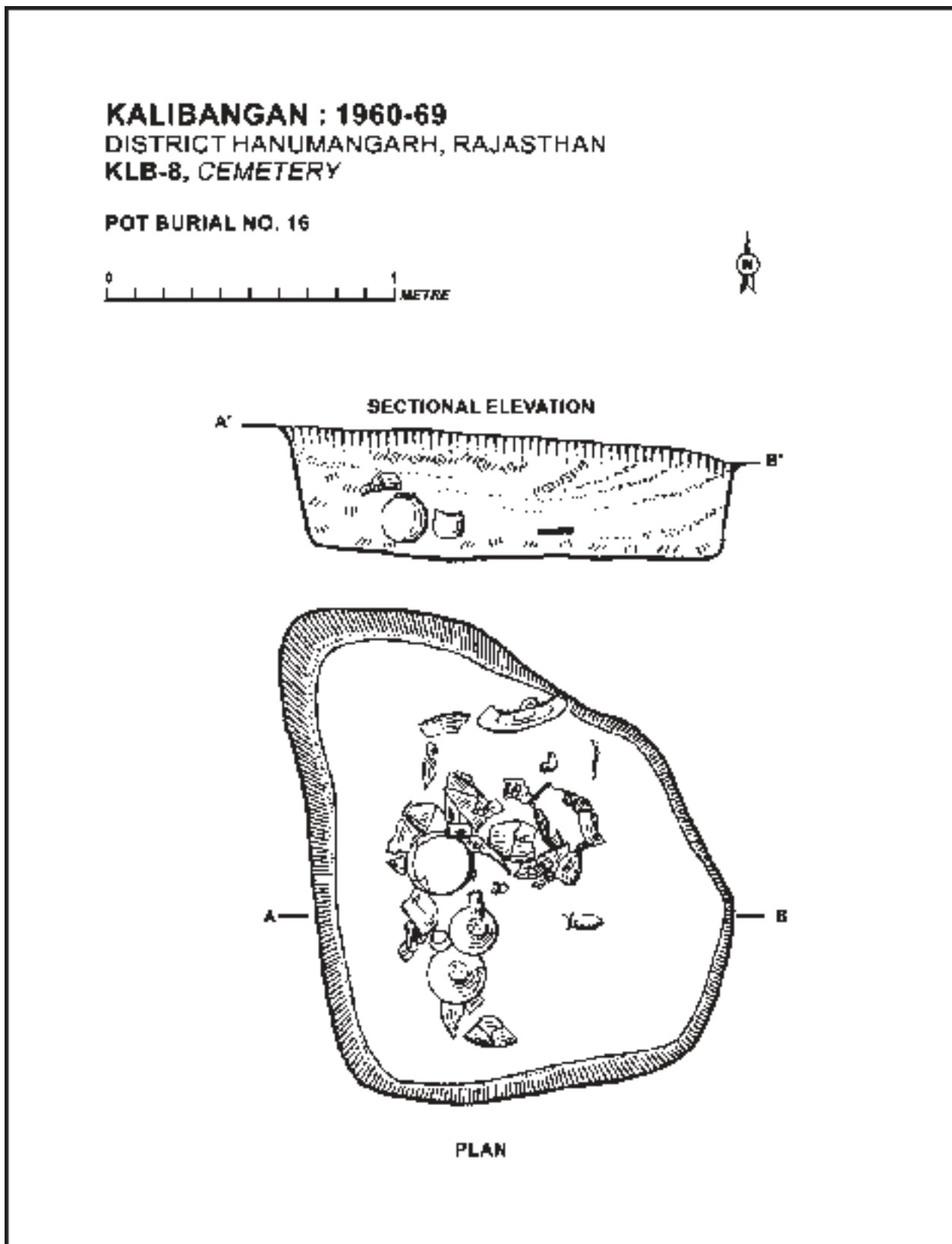


Fig. 23.14 KLB-8 Sectional elevation and plan of Pot Burial no. 16

**Burial No. 17, Fig. 23.15**

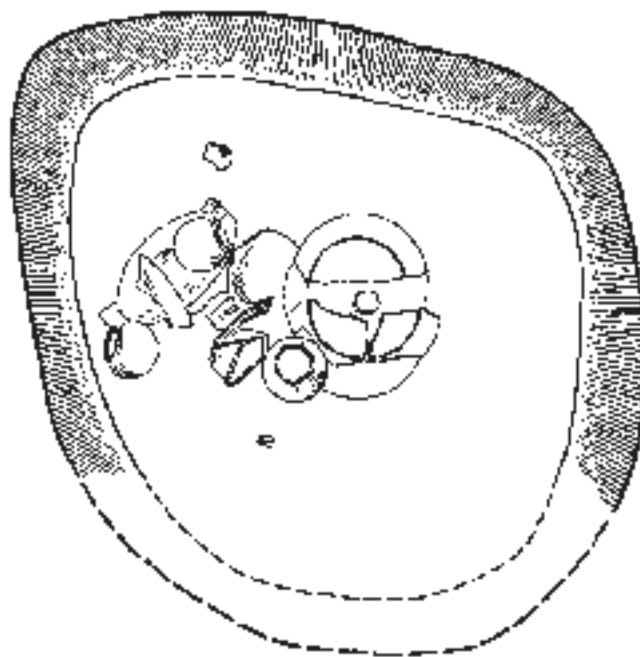
This burial is also a disturbed one. Its shape is somewhat circular with a tendency to become ovalish. Measurement along the cardinal direction NS – 1.25 and EW 1.55 m, depth

of the pit of 0.45 m. The centrally placed dish-on-stand was visible on the top surface. The associated pottery was found at the west. Rest of the space was vacant. All the shapes are Harappan. No urn was encountered here. This has partially cut Burial-6. Total no of pots are 8.

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**POT BURIAL NO. 17**

0 1 METRE



**PLAN**

Fig. 23.15 KLB-8 *Plan of Pot Burial no. 17*

**Burial No. 18, Fig. 23.16**

Measured 1.55 m and 1.40 m E-W.  
Maximum depth reached 0.15 m.  
Originally it must have contained a big  
jar as other burials but now only pieces

were available. Only one intact lid was  
available here while others were broken  
fragments of pots. From the broken pieces  
of shapes of the pots could be ascertained  
viz. jar, dish-on-stand and lids.





Fig. 23.16 KLB-8 Pot Burial no. 18

**Burial No. 20, Fig. 23.17**

Circular in shape 1.30 x 1.60 m NS-EW in diameter. Depth reached is 0.40 m. The burial consisted of only two pots, an urn and the other a very big dish-on-stand. It would appear that this dish-on-stand is a biggest and tallest of all the dishes-on-stand so far obtained from any

of the burials here. This was found placed behind the jar or urn laterally perhaps due to the fact that the height of the dish-on-stand was greater or just equal to the depth of the pit into which it was intended to be placed.

Similar to all other burials the filling was brownish dirty and sandy earth.

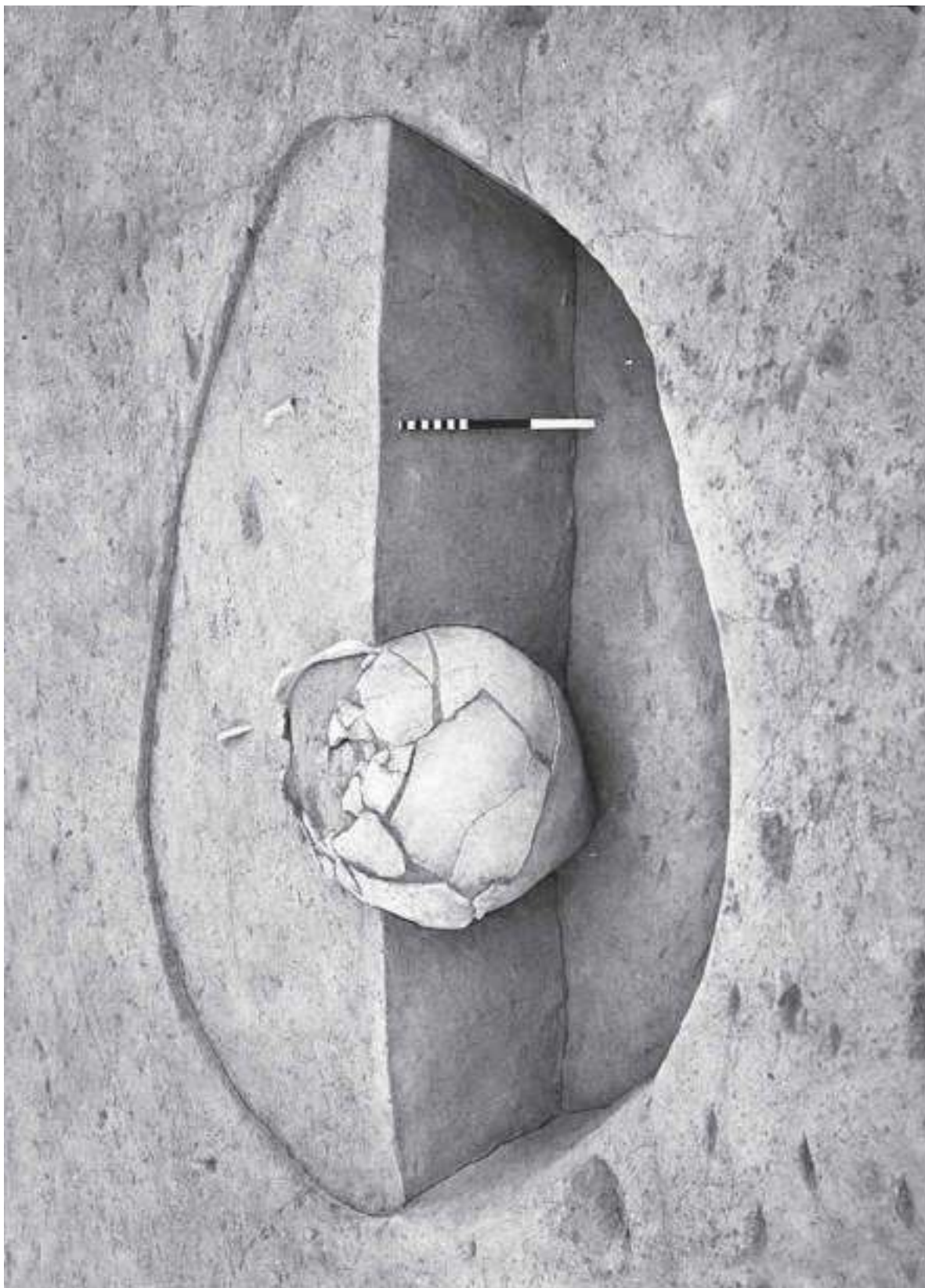


Fig. 23.17 KLB-8 Pot Burial no. 20



**Burial No. 21**

Measured 1.66 m x 1.30 m NS-EW. Depth reached only 0.30 m. Only one lid was encountered.

**Burial No. 23**

Roundish burial enclosing a pot burial. Measures 1.30 m x 1.33 m in dia NS-EW. Depth reached 0.37 m.

The urn was found almost in the centre and on either side were the associated pottery numbering 13. Shapes include platters, base, goblet and lids or dishes. Upper surface badly damaged due to ploughing. As already observed this burial has been partially dug into the rectangular burial (Burial 22) on

the north. Therefore the filling is mixed and not wholly the dirty sandy earth as found in other similar burials. It would also appear that the diggers of this burial were ignorant of the adjacent rectangular burial and chronologically that would mean that this was posterior to Burial-22.

The presence of two types of burials without skeletal remains viz., the circular and rectangular would lead one to believe that there was some sort of sectarian or social division among the Harappan communities which affected their burial-rituals also. A degeneration in the burial architecture though plausible is hardly possible considering the brief life span of Kalibangan.

**Burial No. 24, Figs. 23.18 and 23.19**

An oblong burial pit on exposure yielded 48 pots. The pit is 3.32 m in length, 1.30 m in width and 1.05 m in depth. Filling of the pit consists of speckled cloddy clay mixed with sand patches and chunks of brown compact earth. Few pieces of mud bricks of brown clay is available at present in the cemetery area. Orientation of the pit is north-south. Pots occur at different levels from the depth of 0.06 m to 0.93 m. surprisingly most of the pots are concentrated towards the northern half of the pit and most of them form a perfect line at a distance of 0.62 m from the northern central edge of the pit. Pot Nos. 1, 2, 3, 4 and 5 occurred on higher levels in stepwise fashion, on the western edge of the pit are a lid, a piece of stem and a big jar with tapering end. Lids lying over each other except a lid which is lying on the eastern side of the jar. Other pots

are a vase of medium size, a big lid, smaller lids, vase lying at the northern end of the big jar, lids, a small *lota*, a vase, a vase (in pieces), a lid and a vase. Apart from these, numerous sherds are lying over each other and it is not possible to assign them any specific pot numbers in the present circumstances. Bottom of the pit has been reached and it consists of usual greenish sand. While lifting the pots three more lids came out just below the dish-on-stand. Pot with a constricted neck, a globular '*lota*' painted upto the waist line with fish scale and dot designs were placed. This pot came out below another pot at the bottom of the pit. Near the pot two more pots are found after lifting the others i.e., a lid, a globular '*handi*' and a constricted glass. Besides, there are other miscellaneous potsherds which may fit into some pots or may form separate pots also. A valve of fresh water mollusc has also been found amongst the potsherds of this pit.



Fig. 23.18 KLB-8 *Pot Burial no. 24*



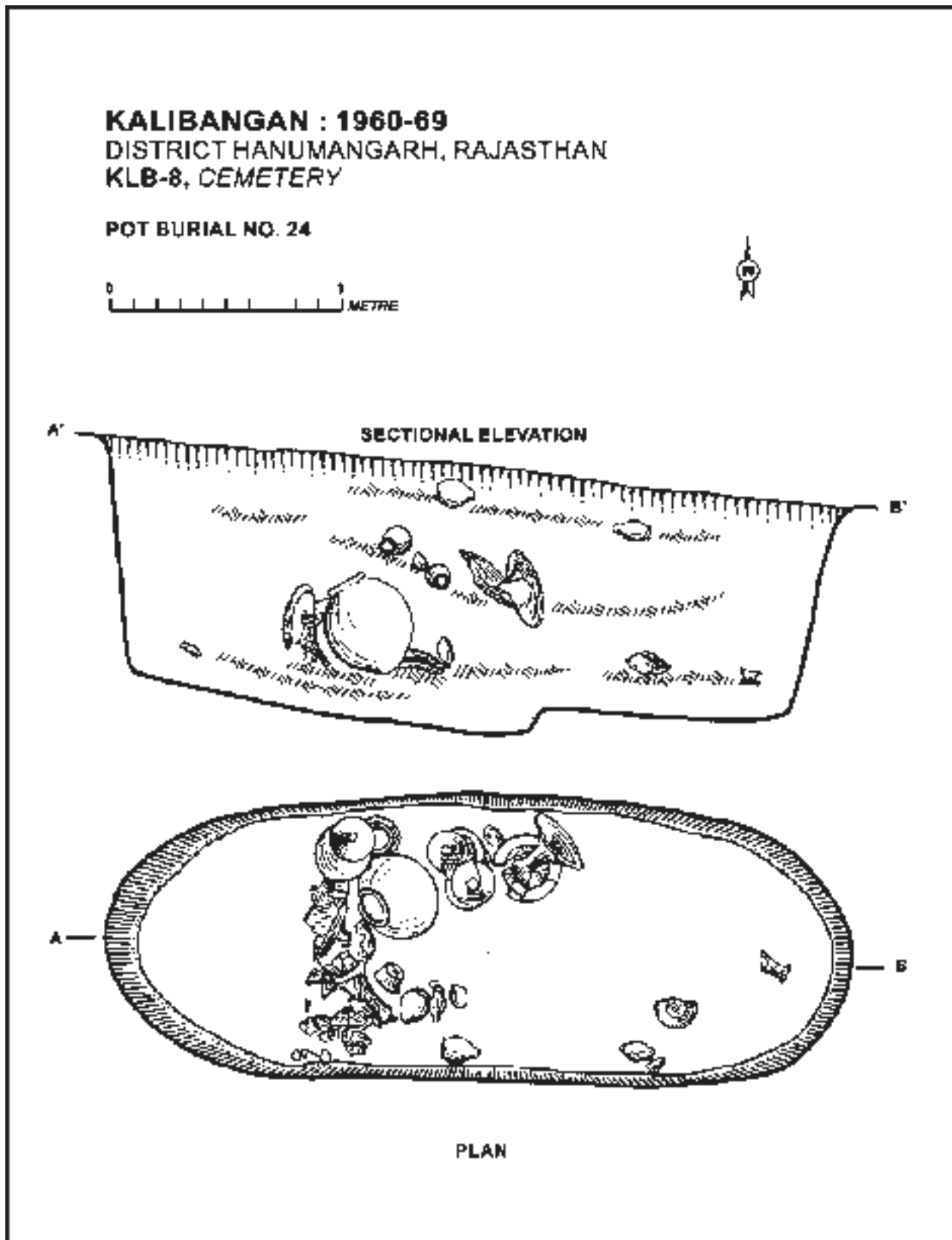


Fig. 23.19 KLB-8 Sectional elevation and plan of Pot Burial no. 24

**Burial No. 25 (Oblong pot burial), Figs. 23.20 and 23.21**

Burial No. 25 is an elongated oblong pit which has yielded 14 pots. The grave is 3.10 m in length, maximum width is 1.30 m and depth is 1.17 m. Filling of the pit consists of the speckled clay mixed with greenish sand and compact brownish clods occurring at intervals. Bottom of the pit is greenish sand. The pit has been dug in the natural soil but the working level is missing due to the heavy erosion. Orientation of the pit is north-south. Pots have been deposited in the pit in two distinct groups, one on the northern end and the other on the southern end. The eastern and western sections of the pit clearly show laminations (wind and water borne deposits). Each lamination consists of three distinct deposits, (1) compact white fine clay (2) brownish layer, and (3) fine sand. The laminations vary in thickness depending on the intensity of the rainy season followed by the spell of dry season. The laminations start from the southern end of the pit and continue upto 2/3 length of the pit leaving the 1/3 northern end devoid of these. These laminations form concave bands dipping towards the bottom and run right over

and under the pots of the southern group. Centre of the pit is absolutely empty with no trace of any pot or skeletal material. The filling on the northern end does not show any laminations. From the nature of the filling and dipping nature of the laminations, it seems logical that the pit was filled towards the northern side only leaving the southern end and group of pots exposed to the nature. The water formations are occurring right on the floor of the pit also in the southern half.

The pots start occurring at a depth of 0.66 m. The northern group of pots consists of at least 8 pots. Consisting of big jar and first to occur resting over the three pots numbered dish-on-stand occurring at the north-east corner of the pit. 'lota'. Gourd shape vase and vases 'lota' shaped vase. A broken piece of a vase.

Southern group of pots consists of five pots dominated by a cup-on-stand leaning against the western section. These tapering vases, a 'lota' lying below was found while lifting the pots. None of the pots is painted. Sides of the pits are sloping towards the bottom. A valve of the fresh water mollusc was recovered from inside the cup-on-stand as in case of Burial Nos. 24, 26 and 31.



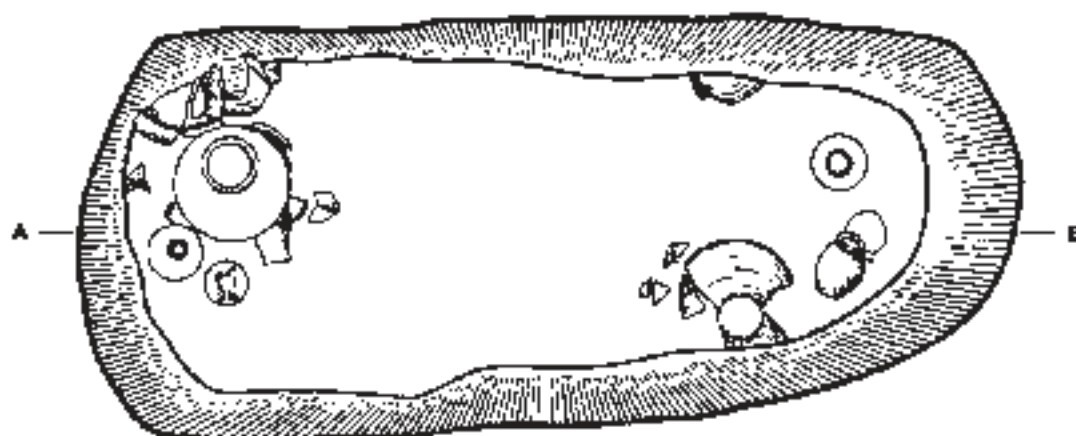
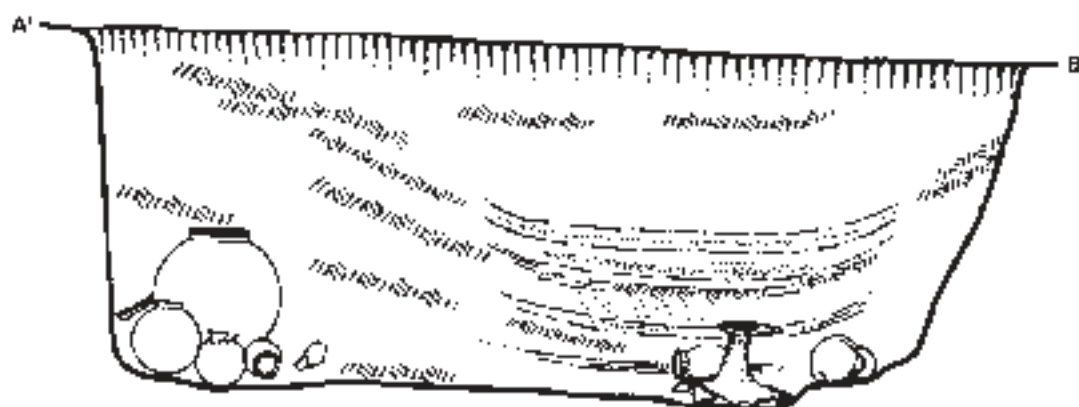
Fig. 23.20 KLB-8 Pot Burial no. 25

**KALIBANGAN : 1960-69**  
**DISTRICT HANUMANGARH, RAJASTHAN**  
**KLB-8, CEMETERY**

**POT BURIAL NO. 25**



**SECTIONAL ELEVATION**



**PLAN**

Fig. 23.21 KLB-8 Sectional elevation and plan of Pot Burial no. 25



# THE POTTERY FROM CEMETERY

MADHU BALA

CHAPTER

# 24

## 1. INTRODUCTORY

The pottery is wholly wheel-turned and made of well levigated clay, of course, the majority of the pots are of medium fabric, but pots with fine fabric are also not lacking. A fewer pots seem to have been treated with red or buff slip. The earth encrustation made it impossible to determine the slip. Some pots appear to have completely lost their slip. The firing is mature. It may be pointed out that no specimen of grey ware has been obtained from the cemetery. The pottery retrieved from KLB-8 is more or less similar to the pottery found from Harappan levels of its habitational mounds KLB-1 and KLB-2 and also of KLB-3. The following types have been observed in the collection, i.e., dish-on-stand, cup-on-stand, beaker, dish, bowl, lid, basin and vases of various types. In a rectangular burial devoid of skeletal material, a perforated jar was found inside the trench and a small vase was kept inside the perforated jar. No perforated jar was found from any other burial. This was a solitary find. A few specimens are painted in black. A painted cylindrical jar along with a lid has been found. Majority of pots were kept on the northern side of the pit. Only one or two pots were kept at the southern end as observed by the excavators. The pots and pans might be kept with food and drinks as offering for life after death. The burials have not yielded terracotta cakes of any type.

## 2. POTTERY TYPES

**Type 1:** Dish-on-stand of red ware of fine fabric showing an oxidized core, treated

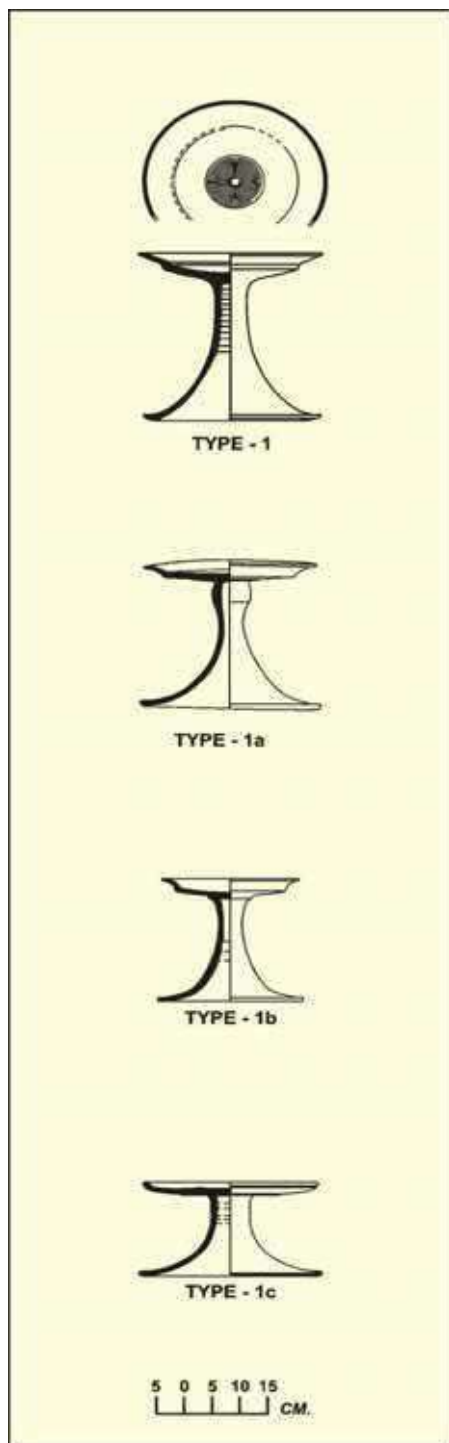


Fig. 24.1



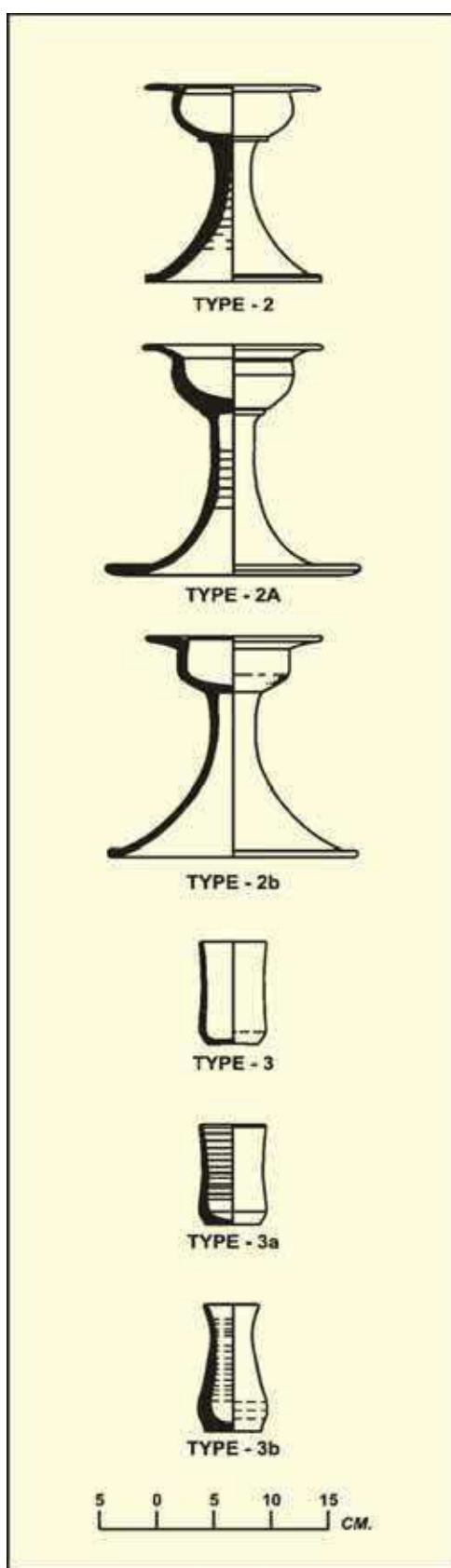


Fig. 24.2

with red slip, has flaring sides and carination to the waist for the saggar base. The bottom of the dish is extensively decorated with a series of incised spirals. The stem is plain ending with a flaring base. The specimen is painted in black with horizontal line at each edge of the rim of dish and the base of the stem. The variant 1a differs in having an upturned base, and the variant 1b is without painting and 1c is squatish having a flaring base. Type 1 and 1a from KLB-8, Harappan extended burial reported while 1b and 1c from Harappan pot burial.

The dish type is not available from the habitation area at the site, but the type is reported from the Cemetery R-37 at Harappa of type 1 and 1c fig. 11 (Fig. 24.1)<sup>1</sup>.

**Type 2:** Cup-on-stand, the cup with the fragmentary portion only is available. It is in red ware, of medium fabric, showing an oxidized core, treated with red slip which has considerably peeled off. Has a flaring rim ledged from the mouth, concave sides and saggar base. The junction of base of the cup with the stem decorated with a ridge. Variants are 2a and 2b having flared base. From KLB-8, Harappan pot burial.

The type has been found from habitation area at the site. Though cups-on-stand are reported from Cemetery R-37 at Harappa but the ledge type is missing (Fig. 24.2)

**Type 3:** Cylindrical vase (broken) of red ware of medium fabric, showing an oxidized core, devoid of slip. The external surface is not smooth and wheel marks are prominent in the interior. Has a slightly

<sup>1</sup> As every burial had a large number of pottery only main types have been described here.

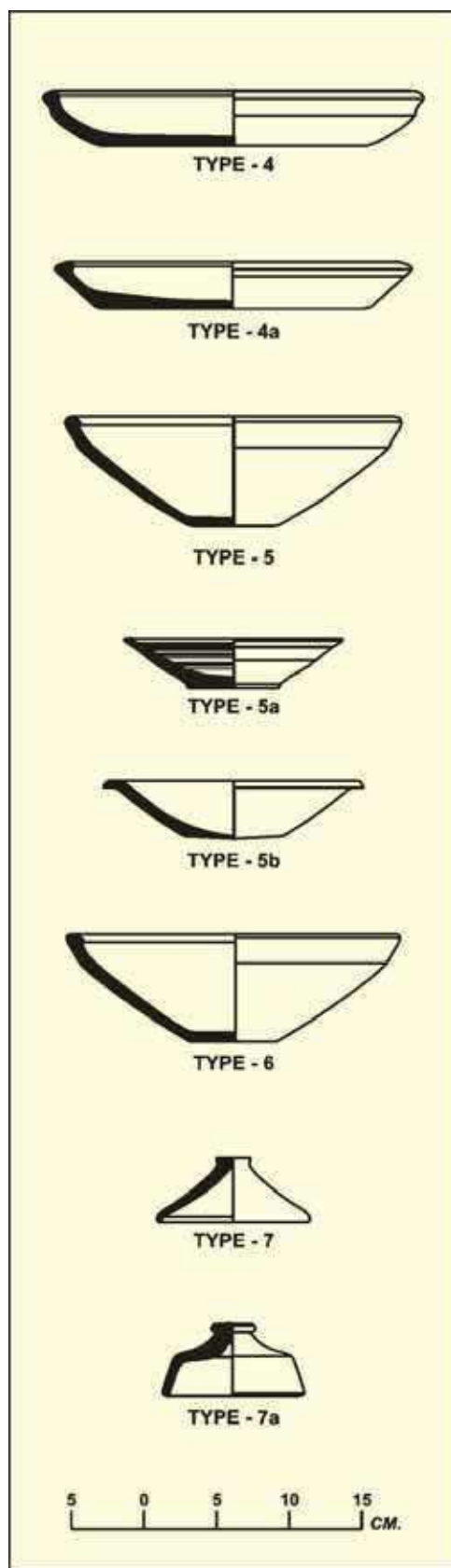


Fig. 24.3

flaring rim, tapering profile and concavity above the flat base. The variant 3a is different from the main type in being of a slightly bigger size of fine fabric, and smooth external surface with the wheel mark visible. Has flaring rim, concave sides broader at the bottom with beveling and flat base. The variant 3b has red slip on the exterior and has further been smoothened by paring, the wheel marks are prominent in the interior. Has slightly everted rim taking up sides with concavity and a flat base. From KLB-8, Harappan extended burial.

The type is available from the habitation area at the site and the Cemetery R-37 at Harappa. cf. type XVa fig. 16. (Fig. 24.2).

**Type 4:** Dish of medium fabric covered with encrustation hence not possible to judge the ware and slip. The underside is rough and shows wheel-marks. Has flaring sides, externally beaded rim and flat base. Variant 4a has an internally beaded rim. From KLB-8, Harappan Pot Burial.(Fig. 24.3).

The type is available from the habitation area at the site.

**Type 5:** Bowl or jar-cover of red ware of medium fabric, devoid of slip. Feeble wheel-marks are seen on the under side. Has flaring sides with a lip and a flat base. Parallel is found from the habitation area at the site and also in Cemetery R-37 at Harappa cf. type XXXIII d fig. 29. From KLB-8, Harappan pot burial. 5a and 5b from Harappan extended burial. The variant 5a has a groove on the exterior below the rim the variant 5b has widely flaring sides (Fig. 24.3).

**Type 6:** Deep bowl or basin of red ware of medium fabric, showing oxidized core treated with red slip in the interior, the

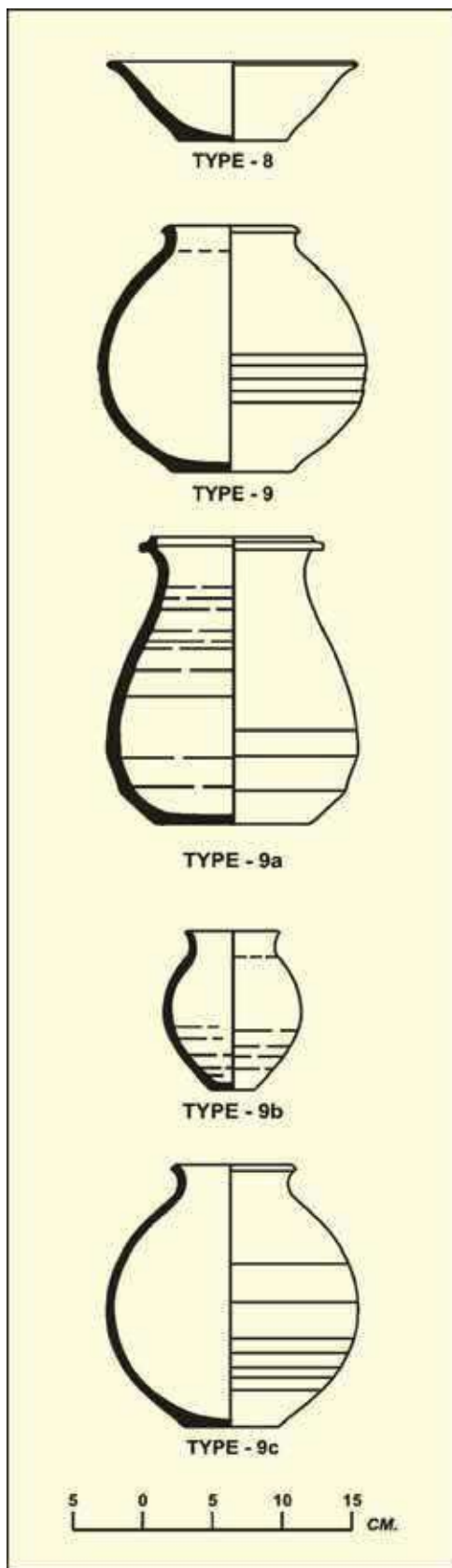


Fig. 24.4

exterior is rough and wheel-marks are seen. Has flaring sides, internally beaded rim and a flat base. From KLB-8, Harappan pot burial (Fig. 24.3).

**Type 7:** Lid of red ware of medium fabric treated with red slip. Has short vertical rim, tapering sides rudimentary solid kind with flat top. From KLB-8, Harappan extended burial.

The type has parallel in the cemetery R-37 at Harappa cf. type XXXIXd fig. 20.

The variant 7a is in buff ware and has slightly oblique high sides with carination at the top with a solid circular knob. From KLB-8, Harappan pot burial (Fig. 24.3).

**Type 8:** Shallow basin of red ware of medium fabric showing oxidized core, devoid of slip, has flaring mouth, tapering sides and flat base. From KLB-8, Harappan extended burial (Fig. 24.4).

**Type 9:** Oval jar of red ware of fine fabric showing oxidized core, devoid of slip, the external surface is smooth but wheel-marks are seen in the bottom above the base. Has externally beaded rim, short vertical neck, convex profile and narrow externally beaded flat base. Variant 9a differs from the main in having elongated body with groove below the neck. 9a and 9b from KLB-8, Harappan extended burial.

The type is represented in the habitation area at the site and is also found in the Cemetery R-37 at Harappa cf. vii B fig. 14.

Variant 9b has flaring out rim, short vertical neck rough existing and bulging profile; variant 9c has smooth exterior with buff slip having bands painted in black pigment. From KLB-8, Harappan extended burial (Fig. 24.4).

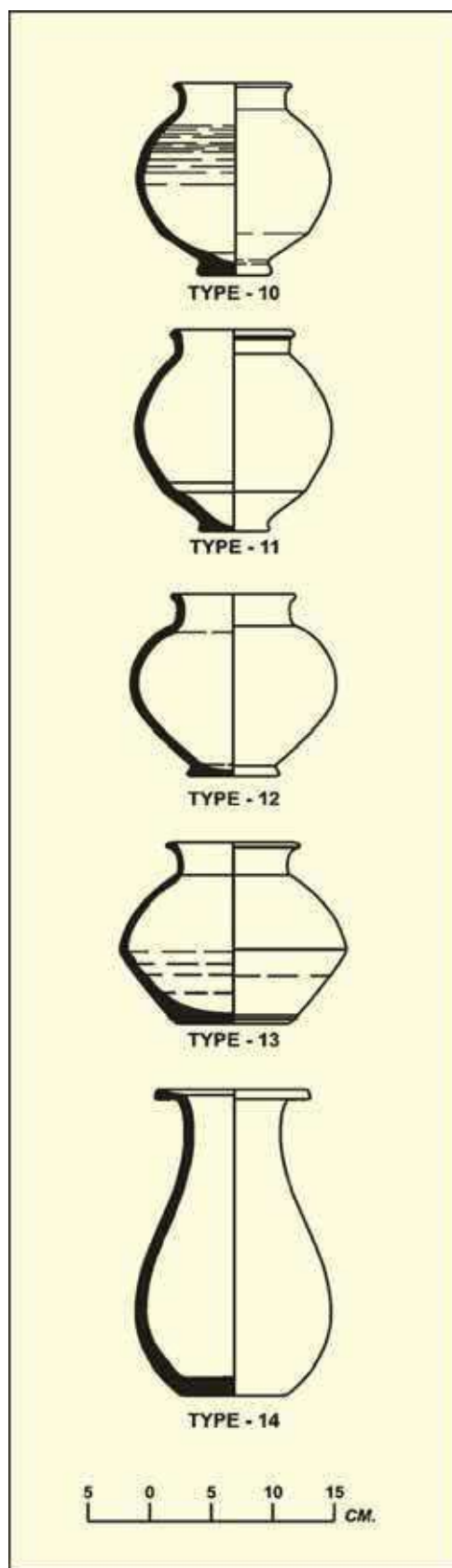


Fig. 24.5

**Type 10:** Jar of red ware of coarse fabric showing an oxidized core, has flaring rim, short vertical neck, globular in profile, mild carination at the waist and externally beaded flat base. From KLB-8, Harappan extended burial (Fig. 24.5).

**Type 11:** Jar of red ware of medium fabric showing oxidized core, treated with thin red slip on the exterior, wheel-grooves are visible below the waist. Have externally beaded rim, short vertical neck, globular profile and flat base. From KLB-8, Harappan extended burial (Fig. 24.5). The type is represented in the Cemetery R-37 at Harappa cf. XIII, fig. 16.

**Type 12:** A globular jar of red ware of medium fabric showing oxidized core, devoid of slip, the external surface is smooth. Has a short vertical rim. Wheel grooves are seen below the waist and a flat base. From KLB-8, Harappan extended burial (Fig. 24.5). The type occurs in Cemetery R-37 at Harappa cf. XIII, fig. 16.

**Type 13:** Elongated jar of red ware of medium fabric showing oxidized core devoid of slip, has a flaring mouth, short vertical rim and a ledge outside to receive the lid. The profile is taking up and wider at the waist with a mild carination. From KLB-8, Harappan pot burial (Fig. 24.5). The type is available from the habitation area at the site and also in the cemetery R-37 at Harappa cf. type XLlb fig. 22.1.

**Type 14:** Gourd-shaped elongated vessel of red ware of medium fabric showing oxidized core, devoid of slip, has horizontally splayed out rim with a groove at the mouth forming a ledge to receive the lid, concave neck, convex profile and a flat base. It is a new type. From KLB-8, Harappan pot burial (Fig. 24.5).

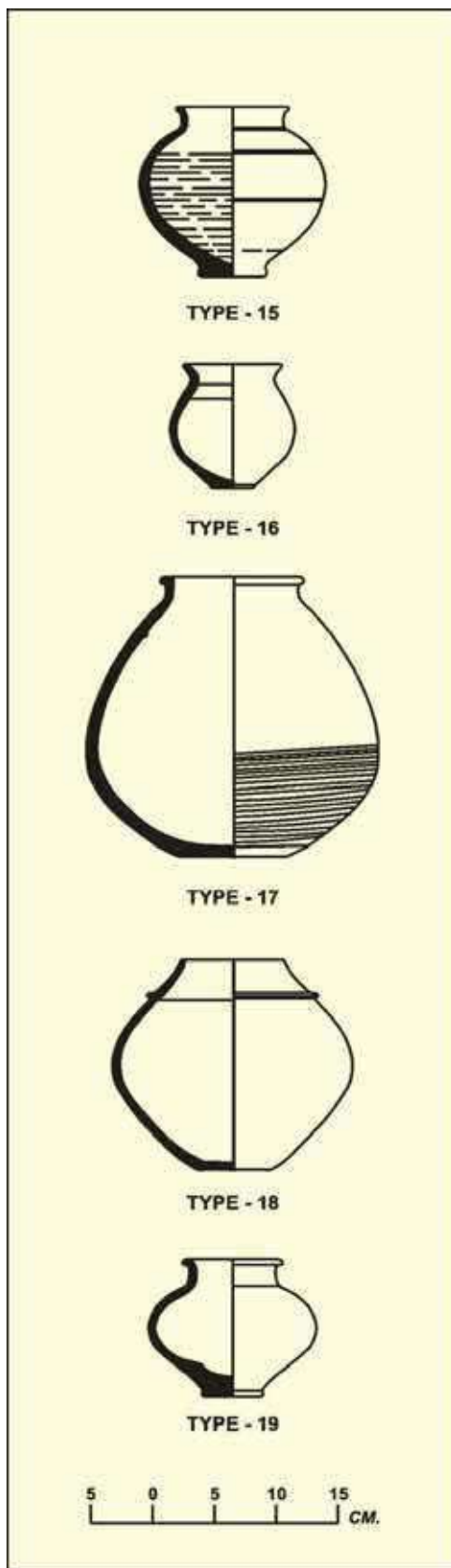


Fig. 24.6

**Fig. 24.6**

**Type 15:** Vase of medium size in red ware of medium fabric showing oxidized core devoid of slip. Has an out-turned rim, short vertical neck, concave profile widest at the waist and beaded flat base. The type is available in the Cemetery R-37 at Harappa cf. type XIa fig. 15. From KLB-8, Harappan extended burial.

**Type 16:** Vase of small size in red ware of medium fabric treated with red slip on the exterior, has slightly flaring rim, short concave neck, profile receding from the waist ending into a discular base. From KLB-8, Harappan pot burial. The type is available from the Cemetery R-37 at Harappa cf. type XIp fig. 15.

**Type 17:** Oval jar of red ware of medium fabric showing oxidized core devoid of slip, has everted rim, short vertical neck, concave profile ending in a narrow flat base. Wheel-grooves are visible on the exterior. The type is represented in the habitation area at the site. From KLB-8, Harappan pot burial.

**Type 18:** Jar in red ware of medium fabric having concave sides without neck portion having a ledge, globular body and flat base. From KLB-8, Harappan pot burial.

**Type 19:** Jar of medium size in red ware of medium fabric showing oxidized core devoid of slip, has outturned rim, short vertical neck, convex profile and a disc base. From KLB-8, Harappan pot burial.

The type is represented in the habitation area at the site and also in the Cemetery R-37 at Harappa cf. XXIIc fig. 17.



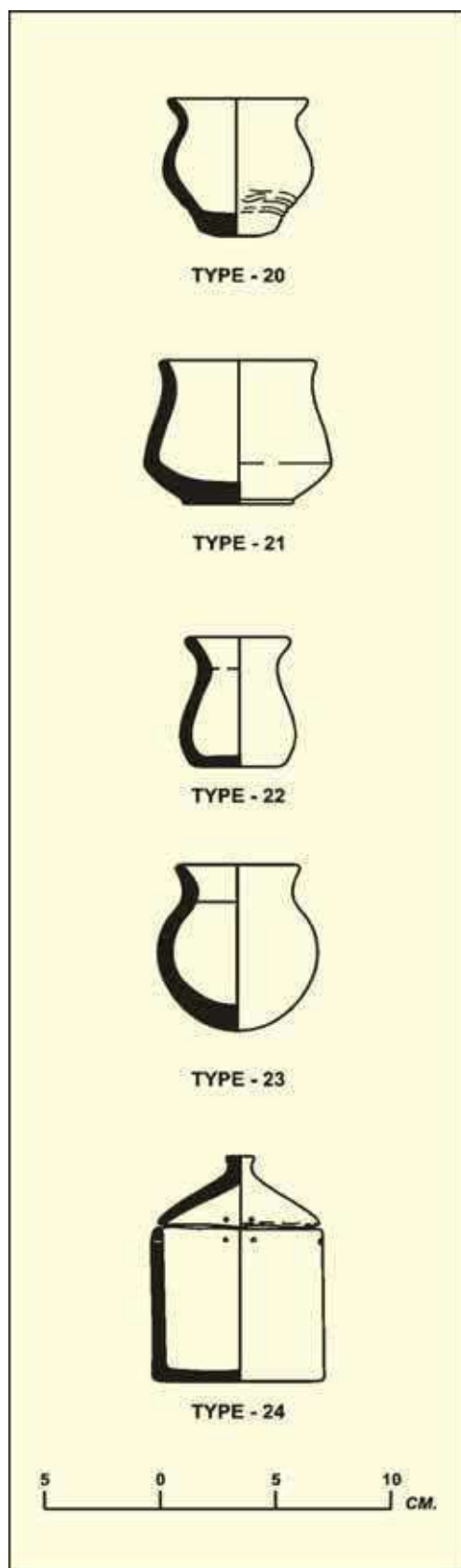


Fig. 24.7

Fig. 24.7

**Type 20:** A miniature vase of red ware of medium fabric showing oxidized core, the slip has peeled off. Remains of horizontal lines suggest that the specimen was painted in black pigment. Has an outturned rim and globular body and a flat base. From KLB-8, Harappan extended burial.

**Type 21:** A miniature vase of red ware of medium fabric showing oxidized core, devoid of slip, has flaring rim, tapering sides, carination at the waist and a disc base. From KLB-8, Harappan pot burial. The type is available in habitation area at the site and also from the Cemetery R-37 at Harappa cf. XXVI fig. 17.

**Type 22:** A miniature vase of red ware of medium fabric showing oxidized core, devoid of slip, has flaring rim, convex profile and flat base, wheel-marks are seen on the lower part. From KLB-8, Harappan pot burial.

**Type 23:** A miniature vase of red ware of medium fabric showing oxidized core, devoid of slip, has flaring mouth, oval profile with a round base. From KLB-8, Harappan pot burial.

**Type 24:** A deep bowl has a featureless rim, straight sides and round flat base along with a knobbed lid, having two sets of holes for tying a string or copper wire for keeping the contents intact, of medium fabric showing oxidized core, devoid of slip. From KLB-8, Harappan burial.



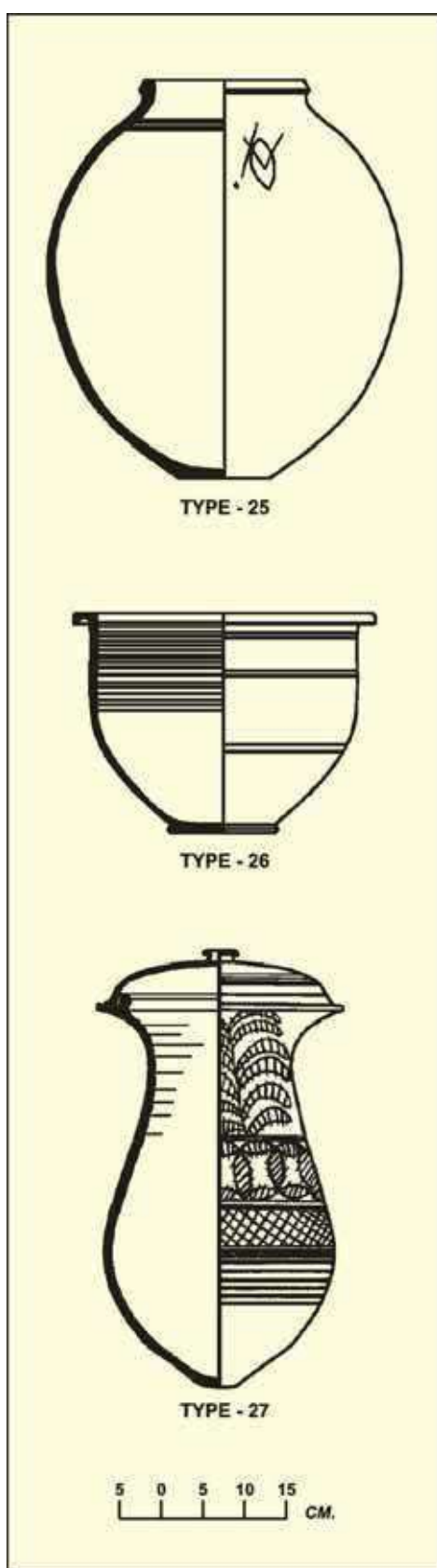


Fig. 24.8

**Fig. 24.8**

**Type 25:** Oval storage jar of red ware of medium fabric, showing oxidized core treated with buff slip, which has almost peeled off. Has an uneven outturned rim, short vertical neck and oval profile narrowing at the bottom ending in a flat base. It is inscribed with a Harappan inscription. From KLB-8, Harappan pot burial. The type has not been found from the habitation area at the site but is available with Cemetery R-37 at Harappa cf. type XLc fig. 21.

**Type 26:** Deep basin with an outturned flanged rim, of medium fabric, treated with red slip and having black horizontal bands. It has a discular base. From KLB-8, Harappan pot burial.

**Type 27:** A tall storage jar of medium fabric with a flaring rim and ledge for a lid, painted in black over pale red slip. The painting consists of two registers i.e. upper one has bipartite Acacia tree and sun design in between and the lower has criss-cross design with horizontal bands below. From KLB-8, Burial No.29 (Fig.22.42)

# SMALL FINDS FROM CEMETERY

JAGAT PATI JOSH

CHAPTER

# 25

Few grave-goods which were kept along the persons in the cemetery have been found. These are found both in extended or pot burials. Generally these consist of beads of semiprecious material, gold, terracotta, steatite and shell; bangles of faience, shell and copper, both solid and tubular; faience plumb-bob; ear ornament; copper mirror besides gold foil, bone arrow head, terracotta ball, jasper gamesman or weight and valva of freshwater shells. The things most dear to the departed were perhaps kept in the burials besides food and drinks kept in the pots and pans

## 1. COPPER OBJECTS

Fig. 25.1

1. Copper tubular bangles, thick 1.0 cm. (KLB-8, Reg. No. 22036).
2. Copper mirror, length with handle, 11 cm. diameter of the mirror 6 cm. From Grave No. 10. Harappan extended burial. (KLB-8, Reg. No. 11296).
3. Copper bangle, diameter 3.5 cm, made of flat wire. From Harappan pot burial. (KLB-8, reg. No. 11310(?)).
4. Copper bangle, diameter 3.5 cm, made of a thin wire. From Harappan Pot Burial. (KLB-8, Reg. No. 11310).
5. Copper ring, diameter 1.5 cm. (KLB-8, Reg. No. 22037)

## Distribution of Small Finds from Cemetery (KLB-8)

1	Mirror	1	Copper
1	Ring		
2	Bangles solid		
1	Tabular Bangle		
4	Beads	2	Gold
1	Piece		
1	Stapula/ Bead	3	Ivory
5	Bangles	4	Shell
4	Beads		
1	Mother of Pearl (Fresh water)		
6	Beads	5	Agate
3	Beads	6	Carneilian
3	Beads	7	Steatite
2	Beads	8	Jasper
4	Beads		Faience



Fig. 25.1 KLB-8 Copper mirror, bangles and rings

## **2. FAIENCE OBJECTS**

### **Fig. 25.2**

1. Faience bangle, complete having a dia. 6 cm, decorated with incised lines. From burial. (KLB-8, Reg. no. 14779).

2. Faience, bud-shaped plumb-bob, height 7 cm, circumference of the cover 4 cm with side holes. From Harappan pot burial. (KLB-8, Reg. No. 11311). This item has been discribed in detail, earlier on p

1004 ( Fig. 17.8.1).

3. Faience ear ornament with a round side having a dia. 4.5 cm and the stud is having a dia. 1.5 cm with a hole in centre for the stud. From Harappan pot burial. (KLB-8, Reg. No. 11307).

4. Faience bangle, fragmentary, decorated with incised herring bone design, having a dia. 6 cm. From surface. Harappan cemetery area. (KLB-8, Reg. No. 14780).



Fig. 25.2 KLB-8 Faience bangles, plumb-bob and ear ornament

### 3. SHELL OBJECTS

#### Fig. 25.3

1. Shell bangle, 3 fragments. From Burial no. 16. (KLB-, Reg. No. 11303).
2. Shell, complete ear ring (*bala*), dia. 4 cm. From Burial no. 28. (KLB-8, Reg. No. 14775). Also see Fig. no. 22.70.
3. Shell bangle, dia. 8 cm. From Burial no. 7. (KLB-8, Reg. No. 11308).
4. Freshwater shell<sup>1</sup>. From Burial no. 31. (KLB-8, Reg. No. 14778).
5. Freshwater shell. (KLB-8, Reg. No. 14478).

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<sup>1</sup> Fresh Water shells discribed at sl. Nos. 4 and 5 may be identified as *LamellidensMarginalis*, see Nath, A. 2018. *Archaeomalacology of the Harappans at Rakhigarhi, Haryana, Man and Environemnt* XLIII (2): 42-66, Figs. 8-10.



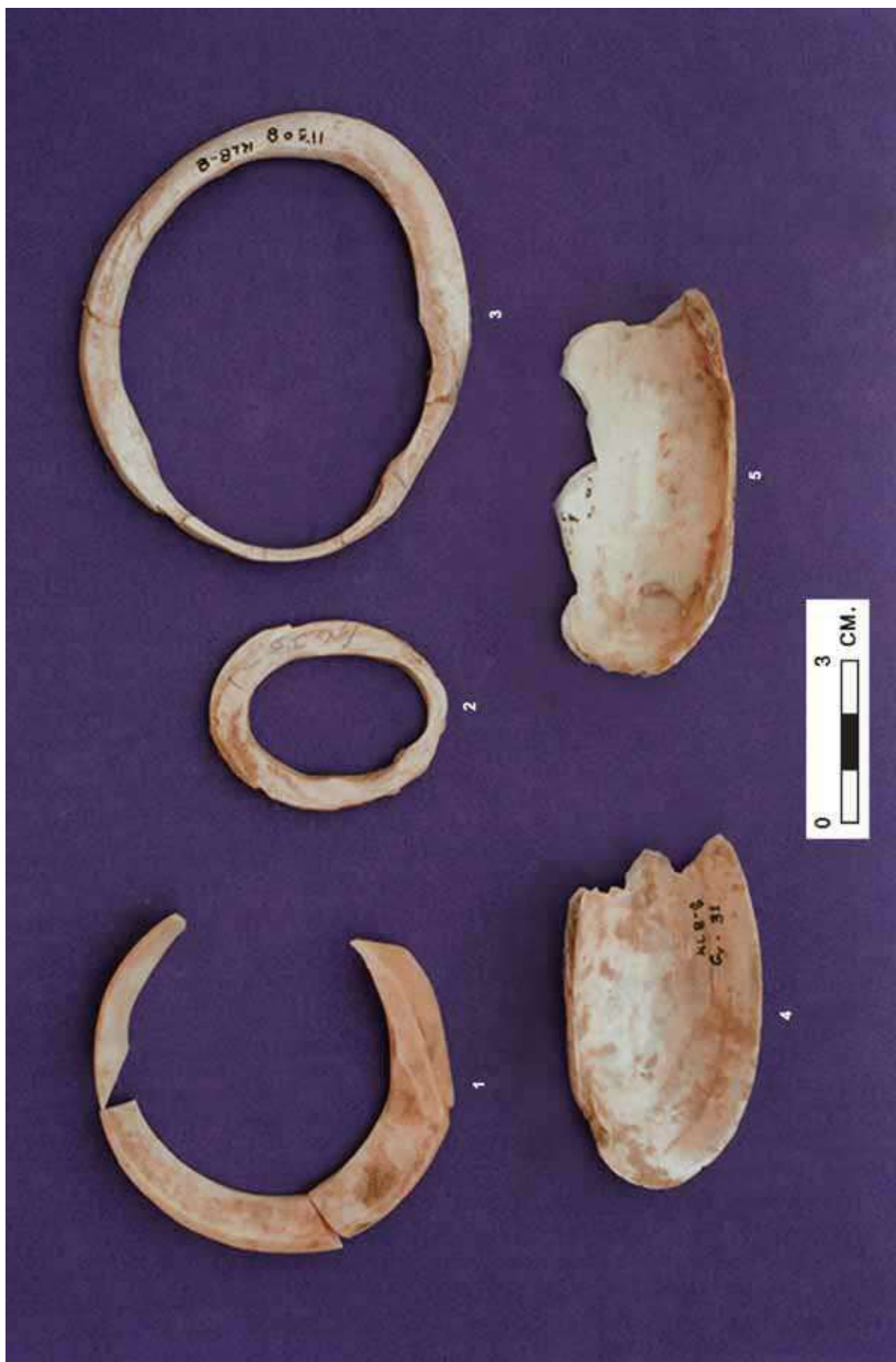


Fig. 25.3 KLB-8 Shell, shell bangles and ring

**4. AGATE, BONE AND TERRACOTTA OBJECTS**

**Fig. 25.4**

1. Agate, weight, height 1.2 cm, dia.6 cm and weight .874 gm, with a groove at

the neck. (KLB-8, Reg. No. 22035).

2. Bone arrow head with a broken tang, length 5.5 cm. From Burial no. 12. (KLB-8, Reg. No. 11297).

3. Terracotta, ball, marble. (KLB-8, Reg. No. 11300).



Fig. 25.4 KLB-8 Agate weight, bone arrow head and terracotta marble

## **5. SEMI-PRECIOUS STONE BEADS**

### **Figs. 25.5 and 25.6**

1. Red jasper long, barrel, circular bead. From Burial No. 7. (KLB-8, Reg. No. 11306).
2. Jasper, bicone, circular bead. (KLB-8, Reg. No. 14771).
3. Carnelian, long, cylindrical, circular bead. From Burial No. 31, Harappan pot burial. (KLB-8, Reg. No. 14771).
4. Carnelian, standard, circular unfinished bead. (KLB-8, Reg. No. 14771).
5. Agate, long, cylindrical, tubular, circular bead. From cemetery surface. (KLB-8, Reg. No. 21781).
6. Agate, barrel, circular bead. From Burial No. 5. (KLB-8, Reg. No. 11298).
7. Bone, long, barrel, circular bead. From Burial No. 5. (KLB-11298).
8. Steatite, cylindrical, circular bead. From Burial No. 31. (KLB-, Reg. No. 14773).
9. Steatite, cylindrical, circular bead. From Burial No. 31. (KLB-, Reg. No. 14773).
10. Carnelian, cylindrical, circular bead. From Burial No. 31. (KLB-8, Reg. No. 14772).
11. Carnelian, standard, circular bead. From Burial No. 31. (KLB-8, Reg. No. 14772).
12. Agate, cylindrical, circular bead. (KLB-8, Reg. No. 14771).
13. Agate, long, cylindrical bead. From Burial No. 31. (KLB-8, Reg. No. 14771).
14. Agate, long, barrel, circular bead. (KLB-8, Reg. No. 14771).
15. Agate, banded, long, cylindrical, circular bead. From Burial No. 7. (KLB-8, Reg. No. 11309).
16. Coral, long, cylindrical, circular bead. From Burial No. 31. (KLB-, Reg. No. 14770).
17. Agate, reddish, banded, long, barrel, circular bead. From Grave No. 31. (KLB-, Reg. No. 14770).
18. Terracotta, standard, circular, gadrooned bead. From surface, cemetery area. (KLB-8, Reg. No. 21723).
19. Agate, variegated, long, barrel, bead. From Burial No. 8, (KLB-8, Reg. No. 11304).
20. Agate, long, cylindrical, bead. (KLB-8, Reg. No. 21782).
21. Banded agate, long, barrel, bead. From Burial No. 1. (KLB-8, Reg. No. 14772).

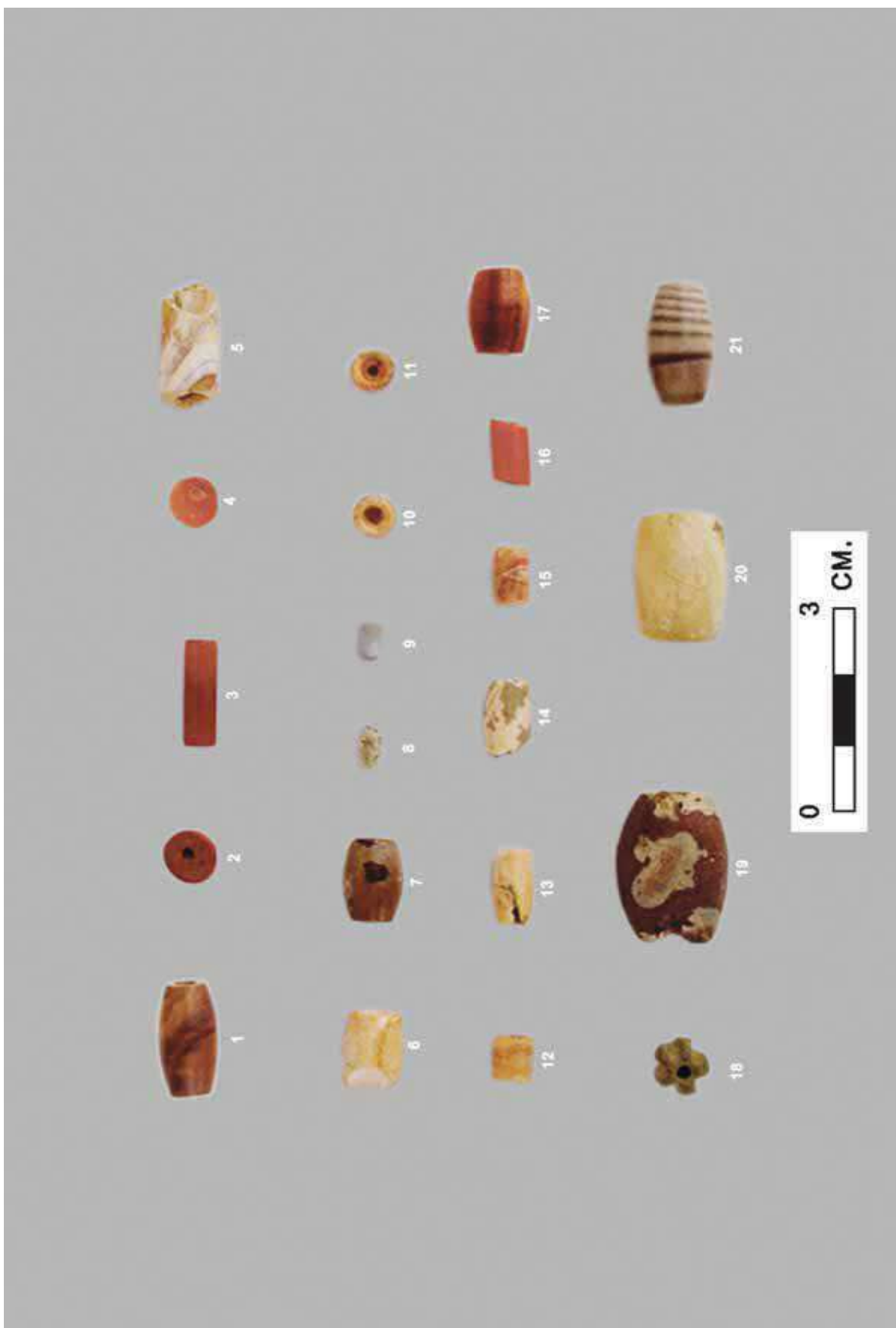


Fig. 25.5 KLB-8 Semi-precious stone beads

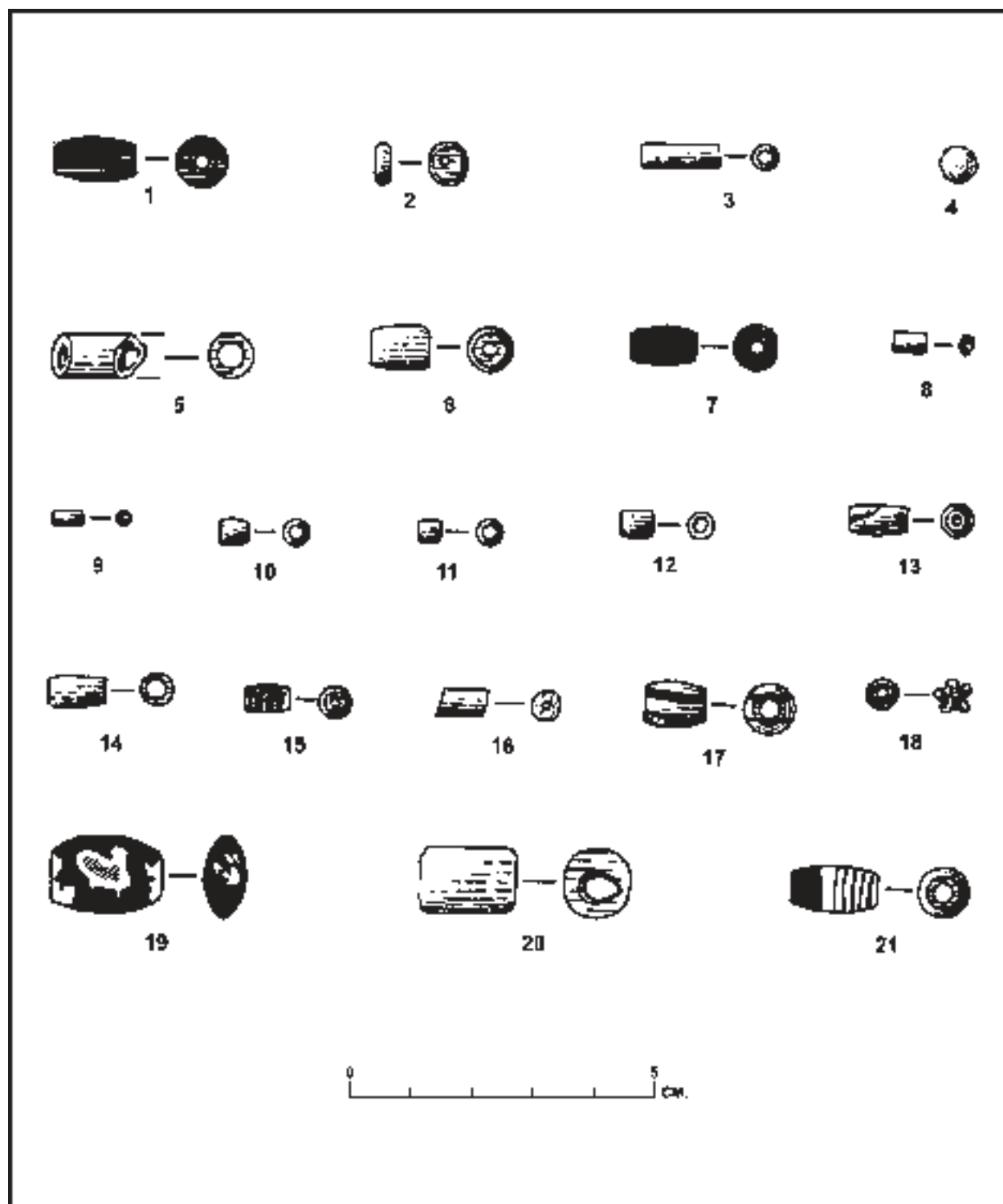


Fig. 25.6 KLB-8 Side and front views of semi-precious stone beads



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## **6. GOLD OBJECTS**

### **Fig. 25.7**

1. Gold, standard, circular, bicone bead. (KLB-8, Reg. No. 14470).

2. Gold, long, bicone, circular bead.

(KLB-8, Reg. No. 20895).

3. Gold piece. From Grave no. 22. (KLB-8, Reg. No. 14635).

4. Gold, standard, barrel, circular bead. (KLB-8, Reg. No. 14774).

5. Gold, circular, tubular bead. (KLB-8, Reg. No. 11296).



Fig. 25.7 KLB-8 Gold beads and a piece



# Appendix

## EXPLORATION IN BIKANER\*

### (1950-51)

A. GHOSH

I am to speak to you this evening about an archaeological exploration in the valley of the “lost” rivers Sarasvati and Drishadvati in the northern part of the Bikaner Division of Rajasthan State, which I have had the privilege of carrying out on behalf of the Department of Archaeology of the Government of India (Fig. 1). The results obtained so far are of great significance, and though much more remains to be done, I am glad to get this opportunity of announcing them. And I cannot think of a more suitable occasion for doing so; for, luckily for me, the leading historians of the land have assembled this year at Jaipur, the capital of the State within the bounds of which I have been conducting my researches. Let me acknowledge here publicly, as I have done very often in correspondence, my gratefulness to the officials of the Rajasthan Government, but for whose kind help and cooperation my work would have been much more difficult than it has actually been. I am particularly thankful to them for lending me the use of a motor vehicle, without which I would have been able to cover only one-tenth of the area actually surveyed by me during October to December last year and again during the last two months this year.

Speaking before learned historians as I do, I must at once dispel any expectations which might have been raised in your minds about the finds of the exploration. For I

cannot claim to have discovered a new inscription or coin which will solve an engaging problem of history; nor any new style of temple-architecture or sculpture or anything of that sort. My work and the results thereof have been entirely archaeological in the restricted sense, and I must crave your indulgence if they fall short of your expectations.

Let me describe the geographical features of the land under investigation, for geography is more directly related to archaeology in this case than it always is. I have already told you that my exploration was restricted to parts of the valleys of the Sarasvati and Drishadvati in the northern part of Bikaner. Here I have to bother you with a few geographical details about the course of these rivers. Taking its rise in the submontane regions of the Ambala district, the Sarasvati at present pursues its feeble course past Kurukshetra, Thaneswar and Pehoa, all of them ancient towns, is met by a few other channels and joins the Ghaggar, a more northern streak at a place near Shetrna in PEPSU. Thereafter the combined stream, now known as the Ghaggar, but anciently by the name of the more renowned component, Sarasvati, flows in a south-westerly direction, enters the Hissar district and flowing near the town of Sirsa, the name of which owes its origin to the river itself, enters the Bikaner State. By now, or even before this, it has ceased to

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\* The paper presented before the All-India History Congress, Jaipur, on the 29<sup>th</sup> December, 1951



Fig. 1 Exploration team headed by late A. Ghosh (centre, first row)

be perpetual stream. During the rains, however, the flood-water reaches more south-westerly points through the ancient channel.

In Bikaner the dried-up bed is clearly traced in a westerly direction till it reaches the town of Hanumangarh, renamed in the last decade as Sadulgarh, but anciently known as Bhatner. Here the channel is met by another one from a north-eastern direction, now known as Naiwala, and identified as an ancient bed of the Sutlej which, in ancient times, formed part of the Sarasvati system and had not captured the Beas, thus to flow into the Indus.

South-east of Hanumangarh, the river-bed, marked by sand-ridges on both sides, and locally known as the Nali, reaches the tahsil headquarters Suratgarh, where it is joined from the east by another dried-up stream, the ancient Drishadvati, which I shall describe later on.

Beyond Suratgarh, the river, as indicated by the sand-banks now attaining greater heights, flowed past another but smaller tahsil town Anupgarh and beyond 6 miles or so, enters the Bahawalpur State, now in Pakistan, and therefore beyond the scope of my exploration. (Fig. 2).

Between the sand-banks of the river, separated from each other by 3 to 6 miles, lies a stretch of alluvium, usually covered with wild shrubs, but sometimes absolutely flat and shiny with not a blade of grass growing on it. Such lands are locally known as *tal* and abound in spots where mirages are frequently seen. Wherever, however, the parched alluvium is irrigated by modern canals, it yields a harvest of summer and winter crops as rich as the Indo-Gangetic plain, of which the region anciently formed part, and you

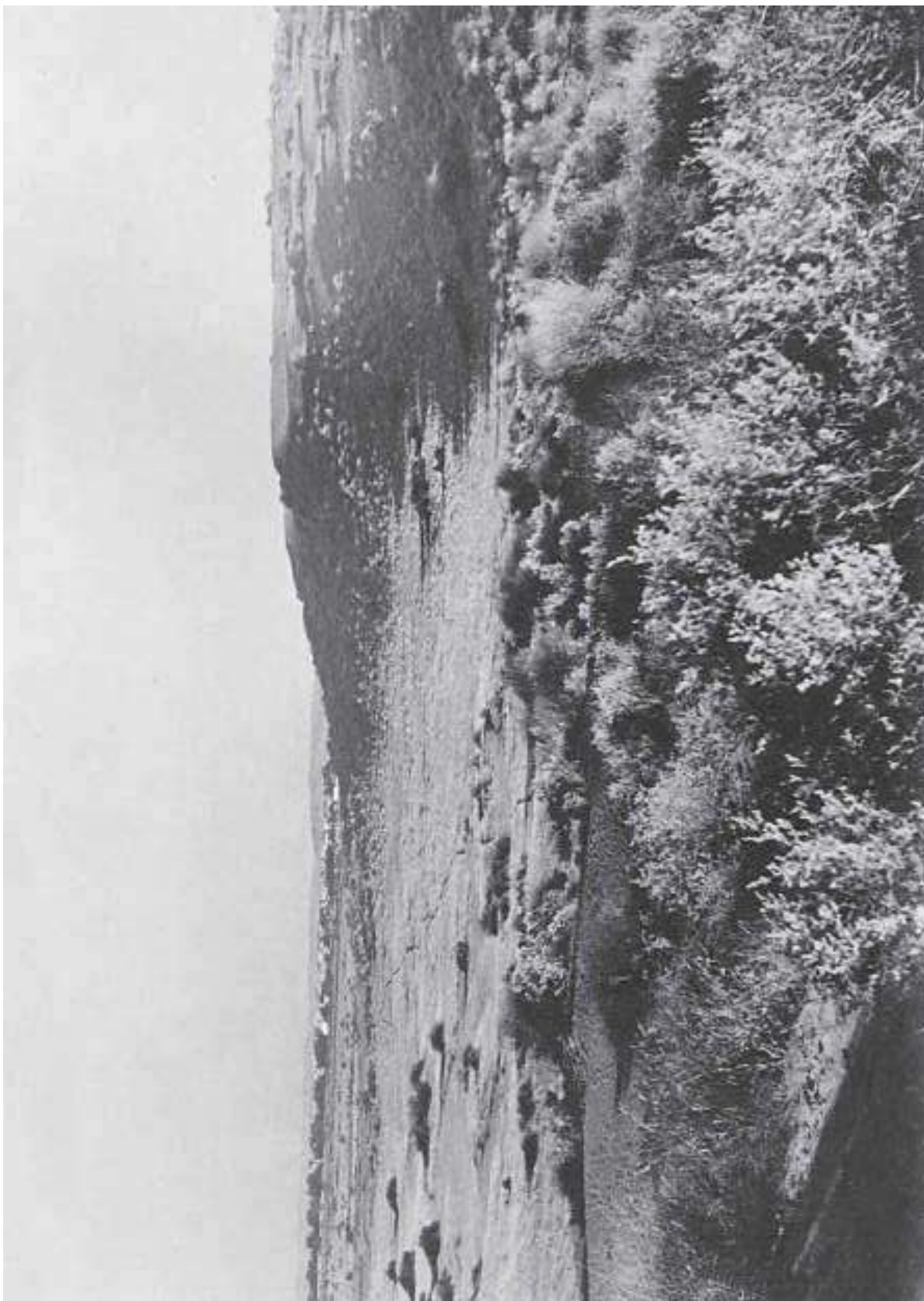
have to look towards the sand-ridges, in the distant northern and southern skyline to remind you that you are in the midst of an erstwhile wasteland.

So much about the Sarasvati. The Drishadvati also took its rise in the submontane Himalayan region, but farther south than the Sarasvati. Such part of the river as still exists in East Punjab is known as the Chitang, and the river bed can be traced through Bhadra, a north-eastern town in Bikner, with Firuz Shah's Western Jamna canal flowing through part of its valley. Beyond Bhadra it flowed through the town of Nohar, and further down, past the site of the modern village of Rawatsar, from where the northern sand-bank of the river becomes visible. Its bed further west is now a complete wasteland, till it can be seen to have met the Sarasvati at a place about three miles north of Suratgarh.

It was in the midst of these surroundings - usually barren waste, but sometimes green with vegetation as the irrigated region between Suratgarh and Anupgarh, that the ancient sites to be described here lie. The valley between the Sarasvati and Drishadvati was the holy land Brahmvarta according to Manu. To the north of the Drishadvati and to the south of the Sarasvati lay Kurukshetra, the holiest of the holy, and according to the *Mahābhārata* those who lived in Kurukshetra lived in heaven. No wonder that the land is found to be so full of archaeological relics.

Part of the Sarasvati valley in Bikaner had already been surveyed by the renowned explorer Sir Aurel Stein, who, with his fondness of regions unknown, devoted the winter season of 1940-41 in investigating the remains in this region as well as in the adjoining Bahawalpur State. He published a short summary of





*Fig. 2 Sarasvati river valley near Suratgarh*

his work in the *Geographical Journal* of London for the year 1942. We are also lucky in having recovered, after his death, his typescript report, which will be published by us as soon as circumstances permit, for anything from the pen of the great explorer makes a fascinating reading, is of biographical, if of not other, interest. But his work, so far as it relates to Bikaner, has been entirely superseded by the present work. His observations have been found to be very incomplete, and his conclusion that there are no 'pre-historic mound east of Fort Abbas in Bahawalpur State with pottery of the chalcolithic period', by which he no doubt means the culture represented at Harappa and Mohenjo-daro, has been rendered utterly untenable by the present exploration. This remark of his is all the more astonishing in view of the fact that some of the sites found by us belong definitely to that culture had been visited but dismissed by him as having 'indeterminate plain ware and scarce fragments decorated with simple black bands or coarsely impressed patterns'.

In view of Stein's statement which had led us to believe that nothing very ancient would be found in the region, it was a great thrill for us, when even on the first and second days of our exploration we found sites with unmistakable affinities with the culture of Harappa and Mohenjo-daro. And a few subsequent days' work convinced us that

the Sarasvati valley had been really a commingling of many rivers, not only geographically, but culturally.

The number of ancient sites plotted on the map as a result of my exploration is more than a hundred, and taking into consideration the limited area explored, the valleys of the Sarasvati and the Drishadvati must be regarded as very rich indeed in archaeological remains. But the richness does not consist only in the number of the discovered sites, but in their vast chronological and cultural range. For they comprise relics of several millennia of Indian history right from the Harappa period to comparatively recent historical times.

The earliest group of sites represents the same phase of Indian history as the twin cities of Harappa and Mohenjo-daro, labelled as the Indus Civilization, – a term inexact in both its geographical and chronological aspects. For the culture extended far beyond the Indus basin, a fact which gives a geographical lie to the term, and that basin itself witnessed many more cultures, earlier and much later, a fact which give it a chronological insignificance.

(I regret to note, that the scheme of history planned by this august Congress still adheres to this term, which if finally accepted, will perpetuate an error made 25 years earlier. However, it is not yet too late to change).

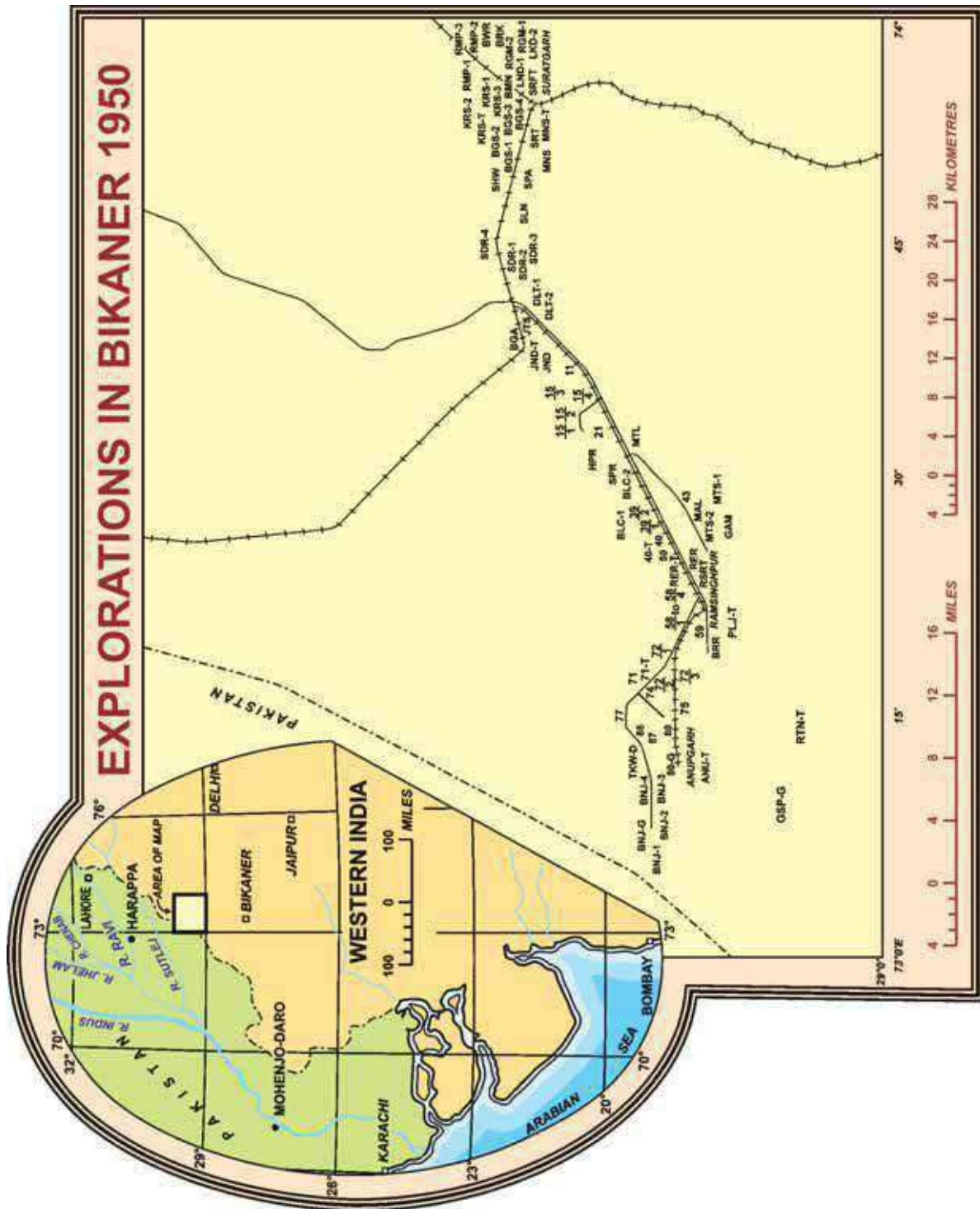


Fig. 3 Exploration in Bikaner 1950



More than 25 mounds of this culture, which should be called the Harappa culture, (Fig. 3) have been identified so far in the explored region, beginning right from the Pakistan border up to midway between Hanumangarh and Suratgarh in the Sarasvati valley, and about 15 miles east of Bhadra in the Drishadvati valley, near the border between Bikaner and East Punjab. In the Sarasvati valley, as explored, the colossal mound of Kalibanga stands, as it were, as the easternmost outpost of this great culture, though there is little doubt that more of its remains await identification further east. The discovery of these mounds brings the Harappa culture much nearer the heart of India and reveals how deeply it had taken its roots in the Indian soil. Ere this, the mound at Rupar, near the bank of the Sutlej in the Ambala district, stood as an isolated representative of this culture. Now the chances of establishing a continuous chain of sites of the culture are brighter than before. With its centres dispersed from Baluchistan to the eastern limits of Bikaner, a distance of more than 700 miles, the culture must be regarded as one of the mightiest in ancient Orient.

The Harappan mounds on the Sarasvati, though most of them small settlements, yield the same types of pottery and other objects as those further west in Bahawalpur, Sind and Baluchistan. Typical food-dishes, goblets with narrow bases, other pottery painted with designs in black against a red-slipped background, circular disc beads, typical terracotta toy-carts, flat triangular and circular double-convex terracotta cakes, long blades of chert, – in fact, all the material features of the Harappa culture are present on these sites and bespeak an absolute homogeneity of culture.

Only one steatite seal, another characteristic product of the Harappa culture, was found, but this paucity can well be explained by the seals having been used for purposes, most probably commercial, which were appropriate only to the large cities of Harappa and Mohenjo-daro. The discovered specimen, though fragmentary, can be recognized as disc, circular in shape with an incised animal design and an inscription at the top, only one letter of which is partially preserved. I may note here that seals of this shape, as distinct from the more common rectangular or square seals, were found by Mr. Vats in the early levels of Mound F at Harappa. All these finds leave no doubt that it is the true Harappa culture and not an offshoot or survival thereof that is represented in the Sarasvati valley.

In the explored Drishadvati valley also there were a few sites, one of them fairly extensive, with unmistakable Harappan affinities, but there are a few differentiae in pottery fabric and types. They may be regarded as the eastern variety of the Harappa culture, and it is not unlikely that they flourished at a period later than true Harappa. This phase of the culture requires further investigation. All the same, they emphasize the eastern extent of the culture. (Fig. 4).

The next group of sites comprises a typical pottery, grey in colour and with or without black painted designs, and a mass of associated pottery quite distinct from that of Harappa or of the succeeding cultures. Grey ware has recently assumed importance in north Indian archaeology and has been found on many early sites in PEPSU, East Punjab and West U.P. To this list has to be added about 20 sites now found in the explored region in the Sarasvati valley in Bikaner.



*Fig. 4 Southern bank of Sarasvati river*

In the Drishadvati valley only one grey ware site was found, and that too with a coarser variety of grey ware.

The vessels in grey ware are restricted in shape, being confined to dishes and bowls. The painted designs also present a limited variety. Along with the grey ware vessels are found an enormous amount of red pottery with shallow impressed designs and with a base besmeared with coarse grits. Some of the red pottery-types are similar to types also found associated with grey ware in the Hastinapur excavations. Many, however, are the new types both at Hastinapur and Bikaner, and they no doubt represent the local creations of the grey ware people.

About the other material aspects of this culture we have little evidence as yet. In Bikaner at any rate, these sites are rather small in extent and present few features. The houses appear to have been of mud-walls; the use of mud-bricks, not to speak of baked bricks, is not attested too. On the whole, the culture presents more primitive features than Harappa.

The terminal dates of this culture are uncertain as yet, and as you heard about it the other day, I need not go over the whole ground again tonight. To my mind, it appears that 600 B.C. may represent a very rough central date for this culture. Towards its end it touched the historical cultures of the Mauryan and post-Mauryan times. How much earlier than 600 B.C. it requires further investigation. One thing appears certain on practically all the grey ware sites in Bikaner and elsewhere, settlement began with grey ware. The people of this culture broke new ground to build their villages and did not utilize any existing mound for the purpose.

The next group accounts for a large number of sites, some of them especially near about Suratgarh, of very large dimensions. I propose to christen these sites collectively as Rangmahal and the culture represented in them as Rangmahal Culture, after one of the leading and well-known sites near Suratgarh.

The Rangmahal pottery industry was very sturdy and productive. The shapes represented are many, and the painted designs in black, or, rarely, in crimson, on a bright red background consist of innumerable varieties, both naturalistic and geometrical.

The slips, designs and fabric of the Rangmahal pottery is readily distinguishable from the Harappa, but from the existence of a few types common to both, it appears that the Rangmahal pottery, by a process of 'atavism', which is not yet explained, inherited or imitated a few Harappan traits. On the other hand, some of its features persist in the present-day pottery of the Suratgarh-Anupgarh region.

As I said just now, some of the sites of the culture are very extensive and a few of them have mud fortifications around them. Brickbats are plentiful on most of the sites, indicating the existence of brick houses. Other finds from the sites include terracotta human and animal figurines, including painted bulls, faience and shell bangles, a large number of beads of different shapes, etc.

That the culture flourished in the early centuries A.D. there is little doubt. This is borne out not only by one or two similar pottery-types found in equivalent levels at Ahichchhatra, Hastinapur, Kausambi and other excavated sites, but by the discovery of one or two Kushan



coins on the Bikaner sites themselves. But as some of the Rangmahal mounds are very high, as much as 35 or 40 feet, they must represent the accumulation of several centuries. That some sites included the Gupta period as well is certain from the find in previous years of large-size terracotta plaques with combined Gandhara and Gupta influence, of carved bricks and of a Gupta official seal which has been published by our distinguished Local Secretary. In my own exploration I found a sherd incised with two letters in late Gupta script.

In the Drishadvati valley the Rangmahal culture persists, but like the Harappa one, in a somewhat modified form.

I have described the three main ancient cultures in a chronological order, which was *prima facie* apparent from the beginning. But an archaeologist is not satisfied about the sequence of cultures unless it is established by stratigraphic evidence, i.e. the superimposition of the remains of a later culture upon those of an earlier one, and this can be established only by excavation. Accordingly, a few limited excavations were done in both the seasons of my work.

I told you before that the grey ware people were fond of breaking new ground for themselves; this fact makes the getting of stratigraphic evidence in their case difficult. However, last year I had found two fairly representative mounds a few miles north of Anupgarh, one 8 feet high, representing the Harappa culture, and the other, 10 feet high, grey ware, with their apexes more than 500 yards of each other, though the washings of sherds from the respective sites very nearly met each other. These two mounds, the Harappa culture one called Tarkhanwala Dera and second the grey ware one Chak

86, were also separated from each other by a canal and a road, which made continuous excavation impossible. Nevertheless, though direct stratigraphic evidence was clearly unobtainable, I made a bid this year partially to excavate these mounds to obtain whatever stratigraphic clue was available about the sequence of these two cultures.

The results were satisfactory. For the excavation revealed that the Harappa and greyware cultures never came into contact with each other, at least in this particular area. The settlements of each originated, flourished and died out in its own time, entirely independently of the other. But a study of the natural soils carrying the settlements had revealing facts to tell us; on the Harappa side the occupation started on a natural sand-deposit. After this, but before the site was deserted by the Harappans, there were two more clay deposits, due to river or rain-action, after which the site was deserted. After all this there was again a third clay-deposit, and it was on this that the initial grey ware occupation in Chak 86 took place. It was therefore very clear that the grey ware people came to the area later than its desertion by the Harappan, how much later I cannot tell you.

The incidental results of the excavation were that the Harappans after occupying the site of their settlement for some time built a platform of mud-bricks to carry their houses. Again, towards the close of their settlement, several pits were dug into the platform to receive urns containing the ashes and bones of the dead after cremation. One oblong cremation-pit was also identified, in which five successive cremations had taken place, the leaving of each having been covered

up by clay or mud-bricks for the next cremation to take place.

For the sequence of the grey ware and Rangmahal cultures, two sites were excavated. The first, an 18-foot high mound at Rer, situated about 15 miles to the north-east of Anupgarh, revealed successive layers of grey ware occupation, superimposed by layers with most of the features of the Rangmahal culture, thus stratigraphically establishing the priority of grey ware to Rangmahal.

Excavation in a smaller mound, further up, in Chak 40, confirmed the sequence, though the Rangmahal occupation here was more limited than the prior grey ware one.

Excavations thus confirmed the relative chronology of the three cultures, Harappa, grey ware and Rangmahal, in the explored part of the Sarasvati valley, but I cannot say that this must hold good elsewhere as well. I told you before that in the Drishadvati valley, where grey ware seems to have a very much restricted distribution, the Harappa culture obtained in a modified form and

might have lingered longer than in the more westerly regions. It might have been superseded there by the allied Rangmahal culture that flourished in the valley or even have symbiotically got mixed up with it. This may explain not only why a few features of Harappa pottery are present in the Rangmahal one, but much greater problems of the presence of a few Harappa culture elements in historical Hinduism. All this remains conjectural at present, but is intended to emphasize that the problems of culture-sequence might not have been as simple as the Harappa culture being everywhere superseded by the greyware one, or, for a matter of that, a pre-Aryan culture being ousted everywhere by the authors of the Vedas. Surely, there were many more currents and cross-currents in Indian history and much more complicated mingling as a result thereof than we know at present. But I am sure that further exploration in Brahmavarta and elsewhere will gradually unfold the unknown chapters of early Indian archaeology and will duly supply the necessary corrective to history.

**(i) NOTES ON EXPLORATION IN  
BIKANER, 1950**

26.10.50 Reached Bikaner at 9.30. The curator of the Museum, Mr. Sagat Singh, met at the station with a state car and truck. The Asstt. Supdt. of the State Garage called at the Dak Bungalow and informed that a jeep with trailer and Dodge Ambulance would be made available for exploration.

Went to the State Museum situated inside the fort. A few medieval statues, terracotta plaques and carved bricks make up the archaeological collection. The plaques are from Badopal and Rangmahal. The Badopal ones have Gandhara and Mathura influence and may be dated to the 2<sup>nd</sup> century A.D. The Rangmahal ones are probably Gupta and so are the carved bricks. Everything, however, is labeled '1<sup>st</sup> century B.C.'

The fort is a typical example of mediaeval splendour. Though gaudy in every sense of the work, it is not by any means vulgarly so.

27.10.50 Saw the collection of pottery in the godown of the Museum building from which the Museum has now been shifted to the Fort. The pottery collection consists of the collection of Goetz who was accompanied

by Sagat Rai probably of Stein and Tessitori. The Suratgarh area, which seems to have received special attention from Goetz, has many sites with painted red pottery of the 'Sarainagar' ware. Amongst Tessitori's collection is 'sieve' pointed goblet, a large number of chert blades of Harappa type, one or two Harappa weights and a few etched carnelian beads. No reliable information is however available about their find spots.

**Wagon re-booked to Anupgarh.**

Saw the palace in the afternoon. An attemptedly modern building decorated in none too good taste.

28.10.50 The C.A. of Jaipur reported. Jeep and trailer booked to Suratgarh. Started for Suratgarh by the night train.

29.10.50 Met by the Tahsildar, Suratgarh, in the morning. He advised that the camp should preferably be located at Ramsinghpur. 12 miles (by road) on the Suratgarh side from Anupgarh. The camping facilities were said to be better there than at Anupgarh. It was therefore decided that Ramsinghpur should be first place of halt. The 'road' from Suratgarh is through the dried up Ghaggar valley. The high banks are to be seen, quite apart from each other, on both sides.

Reached Ramsinghpur at 10 O'clock via Jetsar, where I met

the S.D.O., Irrigation, for reservation of I.B. at Ramsinghpur. Started for Anupgarh by jeep at 1 o'clock accompanied by Bhatia & Tiwari. Met the Tahsildar, who, to all appearance, was not likely to prove very helpful. Took delivery of wagon and stored things in the station godown.

Returned to Ramsinghpur in the evening where Prüfer, Saran and Dogra had come by train. Prüfer and Saran had already visited a site on the supposed high bank of the Ghaggar, about a 100 yds from the Ramsinghpur village.

Ramsinghpur is found to be utterly unsuitable for camping as the supply position is bad and there is no well, though there is plenty of water-supply from the canal.

30.10.50 Saran visited a site, which a few houses later, is identified as the same called Red by Stein to the north of the railway track about a 100 feet away from the telegraph post marked 21/18. Red is called Rer on the Survey map.

The site has the 'Sarainagar' ware and painted grey ware. A most interesting site.

Started for Anupgarh in the morning for starting the camp. There is only one well in the village. The camp was

pitched 200 yds. from it. Returned in the evening.

## ANUPGARH

31.10.50 The whole camp shifts to Anupgarh. The camp as formed is none too mobile with heavy furniture. There cannot be more than two base-camps during the season. The whole day is spent in making the camp-arrangements complete.

1.11.50 The Lieutenant at Anupgarh was good enough to lend the services of an armed escort for visiting Binjor, about three miles from the border. Binjor is now a deserted village, the only inhabitants being the members of a small military outpost. Border-raids from the other side are said to be very frequent.

About 400 yds south of the village is a Muslim graveyard where every grave is covered by a cairn of potsherds, collected from different places, old and new. Called BNJ-G. The collection consists of painted red ware and grey ware.

About 1000 yds. to the south-west of Binjor lies BNJ-1, site hardly rising above the level of the surrounding fields but distinguished by potsherds strewn over a very large area (Fig. 5). Evidently the habitation, like BNJ-2, was washed away by the river. BNJ-1 has red painted pottery as well as chert blades, green faience bangle. Evidently an allied Harappa site. Grey ware absent. Many furnaces, shaped like sarcophagi, with *kachcha* walls baked by the action of the furnaces were to be seen. Contents : burned earth.

BNJ-2 is about 1200 yds. south of Binjor and has got the same appearance



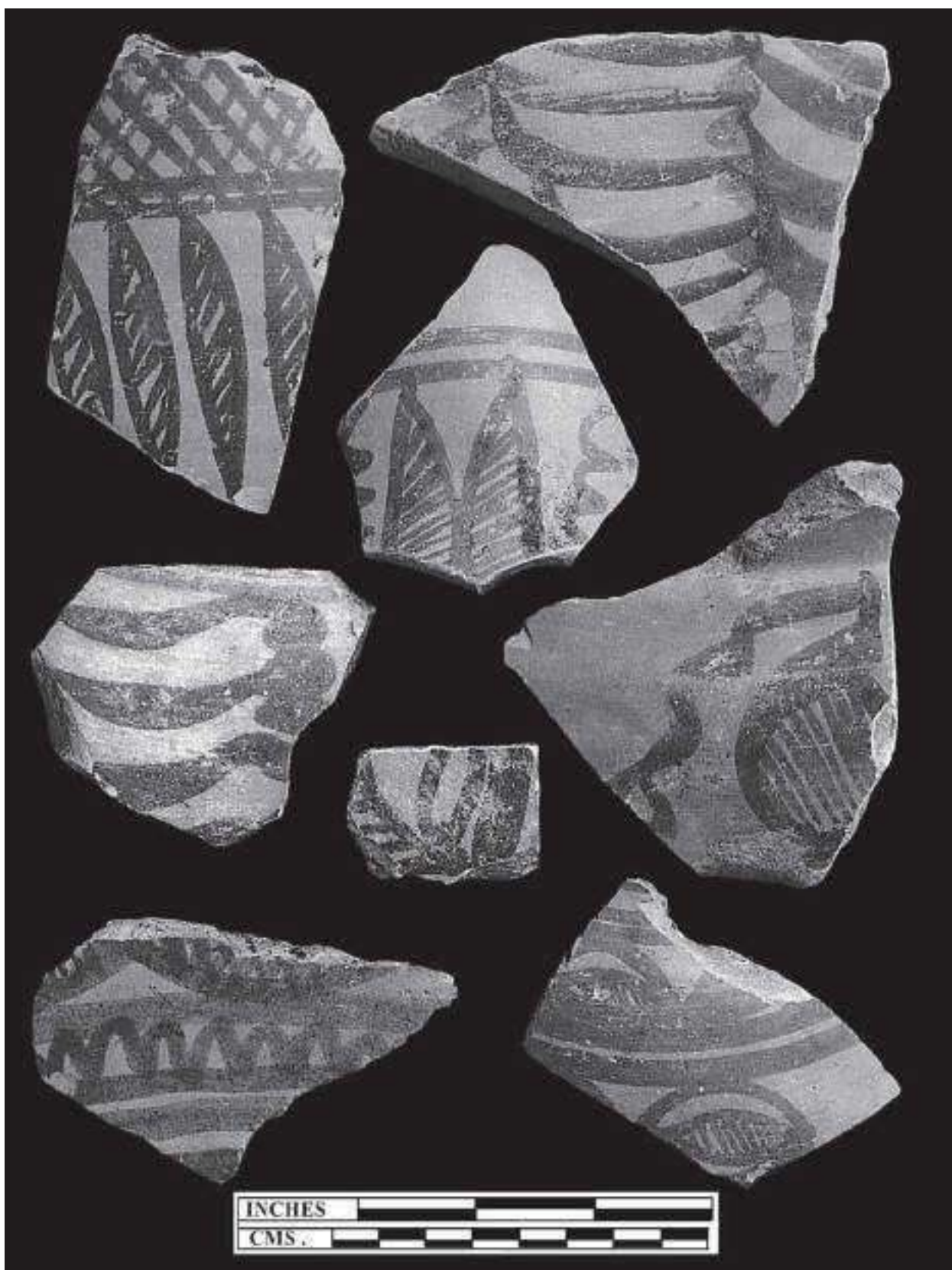


Fig. 5 Binjor: *Harappan pottery*

as BNJ-1. Painted red ware is absent and there is grey ware, painted or otherwise (Fig. 6). Green faience bangle, sieve and incised and moulded ware are present. A complete brick measured 13½" x 11" x 3".

BNJ-1 and BNJ-2 have different pottery but it is not unlikely that they once formed a continuation of each other.

BNJ-3 to the left of the Binjor-Anupgarh road is an allied Harappa site. Pointed goblets, sieves, chert blades, green faience bangles – all tell the story. At the same time matt-patterns, incised designs show a non-Harappa and possibly post-Harappa occupation (Fig. 7). It is a mound about 12' high but quite extensive and compact. Mound partially covered by sand dune (See also under 5.11.50).

BNJ-4 another 12' high extensive and compact mound with painted and unpainted grey ware in its lower slopes. The other pottery consists of incised and moulded ware (Appx. Fig. 8). No painted red ware, but green faience bangles are present.

2.11.50 A straight road leads from Anupgarh to Baror, where about a mile to the north of the village, lies a mound (BRR). The pottery includes incised and decorated types and pointed goblets. One vessel has a Harappa design. A few bricks measuring 11 x 5 x 2 were found. The mound is irregular in shape and has some graves with the same features at BNJ-G.

To the south-west of Baror, about 3 miles away, lies a sand-dune called Phulejawala Tibba (PLJ-T), at the top of which were found some non-

descript sherds. One, with deep parallel incisions, has resemblance with some similar sherds found by Prüfer at Raja Sircap.

After much roaming about here and there due to the obstruction created by canals and distributaries, reached Ratanpura, which was visited by Tessitori, as it is underlined in his maps. No *theri* was however reported nearby. We therefore moved in north-westerly direction towards Chak 72, where between the Binjor Minor and the railway line, were two mounds off telegraph posts marked 28/9 and 28/17 respectively. Both are about 12 feet high and are grey ware mounds, grey ware being more frequent in Chak 72/2. Other pottery included incised and moulded patterns. Pieces of green faience bangles show that they are not necessarily Harappan.

3.11.50 In Chak 74 about 1½ miles south-west of Chak 72, there is a flat site strewn with pottery and overbuilt by a small modern hutment, now deserted. It is a grey ware site, but modern pottery was mixed up with the old.

About a mile to the south of the deserted village of Rer. (Red of Stein and Rira of Tessitori) & a few yards to the north of the railway telegraph post no 21/18, is the 16-feet high mound



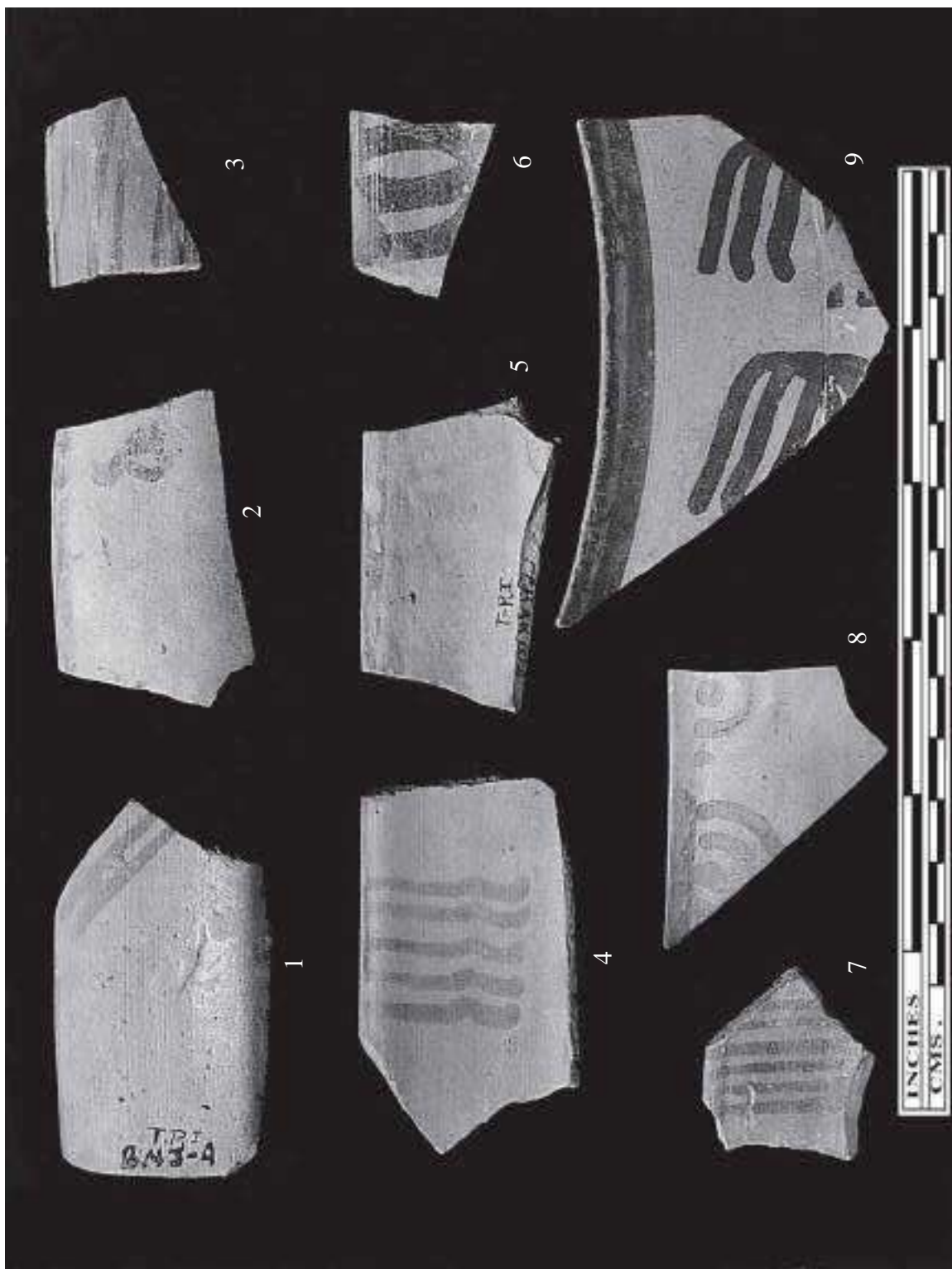


Fig. 6 Painted Grey ware, 1) DLT-1; 2) Chak 15/4; 3) BNJ-4; 4) DLT-1; 5) Chak 15/4; 6) BNJ-4; 7) BRK-4; 8) BNJ-4; 9) Chak-86

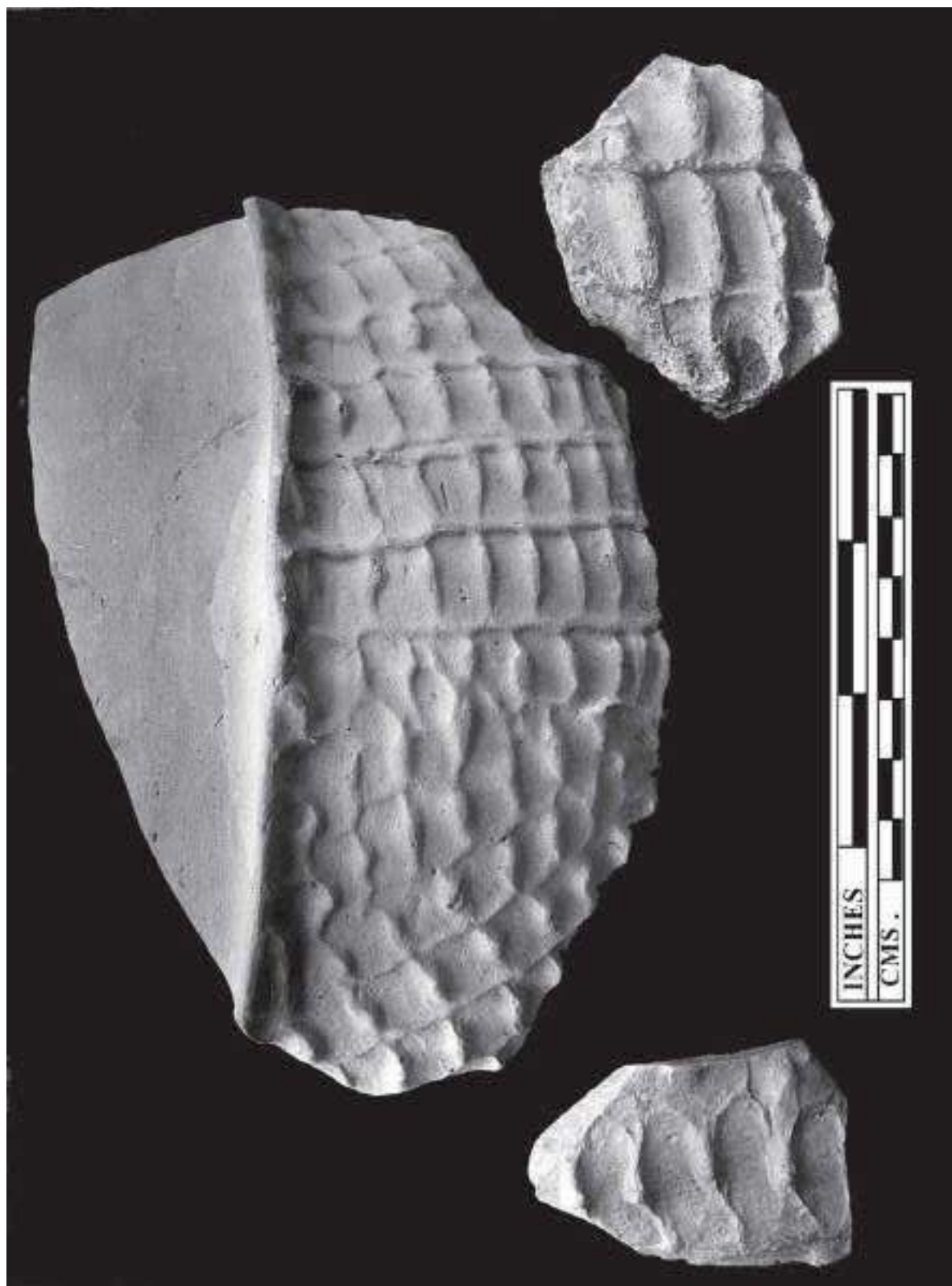


Fig. 7 Binjor : Matt-impressed design

(RER) containing numerous Muslim graves carved with sherds. The mound had been visited on the 30<sup>th</sup> Oct 1950. by Saran and Prüfer. One jar has almost certainly Harappa designs. Sarainagar designs and painted grey ware & Kushan coins are present. An obviously suitable mound for excavation.

The rest of the day was spent in vainly searching for a jeepable way from Rer to Balochia along which Tessitori mentions two *theris*.

4.11.50 The first site visited was situated in the northern extremity of Chak 39 GB (Chak 39/1). It is a very small and low grey ware mound built up on by a deserted hut. Besides grey ware the site contains painted red ware moulded rims, etc.

About  $\frac{3}{4}$ <sup>th</sup> of a mile to the north-east of Chak 39/1 is a long sand-dune which on examination turned out to have a mound-core, about 20 feet high. Wherever sand had not accumulated, the flat of the mound was to be seen, strewn with pottery. This opens out interesting possibilities, as the sand-dunes generally flank the dried-up river-bed on either side. The mound therefore represents a settlement on the northern bank (as distinct from the bed) of the

river. The mound is named *Chak 39/2*.

The pottery of Chak 39/2 includes painted and unpainted dark-red ware. Of particular interest is a Harappan chert blade, a chalcedony microlith and green faience bangle. The painted ware is similar to Sarainagar. The occurrence of chert blade, green steatite and swollen cake may turn out to be significant and may point to the persistence of these objects in post-Harappan times (assuming of course that Sarainagar is later Harappa). They may as well provide the link that join Harappa and Sarainagar. The similarity of Sarainagar with cemetery it is no doubt striking but requires further investigations.

From Chak 39/2 the party walked towards the north-east for more than a mile to another range of sand-dunes. The eastern parts of these dunes, about 1200 yds to the east of village Balochia, have got the same features as Chak 39/2. The pottery is preponderatingly with a dark-red slip. The painted specimens were not many, but may be reminiscent of Sarainagar. There was one green faience ring and two microliths of chert, none, however of the Harappa type.



Fig. 8 Impressed Pottery, 1) Chak 15/4; 2) SDR-3; 4) DLT-5;3, 5&6 BNJ-4



A large number of fragmentary terracotta objects, possibly fragmentary figurines, were found collected at one place. They are devoid of slip and present a contrast to the slipped pottery. A tiny copper coin (?) with a legend in an unknown script was also presenting. The site is named BLC-1.

BLC-2 is situated about 3 furlongs to the east of BLC-1 in the plains. The low mound has practically the same features as Chak 39/1. It is a grey ware one, but had one or two painted red sherds and a sieve with small holes.

Proceeding south-west ward the site of Chak 40 was reached. The low and small mound, about 5 feet high and about 60 feet in diameter, yielded grey ware and Sarainagar ware. The mound is thoroughly churned by mediaeval graves dug into it.

Proceeding south-east and crossing the railway line and further south the canal called GB Minor, about 1200 yds to the north of the sand-dunes forming the southern bank of the dried-up river, is a site in Chak 43, called Mallawati theri by Tessitori. The mound is about 20 feet high and is about 800 feet by 260 feet, a saddle in the middle giving it the appearance of two mounds.

5.11.50

It is an unmistakable Harappa site with no later occupation. A number of chert 'rejects' were found. Another feature is the enormous number of 'swollen discs', usually oven burnt.

Revisited BNJ-3. The site appears definitely Harappan though this possibility of a later occupation (not Sarainagar) is not entirely discounted. The flat land to the west of the mound seems to have been a cemetery, as a large number of pots appear buried there. A stemless offering stand and complete jars were dug out.

The 'swollen discs' fragments are almost as numerous as potsherds. Prüfer visited the site again on 9.11.50 and found some sort of a microliths.

6.11.50

Malla-*tibba* is the name of the sand-dune about a mile and to south south-east of the mound in Chak 43. The top portions of the mound, when not covered by sand, contained pottery, of the bright-red painted type. There were terracotta bangles as well.

About 1000 yds. south of Malla-*tibba* and running parallel to it is the Motasarwala *Tibba*. The gap in between is a stretch of alluvial land, unmistakably an ancient stream-bed. While the top of the *Tibba* as inspected, was free of

antiquities, the lowland just flanking it contained large patches with pottery. One of them, called MTS-1, yielded a fragmentary chert blade and brown ware with chocolate painting. Other sherds were only very small bits, evidently washings of the stream brought from a neighbouring site now difficult to identify.

Proceeding north-west down the stream-bed for about a mile, but still keeping to the edge of the *Tibba*, a second site MTS-2, also flush with the land-level, was met with. Part of this site was a cemetery area indicated by buried jars (with only bottoms left) and a large amount of bones. The pottery included the grooved ware of Raja Sirkap type; a banded agate long barrel circular bead, large and small disc circular beads of steatite of the Harappa type, a miniature copper chisel, and broken microliths of chalcedony were also found. The occurrence of a cemetery on the river-bank is in accordance with Indian tradition. The other part of the site, contained a large number of furnaces of different sites, ranging from 2½" to 4½" pits in the ground lined with a thick (2" to 3") coating of a clay which eventually baked and hardened with the heat of the furnace. Some of the

pits were circular, others oblong and still others circular with an oblong appendage. The contents of one of the furnaces, as hurriedly examined, showed only burnt earth and *jhama*. The absence of any bone-matter precludes them as being of funerary nature.

Returning along the edge of the former *Malla-tibba* other patches of bits of pottery were noticed. Habitation therefore existed on both the banks of the stream.

On reaching the GB Minor canal, we proceeded north-east and reached Sri-Vijayanagar, which is a large market place.

Proceeding further north-east up to the canal and the rail, the large mound called Mathula after Mathula-*tibba* situated about a mile to the south by Tessitori and Stein. That name is retained here (MTL), though a better name would have been Chak 25, at the western end of which the mound is situated.

The mound has much the same features as Chak 43; it is about 18 feet high and there is a saddle in the middle. The objects that speak of its Harappa affinities are offering stands, a few painted sherds with Harappa designs, one segmented bead, one chert blade, one cylindrical bead of faience and faience and terracotta bangles. But there



is a very large amount of unpainted pottery with bright-red slip, probably in greater abundance towards the top. A later occupation is therefore probably indicated.

- 7.11.50 The first site visited was the one between Chak 21 and 23. Stein calls it Jaurainwala, but as the name is little known, we called it Chak 21 to which it is nearer than to Chak 23. It is a 20 feet high extensive mound, with some typical Harappa pottery, such as offering stands and pointed bottom goblets, but there was other pottery too, particularly with bright red slip though unpainted. The surface is free of brickbats, one complete brick measuring  $11\frac{1}{2}$ " x  $5\frac{1}{2}$ " x 2". A chert blade, a microlith, a few terracotta figurines (not definitely of the Indus type) and swollen discs were found. On the whole it is a pseudo-Harappa site, which, situated as it is in the midst of the river-bed, tends to dispel the notion that was growing up that Harappa sites were confined to the river-banks only.

Returned to Vijayanagar and drove thence to Haripur through Shivpuri. At Shivpuri (SPR), just north of the Maharaja's palace, itself on an elevation, there is a very extensive flat stretch of land containing pottery. The eastern part of the site yielded painted and

unpainted grey ware as well as degenerate grey ware of Ahichchhatra Str. VII type. In the western part, a chert blade and a microlith were found.

Half-a-mile to the north-west of Haripur (HPR), at the foot of the sand-dunes which have already engulfed it in three sides was an extensive mound called Juhanuzwala. The site has nothing Harappan, but Sarainagar ware was plentiful. There was moulded pottery too. A chert blade, two microliths and shell bangles were found. A brick measured 10" x  $6\frac{1}{2}$ " x 3" and had 3 inches straight parallel finger marks.

From Haripur drove to Balochia through the Vijaynagar village (as distinct from the *mandi* of the name), the object being to inspect a grave-yard shown on the map as being  $\frac{1}{2}$  mile south-east of the village. The graves were mostly covered with modern pottery, though a few fragmentary grey ware sherds were found (but not collected). The source of the ancient pottery however remained untraced as local enquiries failed to reveal the distance of any then nearby. Tessitori mentions two mounds on the road between Balochia and Rer, but they remain unvisited till now.

On way back the sand-dunes at Balochia (BLC-1) were

examined once more. The underlying mounds were found to be more extensive than was originally suspected, though the collected object consisted of only one bead of carnelian.

8.11.50 Proceeding along G.B. Minor canal which takes off about a mile to the west of Kalyankot Rly. Station the region to the north of Chak 16 and west of Chak 15 was reached. Here, about  $\frac{3}{4}$  of a mile to the west of Chak 15 was a pottery-strewn *tibba* (Chak 15/1), which yielded a double-spout.

Further west was a 20 feet high *theri* (Chak 15/2) with typical Sarainagar ware. But there were also (1) a microlith (2) a coin now unfortunately missing (3) a brick decorated with incised decoration and standing on four legs, now missing and (4) 2 pieces of moulded pottery, typical of Ahichchhatra str. 2. The microliths are an utterly uncertain factor till now, but the other finds do indicate a later occupation. Muslim burials of the usual type exist; on the survey map it is shown as a burial ground.

Further up, about two furlongs to the north-west of Chak 15, there is a sand-dune partly engulfing a mound of indeterminate shape and extent (Chak 15/3). A large number of microliths, cores and rejects were found, particularly in

the lower slopes. The pottery evidence was vague: there was no painted pottery and the unpainted ones do not show any typical shape. There was also a sherd of painted type. Surface evidence does not certainly prove that the microliths and the pottery were coeval. Other small finds included a large number of terracotta bangles, a fragmentary faience bangle, a small copper-red bead (disc circular) and a few fragments of very thin Muslim glazed pottery.

Though Jandewala *Tibba* with its well-known flanking mound was within sight, we proceeded south-ward, till, half-a-mile to the south-east of Chak 15 we came across a low mound, not more than five feet high (Chak 15/4). It is a grey ware mound with impressed pattern pottery as well.

The mound (Chak 11) is situated one mile to the east of Chak 15/4 and a mile & a half to the south of Chak 10. It is about 5 feet high and is a Harappa mound with swollen discs, disc beads, chert blades, typical Harappa pottery and painted terracotta bangle.

9.11.50

The day's activities began with a visit to Chak 77 along the Binjor Minor canal. To the right of the canal-pillar marked 47, there is a very

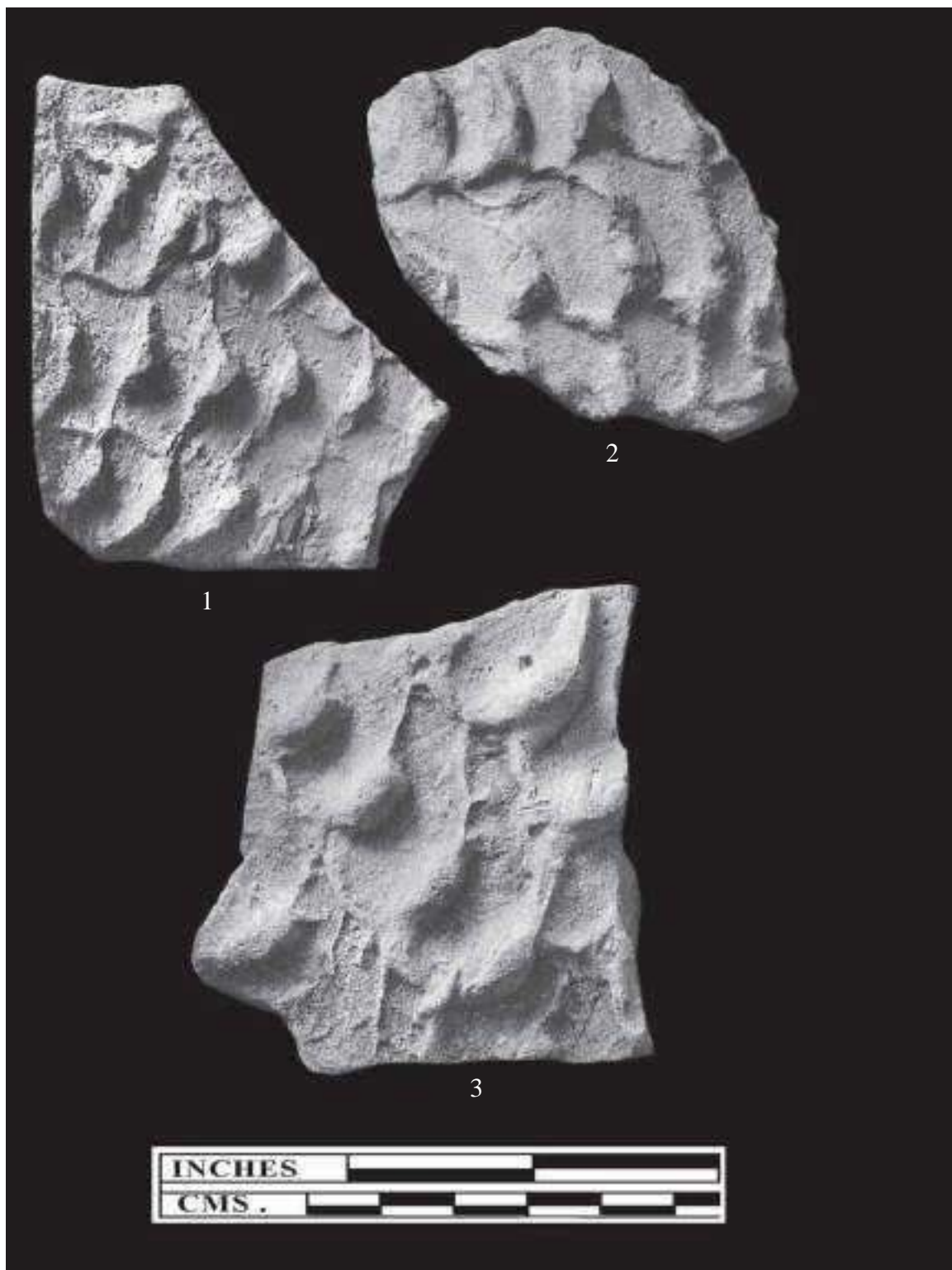


Fig. 9 Matt-impressed ware, 1) Chak 77; 2) Chak-8; 3) Chak 87

large field with an elevation not more than 3' high at the centre. The small finds consist of a fragmentary green faience bangle and the hind part of a terracotta animal figurine, besides a vast number of microlithic blades, cores and rejects. The pottery is generally coarse and sometimes handmade. Possible fragments of offering dishes and one or two painted red pottery exist. No swollen discs, no brickbats. A fragment of a pottery and a barrel-shaped net-sinker were found. (Fig. 9).

Proceeding further up the canal, between the pillars 57 and 58, is seen to the right, an 8 feet high mound. The level pottery-strewn area is very wide-spread and toward the south-east almost touch the canal road. The pottery included typical Harappa specimens, painted (a few) and unpainted. The small finds included circular and triangular cakes, green faience and terracotta bangles, a microlith, a terracotta humped bull, a copper and a quartz cylindrical circular beads and a small disc circular bead. The site has been called TKW-D after Tarkhanwala Dera. A few furnaces were present.

On the other side of the canal and also clearly visible from the road was another *theri* in Chak 86. It had practically the same dimensions as the previous

one, but it turned out to be a grey ware site also with impressed patterns and green steatite bangles. A pestle with Mauryan polish was also found.

Crossing the canal by a bridge near 60<sup>th</sup> stone and proceeding south-westward for less than a mile we came to an extensive pottery-strewn area, with very slight elevations here and there. The site also proved to be a grey ware one. It is in Chak 87.

- |          |  |
|----------|--|
| 10.11.50 | Prüfer visited BNJ-3 again. Excavation started at Rer.   |
| 11.11.50 | Excavation continued at Rer. Prüfer re-visited Chak 39/2 and found a brick wall in a cutting in the sand-dune. The bricks measured 11½ x 5½ x 2½ inches. Also found another mound 2 miles east of Rer in Chak 50, about 7' high. Found microliths and swollen discs. Pottery non-descript, due to smallness of sherds. |
| 12.11.50 | Prüfer visited a <i>tibba</i> 1 mile south of Anupgarh and found a Harappa sherd and faience bangles. <u>ANU-T</u> .   |
| 13.11.50 | Prüfer dug a 5' x 5' pit in Chak 77. The highest point of the mound was about 4' high. Only two layers (1) sandy with a microlithi and handmade pottery with occasional wheel made ones. Layer (2) was sand and ashes with no pottery.   |

	Prüfer also visited Tarkhanwala-Dera. 100 yds south of the mound a flattish patch of earth has painted and unpainted ware, microliths and faience bangles. The surface is strewn with charred bones. TKDV-G.	26.11.50	Visited a site in Chak 80 just on the other side of the railway line near Anupgarh. There are Muslim graves with ancient pottery—both Harappan & grey ware faience bangles. The source cannot be traced as there are no mounds nearby. It is not unlikely that the extensive pottery-strewn area itself represents the ancient site. There are many brick-structures, including brick-pavements. The measurements of bricks being 9 x 7 x 1½-1¼. There is a large number of carved bricks, generally with cut-out triangles, suggestive of shrines. One such shrine converted in Muslim graves. A copper punch-marked coin & another round coin picked at Chak 80-G.
14.11.50	No fieldwork due to illness		
15.11.50	in camp.		
16.11.50	The excavation at Rer progressed satisfactorily. (Fig. 10).		
	Layer (1) : Loose top soil.		
	Layer (2) : Loose dirty soil.		
	Layer (3) : Hard compact clay		
	Layer (4) : Loose sandy soil		
	Layer (5) : Hard compact clay, evidently laid to level the sloping top of (6).		
	Layer (6) : Thick deposit of ashes and burnt material with fairly large amount of pottery (some also burnt). The fall of the burnt house was from the south to the north as the layer prominently sloped in that direction.		Proceeded on foot along the railway line to Chak 75. A low and none-too-large mound about a furlong to the east of the railway line is unmistakably Harappan. Pointed bottom goblets, swollen cakes (in enormous numbers), faience bangles, chert blades, perforated pottery—all unmistakable evidences. One microlith and a few rejects also picked up. Fair amount of brickbats on the surface.
	Pit A : Sealed by layer (1)		
	Pit B & C : Modern pits, with no sealing layer. Yielded a manuscript <i>Quran</i> .		
	Prüfer brings information about more microlithic sites near Motasarwal <i>tibba</i> and Gama-ki-dhani (GAM), where there are also small copper bits, red painted ware and microlithic pottery.		Also went to a site about half-a-mile to the east of Berore railway station. The site - a flat one - lies on both sides of the railway tract and is about 2 furlongs



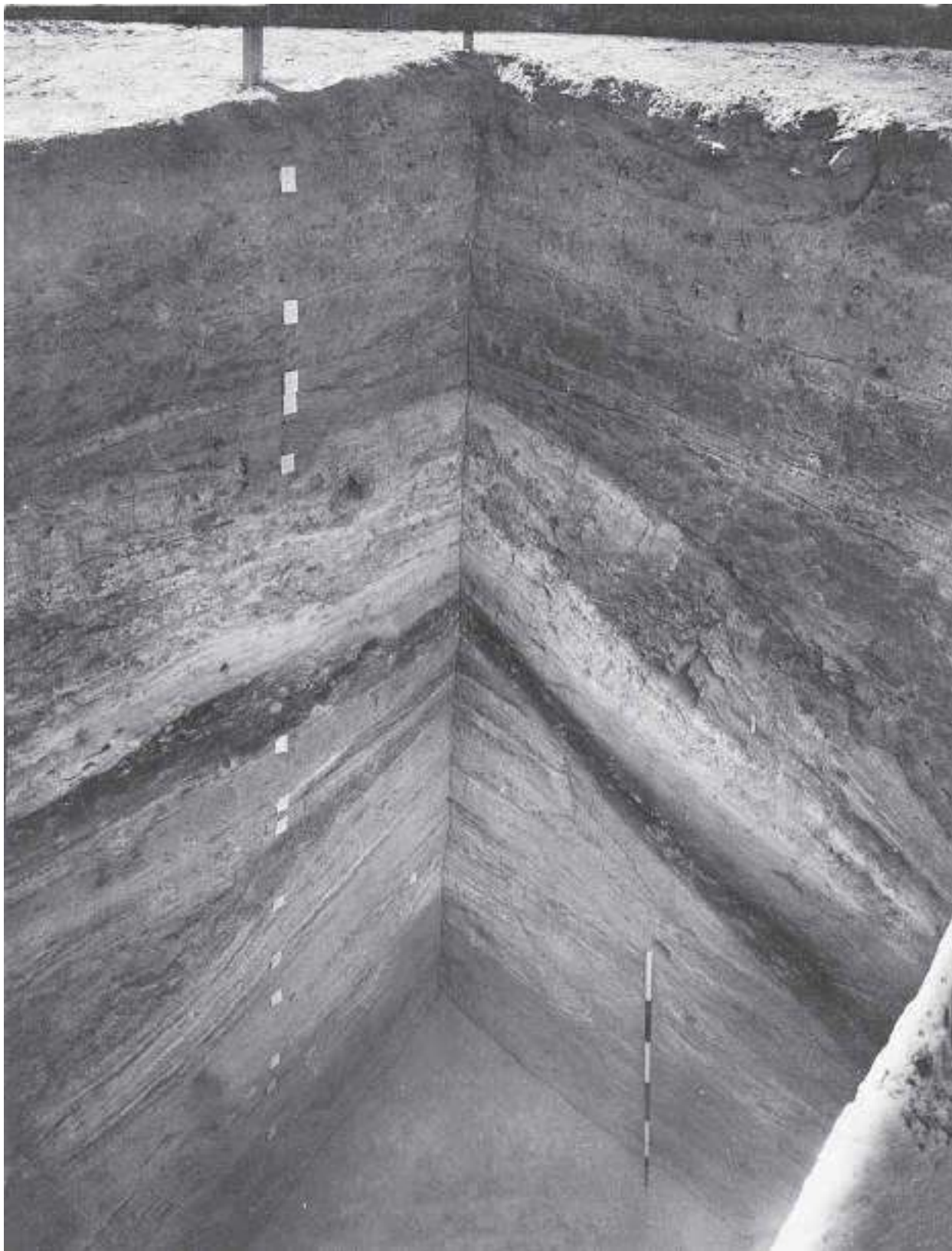


Fig 10 Rer, *Excavated section*



- to south-east of Chak 72/1. Though there was a perforated sherd and a disc steatite bead, the pottery is on the whole non-descript. 'pinched' pottery is the chief characteristic ware. Chak 72/3.
- 27.11.50 Revisited Chak 80, which certainly appears mysterious in view of the presence of Harappan material (including swollen discs) and grey ware over the graves and of the absence of any mounds nearby. Three experimental pits were dug, two at the ruined structures near the medieval dargah and one further east in the area exclusively occupied by graves. The results were disappointing, natural soil having been struck within a few inches without any occupation-levels. The conclusion was inevitable that the source of the ancient pottery was either the twin mounds of Binjor 3 and 4 or Tarkhanwala-Dera and Chak 61, the two nearest sources of Harappan material and grey ware. The ruined brick structure may in reality be only medieval (the brick-size being only a variant of Lakhaury bricks), connected with a Muslim settlement that grew up with the dargah as the focus. [Is the copper coin really punch-marked? What is the other coin?].
- 30.11.50 On the way to Rer, visited a flattish mound in Chak 50, whence antiquities had been collected before but microliths. It is not possible to be too sure about the affiliation of the site.
- About 150 yards to the north of the Rer mound is a *tibba* with microliths. A pit was dug here to a depth of 4½', but there was nothing but sand. The occupation was only skin-deep. It was learnt that a villager had dug a pit in the *tibba* down to a depth of 10 feet in order to bury a baby and he had found nothing but sand. Archaeologically it is a dangerous practice, as the skeleton will easily pass as ancient. As the loose sand would not leave any traces of the pit. RER-T.
- The work at Rer is nearing completion. The section of Rer I was drawn by Saran yesterday and of Rer II by me today. The western end of Rer II requires some wide digging as the bottom of a deep pit has not yet been reached. It is to be noticed that while the natural soil in Rer I and II consists of semi-hard alluvium, that of Rer III is hard brown clay, the same material out of which the rampart in Rer II is built.
- Work to do: i) excavate Chak 40; ii) visit mounds in Chak 50, 77 and 59 and the one near canal stone 8; iii) visit mound near Mallawala *tibba*

- and the *tibbas* nearby; iv) explore the road between Rer & Balochia (unnecessary) and BLC I; v) explore if possible *tibbas*, particularly south of Anupgarh.
- 1.12.50 While filling up of two of the trenches at Rer was in progress, I proceeded with Saran to Chak 40 and laid a trench 6' x 4' there tucking back the edge of a cutting in the part of the mound. This was to confirm the stratigraphy of Sarainagar and grey ware as Chak 40 in one of the few sites on which both are found together. Another probable site is Haripur, to be visited from Suratgarh when we visit Jhandawala *tibba*.
- Sarainagar ware was found only in layer 1. Below that grey ware shapes began to appear. In the section was found the edge of a grave pit sealed only by (1), with a skull sticking out. As the high position of the pit makes it certain that it did not belong to the main occupation of the site it was not felt necessary to bestow much attention to it. The graves known to exist on the site are unlikely to have been Muslim graves, as they are not covered with 'cairns' of pottery or any other material. They may be of some primitive tribe of fairly recent date.
- The low *tibba* to the north of the mound yielded some
- 2.12.50 Sarainagar ware (Chak 40-I). The high and dry *Tibbas* further north and west were barren.
- Drew the section of Rer II and proceeded to Chak 40. It was ascertained that grave-pit is not sealed by (1) but reaches the top of the mound and is unsealed. There is no chance of its being contemporary with the Sarainagar ware and is very recent indeed.
- 3.12.50 Natural soil struck in Chak 40 (Fig. 11) at 4½' feet below surface which is practically the same as the field level. It is to be noted that both at Rer and in Chak 40 natural soil and field-level are practically the same, which means that after the occupation had started the river brought no more silt. Several explanations are possible: (1) Occupation started after the river had dried up and there was no occasion for further silt to come; (2) the drying up of the river was not due to the choking up of its bed with silt but to stoppage of water-supply at source, otherwise the field-levels would have risen; (3) the river had shifted to a southerly direction during the last days of its life so that there was no occasion for the rise of the field-level in the northern bed.
- After closing the work at Chak 40, went to Chak 39/2

(*Tibba*) and dug the buried pit there. The occupation was found to be only skin-deep. Went thence to *Balochia 1*, the pit wherein yielded the same result. 4.12.50

It was ascertained at three places, at *Rer-tibba* and the two *Tibbas* just mentioned that occupation started after the accumulation of sand. Further, the sand-tops, where they had not been covered up with dunes, were found to be full of shells, etc. As it is not possible for these shells to come with the wind the conclusion is inevitable that the sand-hills on both sides of the bed represent the banks of the river and are not the result of accumulation of sand with the wind as a result of the desiccation of the land. The sequence of events is: (1) formation of sand-banks of the river; (2) occupation thereon; (3) desertion and accumulation of small dunes at the top, formed of finer sand collected from the bank itself, this time air-borne and covering up parts of the top of the mound, leaving uncovered patches between each other. It should be noted that the sand of the bank is heavier, being richer in clay than the top-dunes formed of light sand-particles. Stein's theory was otherwise.

Visited the flat *theri* about a mile to the east of the head of the Anupgarh minor. The sherds are very small: this is a feature of all flat sites due to the constant trodding of the ground. There is painted and unpainted grey ware and Sarainagar ware. Microliths occur on the northern part of the site which contains fewer grey ware sherds and on the top of the *tibba* that engulfs the site on the eastern side. The top of the *tibba* also has a buff-slipped ware. Chak 71 and Chak 71-T.

On the slope of the *Tibba* that surrounds Chak 58 on the north, there is an extensive site partly covered with sand. The finds are non-descript, but vaguely painted and unpainted Sarainagar. Mud-bricks the site was called Chak 58/1. A couple of furlongs further east was another site with the same kind of pottery, but the site is well separated from the sand-dunes. Chak 58/2.

The banks of the sand-dunes were examined from Chak 58/2 right upto the Ramsinghpur. There were microlithic remains. Called Chak 58/3. In fact from Chak 58/1 to Chak 52/3, there are a series of sites and for purposes of recording the area was divided into three parts. The part of the sand-bank immediately adjoining Ramsinghpur was called RSP-T.

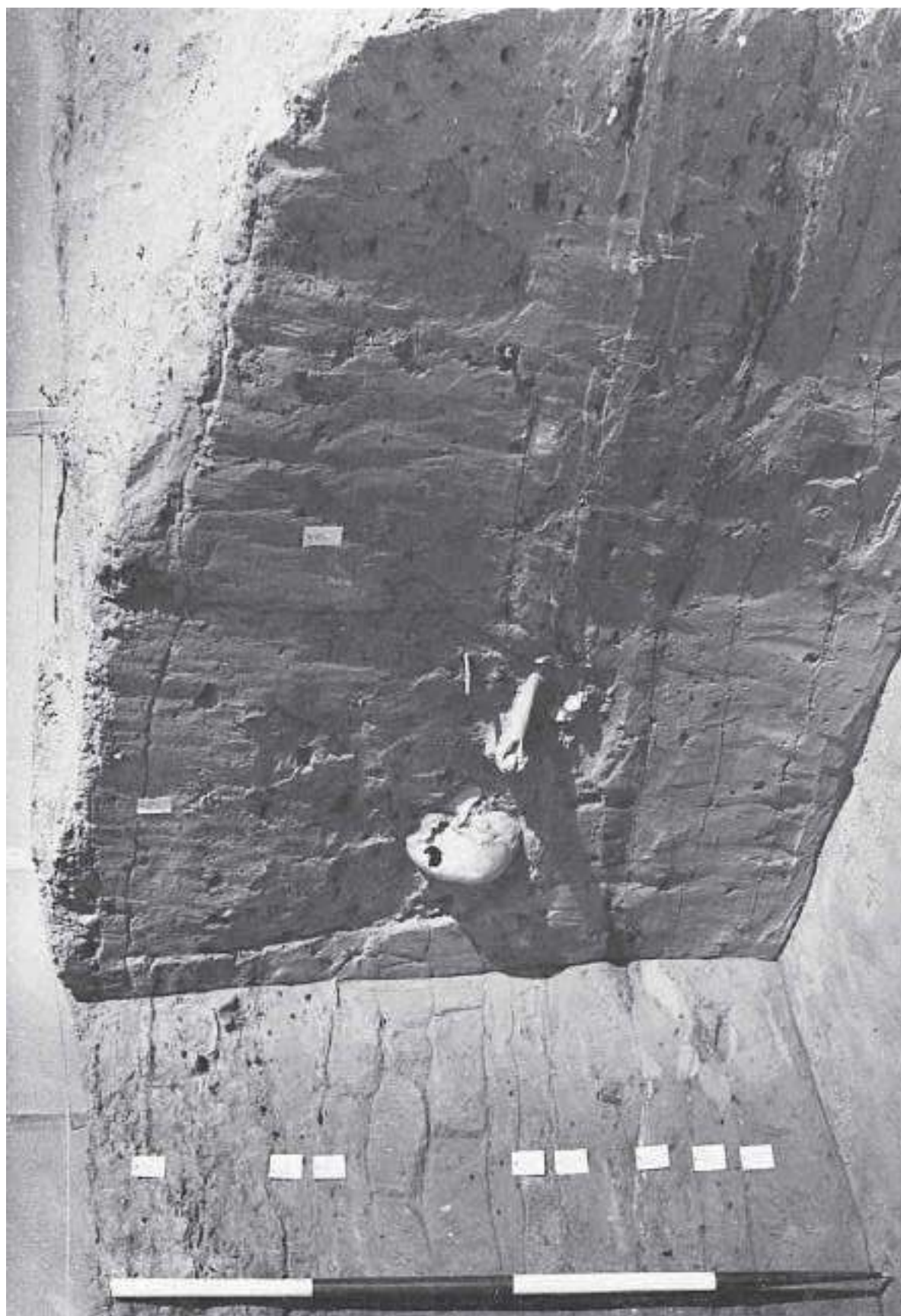


Fig. 11 Chak 40, View of the excavated trench



Both in the morning and in the afternoon I walked extensively on the hinterland of the *Tibba* to see the depth of occupation. The *Tibbas* do contain pottery here and there but no rich deposit was found. The finds are marked Chak 58-T. The map shows fairly flat land to the north of the *Tibbas*, which means that the northern *Tibba*-complex of the Ghaghar bed is connected with the once northern bed of the river. Cf. my yesterday's remarks.

In the afternoon Tiwari and Saran visited a grey ware site in Chak 59, about 500 yds. west of the settlement of that Chak and a mile to the south-south-east of the bridge near the stone marked on the Binjor Minor.

5.12.50

The morning began with a drive to Gangasinghpura about 10 miles to south-west of Anupgarh, via Khadoiwala *Tibba*, which did not yield satisfactory relics. The way beyond this *Tibba* was through a wide river-valley with a bright and smooth surface of hard clay, so bright that mirages were frequently seen. An examination of the topography of the land showed that the valley between Anupgarh and Motasar *Tibba* is divided into two halves longitudinally by intermediary row of *tibbas*. The northern valley, consisting of the *chaks* served by the canal system is

flanked on the north of Chaks 77 & 71. Hansawala-*tibba*, Rer-*tibba*, Chak 39/2 and Balochia form land-marks. The intermediary row of *tibbas* is not a continuous chain, still the alignment is clear. It is formed by Khadoiwala, Jherowala-*tibba*, Phowala-*tibba*, Phulejawala-*tibba* and Motasarwala-*tibba*. Beyond Motasar in the east and Khadoiwala in the west the middle row disappears. The southern row, like the northern one is a continuous stretch of plains, occasionally, however, broken by sand accumulations. The fact that continuous ridges are only confined to the northern and southern banks of the river confirms the theory that they represent river-banks and are not the result of desiccation.

The plain between the intermediate and southern banks may be called the Rajpur valley.

It was not possible to explore extensively the southern bank of the Rajpur valley. The only places visited were Gangasinghpur, where a graveyard (consisting of not more than 10 graves) yielded a microlith, Sarainagar ware and pottery now known to be characteristic of the *Tibbas*. It is evident that the objects had been collected from a neighbouring *Tibba*. GSP-G.

From Gangasinghpur we went via Naiwala to Rathanwala-tibba (RTN-T), where, on the bold patches not occupied by the wind-borne dunes, the stuff usually associated with dunes were picked up.

From Naiwala went to Narawali (where there is a well) [If the Rajpura valley is necessary. Narawali may be considered as suitable. From Narawali, while making for Bharu-ki-dhani lost our way in north-eastern sand-dunes, till we reached a place near Khal. From there drove to Phulejawala-tibba, visited only by Mr. Saran before and collected the usual *Tibba* pottery and microliths.

I suspect that the southern valley represents the last course of the Sarasvati. It is certain that Harappa and grey ware sites are confined to the northern valley. Further, it is certain that no occupation started in Rer or Chak 40 after the accumulation of site in the northern valley.

On the way back visited Baror once more. Harappan objects were collected and it was ascertained that the mound does not stand on a sand-dune. The sand accumulated in the cuttings of the mound as the result of a flood of the river.

6.12.50 Kishan brings pottery from Chak 80, near railway

telegraph post 33/13, on the other side of the line, i.e. to the east of Chak 80-G.

## SURATGARH

7.12.50 to

9.12.50 Camp shifted to Suratgarh partly on the 7<sup>th</sup> and partly on the 8<sup>th</sup>. I arrived by jeep on the 8<sup>th</sup> afternoon. The whole of the 9<sup>th</sup> spent in setting down in the *kothi* rented from the Raja of Majajan, the Tahsildar having acted as the intermediary.

10.12.50 Went to Jetsar on the way to Jhandewala Tibba (JTS) (Fig. 12). A furlong to the south of Jetsar St., is a site very extensively dug into for manure. The high sections that are showing are full of mud-bricks. While a few sherds of painted and unpainted grey ware and of embossed ware were picked up, the site was found to be extremely rich in Sarainagar ware, painted and otherwise. One Harappan swollen cake was found. No faience or microliths. A brick, length missing, was 10" wide & 2" thick

Went to a small graveyard to the east of Chak 5 (*Ch 5-G*). Grey ware, Sarainagar ware & impressed ware, evidently collected from JTS. (Fig. 13)

A mile to the south-east of Bugian is a Harappan site



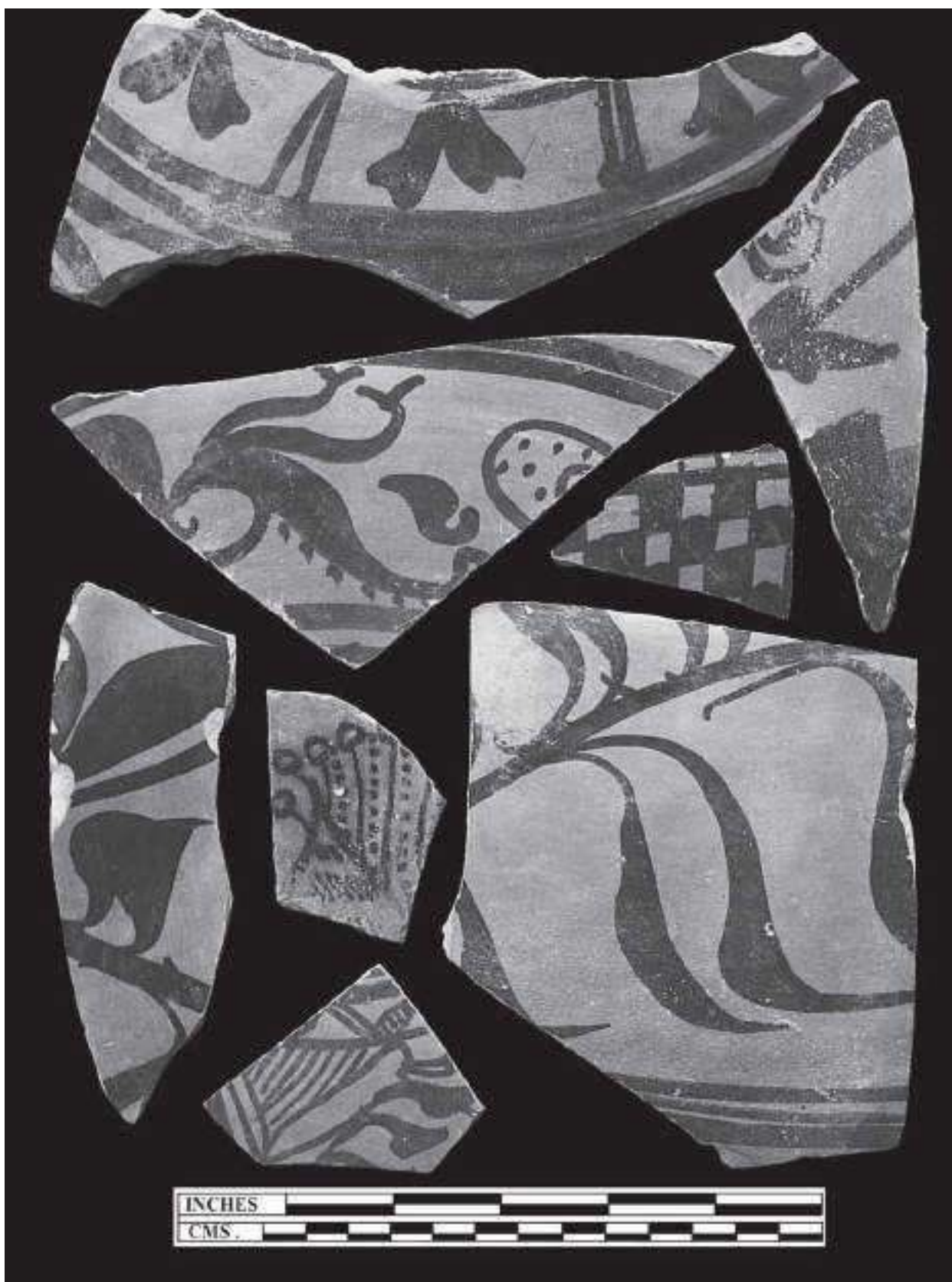


Fig. 12 JTS, *Rangmahal* pottery

(BGA) (Figs. 14 and 15) with drift sand covering its slopes on all sides. Disc beads, dish-on-stand, chert blades and painted and unpainted Harappan ware were found. The site, due to its sides being covered by sand, proved to be less prolific than other Harappan sites. A feature of the swollen cakes was that, while the usual circular and triangular shapes were found, there were some long things with a circular or very roughly rectangular section.

The famous Jhandewala-*tibba* (JND-T), marked on the map with a height of 627, contained the usual *Tibba* stuff, including microliths, particularly on its southern slope. On the south-eastern edge of the *Tibba* is the mound of Jhandewala (JND), with a few painted and unpainted grey ware, embossed pottery and plenty of Sarainagar ware. A trapezoid brick measured 11" x 3" thick, breadth on one side 5½" and on the other 4".

Mr. S.P. Shrivastava arrived in the morning.

- 11.12.50 Visited a 10' high mound 3 furlongs south-west of Sardargarh stn (SDR-1). The site has typical Sarainagar ware. One rim was incised with *sara* in 7<sup>th</sup> c. script. There was also moulded pottery of the type of Ahichchhatra Str. II. One

brick measured 11" x 7½"/9½" x 2½".

While proceeding to another mound (SDR-3, below) more than a mile to the south-east of the former, a flat area of more than half-a-mile square was found to contain large patches with small sherds (collectively called SDR-2). Generally reminiscent of Jaranagar ware, but has also green-core red ware in addition.

The mound, SDR-3, has grey and embossed ware as well as Sarainagar and green-core red ware. It is 10' high. The mound is largely covered with drifted sand. (Fig. 16).

From there proceeded to Daulatabad on Karanji Distributary. One furlong to the south south-east of Daulatabad is DLT-I, about 12' high. It is extensively covered with sand on all sides. Contains grey ware and Sarainagar ware one brick 12" x 8½" x 2½" and huge manure pits.

500 feet east south-east of DLT-1 is DLT-2, a 10' high mound completely covered with sand, Muslim graves and probably Tessitori's dumps. The main ware is Sarainagar, but a few grey ware sherds and embossed sherds were also found. The mound is full of bricks, ancient and Muslim (the latter used for graves). One complete brick measured



Fig. 13 1) JTS; 2) SDR-4; 3) SDR-4

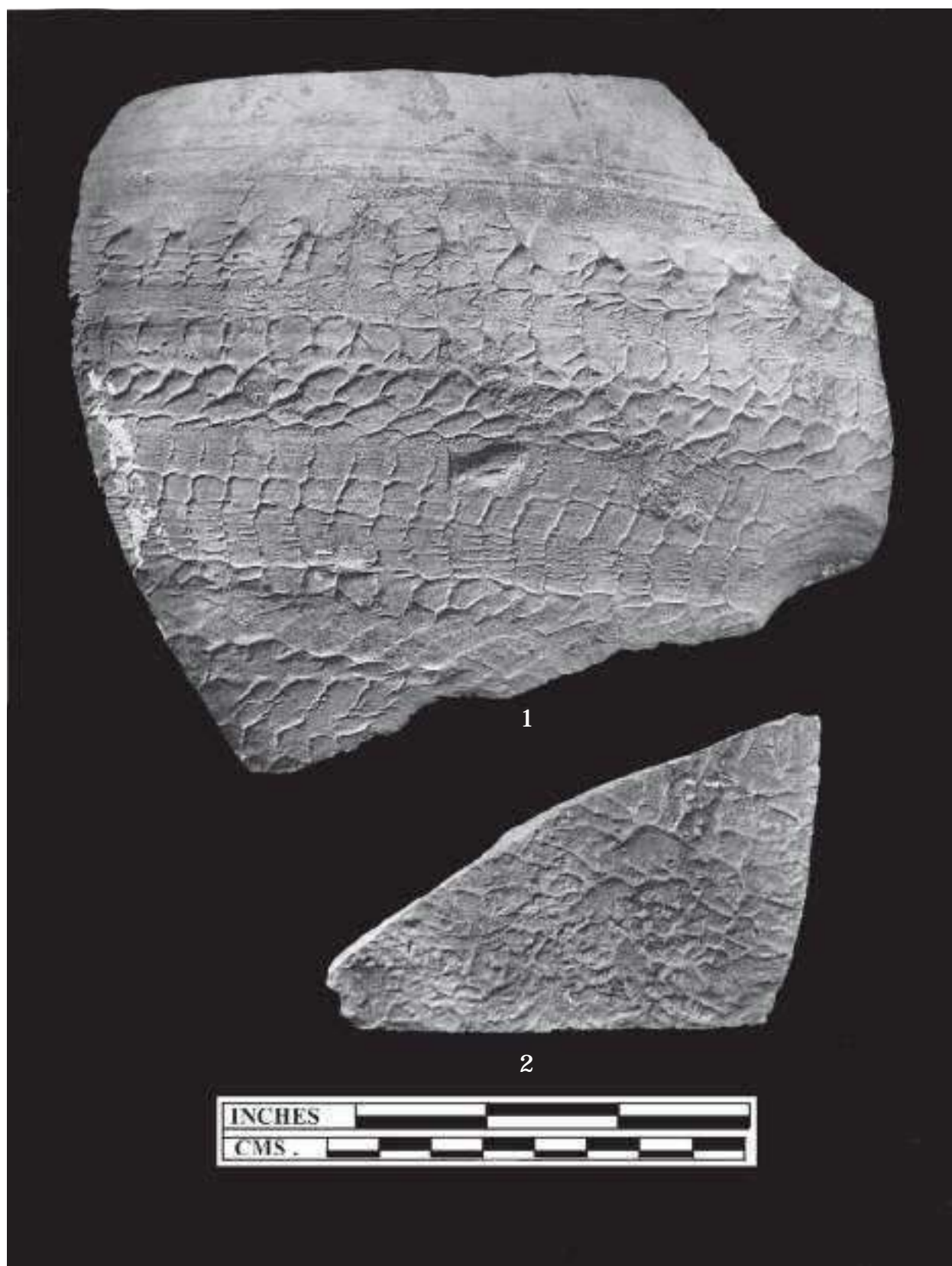


Fig. 14 1) PG-29; 2) BGA





Fig. 15 Harappan pottery, 1, 5 and 7) BGA; 2-3) Chak 21; 4) TKWD; 6) MTL

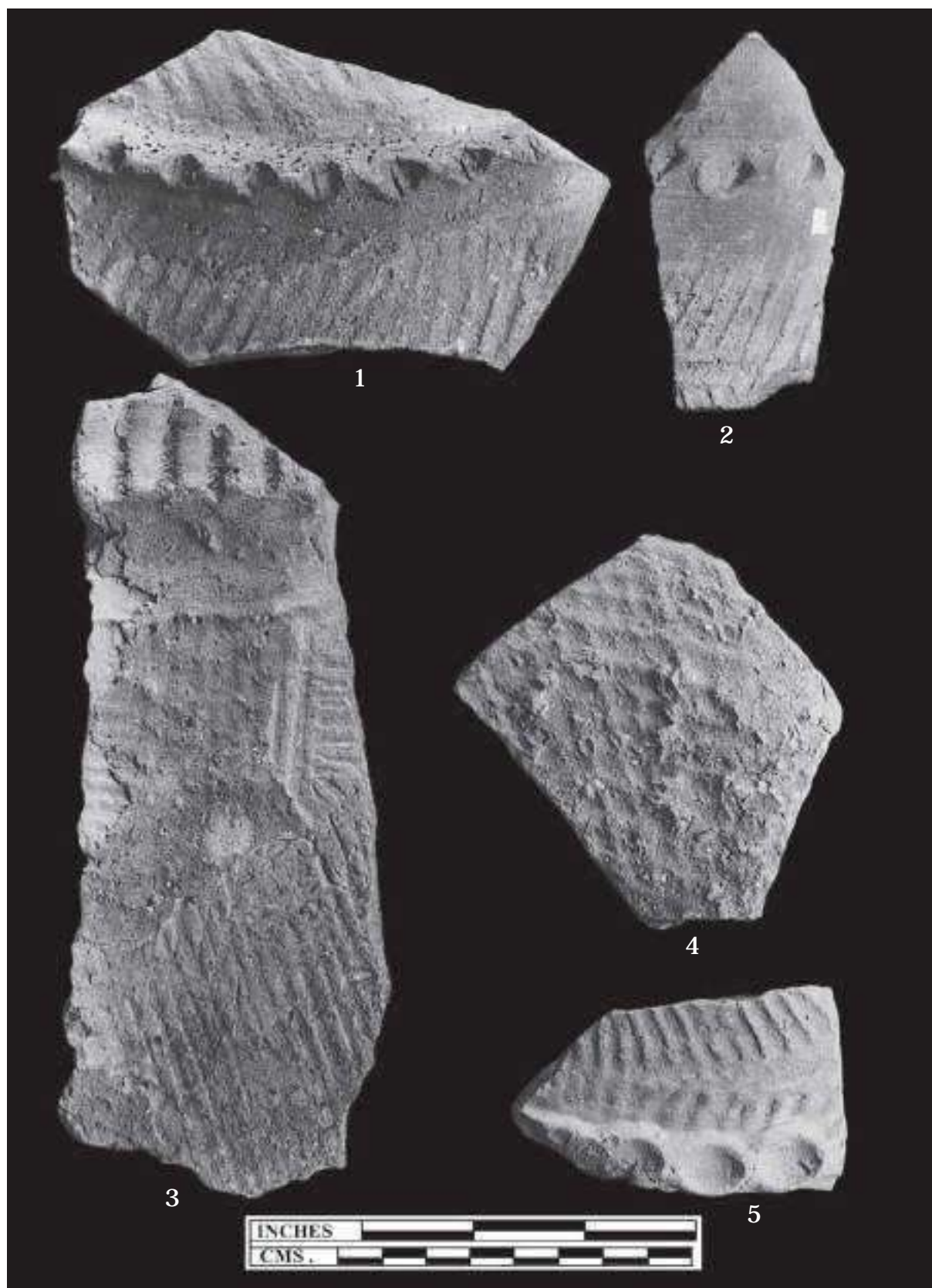


Fig. 16 Impressed pottery 1) SDR-3; 2) SLM; 3) Rer; 4) Chak 72/2; 5) SDR-3



11½ "x 7½" x 2", but a few fragments were 3½" thick.

From there reached Silwani via Sohan and Chak Muhammadabad. About ½ a mile to the north-west of Silwani is a 15' high mound, partly covered with sand. Grey ware and Sarainagar ware (SLN).

12.12.50 The main mound situated to the west of Sardargarh (SDR-4) was first visited. It covers an area of 1000' x 1000'. It is not unlikely it had a mud brick fortification, through the indications are elusive, 30' high. Mud brick structures were seen at many places. A baked brick measured 14" x 9" x 2½" and a practically exposed wall had bricks 10" x 10" x 3". Indications of two gates in east and north. A very important stronghold of Sarainagar culture.

The available indication of the date is Sarainagar pottery are: (1) inscribed pottery from SDR-1; (2) discovery of moulded pottery of Ahichchhatra type on Sarainagar site; (3) finds of carved bricks. An earlier date for the beginning may however be available from excavated Rer pottery.

The mound about 2 miles to east south-east of Chak Sahuwala (SHW) is situated at the foot of the *tibbas* and is largely covered with sand. 10' high. Another Sarainagar site.

The low (7' high) but fairly extensive mound of Shivpura (SPA) is situated more than a mile to south-east of that village. It has grey ware and Sarainagar ware. (Fig. 17).

About one and a half mile to the south and south-east of Bhagwansar are three mounds. BGS-1, 5' high has Sarainagar ware and plenty of brickbats. BGS-2, of about the same height and 1000' north-east of former has again the same ware. BGS-3, about 3 furlongs to the east of the former and similarly distant from BGS-2, is a very low mound, about 2' high, but fairly extensive. It has Harappa objects (painted pottery, sieves, swollen discs), but there is also a superficial deposit of Sarainagar period.

The mound at Manaksar (MNS) is situated about a mile to the east of that foot at the foot of the *Tibbas*. It is a fairly large site which included the ledge of the *Tibba* with plenty of brickbats on the surface. The pottery is of Sarainagar. The trench of Tesstori can be seen with spoil earth of both sides. (Fig. 18)

Proceeding further east, the tip of the *Tibba* contains at the top, in the bold patches not covered by secondary dunes, Sarainagar ware (MNS-1).

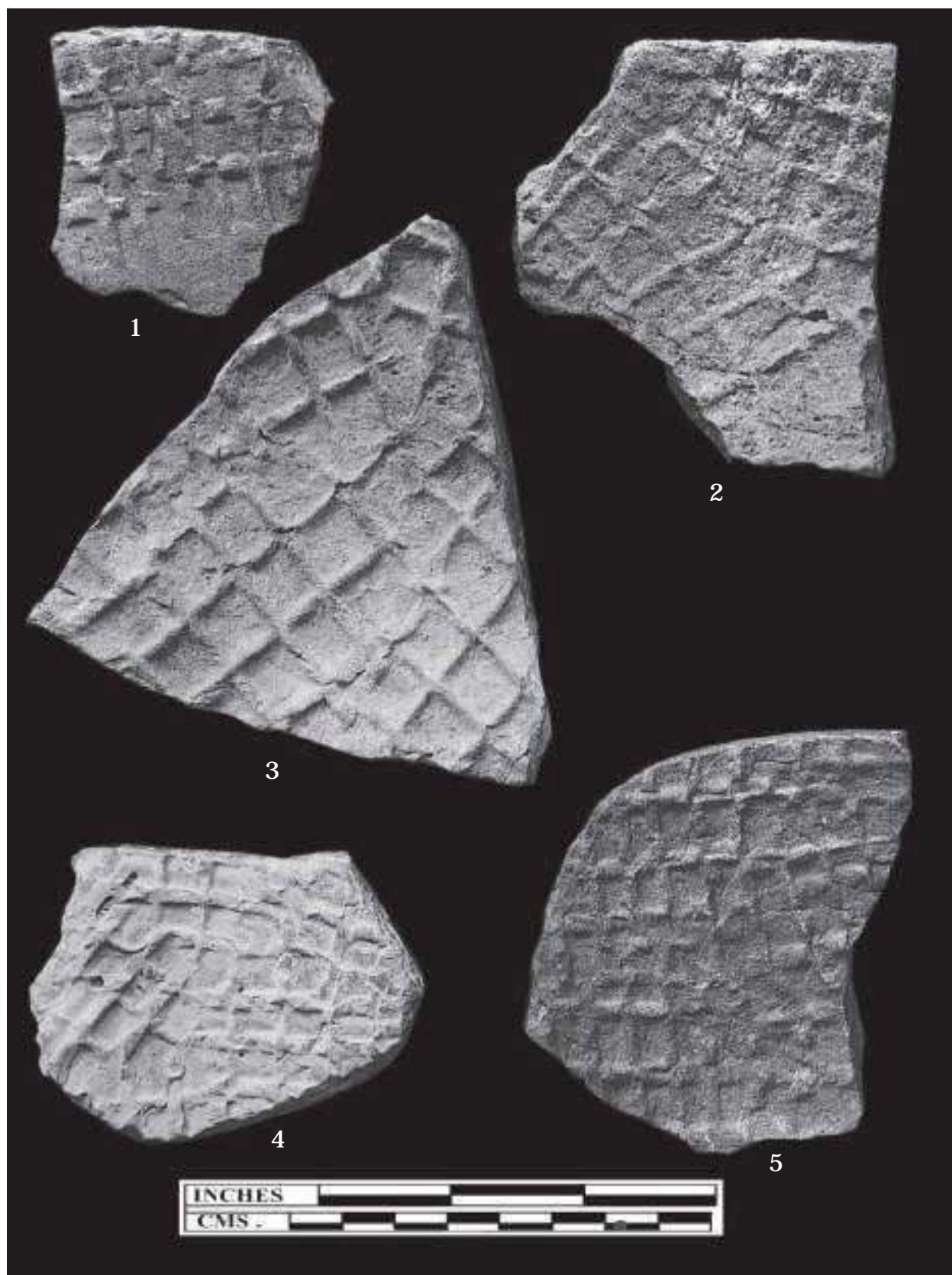


Fig. 17 Impressed pottery 1) *SDR-3*; 2-3) *BRK*; 4) *BNJ*; 5) *SRT*



*Fig. 18 Manak Theri*



- The mound near Suratgarh less than a mile to west north-west is 15' high and is entirely covered by pottery-cairned Muslim graves. The pottery is grey ware and Sarainagar ware (SRT).
- 13.12.50 Owing to the arrival of the DGA no work was possible in the morning. Mr. Srivastava left in the morning.
- In the afternoon walked over to a mound about  $\frac{3}{4}$ <sup>th</sup> of a mile north of the telegraph post marked 1/18 of the Anupgarh. Though it is only  $1\frac{1}{2}$  mile from Suratgarh but 3 miles south-east of Bhagwansar, it was called BGS-4, as it belongs to the group of mounds of which the three visited ones have been marked BGS-1 to 3.
- The mound is only 5' high and not very extensive. The mound, particularly its south-west portion, contained Harappan objects: painted pottery, sieves, swollen cakes and disc beads. But there was an extensive Sarainagar occupation at the top.
- 14.12.50 The first mound visited was Baman-*theri* (BMN), about 3 miles north north-east of Suratgarh. Partly covered with sand and with robber-trenches 30' high. No traces of fortification. Purely Sarainagar. ( Fig. 19).
- KRS-1 lies more than a mile almost due north of BMN.
- Sarainagar Named after Karnisar, about 2 miles to north-west. Sarainagar 12 ft. high.
- KRS-2 lies half-way between KRS-1 and Karnisar. Sarainagar same height.
- KRS-3 is about 3 miles to south of Karnisar. Also of same height and Sarainagar.
- KRS-T is *Tibba* between Bhagwansar and Karnisar, which contain large patches of pottery at its foot. The pottery is generally (unpainted) Sarainagar. A microlithic reject was also picked up. (Fig. 20).
- RMP-1
- 15.12.50 In the afternoon walked over to the *tibbas* to north-east of Suratgarh stn, which has on its lower slopes, pottery, patches, and terracotta figurines similar to Balochia-I (SRT-1).
- Slightly to the east of telegraph post 161/4 is a flat site with grey ware and Sarainagar pottery. LKD-1.
- To the north of Lakha Dora and about 300 yards to the west of Rangmahal mound is the 25' high mound of LKD-2, which has small grey ware-bits and Sarainagar pottery.
- The famous mound of Rangmahal (RGM-1) which has been extensively excavated, but it is unlikely

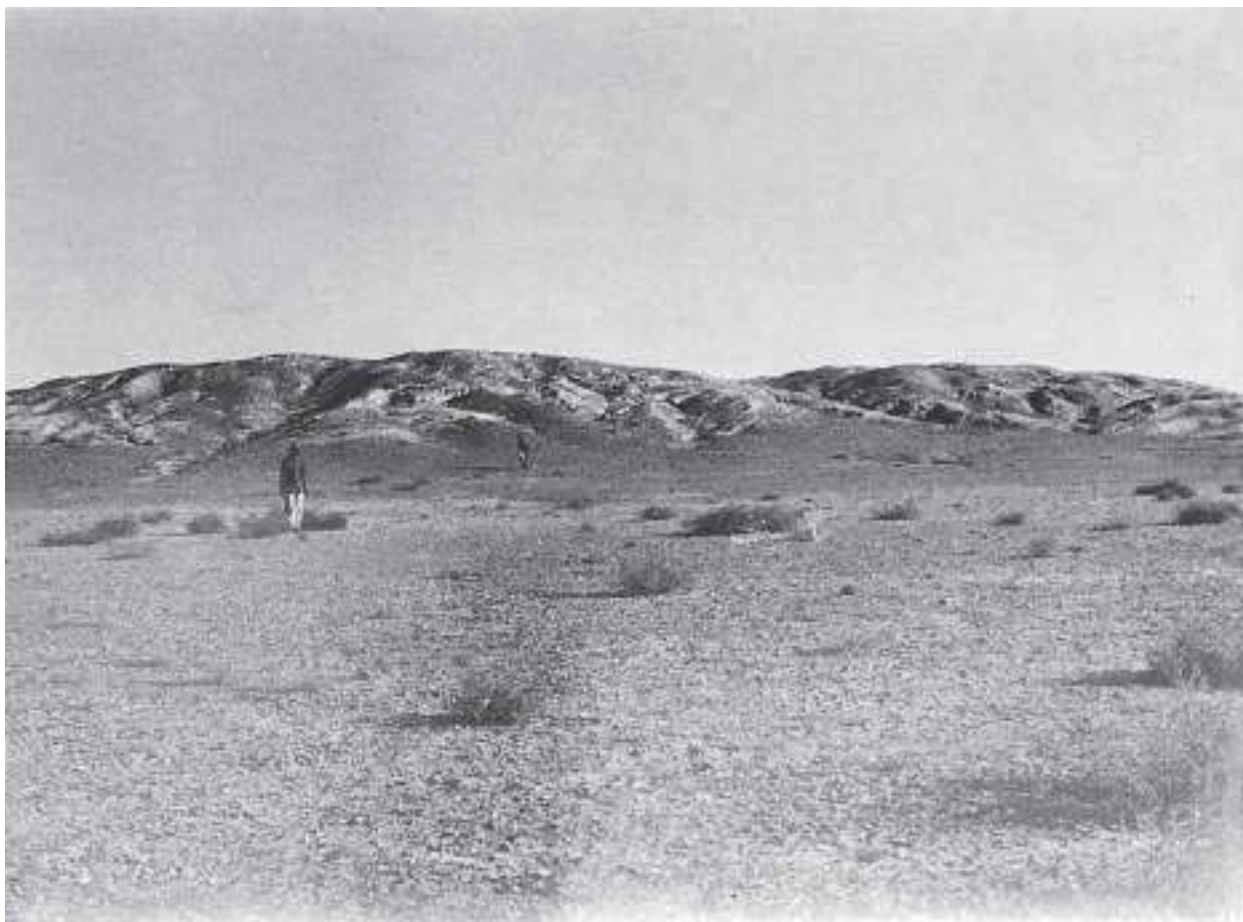


Fig. 19 *Baman Theri*



Fig. 20 KRS-T, *Harappan pottery types*



that the excavations reached the natural soil. The mound itself has two parts, each about 30' feet high with Sarainagar pottery all over. (Figs. 21 and 22).

The *tibba* to the south of Rangmahal contains Sarainagar ware but no pottery was collected (RGM-T).

The tank of Rangmahal once had a brick embankment all over, but it now exists in patches.

About a mile due north of Rangmahal is RGM-2, which is a 7' high mound with mostly unpainted Sarainagar ware.

The village of Bareke, about a mile to east north-east of RGM-2 and about a mile almost due north of RGM-1, is about 13' high (against 20' mentioned in the map). It is partly overbuilt by the modern village on the eastern portion. The mound is very extensive, and contains grey ware with a sprinkling of mostly unpainted Sarainagar ware BRK.

The railway line near Rampura village (RMP-2) cuts a 15' high mound into two halves, the mound being entirely Sarainagar. (Fig. 23)

About 2 miles to east-north north of Rangmahal Rly. Stn., i.e. Rampura village, is

the 30' high and 1000' x 1000' mound of Bhanwar-Theri (BWR), entirely Sarainagar. To the south, almost contiguous, are two smaller mounds, with nothing distinctive. (Fig. 24).

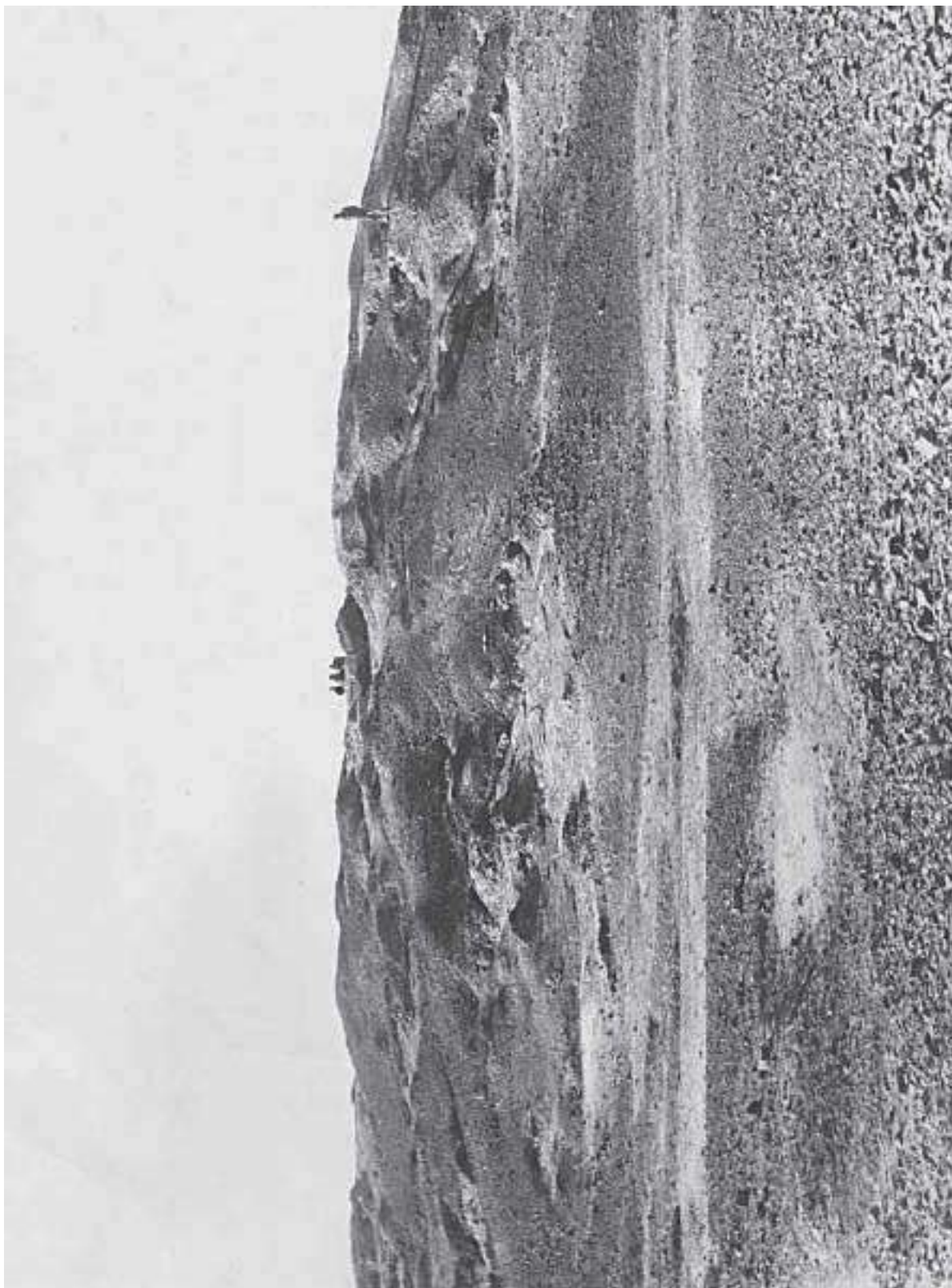
16.12.50

Though Kalibangan lies outside the area to be covered this season, (74° long.), it is visited due to its reported importance. A straight road leads to the mound from Dulmani stn. The site is by far the largest as yet found in Bikaner. It comprises in fact of two independent mounds parallel to each other with a valley about 200' in between, the mound nearer the road is oblongish, about 1500' by 800' the axis being north to south. The other one is about 1500' square with gullies and ramifications. Both are about 30' high; all indications show them to be of the same age, but they were distinguished as KLB-1 and KLB-2 least some difference be found later on (Appx. Figs. 25, 26 and 27). All Harappa objects, but only a few seemingly Sarainagar objects were found at the top of KLB-1. An old man told us that the mound had been excavated very extensively for 6 months 51 years back for railway ballast. It is therefore churned at many places.

The site was visited hurriedly and requires to be seen again next year.



Fig. 21 Rangmahal, *General view*



*Fig. 22 Rangmahal, Another general view*



Fig. 23 Harappan Pottery , 1) RMP-2; 2) RMP; 3) SDR-1; 4) SDR-4





Fig. 24 Bhanwar Theri, *General view*

Saw the *mandi* of Lakkhuwali from a distance and was told that the railway stn. near it was called Pilibanga and that there was a well there (Fig. 28). May be considered as a probable camping place. However, from Suratgarh is to be explored the eastern ramification of the valley containing Manik *Theri* and Badopal.

17.12.50 Visited the mound marked 20 r about  $\frac{3}{4}$  <sup>th</sup> of a mile north north-east of Bhanwar *Theri* (RMP-3). It is about 12' high and 500' x 500'. Sarainagar

Further up, near 169/6 telegraph post, about 1½ miles to the west of Amarpura is a mound, AMP-1, of about the same dimensions. Sarainagar with small bits of grey ware.

About a furlong to the east is AMP-2, a 15' high extensive mound of Sarainagar period. It had a brick fortification of 1000' x 800' extensively devastated for railway ballast. The main mound itself like AMP-1, is similarly churned.

18.12.50 In order to see the possibilities of camping next year, visited the *mandi* of Lakkhuwali-Dulmani (Rly. Stn. Pilibanga) on the Suratgarh-Sardulgarh line. The *mandi* is in Dulmani proper, Lakkhuwali being an insignificant village further south. There is a tank and a well, the water of the latter being declared by the

villagers as not very good, having the property of splitting milk. Besides it is very dirty. The *mandi*, inspite of its imposing appearance from a distance, turned out to be smaller than Vijaynagar. Not suitable for camping.

Visited Hanumangarh (now renamed Sardulgarh). Did not ascertain if name of the post office has also changed. The village is about 3 miles away from Sardulgarh Jn. but there is a branch line stn. At the village itself called Sardulgarh Town. The place is not larger than Suratgarh, may be smaller. There is more than one well and a tank.

Also saw Sardulgarh Jn. There is a waiting room and a retiring room. There is a small colony and a few shops near the station. And water is distributed by the railway from a well, water being pumped out. Much less suitable than Hanumangarh Town for camping.

## (ii) NOTES ON EXPLORATION IN BIKANER, 1951

23.10.1951. Reached Bikaner in the morning. Information was received that no jeep would be available this year, but a power station wagon would be available tomorrow. Visited the Museum once more. The pottery previously stored in the basements of the old Museum building is now in the main Museum.





Fig. 25 Kalibangan - 1, *General view*



Fig. 26 Kalibangan - 2, *General view*

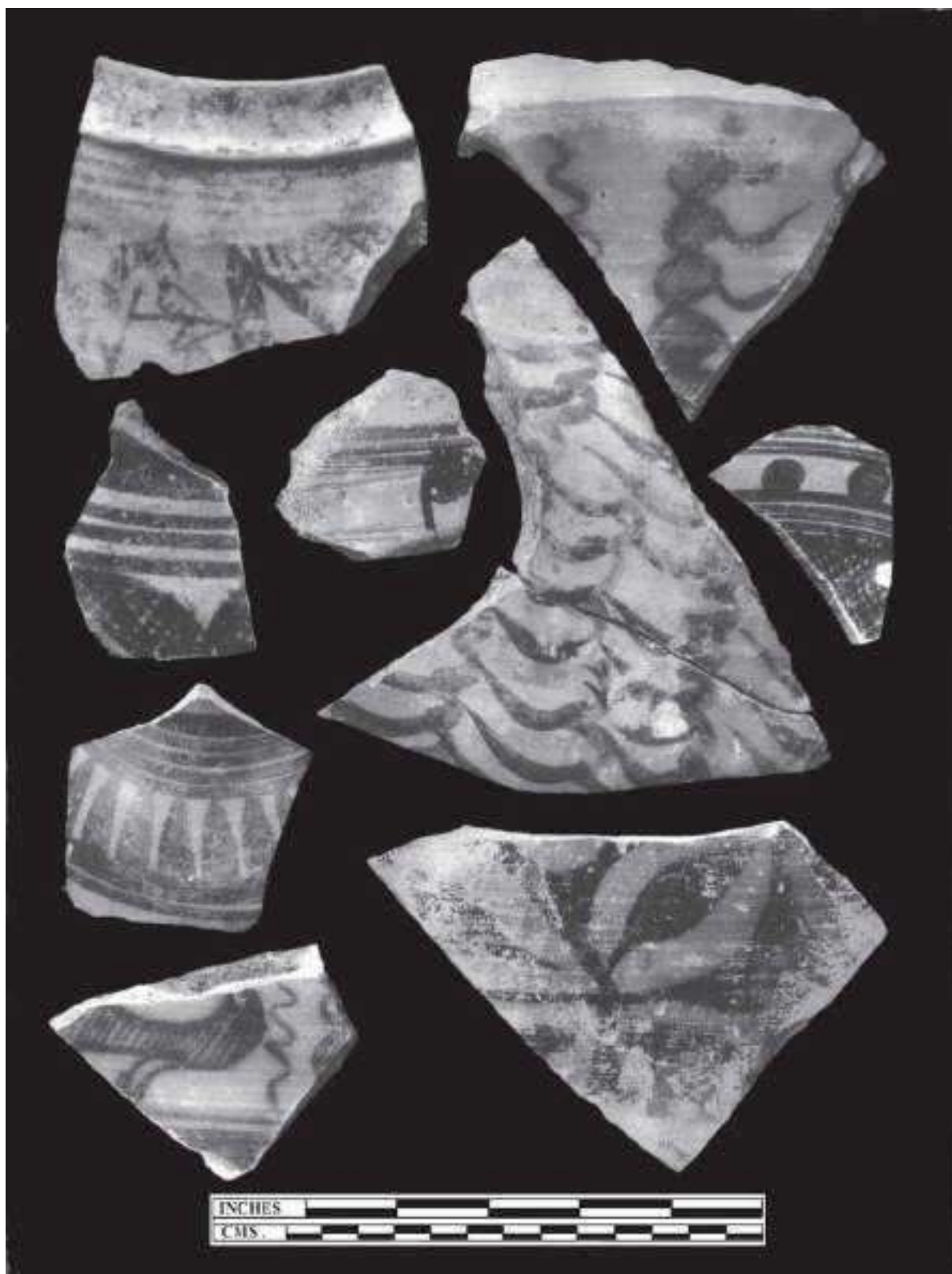


Fig. 27 Kalibangan, *Harappan pottery*

- Hardly any new Rangmahal type. There are some long complete blades from Kalibangan and an enormous number of broken and smaller blades from unspecified sites may be Kalibangan itself. A site called Pir Sultani *theri* 18 miles east of Hanumangarh has a large number of Harappa objects, including blades, through Tessitori's report and photographs indicate the existence of Rangmahal objects there.
- 24.10.51 Everyone except myself left for Anupgarh tonight, taking the station wagon in the same train.
- 25.10.51 In the morning received telegram that the wagon, which had left Delhi on the 19<sup>th</sup>, had reached Anupgarh on the 23<sup>rd</sup>. Left for Anupgarh by the night train.
- 26.10.51 Reached Anupgarh in the afternoon. The camp is complete, thanks to the efforts of the staff.
- 27.10.51 Visited Chak 15/2 *and* 15/3. The objective was the latter site, which according to last years analysis, had grey ware, Rangmahal pottery and an enormous number of microliths. A few grey ware sherds were picked up, but microliths and rejects were remarkably few this year. It appeared that habitation here had been on a pre-existing sand-hill and had no depth at all. A rough-and-ready digging is called for before preparation is made for any regular excavation. In 15/2 only one chert reject was found last year. Nothing mircrolithic this year.
- 28.10.51 Re-visited BNJ-3 and BNJ-4. At the former place no grey ware or associated grey ware was found. In a pit dug at the centre for about a foot and a half, Harappa pottery was found at tip. It is not worth excavating the mound.
- It was noted that BNJ-3 is situated 500 yds. to the south of canal stone 83 and BNJ-4 in Chak 93, near the canal stone 75.
- On our way to TKW-D, a new site, in Chak 88, situated at a short distance to the north of canal stone 68, was found. It consists of a vast stretch of flat pottery strewn area, with very small sherds. Of the large pieces, two are of seemingly Harappa type and a pinched sherd. The seal is non-descript. There were also two fragmentary microliths, two chert rejects: one faience bangle and some spherical faience beads.
- The topography of TKW-D and Chak 86 (Fig. 29) was examined; the two mounds occupy a vast stretch of land strewn with pottery, at the northern end of which stands the 12 ft. high mound of TKW-D and at the other somewhat lower. That in Chak 86, linked together



Fig. 28 Pilibangan, *General view*



by strewn pottery. Curiously enough the canal and the road now separate the grey ware from Harappa ware, for on their northern side there is hardly any grey ware. On the southern side there is plenty of grey ware and associated pottery, including strap-handles and spouts already noticed last year. No painted Rangmahal pottery was found. Most significant however was the discovery of a fairly good number of Harappa sherds. Excavation here is therefore of imperative necessity.

29.10.51 Visited Shivpuri with a view to collecting more microliths, of which 2 blades and one reject was picked up. At Haipura, nothing new was found, but one fragmentary blade of seemingly Harappa type, one microlithic blade of chalcedony and several objects were collected. In Chak 11, fragments of a pot with an inconspicuous carination on the body and with streaks of clay lower down, very similar to Periano-ghundai, were found. The problem probably connected with that of 'pinched pottery' requires further looking into. In Chak 15/4, there was nothing differently Rangmahal, except strap-handles already previously noticed.

In Chak 15/2 no microliths

were found.

In Chak 15/3 a large number of microliths and rejects were again collected. A pit was dug at the centre of the mound, for a depth of about 5 feet. In the midst of a coarse sand-deposit, uniform in nature were found stray pot-sherds of an indeterminate nature down to a depth of 3 feet or so, the only recognizable types being a pinched sherd, a strap-handle circular in section and lower parts of vessels with gritty clay. Below that the deposit was sterile. On the surface were found a sherd of BNJ-3, type 6, and a fragment of seemingly lower part of dish-on-stand and a shell bangle.

On our way back, the car broke down near 40 G.B.Halt, walked to Ramsinghpur I.B. at night.

30.10.51 Returned to Anupgarh by train. Mr. Bhadra left for Bikaner to fetch a mechanic.

1.11.51 The car returned at 3 o'clock, having been repaired by the mechanic.

2.11.51 A trench 6 feet wide was laid in Chak 86, starting from a high point in the mound and pointing towards the highest point of TKW-D. The intention is that while a 6' square pit will be dug at the centre of the mound, in the lower reaches only half the width of the trench will be



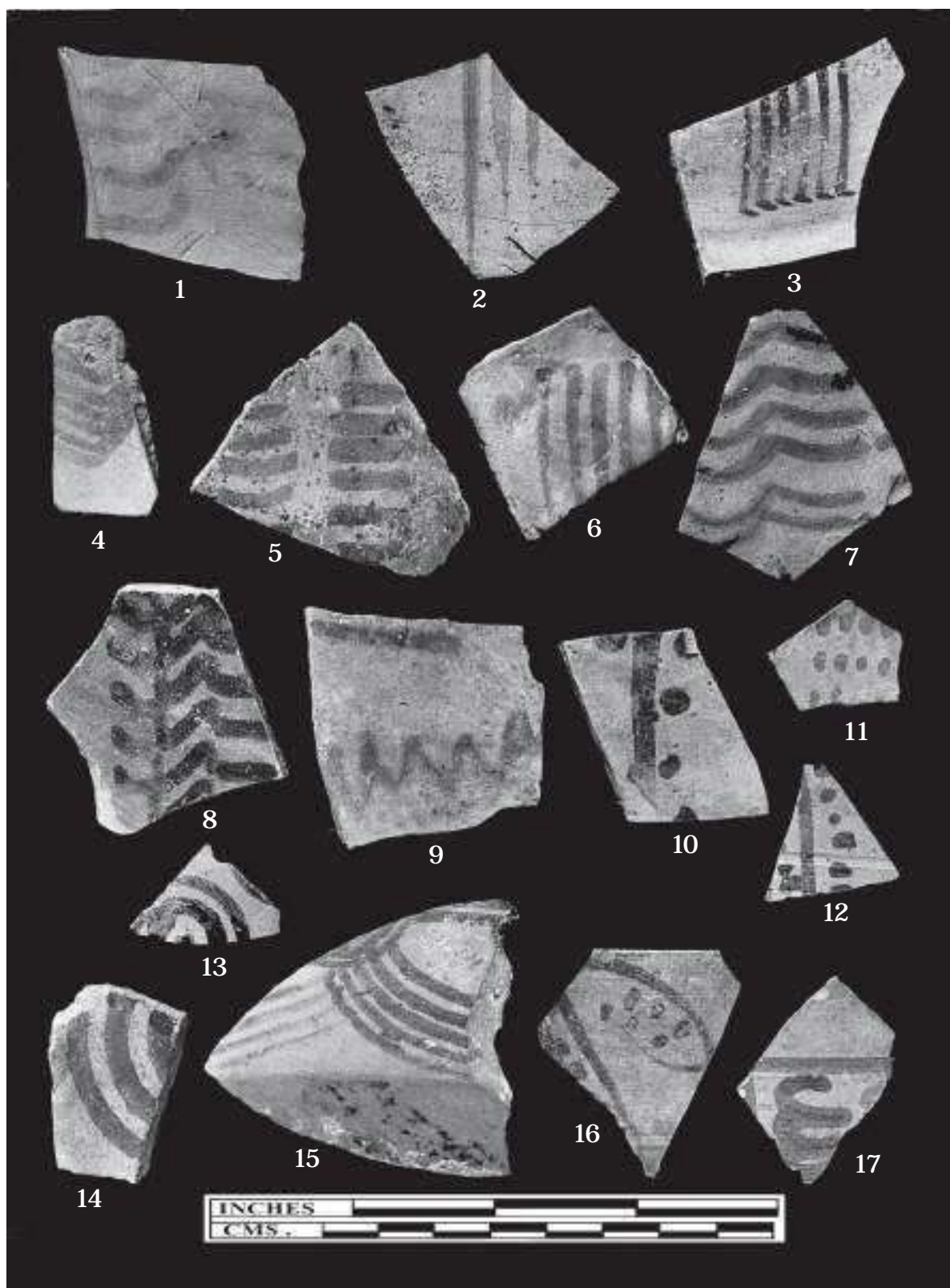


Fig. 29 Painted grey ware 1) BNJ-4; 2) Chak-72/1; 3) Chak-40; 4) Chak-8; 5) Chak 72/2; 6) SPA; 7) Chak 39/1; 8) Chak 15/4; 9) SRT, Chak-59; 10) Chak-59; 11) Chak-86; 12) Chak 15/4; 13) Chak-74; 14) SPA; 15) LKD-1; 16) BNJ-4; 17) SDR-3

- dug at convenient intervals (Figs. 30 to 33)
- Only half the width of the central pit was dug today down to the top of layer 4. (1) consists of loose dust; (2) is an ashy layer; (3) is hard clay; and (4) seems to be another ashy layer. All the varieties of grey ware; impressed pottery; incised pottery; and lower parts of vessels with gritty clay besmearing were found. Painted grey ware was sparse. A complete pot with impressed oblique parallel lines was found in layer (3) cut into (4) and sealed by (2).
- 3.11.51 The other half of the central pit was taken up and the whole trench (15' by 6') was dug down to layer (5). (4) is an ashy layer and (5) is a clayey layer. A few specimens of good painted grey ware were found in (5); they were practically absent in the upper layers, through the latter abound in black-and-red red and grey ware shapes in red and impressed pottery.
- A 3' wide trench was started between pegs XX and XXV. The top layer consists of loose sand; layer (2) is an ashy layer; layer (3), with an eroded top, is a silt deposit, of which the upper part contained some pottery, including grey ware types and 2 pieces of pinched pottery. The lower part was practically sterile. Layer (4);
- 4.11.51 Trench O-V was dug down to layer (7). Stratification consists of alternate layers of clay and ashes. Layer (6) was floor level in view of the existence of a post-hole in it in the southern section.
- In the trench XX-XXV digging was done through sterile clay deposit down to 7'11" from surface.
- Two new trenches was marked between XL - XLV and LX and LXV.
- 5.11.51 The whole length of the trenches (I to V, XX to XXV, XL to XLV and LX to LXV) has to be called Trench I (Chak 86-I) in view of the fact that it has been felt necessary to have a trench in the south-western low reaches of the mound, so as to comprise the fringe of the grey ware mound and a Harappa pottery-strewn area, obviously a continuation of TKW-D, from which area a large number of Harappa sherds was picked up.
- In section XX-XXV, a difference has been noted between the alluvial deposit (3) with potsherds and the natural deposit which is chopped by a layer of brown hard clay. Digging was done down to a depth of 9' feet below surface and the section was drawn.

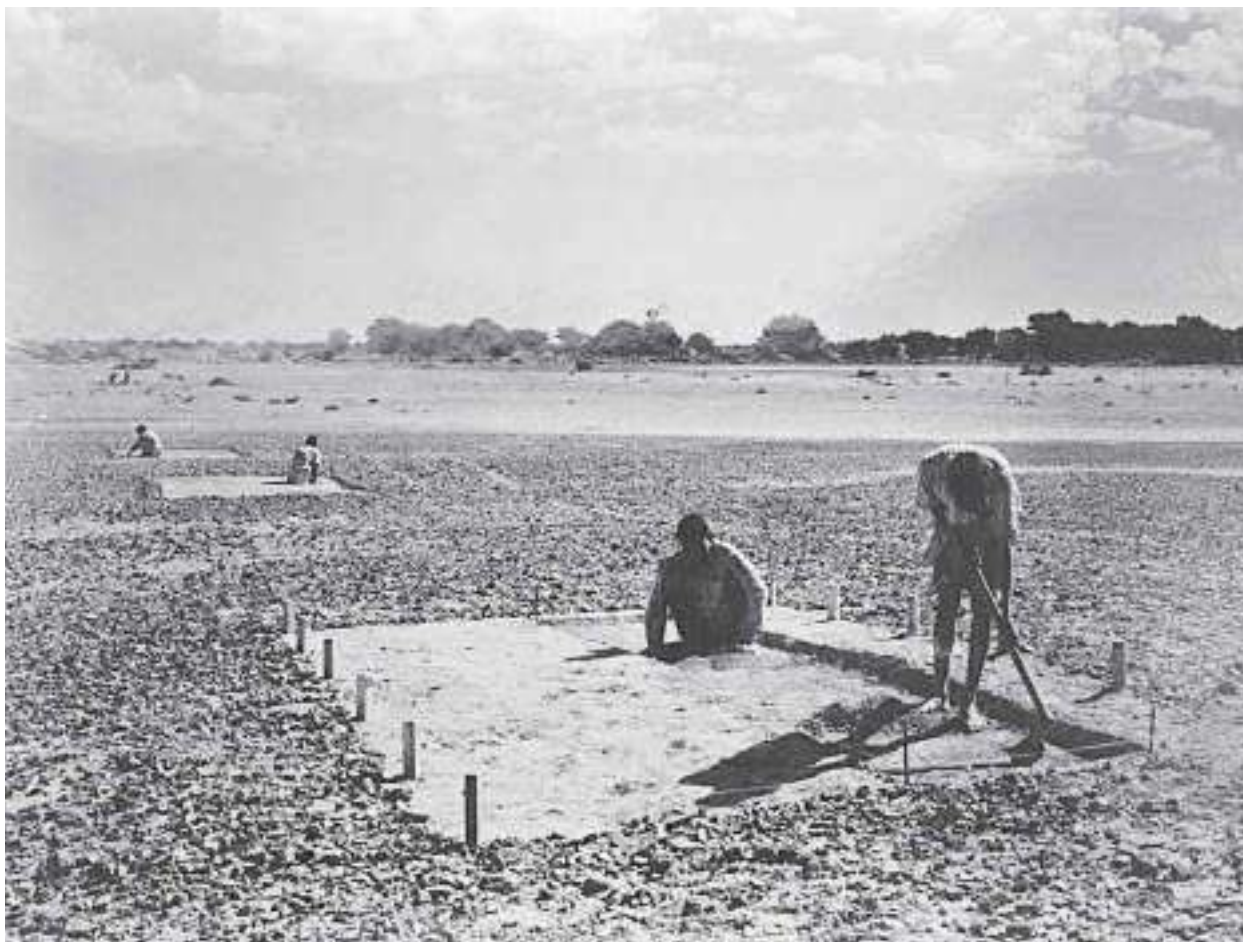


Fig. 30 Tarkhanwala Dera, *General view*





Fig. 31 TKW-D, *Kiln*



Fig. 32 TKW-D, *Cremation ground*



Fig. 33 *Harappan seal, fragmentary*



- In section I-V, digging through an alluvial deposit with pottery (7),
- Digging in sector XL-XLV and LX-LXV was started.
- 6.11.51. In section I-V the natural soil, as suspected, was struck at 5'6". BS. Digging was continued down to 11' BS. and was abandoned.
- In sectors XL-XLV, a clay wall, underlying layer (4) and sealed by (3) was found. Layer (3) contains its debris. Often the destruction of the structure which had evidently been at a ledge of the inhabited area, the slopes were filled up with silt from the top, clear traces of silt brought by water remaining downhill being seen in the section (Layer (2A)).
- In section LX-LXV, below the loose dust of (1) is loose muddy soil below that mud consolidation layer (3) characteristic of water-logged area. It is likely that the natural slope of the land having been disturbed by the canal-distributory, the low-lying reaches of the mound remain water-logged during rains.
- 7.11.51 Walked by the railway line to Chak 75 for re examination. No Rangmahal pottery was found, but there was again a strap-handle. It should be examined whether strap-handles were not a feature of Harappa pottery.
- An interesting sherd with dark brown painted design was found.
- Walked further east in search of a mound shown by a caution-line on the map as being situated south of Chak 68, between the Chak and Baror mound, beside the road. No mound was found. Returned by train from Baror Station.
- 8.11.51 In sectors XL-XV, the natural soil was struck below layer (7), which is sandy. In sectors LX-KXV, the same soil continues.
- Trench II (Chak 86-II) was started at its Harappa end, but the results were not encouraging. Both Harappa and grey ware types were found in layer (2), but layer (3) was practically sterile, consisting of silt deposit which may correspond to layer (8) of Sectors O-V, Chak 86-I. Layer (4) consists of fine compact sand, after which the natural soil seems to have been struck.
- 9.11.51 The section of sectors XL-XLV was drawn.
- The trench in sectors LX-LXV remains enigmatic. Down to a depth of about 4'6" the deposit remains uniform. Below (3) is a layer (may be the natural soil) capped by a large number of small sherds (all connected with grey ware), which was definitely

- at one time the trodden surface on which pottery from the mound accumulated. The upper acculation might be result of water-logging in the low land, but why does not similar soil occur on comparable levels elsewhere, say in Trench II LX-LXV? The possibility of its being a rampart has to be investigated and for this reason the trench has to be extended on the mound side, between LV and LX.
- In Trench II, LX-LXV the natural soil was dug down to a depth of about 2'. In the newly started trench XL-XLV fine compact sand was struck below 1', corresponding to (4) of LX-LXV.
- It can now be safely held that there was absolutely no overlap between the inhabited areas of the Harappa and grey ware people. The extreme fringes of the two mound very nearly touch pottery from the respective mounds. The Harappa sherds in Chak 86-S.W. is definitely due to this reason, and their occasional occurrence in the low reaches of the grey ware mound is purely adventitious.
- 10.11.51 In the absence of petrol, walked over to Anupgarh-*Tibba*, where a few Rangmahal types and a few rejects had been found last year. Nothing noteworthy was found.
- 11.11.51 Petrol did not come yesterday, so walked to Chak 86 to continue excavation. To solve the problem of the mud accumulation in LX-LXV, the trench was extended to LV-LX, where also the top of the mud was struck at practically the same depth. The trench was therefore re-extended to L-LV.
- The section of LX-LXV in Trench II was drawn after the natural soil had been tested to a depth of about 3'. In sectors XL-XLV the sandy deposit (3) has patches of clay and is thick. Below it is the natural soil.
- 12.11.51 Petrol had arrived last evening. In the excavation, Trench I was further extended, so as to include pegs L-LV. No solution as yet of the mud deposit. In trench II the section of XL-XLV was drawn.
- The car had taken Dogra to Vijaynagar after dropping us at Chak 86, but did not come back till evening. So we walked back to the camp. The car came back at 9 pm. There had been a breakdown near Vijaynagar.
- 13.11.51 Trench I was further extended to pegs XLV-L, so that we have now a continuous stretch from XL-LXV, 75 feet. The section was carefully examined, and it appeared that there was a deep depression in XL-XLV, so that the layers there are

- different from those in XLV-onwards. The problem of mud deposit remains.
- In Trench II it is definite that the natural deposits begin from the top.
- 14.11.51 On close scrutiny it appeared that the pottery capped layer (4) and (4A) in LX-LXV is not the natural soil, which comes about a foot lower, separated by a clay-deposit with rare minute sherds & specks of charcoal. The section of LX-LXV was drawn.
- To examine the cross-extent of the mud-deposit a trench (IA) was laid at right angles at the end of the main trench. A few square pits were sunk down to a depth of 1½' within the alignment of the trench. The result will be clear tomorrow.
- In trench II the sections of O-V and XX-XXV were drawn.
- Pegs were fixed in TKW-D. The idea is to extend the main trench to the top of the mound and to have a subsidiary trench at right angles to it (to be called Tr. III) to cover an elevated spot isolated from the main mound.
- 15.11.51 The section between XL-LXV was very carefully scrutinized and some sense has developed out of it. The section will be drawn tomorrow.
- 16.11.51 The result of Tr. IA are still uncertain.
- Excavation was started in Tr. III of TKW-D. In the first two layers, good Harappa pottery, including pinched ware, was found.
- The section between XL-LXV was drawn. It is now making some sense. In Tr. IA the mud deposit has now been found to be slopping inwards.
- In Tr. III (TKW-D) there was good Harappa pottery in layers (1) & (2).
- 17.11.51 The sections of Tr. I, pegs O-V and XX-XXV were redrawn on the continuous roll. The picture is now complete.
- In Tr. IA southern end, sand has appeared quite high up, below (3A), clay with rare sherds. Intervening at places is a thin layer of pottery which may correspond to (4) of Tr. I, LX-LXV. An encouraging link.
- In Tr. III, (3), clay, has occasional sherds. It is clear that there are no occupation layers left, if any priorly existed at all, in the area.
- 18.11.51 No field work. Attended to office work and marking of pottery. The surface finds from TKW-D, Chak 88 and Chak 87, visited yesterday, were classified and entered in the respective note-books. Chak 77 remains a mystery: there are some pottery-types,

- which seem to be allied if degenerated, to Harappa; there are one or two Rangmahal types as well.
- 19.11.51 In the absence of a wheel of a car, which was taken by the driver to Bikaner for repairs, we walked to Chak 86. A new trench covering I-V of Trench III (in TKW-D) was laid. Part I of the trench down from layer (3) onwards was found to consist of the same type of muddy deposit as LX\_LXV in Tr. I. In Tr. II, pottery was ceased, and natural soil consisting of clay and sand has been struck.
- 20.11.51. Walked to Chak 86. The limits of the muddy deposit in O-IV were demarcated. In the limits of pit in the extreme corner, filled with hard clay and sherds were marked out.
- The driver returned from Bikaner with the repaired wheel. So came back in the car.
- 21.11.51 Before layer (2) all is natural in Tr. III, although the texture of the clay varies. There is a pit at the southern end of the trench (3), sealed by (2) which contains pottery and hard clay. (3A) has very rare sherds.
- The TKW-D end of Tr. I was marked out and pegged and 2 trenches one near the canal-road and the other midway between the ledge of the mound and peg CCLXI
- were marked. Digging was started at the canal-end.
- The top of the TKW-D mound was found strewn with large patches of charred bones, obviously human, with evidence of burning in situ. Clearance of one small patch was started.
- In Tr. IA at the southern end, digging is continuing. The layers are sloping towards north.
- 22.11.51 Three new trenches covering the mound of TKW-D were started and one in the flat land between CCLX1 and the mound was also taken up. In the last, natural soil occurred below (2). In the trench between the canal and CCLVII natural soil was struck below (1) loose dust. The plan of the excavated parts of Tr. I is now as follows.
- In DV-DX, just near the surface were found a few mud-bricks. A careful clearance showed that they were loose bricks. Photographed.
- In the cremation area, a careful clearance seemed to show that cremation had taken place inside a room of mud-brick walls, one side and partially another two sides of which were clear and had a burnt inner face. The whole show seems to have been covered up by a soling of mud-bricks. A jar carefully placed against one

- of the walls was found, also full of ashes and bones. The soling may either be an integral part of the whole show, or floor of a later structure, in fact the last structure on the site. The latter alternative seems to be correct, otherwise the upper part of the jar would not have been found in a broken connection. Photographed<sup>1</sup>.
- 23.11.51 In sector DV-DX, the whole area is covered by mud-bricks below (1). The measurement of a few loose bricks are : 10½" x 6"x 2¾". In other trenches there are thick ashes and other occupational debris.
- 24.11.51 Heavy rains and gale. No field work: classified and packed the pottery. The drawn section of Chak 86-I was scrutinized. A scrutiny of the natural stratification may reveal interesting data.
- 25.11.51 Rained heavily at night as a result of which the camp was flooded in the early hours of the morning. The tents were bodily shifted on a high land. What an experience!
- 26.11.51 We are living on an island and it is not possible to go out to work. Tried to find out the situation of the road to Chak 86 this afternoon, but the car got stuck up in mud.
- 27.11.51 In the morning, walked to the *tibbas* west of Anupgarh where some high points are marked as 10r and 20r on the map. One *tibba* is called therein Mashinwala-*tibba*. The high points turned out to be only sand-dune peaks. But the whole track is full of pottery-strewn areas. They seem to contain remains (pottery only) of the post Rangmahal period, when the population must have been largely migrating (note the total absence of post-Rangmahal mounds). The pottery has knobbed bowls, painted splayed-out rims and scalloped ledge produced by deep finger-

<sup>1</sup> Later on A.Ghosh recorded in the book *Human Skeletal Remains from Harappa*, published by Anthropological Survey of India, 1962, p.3 "It would be unfair if I do not mention here a case of Harappan cremation observed by me at Tarkhanwala-Dera (lat 29°10' N.; long 73°10' E.) in Ganganagar District (north Rajasthan), 4 miles to the north of Anupgarh, in the course of my exploration (1950-53) in the dried-up valley of the Sarasvati. Here, at the top of a made-up platform, on which stood a modest Harappan settlement, was noticed, by excavation, an oblong standing cremation-ground marked off by flatly-laid mud-bricks, in which there had been at least five cremations after each cremation, marked by ashes and bits of charred bone (sometimes collected in pots), the ground within the enclosure was leveled by a coating of clay or mud-bricks for the next cremation to take place. That the Harappans cremated at least five of their dead at this place seems established; but the conclusion that extended inhumation was the normal practice of the Harappans need not be prejudiced by the single isolated instance, particularly as in the neighbouring Harappan site of Binjor-3 (lat. 29°10' N.; long 73°05' E.), 6 miles to the west of Tarkhanwala-Dera and 3 miles to the east of the Indo-Pakistan border, the existence of a cremation in the flat land to the west of the mound, where a large number of complete Harappan pots were found near the surface.



- impressions. One microlith was found. By the way, one microlithic, a blade of thick section, was found in the *tibbas* north of the police station at Anupgarh itself. Walked to BNJ-3 from Mashinwala Tibba. In a 5' square, upwards of 600 pieces of terracotta cakes were counted and the small fragments were ignored.
- In the afternoon drove to Chak 86 by the circuitous route. The trenches of the low regions present a devastated appearance as a result of the rains. Work enormously increased. What a pity!
- 28.11.51 Much of the day was spent in renovating the trenches in Chak 86, but excavation was also done in the 3 trenches in TKW-D. In DV-DX the whole of the trench, barring a few pits (Pits C,D,E, all with their orifices at the top, practically unsealed), was taken in by a massive mud-brick structure. In CDLXXXV-CDXC there are regular occupation layers with one definite mud and mud-brick wall. In CDLXV-CDLXX, there is a very thick deposit of black ashes and burnt material.
- 29.11.51 In the three trenches the same features are continuing. In CDLXXXV-CDXC layers (5), (6) and (7) are all sand differing in degrees of compactness. (7) seems to be natural.
- 30.11.51 An egg-shaped furnace was taken for excavation in the north-west reaches of the mound. The contents are thick deposit of ashes. The sides were made of lumps of clay (or mud-bricks, to be seen later on) directly resting on sand (natural ?) the top of which was found burnt. The contents were ashes and large potsherds; it was evidently a potter's kiln. The whole show was dug underground in the midst of (natural ?) sand.
- 6.12.51 The same conclusions persist. The bottom of mud-brick wall in DV-DX reached. The wall was not robbed, as one box-chamber, filled with hard clay with pottery was detected.
- The renovating of the trenches in the level land proceeded satisfactorily.
- No notes were written all these days, for the results at TKW-D are to be better seen in the section that is being drawn. The main settlement was on a mud-brick platform, a solid structure probably with box-chambers, one of which has been restified. It rested on a hard earth mark up, but was not the earliest structure on the site. Below it are layers, usually sandy, with Harappan pottery. A wall in the extreme end of the trench (DXLV-DLV) has been found. No structures can be certified on the platform. On the eastern



side of the platform are enormous pits-section producing a confused appearance—all belonging to the post platform period—the earliest of them may be the result, as usual, of scooping out mud for the platform.

On the platform, contemporary with the occupation on it (of which no trace except the surface pottery is found), or of the period of its desertion, but still comprised within the Harappan period, a large number of cremations took place, now marked by deposits of ashes and charred or partly charred bones. There is also evidence that in some cases at any rate the bones were collected in a jar, resting on the lower part of another jar. (It is also possible that, as two excavated jars were found with their upper portions broken, the jars to contain the bone-remains were broken into two, the lower part, inverted being used as its stand. This point will be clear tomorrow.)

An important find is a permanent funeral pit, which was either cut into the platform or formed part of its original construction, one of the box-chambers having been left unfilled for the purpose. Its limits are not yet clear, but several cremations took place within it, as is clear from the internal stratification,

consisting of layers of ashes each covered up by clay or mud-bricks. Even each ash-layer may represent more than one cremation, for there is a large quantity of bones in each. In the upper most cremation available to us, which again was found to be covered by mud-bricks, there were two pots, one against the wall of the pit and the other, a basin with a rug-base in fragments (photographed). There are, a pit from pottery and bases, saddle-querns (cf. *śms-sayana* ?). A chert blade was found on the surface nearby, outside the pit. A copper spear-head was found within the neighbouring core of the platform, or in a pit within it. More will be known about the pit tomorrow. The burnt outline of the rectangular pit is clear on one side and partly two other sides (planned).

Archaeological stratification has failed to establish any link between the grey ware site and the Harappan site. Natural stratification has been closely observed and is being plotted on the section. But there is little hope of any thing coming out of it.

7.12.51

In the cremation area there are traces of 5 independent cremation, or groups of them, each covered up by a layer of clay or mud bricks.

No natural has been reached at the eastern end

of the pit, probably there was a tank, now represented by a huge scoop, filled up with layers which don't make much sense.

Dr. Roy excavated a small trench in Chak 77. He reports as follows: A trench, COX2, was laid and dug down to a depth of 3½'. Three layers covering a deposit of 2', yielded sherds after which the natural soil was reached. The sherds do not seem to have any characteristic and could not be allied to any known pottery type. Some of them had gritty clay applied over them. Neither any microlithic nor any other microlith was found.

- 9.12.51 Measurement of bricks in Chak 86 : Layer 3 of Tr. IA (hard clay cloddy mud) : 11" x 11" x 2" ; layer 4 in LXVII – LXIX (pottery layer) : thickness 2". One brick but contains two parallel frog marks.

Two complete but loose bricks were found in TKW-I, CDLV-VII (4XA) bottom, laying on the natural, top of which was burnt. Measurement : 11' x 5½" x 3". Bricks in furnace.

- 10.12.51 Being the last day of the excavation, the sections were hurriedly completed. To my mind it is clear that during the currency of the Harappa occupation in TKW-D, a natural force was responsible for a deposit of dark brown hard clay

throughout. Occupation continued on TKW-D after that, with the result that no natural deposits were possible but on the *Chak 86* side, there were further deposits of light brown clay and again of a dark brown clay, on which the earliest settlement in Chak 86 rests.

The natural compact sand in TKW-D, on which settlement started, is represented at Chak 86, if at a somewhat lower level (498', 497') [which represents the original slope of the land] in the form of sandy clay or clayey sand in the undisturbed section (O-V and XX-V of Chak 86).

A small trench was dug in an unoccupied area to the north of the TKW-D mound and this confirmed this stratification. Over a thick sand natural [pre-Harappa] deposit was a deposit of dark brown clay with rare sherds [which accumulated during Harappa times] and was capped by a loose deposit of light brown clay [the surface]. The uppermost layer of dark brown clay [on which occupation started in Chak 86] must have eroded as a result of agriculture and rain-action.

The net conclusion is: after the Harappa occupation in TKW-D there was deposit of dark brown clay; on the Chak 86 side there were two more deposits, which were not possible on the TKW-D

side due to the height it had gained due to occupation. The occupation on Chak 86 is therefore much later than TKW-D [Q.Ed.]

An advance party consisting of Mess. Tiwari, Bhatia, Purushottam and Bali Ram left for Suratgarh. Messrs Shiv Saran Lal and Dogra were to remain at Anupgarh to see to the filling up of trenches, but Dogra had to leave for his home town due to his mother's illness. Shiv Saran Lal will have to remain alone. What a pity!

11.12.51 After seeing to the looking of articles, left Anupgarh by car at 11.30 with Mr. Saran and Dr. Roy reaching Suratgarh at 4 pm.

12.12.51 In the afternoon visited RGM with a view to verifying Stein's detailed description of the mound with his map. The map had discrepancies which have been corrected on one of the photostat copies. A copper coin was found.

Also re-visited BRK. There is definite Rangmahal pottery there, but the occupation was not very extensive.

13.12.51 This was the first day of exploration in the Drishadvati Valley. Proceeded by way of Rangmahal and past the village Bareke, by the road to its east. A flat there beside the sand-dunes was found

300 yds east of Bareke by the road-side. There were a good number of microliths with painted and unpainted RGM pottery. The evidence is unmistakable that microliths are either contemporary or later than RGM culture. RGM-3.

Proceeding further north-east, reached a 12'-high mound on the south-eastern bank of the confluence. It has typical Rangmahal pottery (a small sherd of Kaolin pottery ? cf. Sambhar) and microliths. MNK-1.

The main Manaksar mound (MNK-2) is situated very near the village and is of respectable dimensions, being about 40' high (part of the height may however be due to the habitation springing up on a sand dune) and is crescent-shaped line RGM-1. it has Rangmahal pottery and shell bangles; one microlith was found.

By now, we were right inside the valley and could clearly see the Drishadvati valley before us. It is much narrower than the Saraswatî valley, not more than a mile in width, and at places even narrower. Further on, near Badopal (pronounced as written hear), it is narrower and on either side there is parallel row of sand-hills which have narrowed down the width. Behind us was the towering giant Bhanwar -Theri,

guarding, as it were the confluence of the two rivers.

From MNK-2 drove to the northern bank, to reach SMS-1 about 250 yds. To the east of the village Chak Siramsar (not shown on the map), and three-fourths of a mile to the north-east of Manaksar village. It is a fairly extensive Harappa mound. 7' high, with many microliths and some RGM pottery, especially in its lower reaches. On the mound was found dried-up ancient well, obviously Harappan, which, without its brick-lining, was 5' in diameter. The brick lining down to the exposed depth of the well (about 5') has been removed and the bricks, all wedge-shaped, are lying about. Complete bricks are rare.

SMS-2 is a flat *Theri* to the south-east of SMS-1. It has Rangmahal pottery and microliths.

700 feet to the north of SMS-1 is SMS-3, a fairly extensive 10 ft. high Rangmahal mound, from which were found, apart from the usual RGM pottery, 2 copper coins. If it is necessary to link up Harappa and Rangmahal cultures, SMS-1 and SMS-3 are ideal.

In the absence of any intermediate mound, drove to Badopal village, which is a prosperous village with a large tank and a well with

reportedly good water. On the banks of the tank were many *asvattha* and *nim* trees.

Beyond the village, about 200 yds. to its east, at the foot of a sand-dune, which may cover the mound, was BDP-1, where pieces were found. Microliths were also found.

The famous Badopal mound (BDP-2) is situated opposite the village, near the northern sand-dunes. It is an extensive 25' high mound, with Rangmahal pottery, shell bangles, a terracotta bead, and a standard cylinder circular bead. One complete brick measured 10"x5"x2½". There are many recent Muslim graves.

BDP-3 is situated about 1000' to the west of BDP-2. it is about 10' high, largely covered with sand. Unpainted RGM pottery and shell and faience bangles.

It is obvious that there are some sites on which unpainted RGM pottery is found. It certainly represents a phase, probably decadent, of the RGM culture.

14.12.51

Started at 1 O'clock. About 700 yds to south of AMP-2, visited last year, is a small inconspicuous area about 5' high, very richly strewn with brick bats with unpainted RGM pottery. AMP-3.

Slightly to the north-east of this area are large patches

of pottery-strewn area, from which a large number of mircroliths and faience bangles and a bead was collected RGM. These patches have been collectively named AMP-4. It appears that the sand-hill, down the slope of which the patches occur, hides the source of the antiquities.

300 yds. to south-east of AMP-2 was AMP-5, with identical features as AMP-3. The pottery is akin to unpainted RGM, was one sherd with a black painted band. A fragmentary brick measured: length missing x 8" x 2½".

AMP-2 was re-visited, for it was so near. There is a prominent saddle which divides the mound into two halves, east to west and must have led Tessitori to call it do-theri?. The saddle-feature was photographed and should be published.

Proceeded to Amarpura village, which is deserted. To its north-east but nearer to the village of Ludhiana, about 300 yds. North of the village, is a Muslim graveyard, very side in RGM pottery. Many large sherds with paintings and other types were picked up, in addition to only one associated grey ware type (impressed sherd with concentric circles). The source of the pottery must have been AMP-1 and AMP-

2, but chiefly LDN-1, noted below. LDN-G. The graves are itself situated on a slight elevation, but there is hardly any pottery on the elevated ground.

To the back of the village Ludhiana is an extensive mound, very largely covered with sand. It is about 15' high. The pottery is exclusively RGM, a few painted sherds being found. Being probably the source of LDN-G, the absence of many large painted pieces is understood. A terracotta ball, long cylinder circular bead of shell; one bead piece. LDN-1.

Proceeding along the *tibbas* representing the south bank of the river, reached LDN-2, 1 mile to the north-east of Ludhiana village. The pottery is largely RGM unpainted, though there were a few painted specimens. Faience bangles, shell bangles, a terracotta bull and a terracotta stamp.

15.12.51

Left Suratgarh at 10 am, to reach Nohar at 5 pm. The road beyond Badopal lies through a dreary waste-land. The valley was narrow and full of sand bars. It appears that the river had dried up much earlier than the Sarasvati. The tanks have *peepal* and *nim* trees on their banks. At Jakhruwati the tanks had a large banyan (photographed on



Leica) along with other tropical trees. Cf. *naichasakha* etc. The people here are aware, if vaguely of the prior existence of a river that passed through Bhadra, Nohar and Badopal and one *gramavridha* said that in 1922 *samvat* there had been a flood that made the river flow again.

Beyond Rawatsar the landscape somewhat changes. The northern bank virtually ceases to exist as a continuous range and there are stretches of cultivated sandy fields sown with barely and *taramira*. On the north the land opens out. The southern bank continues through upto Nohar, may be further east. Information was consistent that there was no mound between Badopal and Rawatsar, a fact which also indicates an early desertion of the river-bed. The previous estuary near BWR might have remained as a back water of the Sarasvati, as it certainly looks now, which would explain the existences of mound line ± SMS, MNK and BDP.

There are mounds near Rawatsar south-east of the village there are large patches of pottery strewn area on the slopes of the *tibbas* with unpainted RGM. Pottery (RWS-1). A mound

16.12.51

was reported about a mile to the east of Rawatsar, but was not visited.

Explored the neighbourhood of Nohar. Within the limits of Nohar itself ½ mile to north-east of the PWD resthouse, there is a large (700') 15' high mound, NHR-1 with Harappa pottery including a large amount of pottery internally incised with seeds or otherwise. Among other features food-dishes are painted with a band at the edge. Painted bottom or narrow flat-bottom goblets exist but are rare terracotta cakes occur, but not profusely. Terracotta bangles, shell bangles and 2 stone rejects. On the whole the mound represents a phase regular later than there was a recent occupation as well, as is shown by the presence of a large number of *lakhauri* bricks. The so-called RGM pieces require careful examination. Can't they go with the later occupation. (Figs. 34 to 37).

1 mile to the west of Nohar there was small settlement, by which is the graveyard of the sweepers. The pottery is roughly RGM, may be an eastern phase of it. A copper coin seemingly Kushan, terracotta balls of large size, animal figurines and a large number of fragmentary bricks, the usual thinness being 3". (NHR-2).



Near the tahsil office, within the limits of the remains of the mediaeval fort wall are the remains of a mound. But as the site is very extensively disturbed and the pottery is very mixed, no collection was made.

Near Sothi, a village 6 miles east of Nohar, and near the 51<sup>st</sup> Rly. Milestone, there is an extensive (1000') 15' high Harappa mound. In extent it beats most of the Harappa mound, but is very extensively covered with sand and will soon disappear from view. It is also largely cultivated the pottery is true Harappa. STH. (Fig. 38).

Further south-east, almost a 1000 yds to the south of Diplana and 500 yds to the east of Karoti there is a large mound (1500' across and a places 20' high) with plenty of painted and unpainted RGM types with a few new types. A copper coin, stone rejects, shell bangles, small and large terracotta balls. It was stated by many persons that the site represents the remains of the ancient Karota-nagara, the modern Karoti. DPL.

17.12.51 Today the difficult sand-ridden area to the south and south-west of Nohar was covered. We very nearly reached Rawatsar from its south-east.

Three-fourths of a mile south west of Nohar, on the

road to Malia, which cuts it into 2 parts is a mound, at places upto 4' high under cultivation. It has Harappa pottery, plenty of cakes, toy cart, microlith, chert piece, disc beads, unpainted RGM pottery. NHR-3.

A mile further up the road there is a flat theri to the south of the road. A few vaguely Harappa sherds (may be wrong), late pottery and chert pieces were found. NHR-4.

Another mile further up, to the left of the road is a gunitr beside which is a pottery strewn area with late pottery, a chert piece and iron slag. NHR-5.

About ½ mile to north-east *khauri* bricks and iron slag. MLI-1. Opposite MLI-1 is MLI-2, which is shown as the site of the village Nalia on the map (a fact confirmed by the villagers). There is much recent pottery with 2 chert pieces.

Proceeding further west, through a most difficult track, the village *Birkali* (BKL) was reached. The village is on a natural elevation, on the eastern slope of which lies some pottery. ½ mile to north-east at the top of the highest *tibba* there is a large number of brick-bats all 2½" thick, but there is hardly any pottery. They may represent the ruins of a watch-tower, as the *tibba* commands a very

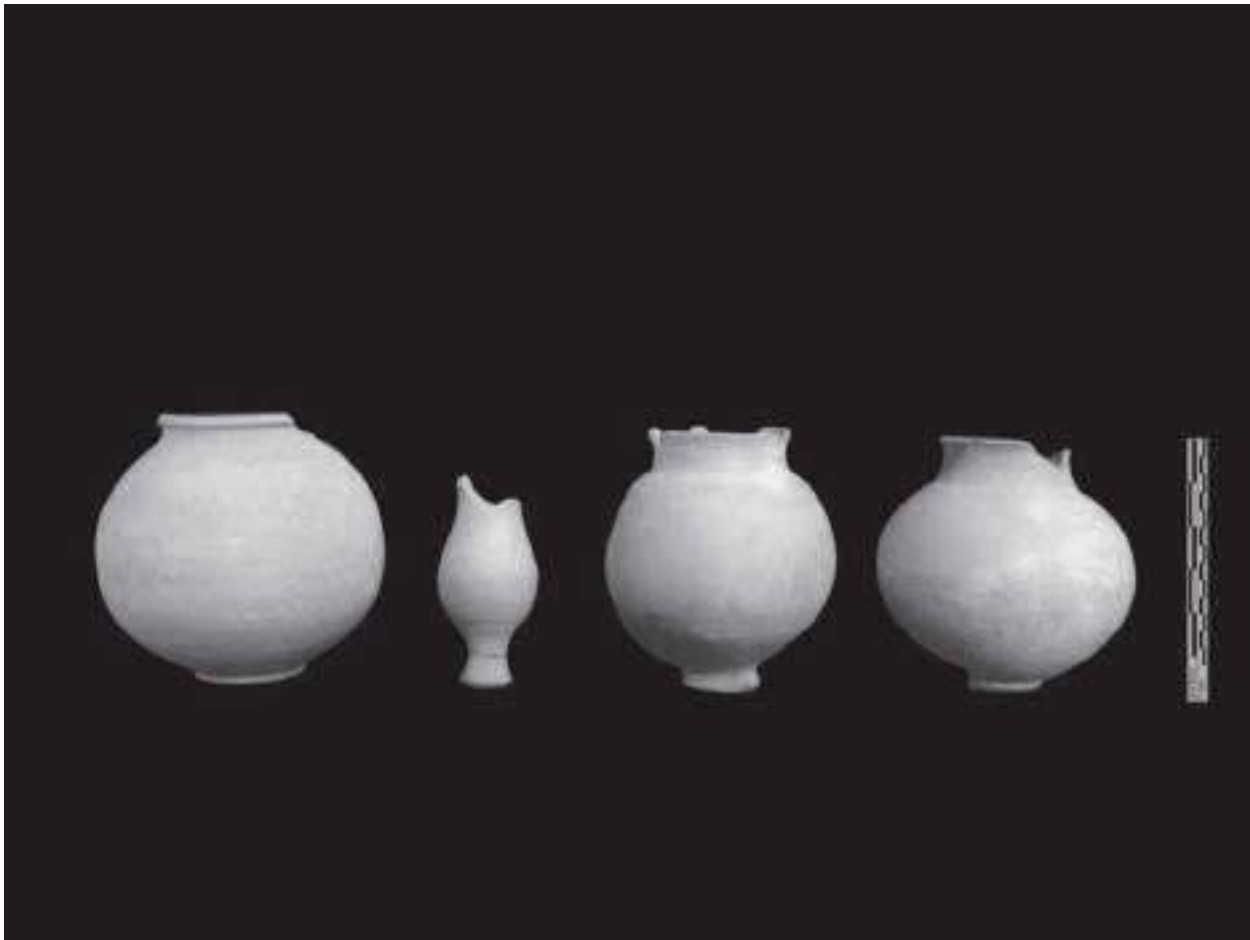


Fig. 34 Nohar, *Pottery types*



Fig. 35 Nohar, other *Pottery types*

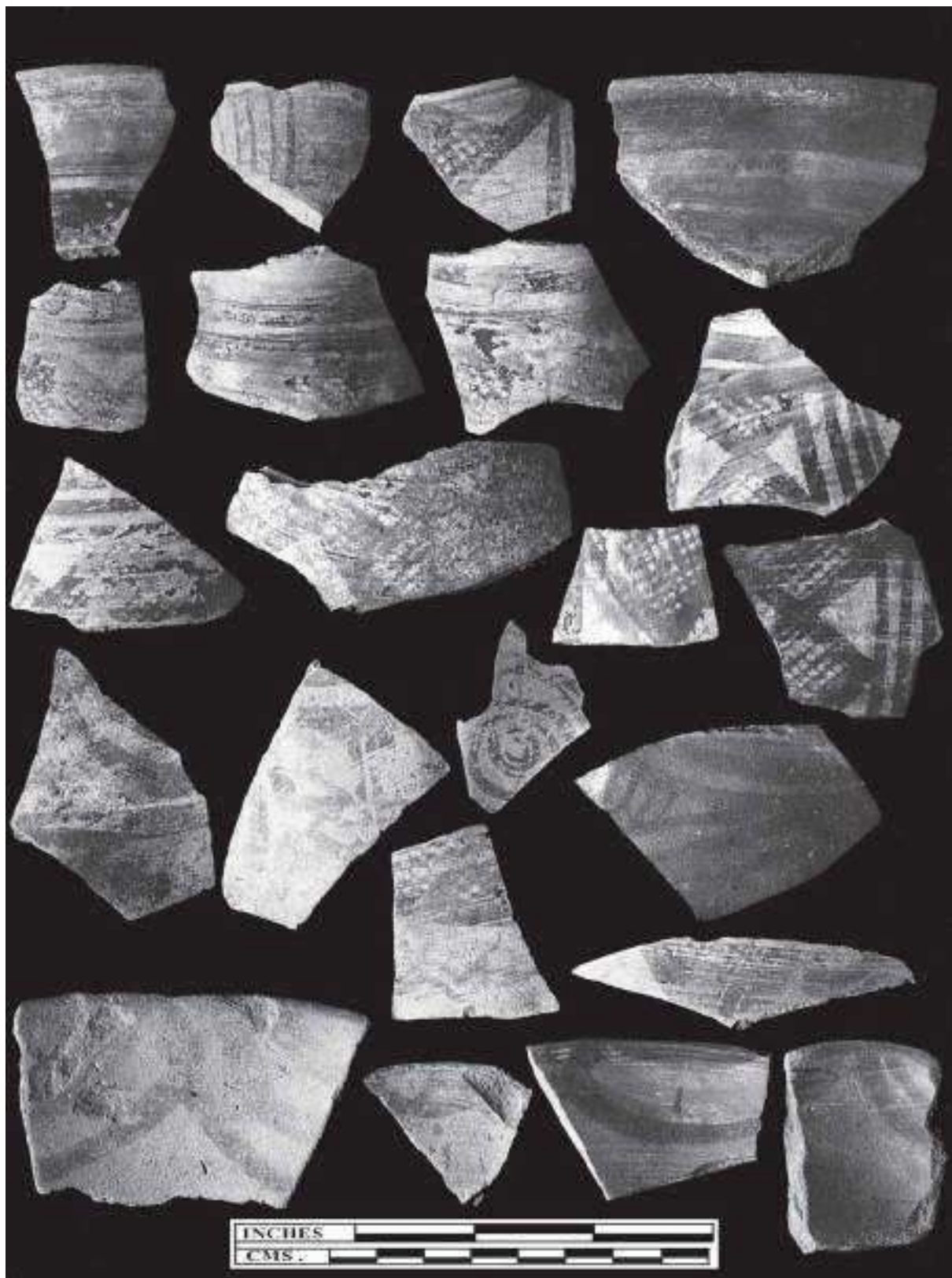


Fig. 36 Nohar, *Black-on-red ware*



Fig. 37 Nohar, *Black-on-red ware*

wide view of the valley to the north. No collection was made.

Proceeding north-east towards the village Naga, again through a difficult road via Gandeli, a patch of land with sherds was found, 1 mile south of Naga, probably the ledge of a sand-covered mound. The pottery was unpainted RGM. There was a shell bangle. NGA-1.

Near Naga, by the *gumti* there is a late medieval settlement with *lakhauri* bricks. NGA-2.

3 miles south-west of Kanwant, between that village and Chaiya there is a fairly extensive medieval site entirely under cultivation. KNW.

From the site drove to Chaiya and caught the main road to Nohar.

- 18.12.51 Heard the name Hakra twice today, one from a Pandit at Nohar, according to whom the river that might have overflowed Nohar was somewhat vaguely connected with the Hakra and again from a tahsil peon at Bhadra who said that the channel responsible for flooding Bhadra was Jamuna, which, according to the map, represents the overflow of the western Jamuna channel, Hakra channel being further up in the British Territory. According to the Bhadra people no water reaches Bhadra from the east. The

tradition about Hakra is therefore extremely confused.

Drove towards Bhadra about 500 yds. To north-east of village Ramgarh there is a small mound with late pottery, a small glazed piece and glass bangles. RGR-1.

2 miles to the south-east of the village is a 20' high mound with late pottery and 2 Muslim coins. It is about a mile to west of the village Gogana and at the same distance to the north-west of the tomb (a forsake building) of Goga, some Rajput chief, known as Nari Gogga Pir. RGR-2.

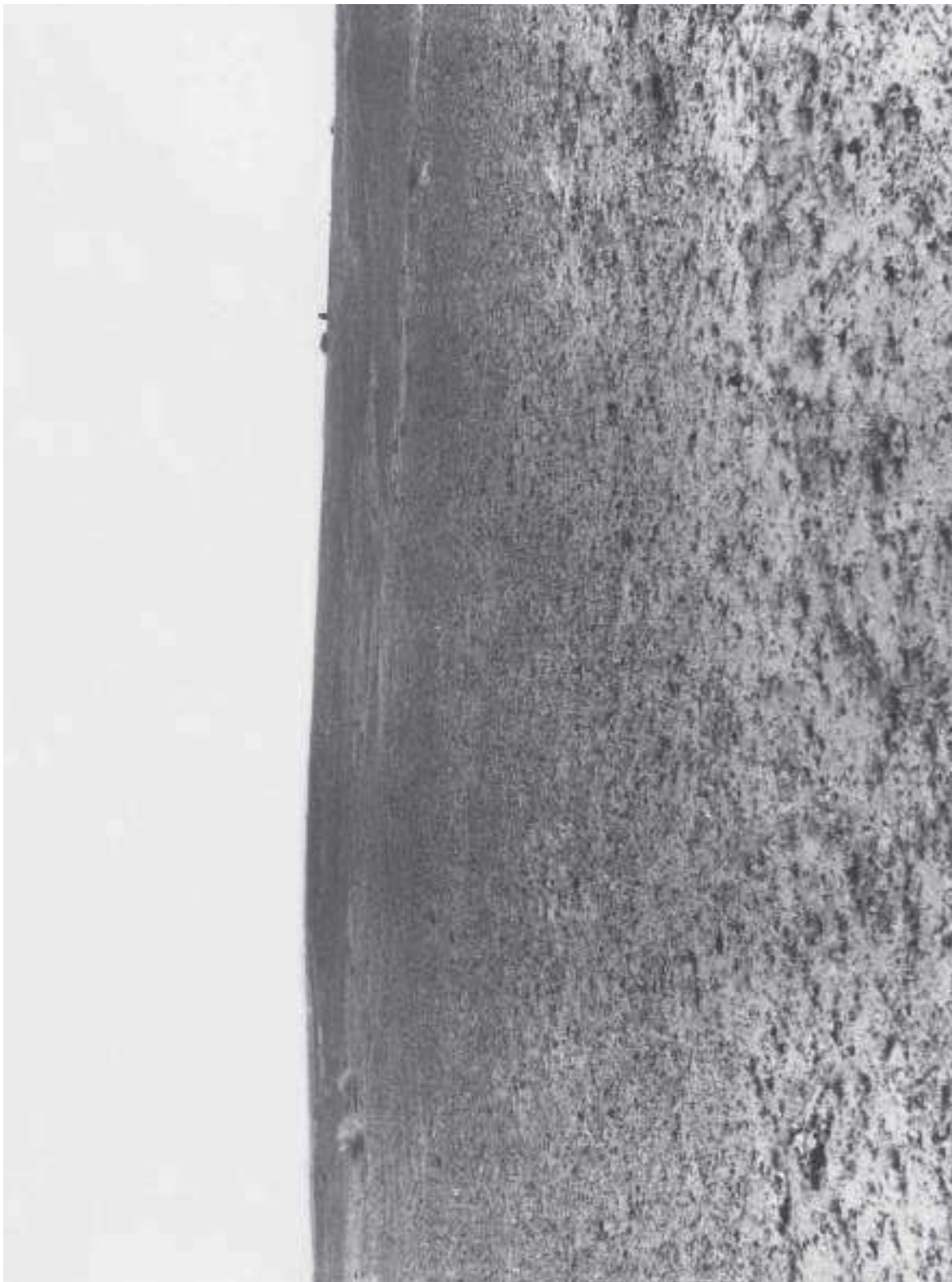
Further up the road, ½ mile to south-west of Bharwana is a 12' intact mound, about 500' across, with RGM pottery (including modified forms), shell bangles, terracotta figurines and terracotta marbles. BRN-1.

2 furlong to north-west of the village is another mound with identical features and pottery. BRN-2.

[At the ledges of both BRN-1 and BRN-2 are two stone pillars, respectively marked 417/451 and 417/447; to write to CWINC].

From Bharwana drove to Bhadra through a bad road full of ups and downs. It is clear that the innumerable relative heights marked on the survey maps are not





*Fig. 38 Sothi, General view*

mounds, but represent the ruggedness of the land.

At Bhadra, to the north of the town, but within its limits, there is a patch of sloping land with late pottery, terracotta figurine, iron objects and copper coin. BDR-1.

To the north-east of the town there is a very extensive mound about 20' and 500 yds across with modified RGM pottery, terracotta figurines, a small *pancharatha* stone pedestal, terracotta marbles. The mound is divided by a road. BDR-2.

19.12.51 From Nohar, drove to Gagana and there south towards Ujalbas. 2 furlongs west of Ujalbas there is a cultivated field with some medieval pottery. UJB.

Drove thence to Dhilki Jathan (DKJ-1) where 1 furlong to west of the village is a cultivated field with medieval pottery.

DKJ-2 is about a mile to north-east of the village an extensive mound, 1000' across and at places 5' high. It contains coarse grey ware, often with a black slip outside, of all typical shapes, associated grey ware (but not impressed pottery), RGM (rarely painted pottery), chert piece, faience bangles and terracotta bangles. Drove back to Gogana and proceeded to towards

Bhadra. 1 mile to east of Karanpura, 6 miles west of Bhadra is a flat land with indeterminate pottery, faience bangles and a glass bangle. KNP.

About 2 mls. south of Bhadra is a prominent mound 20' high and 1000' across. It had allied RGM pottery, sometimes painted. The affinity with Ahichchhatra in the form of impressed *nandipada* and other designs is to be noted. There are collared jars of AG type but no grey ware. Terracotta animals, one defaced terracotta seal, one iron arrowhead. (BDR-3).

From Bhadra drove north-east to Nangal, beyond which is a land strewn with brick-bats (2½" thick) with lime *surkhi* plaster. No collection was made, as there was little pottery.

To north-east of Nangal is the village Shairpura, about a mile east of which is an extensive mound, with very widely spread patches of pottery. The west portion (isolated) was called SRP-1, which besides the middle portion of a food-dish and a carved shell bangle had allied RGM pottery.

On the main mound, SRP-2, a furlong further east, was plenty of allied Harappa pottery, but very few terracotta cakes.

20.12.51 About 2½ miles south-east of Gogana, to the right of the Bhadra road, a flat land has some indeterminate pottery, one microliths and 2 rejects. GGN.

From Bhadra drove east to Patna, where ½ mile to south of village in the midst of a flat cultivated field some medieval pottery was collected. PTN-1. To the same period belongs the pottery of PTN-2, which is a flat land adjoining the east limit of the village.

From Patna, drove to Ramgarhiya, where 1 mile to north-east of village there is a 5' high sand covered land with late pottery. RMG.

On the way to Ninan, between Ramgarhiya and that village about 2 miles from both, there is a slightly elevated cultivated field, with *lakhauri* bricks, a carved brick and late pottery. NNA-1.

NNA-2, 1 mile to south-east of the village is a respectable mound, under cultivation, about 20' high, and about 300 yards across. It has allied RGM, pottery, terracotta ball and carved stone. It overlooks a narrow valley of a channel called on the map Jaman, the channel being referred to as Chitang by the local people, name heard locally for the first [and the last] time.

Further up the road, about 2 miles to east of Ninan and 3 miles to south-east of Chhani Bari there is a flat land on both sides of the road strewn with pottery the obvious source of which was a 10' high isolated sand-hill most probably concealing a mound. The pottery is modified Harappa. There was a carved faience bowl, faience bangle and terracotta bangle. NHA-3.

Half-a mile to south-west of Chhani Bari to the south of the road is a 15' high and 200' across sand-covered and cultivated mound (CHN-1), with allied RGM pottery, terracotta animal figurine and a large number of brick-bats 2" and 2½" in thickness.

Adjoining the west outskirts of the village was CHN-2 a sand-covered extensive slope of cultivated land has late-pottery & *lakhauri* brick.

21.12.51 On the way back to Nohar, a vital spring of the car broke. Drove back to Nohar, where the car was left for repair and returned to Suratgarh by train. The second mound at Rawatsar to have been called RWS-2 remained unvisited.

24.12.51 1 mile south of Lakkhuwali, there is a 3' high and 900 ft across land with typical Harappa pottery and plenty of terracotta cakes. No chert blade or faience bangle or disc bead. LKW. Probably traces of mud-brick platform.

The mound of Pilibanga is at present 20' high, but very irregularly shaped, being at its widest 1000' across. The older village was settled on it, and dilapidated walls still stand. Entirely RGM, terracotta toy wheel, shell bangle and bricks were found.

Measurement of bricks at Pilibanga (PLB)

10"x8"x3"; 9½"x8"x2¾";  
9"x8"x2½"; 10"x9"x2¾";  
9½"x7¼"x2¼"; 9"x9"x3"; 10"x  
6¼"x3"..

Three-fourths of a mile south east of Dulmani, there is a low mound, 4' high and 700' across. It has coarse and rarely fine grey ware, black fired ware all unpainted, and other associated ware. Strap handles were present. Shell

bangle, terracotta bead, DLM-1.

The same distance to east of Dulmani is a 7' high and 500' across mound. Apart from 2 grey ware sherds, the pottery is entirely RGM. Shell bangles, terracotta ball. DLM-2.

The same distance to south-east of Dulmani was a mound of practically the same dimensions. It had fine and coarse grey ware painted & unpainted, black & red ware, associated grey ware. DLM-3.

400 yds. south-east of DLM-3 was DLM-4, 5' high and 500' across. On the whole RGM, but less of painted sherds. A brick measures 11½ x 9½ x 3".

25.12.51

Day spent in packing.

26.12.51

Left for Bikaner by morning train.

## **SUMMARY**

The work of a thorough and systematic survey of the dried-up valleys of the rivers Sarasvatî and Drishadvati, which had been started by the Department of Archaeology in 1950, was continued in subsequent years. The survey of these valleys, so far as they are comprised in Bikaner, was completed. In addition the valley of the Naiwala further north, supposed to be represented in ancient bed of Sutlej, was also completed.

The survey confirmed the results obtained in the first year of exploration. It was found that the valleys had been inhabited from pre-Harappan times down

to early medieval days, when progressive desiccation made it uninhabitable. The cultures represented are mainly the Harappan, the painted grey ware and an early historical culture labelled "Rangmahal".

The discovery of the Harappan culture in this comparatively eastern part of India, together with the find of Harappan strata at Rupar near Ambala, brought that culture much nearer the heart of India, so that it can no longer be regarded as having been confined to Baluchistan, Sind and west Punjab only and takes its proud place as the first Indian Civilization. This was the position after A.Ghosh's exploration.