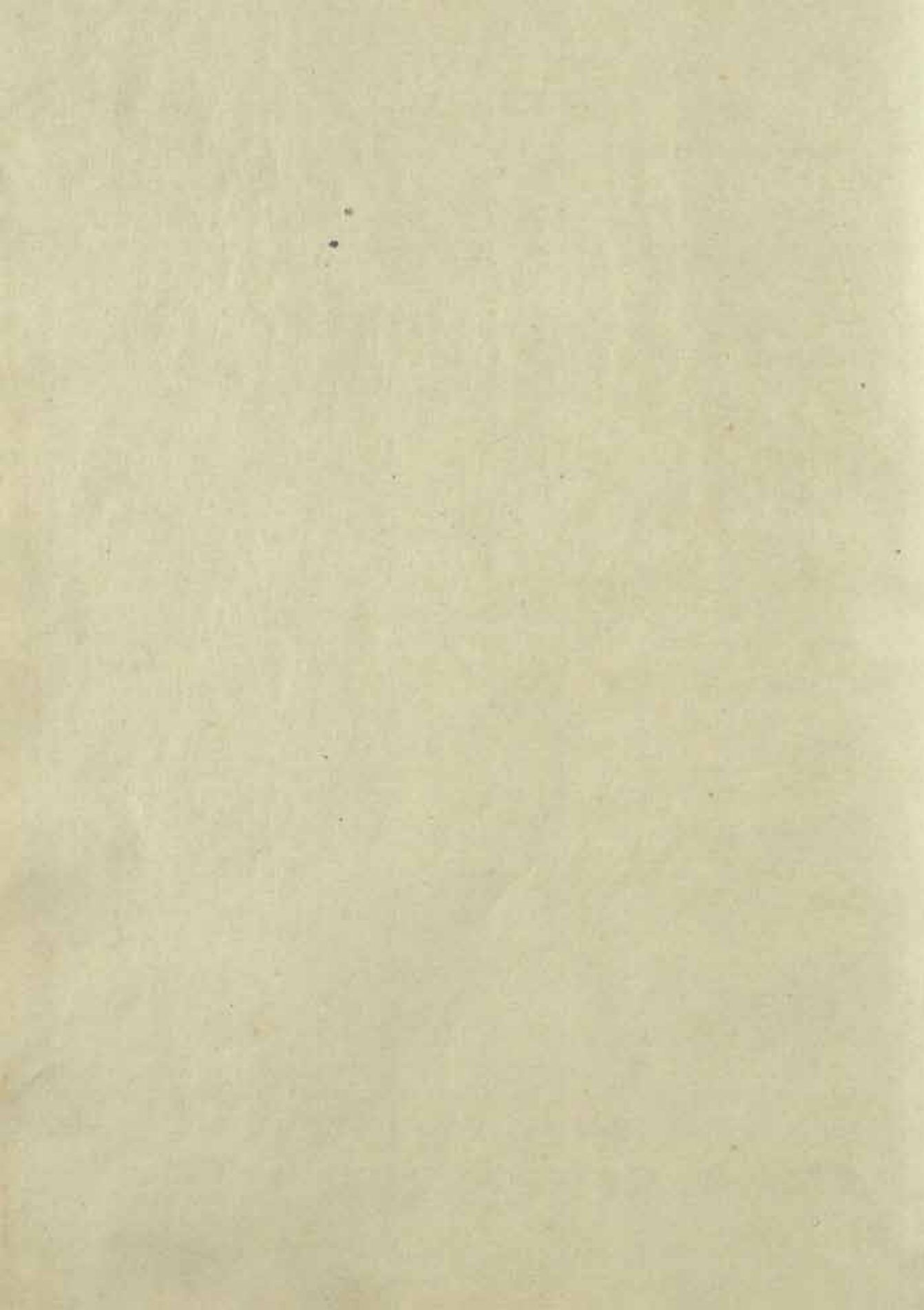


GOVERNMENT OF INDIA
ARCHÆOLOGICAL SURVEY OF INDIA
ARCHÆOLOGICAL
LIBRARY

ACCESSION NO. 63282

CALL No. 901.05 / I7a

D.G.A. 79



571410

137

IRAN

Journal of the British Institute of Persian Studies

VOLUME XV

63282

1977

CONTENTS

	Page
Governing Council	ii
Obituaries	iii
Director's Report	vii
Qal'eh-i Yazdigird: The Question of its Date, by E. J. Keall	1
The Elamite Cup from Chogha Mish, by Helene J. Kantor	11
Early Cultivation in the Zagros, by Judith Pullar	15
The Neolithic and Chalcolithic Periods in the Mahidasht, by Louis D. Levine and Mary M. A. McDonald	39
Istoki Kompozitsii i Etapy Formirovaniya Ansamblya Shakhi-Zinda ("The Origins and Architectural Development of the Shâh-i Zinde"), by N. B. Nemtseva: translated, with additions, by J. M. Rogers and 'Adil Yâsîn	51
The First English Guide Book to Persia: <i>A Description of the Persian Monarchy</i> , by R. W. Ferrier	75
Some Vernacular Buildings of the Iranian Plateau, by Elisabeth Beazley	89
Excavations at Baba Jan: The Architecture of the East Mound, Levels II and III, by Clare Goff	103
Shorter Notices	141
Survey of Excavations in Iran—1976	169

THE BRITISH INSTITUTE OF PERSIAN STUDIES

c/o The British Academy, Burlington House, Piccadilly, London, W1V 0NS

Price: £7.00

STATEMENT OF AIMS AND ACTIVITIES

1. The Institute has an establishment in Tehran at which British scholars, men of learning versed in the arts, friends of Iran, may reside and meet their Iranian colleagues in order to discuss with them subjects of common interest; the arts, archaeology, history, literature, linguistics, religion, philosophy and cognate subjects.
2. The Institute provides accommodation for senior scholars and for teachers at British Universities in order that they may refresh themselves at the source of knowledge from which their teaching derives. The same service is being rendered to younger students who show promise of developing interests in Persian studies.
3. The Institute, whilst concerned with Persian culture in the widest sense, is particularly concerned with the development of archaeological techniques, and seeks the co-operation of Iranian scholars and students in applying current methods to the resolution of archaeological and historical problems.
4. Archaeological excavation using modern scientific techniques as ancillary aids is one of the Institute's primary tasks. These activities, which entail a fresh appraisal of previous discoveries, have already yielded new historical, architectural, and archaeological evidence which is adding to our knowledge of the past and of its bearing on the modern world.
5. In pursuit of all the activities mentioned in the preceding paragraphs the Institute is gradually adding to its library, is collecting learned periodicals, and is publishing a journal, *Iran*, which appears annually.
6. The Institute arranges occasional seminars, lectures and conferences and enlists the help of distinguished scholars for this purpose. It will also aim at arranging small exhibitions with the object of demonstrating the importance of Persian culture and its attraction for the world of scholarship.
7. The Institute endeavours to collaborate with universities and educational institutions in Iran by all the means at its disposal and, when consulted, assists Iranian scholars with technical advice for directing them towards the appropriate channels in British universities.

MEMBERSHIP OF THE INSTITUTE

Anyone wishing to join the Institute should write to the Honorary Secretary, Stephen Whitwell, Esq., C.M.G., M.C., M.A., 85 Queen's Road, Richmond, Surrey TW10 6HJ. The annual subscription for Membership of the Institute is £1, while the subscriber is entitled to receive the Journal, post free for the sum of £5.50, U.S. equivalent, \$12.50; in Iran, Rials 900.

IRAN

Volume XV 1977

प्रकाशित संख्या 63282 दिनांक 29.4.78
निर्देशा संख्या 901.05/Ina.....
नई दिल्ली
केन्द्रीय पुरातत्व पुस्तकालय

CONTENTS

	Page
Governing Council	ii
Obituaries	iii
Director's Report	vii
Qal'eh-i Yazdigird: The Question of its Date, by E. J. Keall	1
The Elamite Cup from Chogha Mish, by Helene J. Kantor	11
Early Cultivation in the Zagros, by Judith Pullar	15
The Neolithic and Chalcolithic Periods in the Mahidasht, by Louis D. Levine and Mary M. A. McDonald	39
Istoki Kompozitsii i Etapy Formirovaniya Ansamblya Shakhi-Zinda ("The Origins and Architectural Development of the Shāh-i Zinde"), by N. B. Nemtseva: translated, with additions, by J. M. Rogers and 'Ādil Yāsīn	51
The First English Guide Book to Persia: <i>A Description of the Persian Monarchy</i> , by R. W. Ferrier	75
Some Vernacular Buildings of the Iranian Plateau, by Elisabeth Beazley	89
Excavations at Baba Jan: The Architecture of the East Mound, Levels II and III, by Clare Goff	103
Shorter Notices:	141
A Note on Pre-Achaemenid Bronze Standard-tops from Western Iran, by P. R. S. Moorey	
A Persepolis Relief in the Fitzwilliam Museum, Cambridge, by Richard Nicholls and Michael Roaf	
A Dirham of Muḥammad b. Ilyās of Kirmān, by A. H. Morton	
Originality in Bronze: A thirteenth century Persian school of metalworkers, by J. W. Allan	
Iranian Plateau—The Homeland of Original Truss Structures, by M. Farshad and D. Isfahanian	
Some unpublished Indus Beads from Iran, by Dilip K. Chakrabarti and Parveen Moghadam	
Survey of Excavations in Iran—1976	169

THE BRITISH INSTITUTE OF PERSIAN STUDIES

c/o The British Academy, Burlington House, Piccadilly, London, W1V 0NS

901.05
Ina

BRITISH INSTITUTE OF PERSIAN STUDIES

GOVERNING COUNCIL

President

†*Sir MAX MALLOWAN, C.B.E., M.A., D.Lit., F.B.A., F.S.A.

Vice President

†BASIL GRAY, Esq., C.B., C.B.E., F.B.A.

Members

Dr. J. W. ALLAN., M.A., D.Phil.

Professor Sir HAROLD BAILEY, M.A., D.Phil., F.B.A.

R. D. BARNETT, Esq., C.B.E., D.Lit., F.B.A., F.S.A.

Professor J. A. BOYLE, B.A., M.A., Ph.D.

MICHAEL BROWNE, Esq., Q.C., M.A.

Dr. R. W. FERRIER, M.A., Ph. D.

Professor W. B. FISHER, B.A., D. de l'Univ., F.R.A.I.

Dr. ILYA GERSHEVITCH, M.A., Ph.D., D.Litt., F.B.A.

Professor A. K. S. LAMBTON, O.B.E., D.Litt., Ph.D., F.B.A.

Professor SETON H. F. LLOYD, C.B.E., M.A., F.B.A., F.S.A., A.R.I.B.A.

Dr. P. R. S. MOOREY, M.A., D.Phil., F.S.A.

RALPH H. PINDER-WILSON, Esq., M.A., F.S.A.

B. W. ROBINSON, Esq., M.A., B.Litt.

Sir ROGER STEVENS, G.C.M.G., M.A.

†Sir DENIS WRIGHT, G.C.M.G., M.A.

Hon. Treasurer

†STEPHEN C. G. BACH, Esq., C.B.E., M.A.,

Hon. Secretary

†STEPHEN J. WHITWELL, Esq., C.M.G., M.C., M.A.

Assistant Secretary

Mrs. M. E. GUERITZ

Joint Hon. Editors

Mrs. GEORGINA HERRMANN, D.Phil., F.S.A.

Professor C. E. BOSWORTH, M.A., Ph.D.

OFFICERS IN IRAN

Director

DAVID STRONACH, Esq., O.B.E., M.A., F.S.A.

Assistant Director

BERNARD O'KANE, Esq., LL.B.

c/o The British Academy,
Burlington House,
Piccadilly,
LONDON, W1V 0NS

P.O. Box 2617,
Tehran,
IRAN

†Member of Executive Committee *Founder Member

OBITUARY



JOHN GUERITZ

We record with profound regret that John Gueritz who had served as Secretary to the British Institute of Persian Studies since its foundation died at the age of 64 on October 24th 1975. Of recent years he had suffered from ill-health but devotedly remained at his post and in the last two years of his life when he felt obliged to resign from his office remained as a Member of Council. Careful and conscientious of detail he was a punctilious Secretary who kept the business of the Institute at his fingertips and was a mine of information concerning it. By education and experience in a variety of professions he was well fitted for the post. Educated at Cheltenham College he graduated from New College Oxford in History and thereafter served in India from 1934-47 in the Army and in the Indian Political Service wherein he held office as Magistrate and Civil Judge. On the partition of India he retired with the rank of Lt. Colonel.

After the close of his career in India he joined the British Council (1947-51), and served in Iraq and Iran. In Baghdad he was invaluable in helping the British School of Archaeology to organise the house which was established in 1949 and this made him an obvious choice for the secretariat when our Institute was founded in Tehran eleven years later.

Gueritz was a man dedicated to the public service usually in a voluntary capacity. As a member of the Royal Central Asian Society he was awarded the Society's prize for the Persian Lecture for 1951. He was for many years Secretary to the St. John Ambulance Association. The wide range of his

voluntary aid is remarkable: he was a member of the Richmond Borough Council and of the Parochial Church Council and other affiliated bodies. He was also founder and Chairman of the Friends of Richmond Park and was Vice-President of the Richmond Branch of the British Legion. Such men who render unobtrusive public service are indeed the backbone of England and we record with gratitude the help that he gave us and extend our deep sympathy to his widow, our Assistant Secretary, Mary Gueritz and his family

M.M.



THE UNIVERSITY OF CHICAGO

OBITUARY



SIR MORTIMER WHEELER

It is with deep regret that we record the death of Sir Mortimer Wheeler on July 22nd 1976. Sir Mortimer was renowned the world over and his achievements as an archaeologist, his distinction as a public figure in promoting knowledge in this and allied fields needs no recapitulation. We must however recall that when Secretary of the British Academy for which he did so much, he became a Founder member of the British Institute of Persian Studies and played a leading role in its establishment together with Sir Maurice Bowra and the President with whom he paid an inaugural visit to Tehran in 1961 to attend the formal opening of the Institute. The crowning success of this venture, which has resulted this year in the building of a new Institute at Gulhak was a source of great satisfaction to him and his enthusiastic support for its operations never diminished.

In particular he did everything in his power to further the excavations at Pasargadae and had keenly looked forward to their publication, for the presentation of all results in printed form he regarded as a primary obligation. He was therefore glad to be assured that the volume by David Stronach is due to appear this year. Fifteen years ago he was instrumental in the appointment of David Stronach as archaeological attaché in Tehran and this very soon led to his promotion as Director. Sir Mortimer over those years was a valued member of Council and his forceful voice invariably led to action and to the resolution of any impasse, for he had a masterly way of cutting a Gordian knot.

His wide ranging interests were also displayed by his enthusiastic support for the excavations by Dr. Whitehouse at Siraf, a site which he visited together with the President and the Director. He

could be counted on to promote advances in the field of knowledge—archaeological, historical, architectural, artistic—of any period.

He was a delightful, light-hearted and amusing companion, but those close to him knew that he could be a dangerous opponent if threatened with frustration. Immediate and swift presentation of results was more important to him than profound scholarship, although his critical sense made him conscious that it was necessary to maintain high standards and he would approve of nothing that was slipshod. Perhaps the keynote of his character was his courage and refusal ever to be cowed by opposition. He will be remembered by our Institute for his formidable advocacy of whatever course he favoured. His invigorating personality will be sorely missed by a multitude of friends and admirers.

M.M.

DIRECTOR'S REPORT

November 1st 1975 to October 31st 1976

The past year has seen the completion of the Institute's principal building at Gholhak and a resumption of lectures and other activities. The new premises contain a Lecture Hall capable of accommodating 220 persons, a handsome Library, a Laboratory area on two floors, a Common Room and Dining Room and spacious Hostel accommodation for visiting Fellows, Scholars and members. Work has begun on the Director's House and it is anticipated that this last structure will be ready for occupation well in advance of the planned formal opening of the new buildings in the autumn of 1977.

The Institute owes a special debt of gratitude to Her Imperial Majesty the Shahbanou of Iran for the generous donation which she was pleased to make to the Building Appeal early in 1976. Her Imperial Majesty's subsequent visit to London was marked by a ceremony at which she accepted the presentation of an early fourteenth century mihrab of Kashan lustre tiles as a token of appreciation of the goodwill existing between the two countries. The presentation of the mihrab was made on behalf of the Institute by the President of the Institute, Sir Max Mallowan. The mihrab is now housed in the Iran Bastan Museum.

At the Thirteenth Annual General Meeting of the Institute, held on November 17th, Dr. David MacDowall lectured on "The Symbolism of Mithra in East and West", while on June 24th, in a lecture held at the British Academy in conjunction with The World of Islam Festival, Mr. Basil Robinson spoke on "Persian Painting under the Turkmans". Recent lectures at the Institute have included "The Archaeological Work of the Institute, 1961-1976" by Mr. Stronach and "Palaeolithic Research in Iran: Recent Developments" by Professor Hind Sadek-Kooros, Director of the newly established Iran Natural History Museum.

After a slow start the number of persons using the new hostel facilities has increased encouragingly. Visitors during the period under review have included the Honorary Secretary of the Institute, Mr. Stephen Whitwell, who was here for a week-long visit; Professor N. N. Ambraysey, Imperial College of Science and Technology; Professor and Mrs. James Barr, University of Oxford; Dr. A. D. H. Bivar, en route to and from the School of Oriental and African Studies' fourth season of excavations at Ghubeyra; Professor Peter Brown, Royal Holloway College, University of London; Dr. K. N. Chaudhuri, Reader in the Economic History of Asia, School of Oriental and African Studies; Mr. Hubert Darke, Faculty of Oriental Studies, University of Cambridge; Dr. Khorshid Hasan, Deputy Director-General, Pakistan Archaeological Service; Professor Helene Kantor, University of Chicago; Professor C. C. Lamberg-Karlovsky, Harvard University, and Mr. Charles Burney, University of Manchester, each here for the Fourth Annual Symposium on Current Archaeological Research; Professor Emrys Peters, Department of Social Anthropology, University of Manchester; Mr. C. G. H. Plant, Senior Lecturer in Environmental Studies at University College, London, who is engaged in a study of wind towers and their effect on the environmental control of interiors in Iran and the Persian Gulf region; Dr. T. Sulimirsky, formerly of the Institute of Archaeology, University of London, who is making a study of the site of Ziwiye in Kurdistan; Mr. Raci Temizer and Mr. Burhan Tezcan of the Turkish Archaeological Service; and Professor and Mrs. William Watson, School of Oriental and African Studies.

In November 1975 Mr. Stronach took part in the first meeting, held in Athens, of the Directors of the British Schools and Institutes abroad. He lectured later in the same month on "The Medes and Early Achaemenians" at the Faculty of Oriental Studies, University of Cambridge, as well giving lectures at the University of Birmingham and the University of Southampton. In September he attended the 7th International Congress of Iranian Art and Archaeology at Munich where he read a paper on "The Excavations at Tepe Nush-i Jan". From September 28th to October 31st Mr. Stronach

joined Dr. John Hansman in the direction of the third season of excavations at the largely Parthian site of Shahr-i Qumis, near Damghan. The season yielded a second *ostrakon* in Parthian Pahlavi and a further collection of clay *bullae* from Sites V and VI.

Mr. Morton has continued to work on the early history of the Safavid family and, prior to the end of his appointment as Assistant Director on June 30th, he completed a review article for the *Numismatic Chronicle* entitled "Sarbadār history in the light of new numismatic evidence" and a second article "A dirham of Muḥammad b. Ilyās of Kirmān" which is to be found in the pages of this issue of *Iran*. Mr. Morton's four years with the Institute covered an important period and our gratitude is due to him both for his high standards of scholarship and his responsible role during the Institute's extensive programme of construction. Mr. Morton's successor is Mr. Bernard O'Kane, a former Fellow of the Institute.

Mr. O'Kane will be known to readers of *Iran* through his publication last year of the majestic Timurid madrasa at Khargird. Volume XVI of the journal will include his notice of a hitherto unpublished Timurid tomb tower located near Veramin.

Two Fellows were appointed for the year 1975/76, Miss Susan Wright and Mr. David Bradshaw. Miss Wright has been engaged in a social anthropological study of a sub-section of the Doshmanziari division of the Mamasani. She has collected material for a general ethnography of the villages concerned and, with the aid of equipment lent by the University of Tehran, she was able to compile a brief record on film. Mr. Bradshaw has made a study of the changing relationships between nomadic and settled populations in Luristan with special reference to the growth of permanent settlements during the present century. The Institute was also able to make a grant to Miss Susan Ross in connection with her study of vernacular architecture in Iran.

After four years with the Institute Mrs. Margaret Karapetian has resigned in order to complete her studies in Italy. Her unsparing efforts as both our Secretary and Librarian deserve every commendation. Mrs. Karapetian's successor is Mrs. Anastasia Jahansooz, who joined the Institute in September.

Finally this review must close with two personal, and in no sense formal, tributes. Together with her husband, Sir Max Mallowan, Dame Agatha Christie Mallowan made many visits to the Institute in its early years and, as I can affirm, she took a great delight in all our archaeological journeys. I think of a visit to the first season of excavations at Pasargadae; of the then difficult journey to Siraf, with an epic boat crossing on the flooded Mand River; and of a whirlwind visit, in bitterly cold weather which deterred my resolute and entirely enthused lady passenger not a whit, to the Kharraqan tomb towers, Tepe Nush-i Jan and Godin Tepe. Our deepest sympathy goes to Sir Max at this time.

As most members of the Institute will know, Sir Mortimer Wheeler, one of the three Founder Members of the Governing Council, died on July 22nd. In his account of his stewardship as Secretary of the British Academy Sir Mortimer provided a vivid description of the birth of the Institute more than sixteen years ago.¹ It is a dramatic story. "If one thing was more certain than another," he reflected in the spring of 1960, "it was the impossibility of steering a scheme for a full-blown Institute of Persian Studies through H.M. Treasury" within the approaching financial year. And yet only twelve months later the Institute was a reality. The singular energy of Sir Mortimer and his clear sense of priorities can be sensed throughout his chronicle.

In the light of these early years—and in the light of later years—the Institute owes a signal debt to Sir Mortimer.

¹ Mortimer Wheeler, *The British Academy 1949-1968*, London, 1970, pp. 75-84.



63282

QAL'EH-I YAZDIGIRD: THE QUESTION OF ITS DATE

By E. J. Keall

The 1976 R.O.M. Expedition to Qal'eh-i Yazdigird began its work this past summer with the legacy of a number of assumptions made the previous season about the site's date and significance in historical terms. The relevance of those assumptions for this short article is that the old traditional Sasanian date has now been rejected in favour of a late Parthian one.¹ While that date itself still remains inconclusively proven and the interpretations dependent upon it are still tentative in the extreme, it is probably appropriate to present right now such evidence as does exist to justify even the vague late Parthian date.

It is admittedly entirely premature at the moment to undertake any complete iconographical study of the Qal'eh-i Yazdigird stuccoes as a means of dating and identifying the nature of the function of the building they decorate. We have uncovered so far only a portion of the ground plan, and very little of that down to floor level. The stuccoes are often of a repetitive nature, which means that one can expect to recover better examples as time goes on, or at least reconstruct better versions of the originals. Many potential clues as to the original position of the ornament on the walls remain to be discovered as more pieces are unearthed.

It is also quite dangerous to throw around suggestions of centuries when we have as yet to uncover any neatly stratified deposit of artifacts other than the stuccoes themselves. The entire dating process, too, remains at this point a game of juggling by a process of elimination. There is, here, the inherent danger of tautologous argument. This involves the temptation to suggest a Parthian date for the stuccoes on the basis of style and, having thereby dated the structures, to use the stuccoes as a sound canon to advance a definition of Parthian art. Nevertheless, the stuccoes that have been extracted up until now are sufficiently striking in their own right, and, with their important implications besides for the study of late antique Classical and Islamic art, it probably behoves me to present a basic outline of the discoveries so far to explain the way in which the tentative date has been derived.

Let us recapitulate briefly on the nature of the site. Technically speaking, the name of Qal'eh-i Yazdigird only applies to the hill-fort located on one of the pinnacles behind the cliffs which flank the Zardeh basin on its east side (see sketch map, Fig. 1). But for practical purposes the name has been taken to apply to the entire area of the basin that has been fortified with an elaborate network of defences, of which the hill-fort (Upper Castle) forms just a part. Within the defences, the ruined walls of two major monuments are still visible above ground—an inner stronghold (Jā-i Dār), and a rectangular enclosure (Maydān) with the Gach Gumbad block of masonry standing at its upper end. The enclosure has been interpreted tentatively as representing a former "garden of paradise", with a pavilion adjacent to the Gach Gumbad block at the top end of the gardens.² (The pavilion has been the source of the rich finds of decorative stuccoes first encountered in 1965 and now further uncovered in the 1976 campaign.)

The rubble and mortar masonry of the walls of the entire network of fortifications, including the Upper Castle, as well as that of the Jā-i Dār structure and the Maydān enclosure, can all be seen to conform to a common standard of construction technique encountered almost ubiquitously on the

¹ For a general description of the site and the fifth century attribution see E. J. Keall, "Qal'eh-i Yazdigird. A Sasanian Palace Stronghold in Persian Kurdistan", *Iran V* (1967), pp. 99-121. The Parthian date has been advanced in E. J. Keall, "Qal'eh-i Yazdigird" (Survey of Excavations in

Iran 1974-75), *Iran XIV* (1976), pp. 161-4; and "Qal'eh-i Yazdigird: First Season of Excavations, 1975", *Proceedings of the Fourth Annual Symposium on Archaeological Research in Iran*, November, 1975 (Muzeh Iran Bastan 1976, forthcoming).

² Keall, *Iran V*, p. 108.

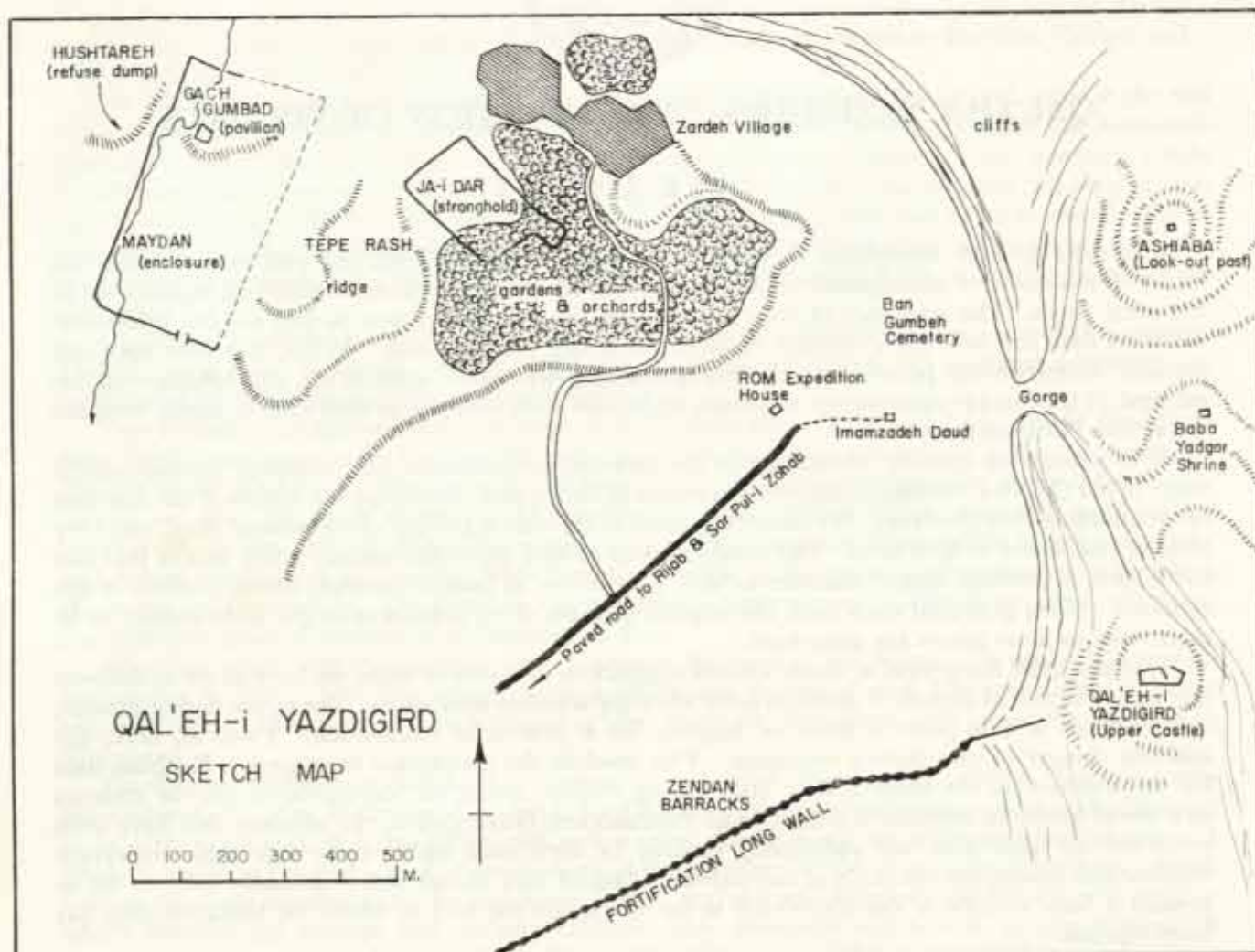


Fig. 1. Qal'eh-i Yazdigird: site sketch map.

Iranian plateau and normally associated with the Sasanians.³ There are almost no indications in the visible extant features (apart from in the Upper Castle) of major alterations being made to the original masonry. This would seem to indicate that the site experienced a relatively short history of occupation on a grand scale. In addition, the pottery that is abundant on the surface in the centre of the site can be said to consist mostly of the coarse type of red ware characterized by a dense red fabric and a large variety of scorings and hatched designs that one would normally associate with the Sasanian period in this part of the country.⁴ In 1965, the rubble and mortar masonry technique of the visible structures,

³ The technique was obviously known to the Parthians, if only in modest domestic architecture. Without that experience, builders could not have managed to construct, for instance, the Qal'eh-i Dukhtar at Firuzabad. Though few in number, there are rubble and mortar structures that can be dated as Parthian, such as the group of buildings that lie not far from the rock relief at Hung-i Noruzi, Izeh. There are, however, no other Parthian rubble and mortar monuments known to me on the scale of Qal'eh-i Yazdigird. This may reflect the relatively limited survey work that has been accomplished in Iran for Parthian sites. As a justification for the automatic labelling of masonry of this sort as Sasanian, it might be fair to point out

that twelve years ago one never conceived that, outside of the major city centres, the Parthians could have sponsored the amount of building activity for which it can now be demonstrated they were responsible. See Robert McC. Adams and Hans J. Nissen, *The Urak Countryside* (Chicago 1972), pp. 57-8.

⁴ Based mostly on personal observations from surface collections gathered at recognized Sasanian sites, such as Taq-i Bustan, during my time as a Fellow at the British Institute of Persian Studies. See also the Sasanian pottery illustrated in Kam-bakhsh Fard, "Fouilles archéologiques à Kangavar. Le temple d'Anahita", *Bastanshenasi va Honar-i Iran* 9/10 (Winter, 1351), p. 5 (French text) and p. 20 (Persian text).

the seemingly rounded towers of those structures,⁵ the pottery, as well as the strong local legends identifying the ruins as a refuge of King Yazdigird,⁶ were all taken as indications that the site was a single period site of Sasanian date, possibly of the fifth century A.D. The distinctive vertical brick-lay construction technique of the pavilion, of which parallel examples can be found ranging from late Parthian to early Islamic times,⁷ was also deemed to be appropriately Sasanian by a process of elimination. Those features of the stuccoes which appeared distinctly Parthian in style were judged to represent an "archaising" element.⁸ But in the end it has to be admitted that the traditional Sasanian date (à la Rawlinson) could only be justified simply because it did not seem possible that the sum of the parts could really be anything else.⁹

The 1975 expedition concentrated mainly on defining the limits of the entire site, as well as locating features that were not free-standing above ground but whose presence was indicated by scatters of masonry, potsherds or other traces of occupation. An intensive ground survey was begun, with the careful collection and recording of all artifacts found. Sondages were undertaken to determine the nature and the depth of deposit of selected features. Part of the objective of the sondage operation, apart from the practical need to determine the lateral extent of the ancient deposit, was to judge whether the occupation represented that of a single Sasanian site as had been suggested by the 1965 campaign.

It should be noted that the original objective of the 1965 expedition had been to test the site for stratified deposits of pottery in order to help establish a Sasanian ceramic typology. The Sasanian-looking pottery was encountered in the largest quantities on the slopes of Tepe Rash.¹⁰ The attempt to locate stratified deposits of pottery here was totally unsuccessful. The terracing of the hillside for farming, along with the annual ploughing and irrigation, had destroyed to all intents and purposes most traces of occupation. The dense sherd scatter was merely a surface phenomenon, with the pottery drawn to the surface by the shallow action of wooden ploughs. These ploughs act more like deep harrows, and the solid nature of the potsherds prevents their getting turned under as they would be by a tractor-drawn ploughshare. Very little pottery was found below the surface, and none in a stratified context. Nevertheless, the predominant features of the pottery appeared to be Sasanian. The relatively large quantities of it in the centre of the site seemed to be a reasonable justification for associating it, and the accompanying Sasanian date, with the occupation of the structures as a whole.

Immediately on beginning the 1975 season it became apparent that the justification for the Sasanian date for the site as a whole was fading fast. The first clue came from the survey. This survey undertook to pick up and record all sherds found, using the present field boundaries as a practical way to divide up the uneven terrain of the Zardeh basin. It became apparent in surveying the areas associated with the defensive Long Wall that a limited but consistent range of pottery was being encountered. By far the largest proportion of sherds belonged to coarse storage vessels with distinctive "grog" inclusions. The greatest concentration came in a flatish area (Zendān) where wall stubs and pit depressions were visible on the surface.

A test trench was sunk in the Zendān area in an attempt to gather stratified material. This was disappointingly unproductive since the archaeological debris was so shallow. It was possible to confirm, however, that there had been some fairly extensive occupation of the flat area behind the defences.

⁵ In all cases but that of the Upper Castle, the schematized tower shapes illustrated in *Iran V* (1967), fig. 3, were reconstructions based on observations of the eroded lines of extant features at surface level. Excavation of two of the towers along the defensive Long Wall in 1975 revealed that these reconstructions were inaccurate, cf. *Iran XIV* (1976), p. 164. The rounded towers of the Upper Castle, whose masonry has also been applied in a different fashion, belong to a major restoration of the building, probably around the thirteenth century.

⁶ Major Rawlinson, "Notes on a march from Zohab, at the foot of the Zagros, along the mountains to Khuzistan, and thence through the province of Luristan to Kermanshah", *Journal of the Royal Geographical Society IX* (1839), pp. 32-3.

⁷ See W. Andrae and H. Lenzen, *Die Partherstadt Assur* (W.V.D.O.G. 57, 1933), pp. 27-8; O. Reuther, "Parthian Architecture", *Survey I*, p. 422; Klaus Schippmann, *Die*

iranischen Feuerheiligtümer (Berlin 1971), figs. 51-2; and Muhammad 'Ali Mustafa, "Preliminary Report on the Excavations in Kufa During the Third Season", *Sumer XIX* (1963), p. 45.

⁸ *Iran V* (1967), p. 117.

⁹ This point was acknowledged in the catalogue of the exhibition at the Sixth International Congress of Iranian Art and Archaeology, Oxford. See E. J. Keall, "Reflections on Qal'eh-i Yazdigird", *Excavations in Iran. The British Contribution* (Ashmolean Museum 1972), p. 47.

¹⁰ Tepe Rash is part of a largely natural ridge which separates the Maydān enclosure from the Jā-i Dār stronghold. There are three hillocks along the ridge, each of them carrying a specific name locally. For convenience's sake, the name of the hillock of Tepe Rash has been taken to label the whole ridge.

The suggestion that this represents barracks-type occupation has been made.¹¹ The guard chambers of two of the towers in the adjacent defensive wall, as well as the fill of the "ramp" on its inner side produced a modest selection of sherds, all of which bore decidedly Parthian characteristics in their shapes and wares. A porous, cream-coloured ware, evenly fired throughout and with fine grits, bears a close resemblance to Parthian fabrics found in Iraq.¹² The examples found at Qal'eh-i Yazdigird are likely to have been made locally. Bands of clay, suitable for the manufacture of such wares, occur in several locations in the vicinity. There is no question also that a "clinky ware" juglet, found in one of the tower chambers, should be dated as Parthian. (Where, within that range, is another matter.) Clinky ware sherds were also found with reasonable frequency throughout the entire area of the defensive Long Wall. Sherds from the type of large storage jars with grog inclusions found throughout this same area were also found closely associated with the guard chambers. Very few of the strongly Sasanian characteristics encountered in the sherds from Tepe Rash were discovered in any of the areas adjacent to the fortifications. The implications of these findings are that the defensive Long Wall was built and garrisoned during Parthian times.

The same cream-coloured wares were picked up on the surface of Gach Gumbad West, the rubble filled area to the west of the stuccoed pavilion site, where surface configurations suggested the presence of the service and residential quarters associated with the pavilion. Here the deposit was deep—three metres in the case of the soundings made—but it was largely sterile fill mostly accumulated after the building had fallen into disrepair. Nevertheless, no obvious Sasanian material was recovered either from the surface or from the deep soundings.

The Sasanian ceramic material appears to be restricted to the Tepe Rash slopes. It would appear that this ridge was the site of a Sasanian village that must have survived after the demise of the original estate. It is noticeable that not a single piece of recognisable Islamic glazed ware has been recovered so far in this area, although a sherd of probable Abbasid date has been found in the Jā-i Dār compound, and thirteenth century material is relatively common in the Bān Gumbah area, between the R.O.M. Expedition house and the Imāmzādeh Dāūd at the base of the gorge. It is tempting to suggest that the occupation of the Tepe Rash ridge came to an end when the original Parthian irrigation canal fell into decay and ceased to function. It would have been logical for subsequent villages to have been located nearer to the natural source of water, that is nearer to Bān Gumbah, where the stream of Bābā Yādgār makes its entry through the gorge into the Zardeh basin.

It would appear from the ground survey that the Bān Gumbah area was the site of a village that was occupied from Seljuq through Safavid times.¹³ A relatively large proportion of thirteenth century Sultānābād type black-under-turquoise wares has been collected from the surface. These were noticeably lacking in any other part of the basin. It is quite likely that the manufacture of these types of wares continued long after their production in the original centres had ceased. A Safavid terminal date might be suggested. A large flaring-sided bowl, of coarse red fabric with straw temper, also seems to be diagnostic for this period of occupation. It has not been encountered so far in other parts of the site. The only other areas in the basin where late material has been recovered are at the lower end of the defensive Long Wall, adjacent to where the present road cuts through the wall; and in the Upper Castle, where it is apparent that modifications to the plan have been made, in the form of rounded towers and other repairs. The thirteen through sixteenth centuries would have been a suitable time for this to have happened. It is worth noting, too, that the tomb of the reputed founder of the Ahl-i Haqq faith (Bābā Yādgār) lies in the gorge at the foot of the crag on which the Upper Castle is located. The presence of this religious sect here, after the sixteenth century, may be a possible explanation for the "late-styled" masonry which has been applied in the cave of Bībī Shahr-bānou to render that

¹¹ *Iran* XIV (1976), p. 164.

¹² The Iraqi versions are to be associated with the type of globular water-jars which bear distinctive designs of "forked" or "comb-tooth" impressions on the shoulder. They can be dated as late Parthian in Babylonia and the Diyala region. For the pottery type, see Robert McC. Adams, *Land Behind Baghdad* (Chicago 1965), fig. 13 nos. G and H; Neilson C. Debevoise, *Parthian Pottery from Seleucia on the Tigris* (Univer-

sity of Michigan, 1934), fig. 183; and Antonio Invernizzi, "The Excavations at Tell 'Umayr", *Mesopotamia* I (1966), fig. 14.

¹³ A cemetery now in current use occupies the upper portion of this mediaeval village site. The cyclopean wall stubs of the abandoned structures also served as the emplacements for the tents of a transhumant summer camp for the Zardeh villagers of two generations ago.

fissure in the walls of the gorge into a fortified retreat. Modern occupation of the basin is limited to the permanent village of Zardeh, with its seven hundred inhabitants, whose ancestors have always lived there within living memory. There is also a transhumant winter village, Sayyid Muhammad, at the far end of the basin. The results of the ground survey seem to be justifying the effort involved, in view of the fact that we are able to hypothesize the location of these various settlements that have occurred since the construction of the original fortress.

At the conclusion of the 1975 season it could be demonstrated that the military fortifications were probably conceived and executed as a single operation, and that all subsequent occupation after the demise of the settlement was on a much lower scale. Because of the widely scattered location of the various parts of the site, however, the dating was still being deduced on the basis of often only vague associations of surface material with adjacent features. It was of crucial importance, therefore, to establish the relationship between the stuccoed pavilion and the walled enclosure in which it lay. Although of different dimensions and shape, the rubble and mortar walls of the enclosure are distinctly built of the same broad layers that are a standard feature of the rest of the site. By contrast, the walls of the pavilion within the enclosure itself are composed of baked bricks, using a technique of vertical lay construction that is known in other buildings ranging in date, as has been said earlier, from Parthian to early Islamic times in Mesopotamia and Iran (Pl. Ia).

It can now be demonstrated that there is a strong likelihood that the pavilion walls of baked brick are contemporary with the surrounding enclosure. This is supported by the fact that during the 1976 campaign it was revealed that the eastern exterior wall of the pavilion, and the footings of the pavilion walls themselves, are composed of rubble and mortar masonry. It is possible that the baked brick provides a more precise medium for the execution of architectural details and that this explains its use by the architects.¹⁴ Of course, a Parthian date for the construction of such walling has already been shown to be quite feasible. Of further value is the fact that a clinky ware sherd was found in the floor deposit of one of the corridors (no. 2) surrounding the main halls. It is a slim thread to hang a Parthian date upon, but it seems to provide at the moment evidence that is consistent with information found independently in other parts of the site. It is obvious that the absence of a sound, tangible date is most frustrating. But, in view of the diverse peripheral information pointing to a Parthian date for the site as a whole, it is satisfying to be able to point out, too, as will be demonstrated below, the growing number of recognizable Parthian characteristics of style as more stuccoes are unearthed.

Let us now proceed to the subject of the stuccoes themselves. The 1976 campaign has revealed, so far, three separate rooms (nos. 1, 5, and 11) as the source of the decorative stuccoes. Although the ground plan is far from complete, it appears to be emerging very closely along the lines of known Parthian complexes, and in particular of the north *eyvan* unit of the Parthian palace at Ashur. The Ashur unit breaks down into three rooms consisting of an outer *eyvan*, an inner hall, and a large pillared room to one side.¹⁵ Each of the rooms is surrounded by a circumambulatory corridor. In the case of the Qal'eh-i Yazdigird version, the front room (the hypothetical *eyvan*) faces the gardened enclosure, and not a courtyard as at Ashur. A double corridor separates the front and inner rooms (nos. 11 and 5) from the side room (no. 1).¹⁶ The iconography of the stuccoes from the three rooms is distinctly different in each of them.

¹⁴ Perhaps it was easier to lay out in vertical brick-lays the precise dimensions needed for the articulation of the "gallery" façade. But if this had been done in the conventional horizontal lays it would have provided a much more stable structure. Bonding across the joints would have been more effective, for gypsum mortar provides only a mechanical bond, and not a chemical one. When the mortar disintegrates there is a danger that the outermost brick will quickly "flake off". There seems to be no obvious reason why this particular technique was employed unless it relates in some way to the earlier techniques of "stacking" mud brick in ancient Sumer. See Reuther, *Survey I*, p. 422.

¹⁵ Andrae and Lenzen, *Die Partherstadt Assur*, pl. 10.

¹⁶ Although these corridors may have assumed a practical function, it is likely that the original purpose of their construction was to fulfill a structural need by the way of providing support for the thrusts of vaults of adjacent rooms. Their presence may be taken as being practically proof that such vaults did exist.

One of the sondage trenches in 1965 uncovered the tops of parallel walls which will probably turn out to be the corridor surrounding room 5 on its western side. cf. *Iran V* (1967), pl. IVd.

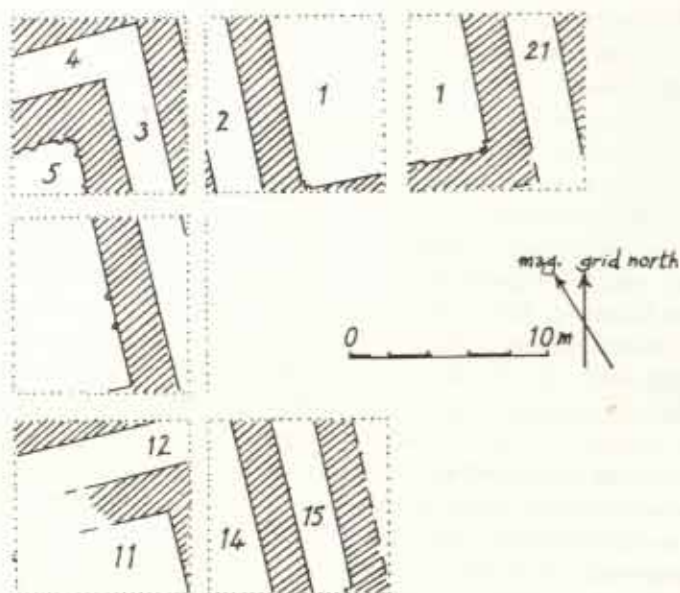


Fig. 2.

Expansion of the 1965 sondage trench, in which the stuccoes were first encountered, revealed that they belonged to a large, square room (no. 1) measuring approximately ten metres a side. The lower parts of the walls appear to be plain. A decorative frieze of interlocking swastika and rosette designs runs below the set-back at the top of the wall, four metres above the floor.¹⁷ This set-back marks the beginning of the zone from which most of the decorative ornament has fallen. It is noticeable that the majority of the finds discovered so far in this room are of a continuous or repetitive nature, and that they have all generally been found in a position very close to the wall. Capitals of engaged columns and a cornice amongst the finds seem to point to the existence of an indented "gallery" below the springing of the ceiling vault, with architectonic devices separating the repetitive figural elements (Pl. Ib).

Perhaps one of the most important elements of the ornament of room 1 is the composite scene consisting of a reclining figure who reaches for a bunch of grapes from a vine, flanked by winged youths who sport with the tail and head of a feline creature (Pl. Ic and d). Another youth also reaches for grapes from the vine. The origin of this particular scene may well be Dionysus, his cupid companions and a panther.¹⁸ Although the style is obviously western in origin, it is worth noting that the head of one of the winged youths protrudes into the actual border of the picture. Rather than being purely a clumsy rendition, it appears to be related to the curious device adopted by artists in some of the Parthian and Sasanian rock reliefs, and is typically Iranian.

The cupid association may also not be out of place in the case of the standing figures which were originally described in 1967 as hermaphrodites.¹⁹ The cupid identification is supported by the presence of wings, discernable in at least one of the examples (Pl. IIb and c). The nude figure leans on a pedestal, a curious artistic device presumably derived from the tradition of Roman stone sculpture. An unidentifiable "drapery" is shown over the top of the pedestal. The precise pose of this figure can be found paralleled in Roman art. The western Classical or Hellenistic source of the iconography of these two scenes just described is obvious, but an unanswered question remains whether that source was the western Classical world of Rome or the "indigenous" traditions of Near Eastern Hellenism.

¹⁷ cf. *Iran V* (1967), Pl. IVa-c. See also Pl. Ia of this text for the set-back above the frieze.

¹⁸ This frieze was first encountered in the 1965 sondage, see

Iran V (1967), p. 114.

¹⁹ *Iran V* (1967), pp. 113-15. See also Keall, *Excavations in Iran, The British Contribution*, p. 47 and fig. 62.

Of the remaining human and animal figural subject matter from room 1 there is no obviously easily defined canon of style other than something that can be loosely called the eclectic art of the Parthians. Recovered from room 1 is a complete, but badly defaced example of the bust of the "Parthian noble" in a circular plaque, of which a composite reconstruction was published in 1967 (Pl. IIIa).²⁰ It is sufficient to repeat here the fact that the frontal pose and distinctively bunched hairstyle is a classic for Parthian portraits in western Iran. Equally distinctive, but more so as a forerunner of a future style, is the winged beast—a griffon—whose flying pose can be recognized as that of the standard Sasanian version of a *senmurv* or *simurgh* (Pl. IIa).²¹ The fact that the griffon head is retained in an otherwise *senmurv*-like stance perhaps argues well for an early, i.e. Parthian, date. The intertwined dragon motif on an engaged column capital (for which there are now three examples uncovered) clearly owes much to the ancient traditions of Near Eastern art, which abounds with scenes of crossed and rampant beasts. Curiously, the closest examples to the Qal'eh-i Yazdigird intertwined dragons (Pl. IIIb) must be the pair of "fighting dragons" from 7th/8th century Penzikent.²² In view of the suggested significance of the twisted knot or "node" in Islamic iconography, an astrological association in the case of the Qal'eh-i Yazdigird piece should not be discounted.²³ A matching engaged capital, but bearing a different design and painted an overall red shows a diminutive nude female (Aphrodite?) holding a pair of dolphins by the tails (Pl. VI). It is interesting to note, too, that the tails of the dolphins are twisted like those of Classical *hippocamps*. One is reminded, in fact, most of all of the sort of thing one might encounter in second century Nabatea.

Room 5, which corresponds to the inner hall of the Ashur-type complex, appears to be a large room approximately thirteen metres long, whose sides are punctuated by a regular series of arched niches (Pl. IVa, and Va and b). Plain half-columns flank the niches. The jambs carry stylized floral and geometric designs in continuous bands or separate, repetitive blocks.²⁴ The simplicity of the designs, whether running swastika or honeysuckle bud-and-tendrils, marks them apart from the "baroque" versions of much of Sasanian stucco overall ornament (Pl. IVb and c).²⁵ One notices, however, a sophistication in the representation of the stylized floral ornament, in the sense that artists are anticipating already some of the most fundamental concepts of the stylized natural designs of Islamic art. It could be argued that the use of the bud-and-tendrils motif, when it is split in half and placed back to back in a half circle, is really the forerunner of the arabesque (Pl. XIId). Pilasters in the east corner of the room, decorated with similar bands of ornament, appear to have once carried the Corinthian capitals that were found in the debris nearby (Pls. VIIIc and IXb). This type of capital, with a human head amongst the palmette foliage, is known from Warka and Seleucia on the Tigris.²⁶

The scenes of processions of griffons, coming from both curved and straight architectural members, most likely belong to the architraves or archivolts that were above the niches. The processions include both addorsed and confronted griffons, as well as an example of a griffon attacking a deer (Pls. VIIla and b and Pl. IXa). It is noticeable that the form of these griffons, particularly the wing shape, differs markedly from that of the "*senmurv*-griffon" from room 1. There is no evidence that this represents in any way a different period for their execution.²⁷ It is true that room 5 has witnessed some alterations to the original plan, in the way of a buttress appended on the west side of niche 1. It is also true that the

²⁰ *Iran V* (1967), pp. 116-17 and fig. 7.

²¹ It would appear that a wing fragment of another beast of the same kind was uncovered in 1965. See *Iran V* (1967), p. 120 and fig. 9a.

²² See *Iran V* (1967), pp. 115-16 and fig. 6; and Aleksander Belenitsky, *Central Asia* (Archaeologi Mundi 1968), pl. 105.

²³ On the question of dragons and some of their astrological associations in Islamic art, see Willy Hartner, "The Vaso Vescovale in the British Museum", *Kunst des Orients* IX, 1/2 (1973/74), pp. 99-130.

²⁴ The concept is very close to the niche with stucco decoration from Bishapur. See Roman Ghirshman, *Iran Parthians and Sasanians* (Arts of Mankind 1962), fig. 179.

²⁵ See especially the ornate columns from the Sasanian palace at Damghan. Erich Schmidt, *Excavations at Tepe Hissar, Damghan*

(Philadelphia 1937), pl. 72.

²⁶ See Bernard Goldman, "The Architectural Decoration", in Clark Hopkins (ed.), *Topography and Architecture of Seleucia on the Tigris* (Ann Arbor 1972) figs. 34-6. The Warka examples were described by Deborah Thompson in her paper delivered at the Seventh International Congress for Iranian Art and Archaeology, Munich, September 7-11th, 1976.

²⁷ The form of the griffons in the processions can readily be paralleled with Parthian examples. See Goldman, *Architectural Decoration*, figs. 72-4. The tightly scrolled wing tips of the *senmurv*-griffon, however, are more difficult. See *Iran V* (1967), p. 115 and Deborah Thompson, *Stucco from Chal Tarkhan-Eshqabad near Rayy* (Colt Archaeological Institute, 1976), pl. IV, nos. 1, 3 and 4.

1975 Expedition located outside of the gardened enclosure a refuse dump of architectural debris that appears to have been cleared from the Gach Gumbad pavilion.²⁸ Several of the stucco pieces recovered this year from within the pavilion also show traces of more than one coat of paint. But whether the stucco decorations were ever subjected to more than repairs and face lifts remains in doubt. Whatever the case turns out to be, it is apparent that both the griffon procession and the *senmurv*-griffon were adhering to the walls of adjacent rooms in a single building at the same time. The more probable explanation for the different styles of the griffon creatures is that the scene being illustrated was different. It often seems to be the case that the style follows the subject matter.

A coffered design decorates the soffit of the griffon niches in room 5, and the whole feature is painted an overall blue. It is interesting to note that the fallen fragments mostly have paint preserved on them, as do the lower sections of the wall decorations. The paint seems to have been preserved by the accumulation of debris around it. There has been severe erosion of the wall faces in the niched room, high up in the fill, as though this was a surface which stood exposed for a considerable time (see Pl. IVb). The features that stood exposed above this point have lost all traces of their paint. The possibility of the building standing as an empty ruin at the time of the Islamic conquest is an attractive theory, since it would be the easiest explanation for the apparent deliberate defacement of the human heads that were probably still adorning the walls at that time.²⁹

From the debris within the niched room comes an engaged half-column, painted an overall green, and decorated with scenes of a series of nude heroes confronting wild animals (Pl. VII). Man and beast are portrayed in flanking panels, separated from one another by a muntin that divides the panels. The hero can be seen thrusting a spear into the opposing quarry through the muntin. It is a curious artistic device. The simple but bold and forceful depiction of the musculature and stance of the figures is a most noticeable feature. It is quite unlike the treatment of the nude figure in the western Classical world, but quite similar to that of figures in Gandharan art.

The use of polychrome colours occurs on the triple faceted columns that come from room 11, the front hall or *eyvan* according to the Ashur concept of a plan. These columns bear a series of repetitive figures that are placed one above the other, in panels that are separated by bands of Vitruvian scroll design. The use of the panels is similar to that employed on the "animal-combat column". The figures are limited to four subjects, namely a nude female dancer, a Pan figure with pipes, an *himation*-robed female, and a trousered male with three-pointed hat (Pls. X and XIa and b). The colours applied to these stuccoes appear to conform to no particular recognizable scheme, and the use is limited to overall colours against single tone backgrounds. The effects of lines and shadow are produced by the depth of the carving, and not by the paint itself. The source of the iconography is mixed. The *himation* is a true Hellenistic derivative, and Pan equally belongs to the western world. The clumsy rendition of the nude dancer is remarkably close in spirit to that of Anahita figures on Sasanian silver vases, and the treatment of the trousered male is reminiscent of the stone sculptures of Hatra.

There are, in addition, from the site an enormous number of painted fragments of geometric, stylized floral and architectonic design (Pls. XIc and XIIa-c). A complete cleaning and study of these pieces has yet to be made. Suffice it to say that it represents an enormous wealth of decoration of great importance.

It can be seen from the casual remarks made about the style that the Parthian element is reasonably dominant. Although the greater number of parallels are known from Mesopotamia, the stuccoes of Kūh-i Khwāja represent an important parallel from eastern Iran.³⁰ The absence of relevant material from central Iran may stem either from an accident of preservation or the fact that this area was not richly developed during late Parthian times. It is equally apparent that the western Classical element is also very strong. For the moment, it is impossible to answer the question of whether this influence entered the vocabulary of artists as a result of direct contact with the eastern Roman provinces or even whether Roman artisans came to Parthia as free agents or prisoners. There is, too, the possibility that

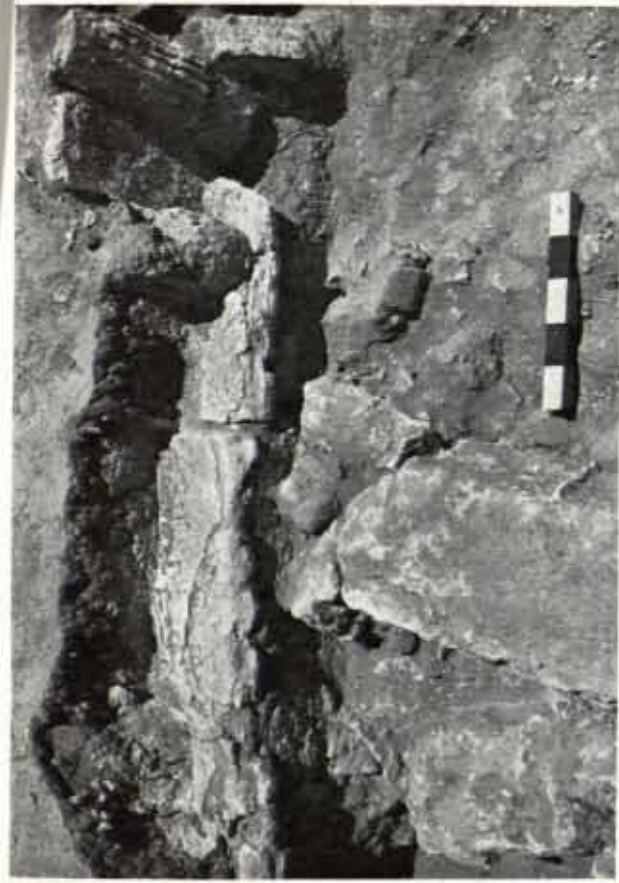
²⁸ *Iran XIV* (1976), p. 164.

²⁹ See, for example, the damage caused to the face of the "Parthian head", fig. 9.

³⁰ See, for instance, Ghirshman, *Iran: Parthians and Sasanians*, fig. 54.



Pl. Ia. Gach Gumbad, Rooms 1 and 21: indented "gallery" above frieze (foreground) and vertical brick lays (top of picture).



Pl. Ib. Gach Gumbad, Room 1: indented gallery above frieze with miniature, fluted half-columns. A section of fallen cornice lies beside the scale.



Pl. Ic. Reclining male figure, QY 76.A71.



Pl. Id. Winged youths sporting with feline, QY 76.A49.



Pl. IIa. Sennur-griffon, QY 76.A76.



Pl. IIb. Standing nude figure (winged), leaning on pedestal, QY 65.



Pl. IIc. Standing nude figure, leaning on pedestal, QY 76.A48.



Pl. IIIa. Male bust in circular plaque, QY 76.A95.



Pl. IIIb. Intertwined dragon beasts, QY 76.A96.



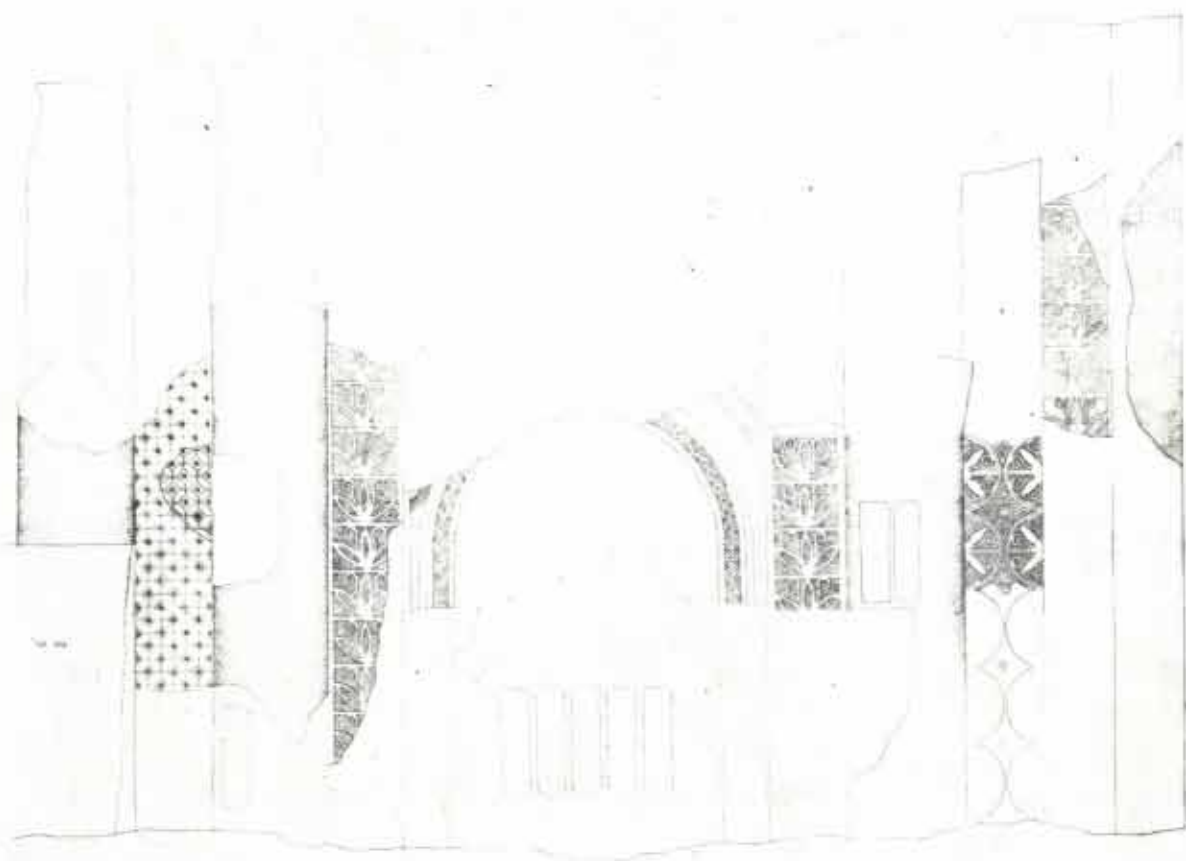
Pl. IVa. Gach Gumbad, Room 5, Niches 1 and 2 (north-east corner of room).



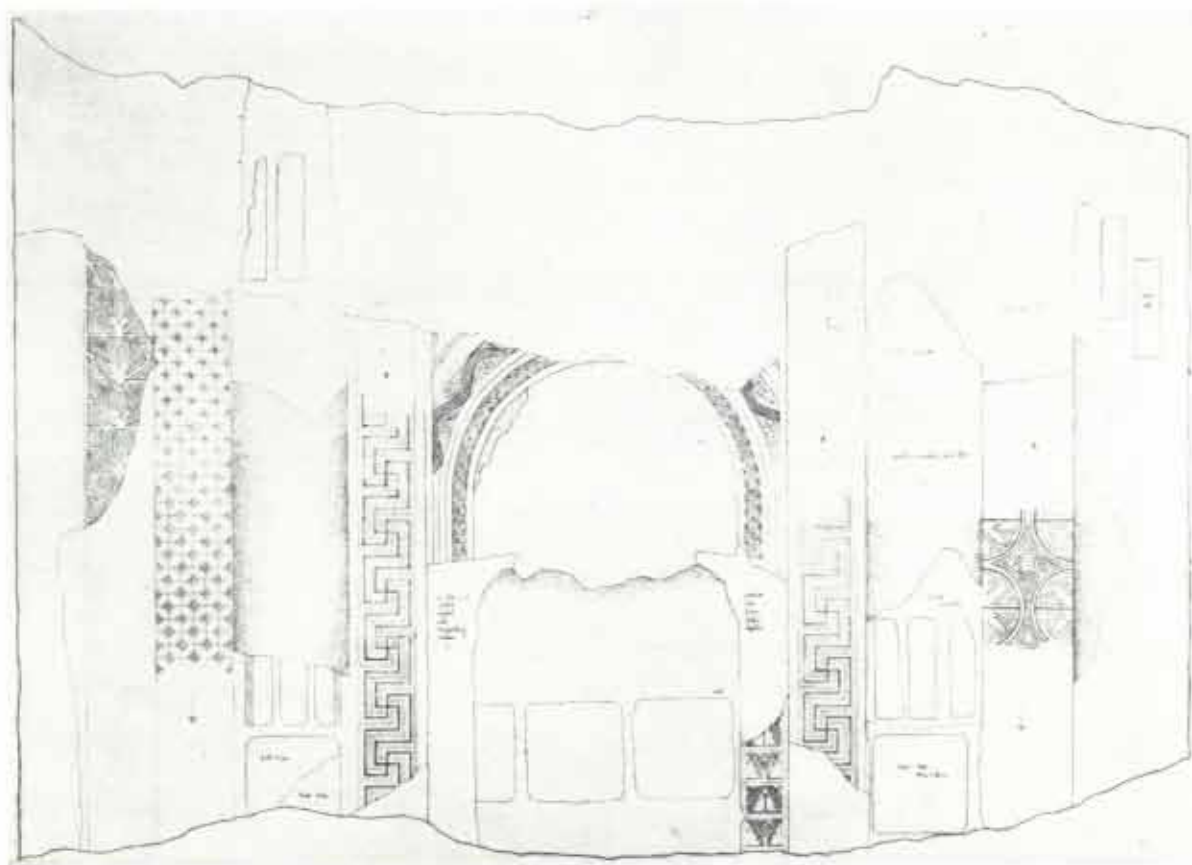
Pl. IVb. Gach Gumbad, Room 5, Niche 2.



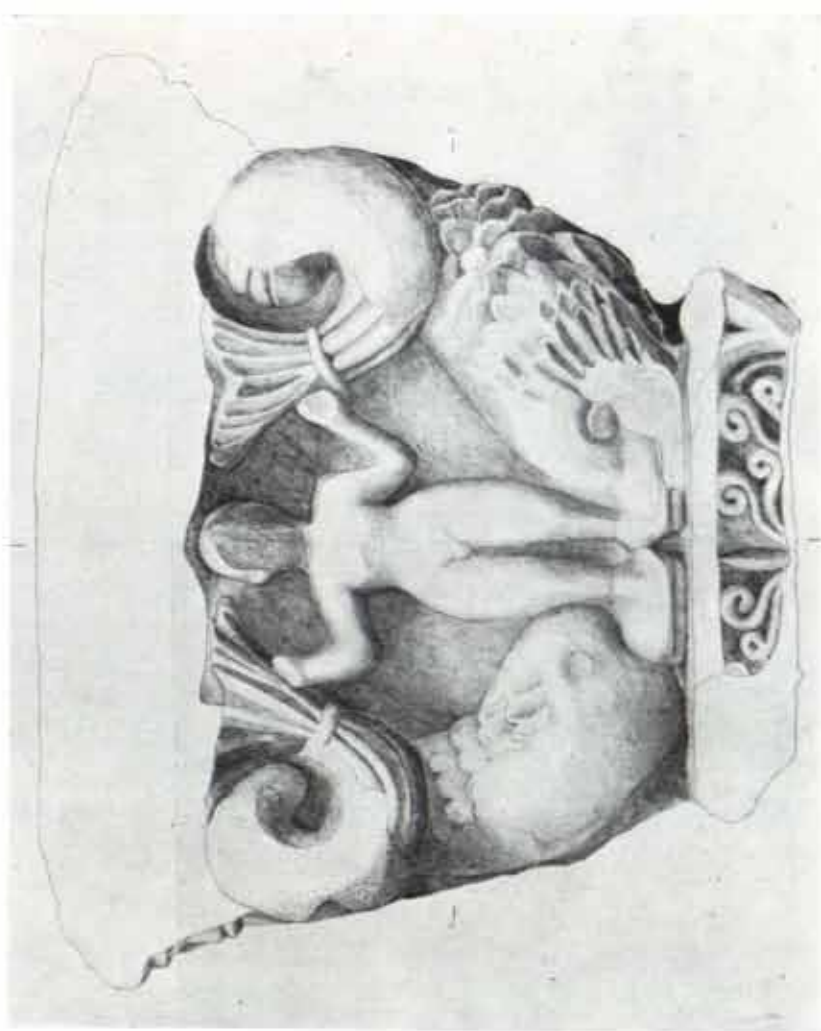
Pl. IVc. Gach Gumbad, detail from Room 5, Niche 1.



Pl. Va. Gach Gumbad, Room 5, Niche 1 (north side).



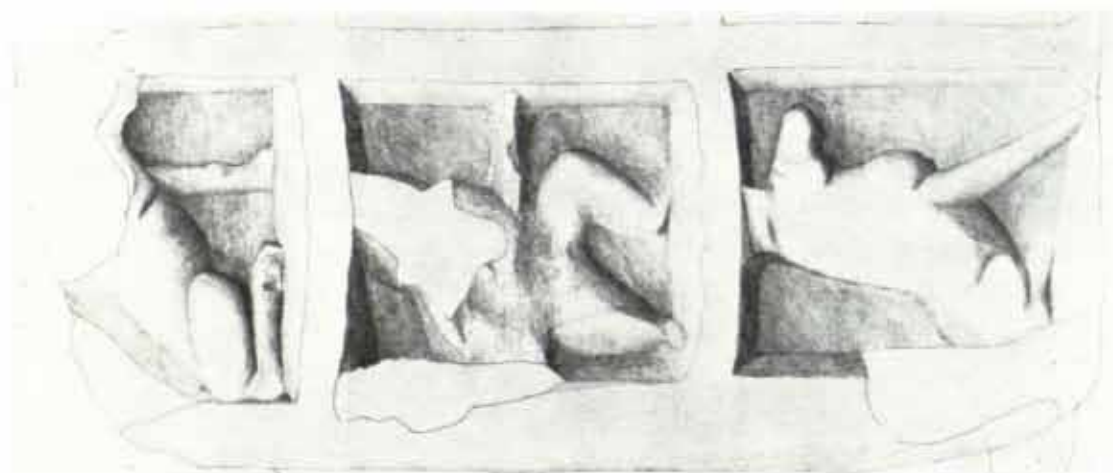
Pl. Vb. Gach Gumbad, Room 5, Niche 2 (east side).



Pl. VI. Nude female holding pair of dolphins, QY 76.A.16.



Pl. VII. Animal combat column, QF 76.A117.

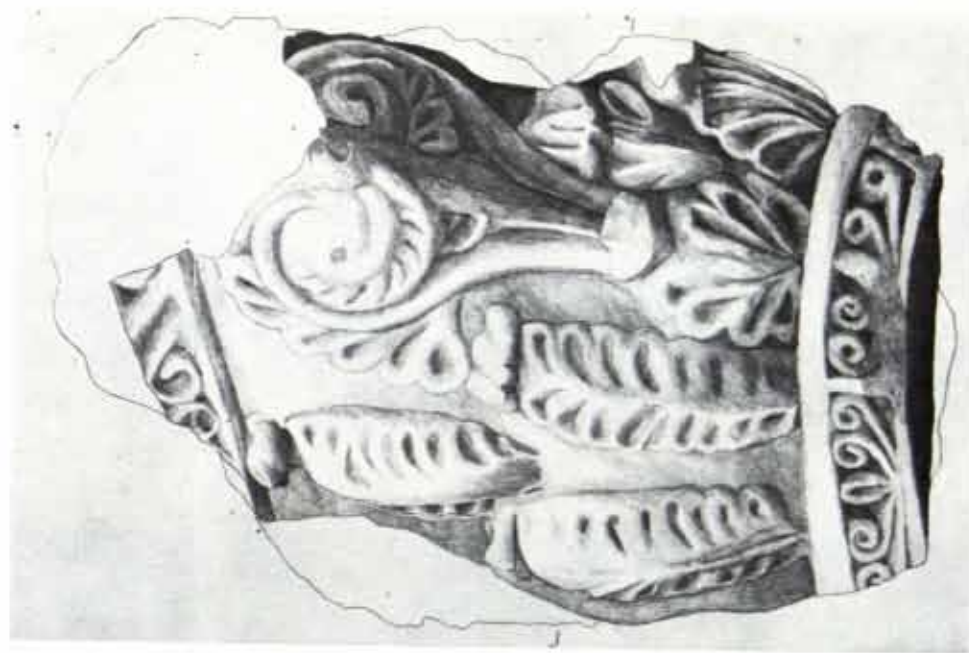




Pl. VIIIa. Pair of addorsed griffons; left one attacks neck of deer, QY 76.A119.



Pl. VIIIb. Griffon, QY 76.A116.



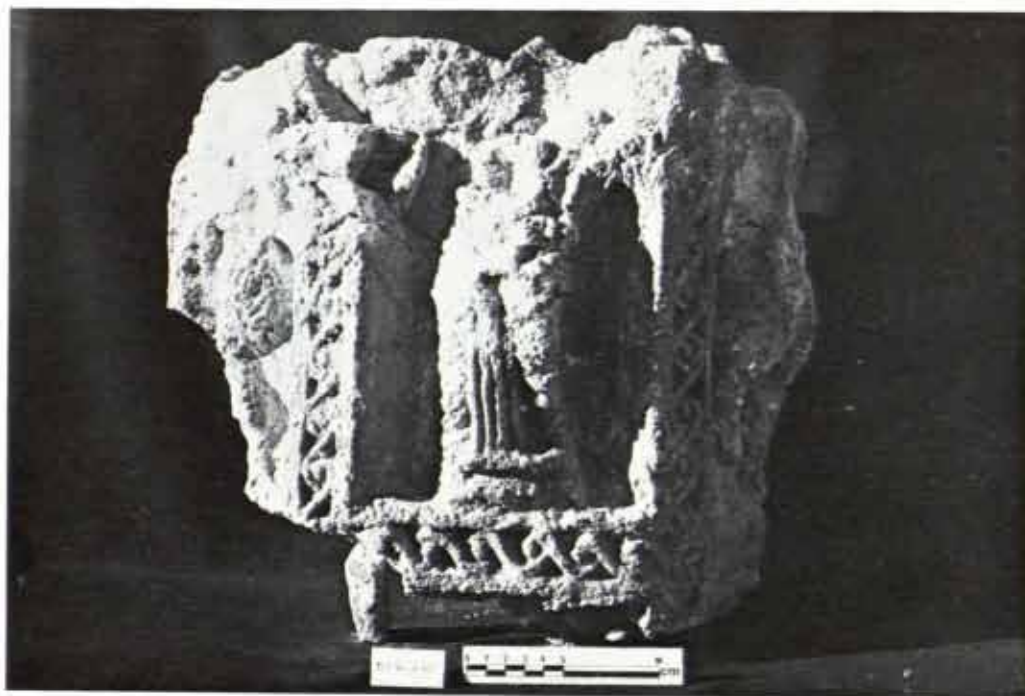
Pl. VIIIc. Corinthian capital, QY 76.A175.



Pl. IXa. Griffon, QF 76.A18.



Pl. IXb. Corinthian capital with human head, QF 76.A67.



Pl. Xa. Column of dancing figures: robed female, Pan and hatted male at sides, QY 76.A38.



Pl. Xb. Column of dancing figures, nude female, QY 76.A18.



Pl. Xc. Column of dancing figures, nude female and hatted male, QY 76.A41.



Pl. XIa. Column of dancing figures, Pan, QY 76.A88.



Pl. XIb. Column of dancing figures, composite drawing of hatted male.



Pl. XIc. Band of rosettes, QY 76.A32.



Pl. XIIa. Vase and merlon panel, QY 76.A46.



Pl. XIIb. Diagonal swastika and rosette frieze, QY 76.A30.



Pl. XIIc. Panel of quatrefoils, plastered over in pristine state, QY 76.A89.



Pl. XIId. Gach Gumbad, detail from Room 5.

the Classical form is merely the result of a development from an unexpectedly strong survival of Hellenistic traditions in one of the great Hellenized areas of the world. There need not be a simple answer. It is more likely that the minds of artists, familiar with Hellenistic traditions, were particularly receptive to the strong expressions of Classical culture as it had developed in the eastern provinces of the Roman empire. What is apparent is that there is an enormous variety in the iconography of the Qal'eh-i Yazdigird stuccoes, and that artists chose to depict their subjects in the style of the artistic tradition from which the iconography was derived. It remains to be seen how long the ornament survived on the walls of the Gach Gumbad pavilion, and how many minor repairs and face-lifts it underwent. Given the apparent influences in the artwork from eastern Rome and the very definite parallels from late Parthian Mesopotamia, it may not be unreasonable to propose a second century A.D. date for the site as a whole and the stuccoes. Even with this unsatisfactory date, this tantalizing glimpse is enough to reveal that the traditional dating of Parthian objects in museums on the basis of style alone—even within the broad range of a couple of centuries—leaves very much to be desired. It is to be hoped that further excavations will greatly clarify the picture.



THE ELAMITE CUP FROM CHOGHA MISH

By Helene J. Kantor

Prefatory Note

The object to be discussed here was found on March 29th 1975 in an area where Professor Pinhas Pierre Delougaz was working on the final surveying of the ninth season at Chogha Mish (Joint Iranian Expedition of the Oriental Institute, University of Chicago, and of the University of California at Los Angeles). During our brief luncheon break, he talked of the vessel with Miss Johanne Vindenas and myself, who had been working that morning on the other side of the mound. Even in the cup's uncleaned and unrepaired state he was fully aware of its importance. It was immediately after lunch, when we had scattered to our respective posts, that he was suddenly struck down by a heart attack. The cup remains with deeply poignant associations; it was the last object which he handled, the subject of his last thoughts and concern. It was pertinent to topics which had long been of great interest to him and which he certainly would have dealt with had he been spared. This article is offered in homage to his memory.

In the northern part of the Susiana plain, between the gorges through which the Dez and Karun rivers leave the Zagros mountains, the "acropolis" of Chogha Mish is a conspicuous landmark. It developed in the final phase of the prehistoric sequence (Late Susiana period; early fourth millennium B.C.) and, centuries later, in the Elamite period, when only the northern one-third of the site was occupied. Parts of eleven-metre-thick walls crowning the high mound were dug in 1965-6 and 1969-70 and apparently belonged to a fort. The outline of its massive outer periphery has been tentatively restored by Delougaz.¹ The scattered finds accompanying the Elamite brick work did not include any pottery or other objects diagnostic for the Middle Elamite period of the later second millennium B.C. (kings of Anshan and Susa) so famous from Chogha Zambil. Accordingly, the Elamite occupation at Chogha Mish can be assigned to the early part of the second millennium B.C. (period of Sukkalmahhu). Interesting though the Elamite finds at Chogha Mish turned out to be in the early seasons, a primary concern has still remained the Protoliterate period (late fourth millennium B.C.), for the investigation of which Delougaz had initiated work at the site in 1961. Since particularly important structures were very likely built on the highest part of the city, in 1975 we returned to the "acropolis" to search for the Protoliterate remains possibly still preserved beneath the Elamite walls. On the eroded surface of the south-west slope of the high mound Delougaz found Protoliterate baked bricks disappearing below the Elamite walls mapped in the third season (1965-6). The removal of part of the Elamite brick-work revealed a monumental Protoliterate drain running about 10 m. up the slope. It was in the final cleaning of the catch basin area of this drain that an unexpected find was made.

Beside the fragments of the mouth of an Elamite pithos was a vessel of bituminous stone (Pls. I-III). It appears to have been a gift placed with an Elamite burial that had been dug down close to the level of the Protoliterate remains. The vessel itself is a cylinder narrowing toward the top. It has a separately made base (Pl. II). The simple vertical shape of the cup contrasts strongly with the dominating figure of a wild goat attached to one side. The animal is carved completely in the round except where its hind legs and horns join the cup.

The material of which the cup is made, soft bituminous stone, is a substance frequently used by craftsmen in both the Susiana plain and Mesopotamia. At Chogha Mish itself, bituminous stone had been utilized for small vessels as early as the Archaic Susiana 3 period (c. 6000 B.C.). In the Protoliterate period bowls were commonly made of it and at Susa in the Proto-Elamite period vessels decorated in relief were being used.² A peak in the popularity of vessels of bituminous stone occurred

¹ See our forthcoming *Chogha Mish: An Interim Report on the First Five Seasons of Excavations, 1961-1971* (Chicago, 1977), Fig. 3.

² Pierre Amiet, *Elam* (Auvers-sur-Oise, 1966), pp. 164-71, Figs. 117-22.

in the early second millennium B.C. in Mesopotamia, the Old Babylonian period, and in Elam, the Sikkalmahhu period. Susa has provided the majority of examples so far known. Typical for these vessels is their theriomorphic ornament. Sometimes the animals appear in relief, as in the case of the bulls flanking trees on a bowl from Susa and the goat on a bowl fragment from Ischali (Pl. IVa).³ On the latter the goat's head is turned to project in the round, continuing a tradition begun in the Protoliterate period. Frequently an entire shallow bowl is designed as the body of an animal with the head only projecting in the round (Pl. IVb).⁴ Sometimes the details of the body are suppressed so that only the head and forequarters of the animal project from the smooth walls of the vessels.⁵ A famous shallow bowl is supported by three legs, each of which ends in a goat's protome; these are carved in the round while their hindquarters are only cursorily rendered on the cylindrical upper parts of the legs (Pl. IVd).⁶ Also found at Susa is a tripod leg of the same form; its clumsy execution demonstrates the range of quality possible at a single site.⁷ In all the examples so far cited the animal forms have been in one way or another subordinated to the vessels they adorn. Only in one instance is there an animal figure of a completeness comparable to that of the Chogha Mish goat. This is the couchant goat handle of a squat bowl from Susa; the figure faces outward and is attached merely by its hindquarters to the vessel (Pl. IVc).⁸ In this piece the plastic treatment of the body is comparable to that of the newly-discovered animal.

The Chogha Mish goat is worked in a fully-modelled style with swelling hind and forequarters and a soft curving belly. Also noteworthy is the rendering of the head, where the high eyebrows and cheeks are carefully distinguished from the softer muzzle. The smooth volumes of the figure are set off and enriched by incised details. Hatched bands are used to emphasize the different parts of the body, delimiting the head and the hind and forequarters, and representing the strands of the beard. Each knob of the large horns is incised with three chevrons.

The subsidiary details of the Chogha Mish goat are paralleled in general on the various bituminous vessels just cited. The lost inlays of the eyes can be visualized by means of the examples from Susa where the shell and lapis lazuli filling has been preserved (Pl. IVb and d). The incised borders of the cheek and forehead of the Susa couchant goat (Pl. IVc) parallel exactly those of the Chogha Mish animal, but there is a variation in the treatment of the beards. Those from Susa have only simple vertical lines. The necks of some of the Susa goats had to be elongated in order to adapt the animal forms to those of the vessel, making their proportions less naturalistic than those of the Chogha Mish goat. It possesses a more sculptural quality than its peers since its effect relies primarily on the shapes and swelling volumes of the different parts of the body. The large areas of incised detail, such as the herringbone or chevrons covering the entire body of the couchant goat and the necks of others, are absent.

A further major distinction between the Chogha Mish goat and its compeers is the relative independence of the animal figure from the container. In the other example where the animal is modelled almost completely in the round, the quiet couchant pose fits well with the solidity of the bowl's body; moreover the goat's head turns backward to face the bowl so that the whole composition is self-contained (Pl. IVc). In contrast, the goat of Chogha Mish rears vigorously forward. Its pose forms a composition emphasizing strong diagonal movement outward, so that the animal's attachment to the cup seems relatively incidental. In this the Chogha Mish piece contrasts with the other bituminous vessels of its class, in all of which the animal shapes are subordinated to the vessels of which they form a part. Here we have a problem of composition, one pertinent to themes which greatly interested Delougaz and which he had hoped one day to discuss, namely symmetry and dynamics in both two and three dimensional compositions. Even the placement of the accessories of everyday household objects can be considered from such a point of view. A familiar example is the teapot, where the straight

³ Henri Frankfort, *The Art and Architecture of the Ancient Orient* (1969), Pl. 67, A.

⁴ Amiet, *op. cit.*, pp. 275-76, Figs. 205, 206B. The head of a goat found in the Sinkashid Palace at Warka probably represents another vessel of this shape (H. J. Lenzen et al., *Vorläufiger Bericht über die ... Ausgrabungen in Uruk-Warka XIX* (Berlin,

1963), p. 40; Pl. 28, W20067.

⁵ Amiet, *op. cit.*, pp. 271-4, Figs. 201, 204.

⁶ *Ibid.*, pp. 252, Fig. 185; 280, Fig. 210.

⁷ *Ibid.*, p. 282, Fig. 211.

⁸ *Ibid.*, p. 279, Fig. 209.



*Pl. I. Elamite Vessel of Bituminous Stone from Chogha Mish.
Height of goat figure 16·8 cm. Height of vessel 14·25 cm.; diameter of mouth 6·1 cm.; diameter of base 7·3 cm.
(Photograph by courtesy of the Iranian Centre for Archaeological Research.)*



*Pl. II. Details of the Upper and Lower Parts of the Elamite Vessel from Chogha Mish.
(Photographs, Joint Iranian Expedition of the Oriental Institute and the University of California.)*



Pl. III. Profile and Front Views of the Elamite Vessel from Chogha Mish. (Photographs, Joint Iranian Expedition of the Oriental Institute and the University of California.)



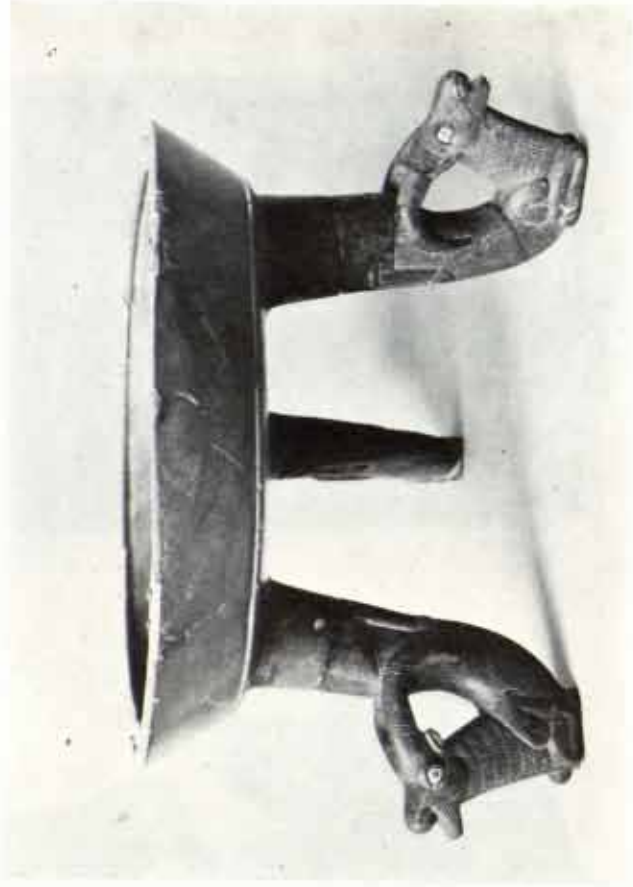
IVa



IVb



IVc



IVd

Pl. IV. Bituminous Stone Vessels from Ischali. (a Photograph by courtesy of the Oriental Institute) and Susa (b-d Photographs by courtesy of Dr. Pierre Amiet, Musée du Louvre.)

alignment of the single handle and spout clearly marks the forward movement basic to the function of the vessel. Thus the movement of the Chogha Mish goat, away from its cup, raises the question of whether it is only an animal-shaped handle. And, in fact, the body of the goat is pierced by a channel with several outlets, as indicated in Fig. 1.⁹ This channel was not necessary for the carving of the goat; rather the boring of it entailed additional work as well as the risk of cracking the figure. Accordingly, the passage must have been a feature important in itself. It is tempting to interpret it as a means of pouring out a stream of liquid on ceremonial occasions, whether at banquets or in cult rituals. However, before even tentatively accepting such a proposal, the multiplicity of outlets must be explained away. This we may do by assuming that the supernumary openings in the hind feet and in the head were needed for the preparation of the curving channel and that, though now open, they were originally plugged, as are still the two openings in the belly. Accordingly, with all due reservation, we may adopt the conclusion that the goat cup was a libation vessel in which function and form are congruent. Such major characteristics as the large size of the goat in proportion to the container and its energetic outward movement would then reflect the use of the object.



Fig. 1.

The vase from Chogha Mish is significant from several points of view. It provides us with a new type of bituminous stone vessel. Furthermore, in itself it is an outstanding work of art, a major animal carving in a style common to both Mesopotamia and Elam in the early second millennium B.C. The discovery of an object of such high quality at Chogha Mish is highly important for the light that it throws on the character of the Elamite occupation at the site. Formerly we had presumed that the Elamite settlement occupying only the relatively limited area of the high mound was, despite the massiveness of its walls, merely a fortified guard post housing a small detachment of troops controlling the strategic route flanking the Zagros foothills between the outlets of the Dez and Karun rivers into the Susiana plain. However, the goat vase is a sophisticated work of art of a type which we would hardly expect to find among the everyday equipment of a small guard post. Thus its discovery suggests that the Elamite occupation at Chogha Mish in the early second millennium B.C. may have been of a more elaborate character than has hitherto been visualized.

⁹ The figure has been drawn by Mr. Ray Johnson, of the University of Chicago, on the basis of a sketch by Mr. Aghil Abedi, the archaeologist from the Iranian Centre for Archaeological

Research who worked with us during the ninth season and who mended the broken section of the cup the day after its discovery.

The tenth season in the winter of 1976 has now provided corroborative evidence. Excavations carried out in the immediate periphery of the find spot of the goat vase have revealed several stages of Elamite occupation, the latest being that of the great walls whose brick work was articulated by Delougaz in the seasons of 1965-6 and 1969-70. Underlying these are large well-built walls belonging to an extensive structure. Although the Elamite walls articulated just below the modern surface of the high mound still cover most of the complex, its importance is already evident. A still incompletely excavated pavement of baked bricks may turn out to be part of a large entrance way. Beside a substantial wall with dadoes painted in red and white were fragments of mouldings decorated by the same colours and apparently fallen from the ceiling. Though so much still remains to be done, it already appears likely that the lower Elamite complex and the goat cup were contemporary, and that we are uncovering an architectural context worthy of the vessel. Such a building could well have been the seat of an official of high rank. Despite the small area of the Elamite occupation at Chogha Mish, the site may in the early second millennium B.C. have been, not merely a simple military outpost, but a centre of considerable importance.

In closing, another important facet of the goat cup should be briefly mentioned—its pertinence to the history of animal forms in the decorative arts of the ancient Near East. In western Asia the earliest extensive utilization of sculptured animal forms for vessels was in the Protoliterate period. On stone vessels, many found in the Diyala region and studied in detail by Delougaz,¹⁰ the animals are more closely bonded to their vessels than is the goat of the Chogha Mish cup. More akin to it in having a definite axis of movement are the theriomorphic libation vessels of pottery discovered by Delougaz in the Protoliterate Sin Temple at Khafaje; similar jars are represented on Protoliterate cylinder seals.¹¹ A fragmentary sealing from Warka shows an elaborate altar supported by a rearing feline, in the original, of course, executed in the round, and to some extent anticipating the pose of the Chogha Mish animal.¹² Later, in the Isin-Larsa period, a similar, though even more erect posture, is given to the three addorsed goats which crown a base formed by human figures holding a small bowl; the work is executed in bronze and thought to have been found at Larsa.¹³ However, the Chogha Mish cup seems to be the earliest example so far discovered in the Mesopotamian-Elamite cultural domain of a rampant animal figure fully worked in the round and associated with a vessel. Other, independent, traditions are known. For example, at about the same general epoch, during the period of the Assyrian merchant colonies in Anatolia, potters in Cappadocia made extensive and brilliant applications of animal forms to vessels, including handles with zoomorphic junctures or complete animal figures.¹⁴

Although as a group, the bodies and, usually, the heads, of the animal figures of handles face toward the mouths of their vessels, there remains a general comparability between our goat figure and handles shaped as a complete animal figure in the round. The latter can hardly all be placed in a single phylogenetic line although they come into prominence at a period of intense international exchange in the later second millennium B.C. The animal-handled vessels of precious materials so frequently appearing as foreign tribute in Egyptian tomb and temple representations may actually be typically Egyptian vessels, as exemplified by an actual example, the silver jar with a splendid goat handle found in the Nineteenth Dynasty hoard at Tell Basta.¹⁵ In western Asia the earlier part of the first millennium B.C. brings the elegant feline and ibex-handled vessels of Median and Achaemenid art.¹⁶ The Elamite cup from Chogha Mish, despite the aberrant position of its animal when contrasted to the animal handles, illustrates the antiquity and early brilliance of the Near Eastern tradition of combining animal figures in the round with vessels.

¹⁰ He had completed much of the basic work on *Miscellaneous Objects From the Diyala Region I: The Stone Vessels* before his death.

¹¹ P. P. Delougaz, *Pottery from the Diyala Region* (Chicago, 1952), pp. 43-4, Pls. 25, 26.

¹² P. Amiet, *La glyptique mésopotamienne archaïque* (Paris, 1961), Pl. 46, 654 (cf. UVB V, pl. 29, b).

¹³ Eva Strommenger, *Fünf Jahrtausende Mesopotamien* (München, 1962), Pl. XXX, left.

¹⁴ See, for example, Tahsin Özgüç, *Kultepe-Kanış: New Researches at the Center of the Assyrian Trade Colonies* (Ankara, 1959), Pls. XXXIII, 2 (equid); XXXIX, 1 (bird). Nimet Özgüç, *The*

Anatolian Group of Cylinder Seal Impressions from Kültepe (Ankara, 1965), Pl. XXXV (large group of a man with a team of equids for which the handle serves only as a subsidiary platform).

¹⁵ W. S. Smith, *The Art and Architecture of Ancient Egypt* (1958), Pl. 167, A.

¹⁶ H. J. Kantor, *The Cincinnati Art Museum Bulletin V* (1957), pp. 18, 19; Figs. 10, 11. Edith Porada, *The Art of Ancient Iran: Pre-Islamic Cultures* (New York, 1965), Pls. 48-50. Petit Palais, *Sept mille ans d'art en Iran* (Paris, Oct. 1961-Jan. 1962 exhibition catalogue), Pls. LI and LII (Median), LIII-LV (Achaemenid).

EARLY CULTIVATION IN THE ZAGROS

*By Judith Pullar**

The change from hunting and gathering to systematic agriculture which took place in the Zagros Mountain area between 11000 and 6000 B.C. should be regarded as a slow and continuous process rather than a series of developmental stages. Successive adaptations to the environment, never consciously viewed by the participants as a change from the past, led ultimately to the Neolithic Revolution. Where once societies had been mobile they were now in many cases sedentary and the bases of subsistence which once had been extensive were now largely intensive. The where, how and why of these developments is the subject of this article.

The change from an extensive system of land exploitation by hunter-gatherers during the Upper Palaeolithic to a more intensive system of exploitation may be regarded as primarily an agricultural revolution which resulted from external pressures, one of the major ones being demographic. During the majority of his existence, however, man has chosen voluntarily to restrict his numbers, and in many band societies continues to do so. In spite of the hunter-gatherer's predilection for his leisured and well provisioned life-style, which depended on keeping population densities low, he changed gradually to more intensive farming methods which, in terms of man-hours, was a rise in his cost of living. Circumstances outside of his control pressured him to opt either to live in greater population densities or dramatically to reduce his numbers. In Iran the extremes of a continental climate during the height of the final phase of the Last Glaciation forced a number of once scattered transhumant bands to live at least part of the year in greater population densities in order to exploit adjacent ecosystems with maximum efficiency. A number of Upper Palaeolithic sites have been found in the optimal areas for summer quarters. Changes in the Lake Zeribar pollen diagram at about this time suggest that the hunter-gatherers of the Zagros were turning to slash-and-burn to augment the wild cereal harvest and feed the increased population densities. One of the effects of this change in land exploitation was to decrease mobility, stimulating the production and storage of surplus produce. It also made possible for the first time the accumulation of material goods. It encouraged a rise in the birth rate since the mother was no longer required to be mobile and more hands were needed to do the increasingly complex agricultural work. Once the change from extensive to intensive exploitation of land had been effected there was nothing to prevent the rapid growth of permanent villages.

CULTIVATION

In the thirteenth to the twelfth millennia B.C. weedy plants which thrive in poor or impoverished soil appeared in the plant communities of the Western Zagros and flourished in the subsequent millennia. The evidence for this comes from the analysis of pollen cores taken from Lake Zeribar in the Western Zagros. The appearance of pollen from plants which thrive in disturbed or impoverished soils at c. 12000 B.C. may be attributed to primitive attempts at cultivation. At this point a clear distinction should be made between cultivation and agriculture. Cultivation is an attempt to increase the produce of the land without applying the intensive labour of systematic agriculture. The cultivator may be mobile or semi-mobile whereas the agriculturalist is tied to one piece of land that must be worked intensively. The initial marks of cultivation on the landscape would have been small. Repeated

* This article is based on research for my Ph.D. thesis "The Neolithic of the Iranian Zagros" which I submitted to London University in 1975. I am very grateful to the Musée Iran Bastan for allowing me to study their collections, and to Professor Braidwood, Dr. Bruce Howe, Professor P. E. L. Smith and Dr. T. C. Young for the opportunity to work on their materials. I am indebted to advisors both inside and outside the Institute of Archaeology, and in particular to my supervisor Mr. Mellaart. Dr. Young and Professor Smith generously read this manuscript and made many helpful suggestions which have been incorporated here. Finally, my husband Jim Humphries suffered through proof readings and was a source of constant stimulating discussion and encouragement.

disturbances of primary habitats, in this case of wild cereals, opens up new plant microhabitats. This results first in an immediate increase in varieties which thrive in disturbed soils, which are recognizable in the pollen records, and secondly assists the chances of survival of mutants and hybrids. Mutations in the wild cereals, caused by cultivation and systematic selection, resulted in the morphological changes exhibited by domesticated cereals. Naturally the rate at which mutations occur will vary greatly with different environmental conditions. A working figure of two millennia has been suggested by Helbaek as the time necessary to effect the change from wild to domesticated forms.¹ During that period the plant would be neither "wild" nor "domesticated" but "cultivated". Morphologically, however, it would generally look like the "wild" ancestor.

When the existing ecological balance is disturbed, for example by clearing scrub or grazing, new plants come in and established plants multiply or decline. Such plants include Compositae, especially *Artemisia* and Tubuliflorae, Ranunculaceae, *Rumex*, Chenopodiaceae, Caryophyllaceae, *Plantago* and Gramineae. In the pollen diagram from Lake Zeribar new plants which thrive in disturbed conditions appear after 12800 B.C. when there is a gradual rise in the incidence of pollen of Gramineae, Compositae in general and Tubuliflorae in particular. *Plantago*, a plant that thrives in poor, disturbed soil,² appears for the first time about 12000 B.C. and is joined shortly afterwards by *Rheum*. *Rheum* and *Rumex* both belong to the weedy sorrel family, Polygonaceae, that invades agricultural land. There is also a rapid rise in Gramineae, Cerealia and Compositae. All of these are species which invade burnt or disturbed land.³ There is little doubt there was considerable disturbance in the plant communities in the Zeribar area about 12000 B.C. These disturbances could not have occurred by chance, and it seems likely they were caused by the activities of man.

This interpretation of the pollen fluctuations in the Zeribar diagram does not, however, accord with previously accepted explanations. Wright, McAndrews and Van Zeist have argued that the climate in the Zagros some 14800 years ago was both cooler and drier than at present, that it started to become hotter and wetter somewhere between 14800 and 8100 years ago and has not altered significantly since. The argument is based on the analysis of the Zeribar pollen core.⁴ It is supported by sediment cores taken by Van Zeist from Lake Nilofar and Lalabad Springs in the Kermanshah Valley.

In the Zeribar pollen diagram⁵ (Fig. 1) Zone A1, dated to 21000-12000 B.C.⁶ has high values for *Artemisia* and chenopods and low values for oak. The low oak pollen counts imply, according to Wright, that the nearest oak woodland must have been more than 75 km. away from the mountains at this time. The high values of *Artemisia* indicate a cool dry steppe similar to that of the higher parts of the Iranian Plateau, such as the area south of Tabriz today. This interpretation is reinforced, according to Wright, by the low *Plantago* count. The scarcity of *Plantago* pollen rain in the Zeribar pollen diagram can be paralleled by the paucity of *Plantago* in surface samples from the relatively cool areas of the interior today.⁷ In Zone A2 of the Zeribar diagram, dated to 12000-9000 B.C., oak and pistachio pollen increase slightly while *Artemisia* decreases. After 6000 B.C. oak percentages increase significantly, thus indicating a continuing increase in precipitation from the end of the Pleistocene. Wright concludes that oak woodland migrated to the Zagros as the climate became warmer and wetter and at the same time the incidence of *Artemisia* fell and *Plantago* rose.

¹ H. Helbaek, "Commentary on the Phylogenesis of Triticum and Hordeum", *Economic Botany* 20 (1966), p. 350. Hereafter "Helbaek, E.B. 20".

² P. E. L. Smith and T. Cuyler Young Jr., "The Evolution of Early Agriculture and Culture in Greater Mesopotamia: a Trial Model", *Population Growth: Anthropological Implications*, ed. B. J. Spooner, (1972). Hereafter "Smith and Young, The Evolution of Early Agriculture".

³ J. Iversen, "Forest Clearance in the Stone Age", *Scientific American* 194.3 (1956), pp. 36-41.

⁴ H. E. Wright, J. H. McAndrews and W. Van Zeist, "Modern Pollen Rain in Western Iran, and its Relation to Plant Geography and Quaternary Vegetational History", *J. Ecology*

55 (1967), pp. 415-43 and fig. 1. Hereafter "Wright et al. *J. Ecology* 55". W. Van Zeist, "Late Quaternary Vegetation History of Western Iran", *Rev. Palaeobotany and Palynology* 2 (1967), pp. 301-11.

⁵ W. Van Zeist and H. E. Wright, "Preliminary Pollen Studies at Lake Zeribar, Zagros Mountains, Southwestern Iran", *Science* 140 (1963), fig. 1.

⁶ H. E. Wright, "Natural Environment of Early Food Production North of Mesopotamia", *Science* 161 (1968), pp. 334-9. Hereafter "Wright, *Science* 161". Cf. also H. E. Wright, "The Environmental Setting for Plant Domestication in the Near East", *Science* 194 (1976), pp. 385-9.

⁷ Personal communication from H. E. Wright 10.6.74.

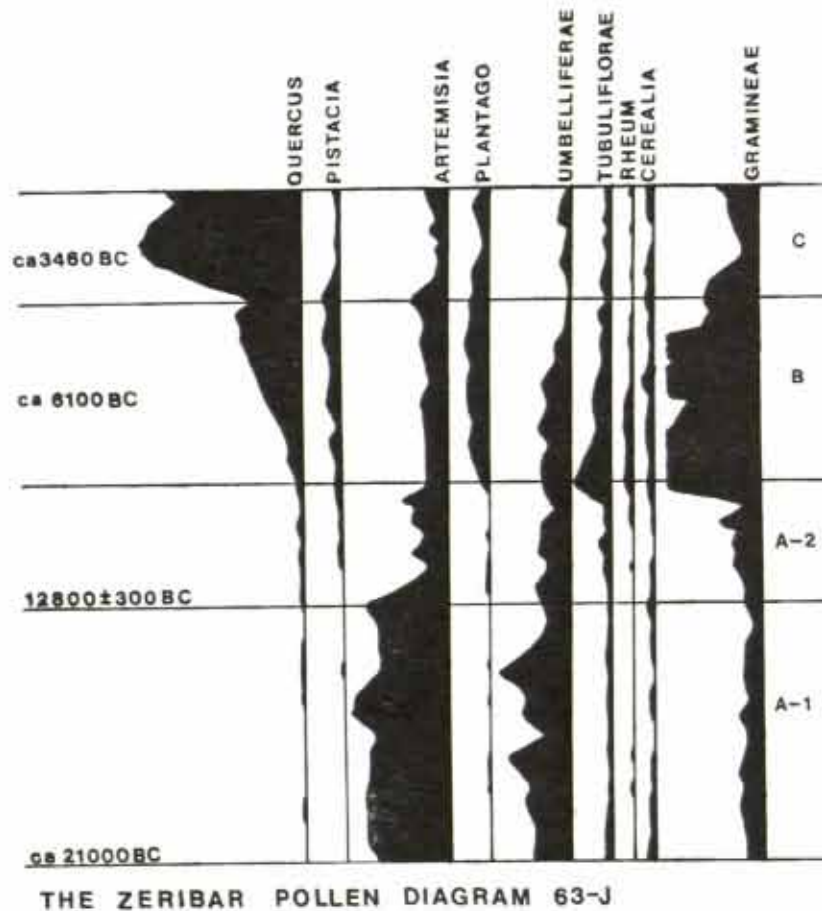


Fig. 1. The Zeribar Pollen Diagram (after W. Van Zeist "Late Quaternary Vegetation History of Western Iran", *Rev. Palaeobotany and Palynology* 2, 1967).

This interpretation of the Zeribar pollen core was based on comparing the buried samples with surface samples collected from the Zagros area. A series of transects were taken across several vegetational zones from the Mesopotamian lowland to the interior plateau in Iran.⁸ The purpose was (a) to obtain a more accurate distribution pattern for modern plant types, and (b) to ascertain the percentage of surface pollen rain in relation to existing flora. With this information the investigators felt it would be possible to compare Pleistocene with modern vegetational patterns and draw inferences about past climatic conditions.

An important part of Wright, McAndrews and Van Zeist's argument rests on the fluctuations in the percentages of *Artemisia* in the Zeribar pollen core. They regard *Artemisia* as being a cool, dry steppe plant. It should be noted, however, that the distribution of *Artemisia* extends over almost all Iran. The only areas where it will not grow are in what Zohary terms the Euro-Siberian plant sector where the humidity of the Caspian littoral is uncongenial, and the Laro-Baluchistanian sectors which are too hot and dry.⁹ It thrives at altitudes ranging from 4800 m. to 10 m., under rainfalls between 500 mm. and 60 mm. per annum, under mean January temperatures of -2°C and mean July temperatures of 37°C .¹⁰ It shows a disconcerting ability to flourish in very different environments and to adapt to

⁸ Wright *et al.*, *J. Ecology* 55.

⁹ M. Zohary, "On the Geobotanical Structure of Iran", *Bulletin of the Research Council of Israel* 11D, Botany no. 4 (1963), pp. 1-108. Hereafter "Zohary, *Bull. Research Council of Israel*".

¹⁰ Climatic data, unless otherwise specified, supplied by the Iran Meteorological Dept. based on approximately fifteen years' observation.

numerous micro-habitats and plant communities. This results in a multiplicity of species which cannot be identified by the pollen record alone. It may be concluded, therefore, that *Artemisia* alone cannot be used as an indicator of a specific climate since it comprises many different species which are capable of thriving under a variety of conditions.

There is a second major objection to Wright, McAndrews and Van Zeist's argument whose basis is a comparison between percentages of buried and surface rain of *Artemisia* pollen. The Zeribar pollen cores provide the only currently available figures for the buried *Artemisia* pollen percentages. On the other hand samples of modern pollen rain are available from several localities on the surface transects. Very different inferences about past climates can be drawn depending on which of the surface samples is used for comparison. The vegetational climax of the Ilam transect is deciduous oak forest, either existing or deforested. *Artemisia* in the Kermanshah area, which comes into the Ilam transect, forms between 25 per cent and 16.5 per cent of the total vegetation. Rainfall for Kermanshah averages 393 mm. per annum and mean July temperatures are 27.3°C .¹¹ This hardly suggests a cool dry steppe. *Artemisia* counts from the Tabriz transect are 10 per cent, 15 per cent, 25 per cent and 60 per cent. It is with the Tabriz transect that the *Artemisia* counts in the lower parts of the Zeribar pollen core diagram are compared. Zone A1 and part of A2, with a lower C14 date of 12800 ± 300 B.C. is characterized by high values of *Artemisia*, 30 per cent. This figure could equally well be compared with the 25 per cent for the wooded Ilam transect, as with the figures for the Tabriz transect. Indeed, if the 30 per cent of the Zeribar core is compared with the 60 per cent from the Tabriz transect the conclusion must be that the Zeribar figures indicate a climate that was considerably wetter and hotter than round Tabriz today. Given that *Artemisia* is a cool dry steppe plant the 30 per cent of the Zeribar core indicates a climate far less favourable to the growth of *Artemisia* than that of the 60 per cent from Tabriz.

The argument, based on *Artemisia* pollen, for a climate change falls on two counts. First, *Artemisia* is not a reliable climatic indicator. Second, the comparison between percentages of buried pollen rain from one locality and surface pollen rain from several localities cannot be used to make the inferences about climatic conditions claimed by Wright, McAndrews and Van Zeist.

Wright's argument for climatic change based on the Zeribar pollen core rests, therefore, mainly on the incidence of tree pollen. Tree pollen is not entirely absent from the base of the diagram but reaches measurable proportions only half way through Zone A2 (c. 12800 B.C.) increasing to about 5 per cent at the base of Zone B, (c. 6000). This suggests there may have been a small change in precipitation and temperature levels at the end of the Pleistocene. This would have been sufficient to affect marginal vegetational zones, but not to produce wide-spread changes in plant vegetation.

Van Zeist interprets the "dry steppe" of the Pleistocene as a description of a climate with annual precipitation essentially similar to today's but with somewhat drier summers.¹² Since extreme cold in winter and drought in summer are the limiting conditions for tree growth the appearance of tree pollen in the Zeribar diagram could well be accounted for by a rise of 3° – 5°C in mean air temperature (see below) and a small rise in summer humidity. This does not suggest a climatic change that would affect seriously the vegetational patterns of the Zagros at the end of the Pleistocene. At the most it would have affected what are now marginal areas of cereal distribution.

It is important to note, both in interpreting the Zeribar pollen diagram and the surface transects, that individual samples may reflect the pollen of a nearby shrub out of all proportion to its actual overall importance in the pollen spectrum. This is certainly the case in some of the transect samples which were taken from beneath detritus. Furthermore some samples will be affected by the proximity of plants in quite a different zone, reflecting an environment alien to that from which the sample was taken.

Finally, the action of man and his livestock changes in a great degree the vegetation of an area. Man not only changes the vegetation by cutting down trees but promotes the invasion of new plant communities thereby affecting the entire micro-ecology of the area. Any surface pollen samples will

¹¹ Rainfall varies considerably from year to year in the Kermanshah area. In some years the precipitation would be higher.

¹² W. Van Zeist, "Reflections on Prehistoric Environments in the

Near East", *Domestication and Exploitation of Plants and Animals*, eds. P. J. Ucko and G. W. Dimbleby (London, 1969).

reflect vegetation severely altered by anthropogenic factors over millennia. The same considerations should be applied to the buried pollen samples. There, too, the vegetation was subject to anthropogenic factors. *Plantago* is only one, albeit one of the more outstanding, of the weedy plants which invade impoverished soil and disturbed areas. The Zeribar area today has suffered considerable over-grazing and deforestation and it is reasonable to suppose a similar situation might have occurred at the end of the Pleistocene.

As far as the Zeribar pollen diagram is concerned no arguments have yet been presented which support conclusively a climatic change of real significance at the end of the Pleistocene. The same pollen fluctuations which are used to indicate climatic change can be accounted for equally convincingly by anthropogenic factors.¹³

The controversies over climatic conditions in the Zagros at the end of the Pleistocene have centred on three main topics. First, the analysis of the Zeribar pollen cores. Second, the extent of glaciation during the terminal phase of the Last Glaciation. Third, the fluctuations in the water level of Lake Rezaieyeh. Since the last two have been cited both against and in support of Wright's interpretation of the Zeribar pollen core they will be discussed below.

Glaciation

A sensitive and well recorded climatic indicator for the Pleistocene are the geomorphological traces left behind by glaciation. The interpretation of the material is, however, vexed by intra-disciplinary disputes and the problem of dating.

The effects of glaciation in Kurdistan have been studied by Wright¹⁴ and Bobek.¹⁵ Wright claims to have evidence for moraines and cirques at altitudes which imply a snow-line 1200-1800 m. lower than today. Bobek, however, claims that snow-lines during the final phase of the Last Glaciation were 650-700 m. lower in south-west Iran and 700-800 m. lower in north Iran than today. He did not find evidence comparable to Wright's for glaciation at greatly depressed altitudes.¹⁶ If Wright is correct, and lowered temperatures alone were to account for the low altitude of the snow-line, mean annual temperatures must have been at least 12° C lower than at present.¹⁷ This would imply a climate similar to that of Europe where Tundra flora and fauna were wide-spread. Unlike Europe, however, there are no periglacial records to indicate such low temperatures in Kurdistan. If Bobek is correct in his placing of the snow-line the drop in altitude would have to be explained by a drop of 3°-5° C at the most in the mean air temperature from that of today.¹⁸ Such an interpretation would accord with the analysis presented above of the Zeribar pollen diagram. A slight decrease in the severity of the winters, not more than 5° C, combined with less summer drought, would have permitted the growth of trees at the end of the Pleistocene.

The problem, however, of dating the height and the decline of the final phase of the Last Glaciation in western Iran remains. Wright draws an analogy with the European Alps where glaciers may have started their retreat by 16000 B.C.,¹⁹ in which case climatic change would have predated considerably the pollen fluctuations in the Zeribar diagram. Any reliable dating of geomorphologic phenomena in the Zagros must await further research.

¹³ In addition to the pollen cores taken from Lake Zeribar, analysis of buried plant macrofossils and Cladocera was used as evidence for climatic trends in the area. During the Zone A1 period of the Zeribar diagram water plants indicate that parts of the lake were 8-10 m. deep. (K. Wasylikowa, "Late Quaternary Plant Macrofossils from Lake Zeribar, Western Iran", *Rev. Palaeobotany and Palynology* 2 (1967), p. 31). Temperature conditions must have been moderate, certainly no colder than southern Scandinavia today. In Zone A2 the water level fluctuated between approximately 3 and 6 m. The decrease in water level of Lake Zeribar at the end of the Pleistocene may indicate slightly higher temperatures but would seem to suggest, if anything, a decrease in precipitation.

¹⁴ H. E. Wright Jr., "The Geological Setting of Four Prehistoric Sites in Northeastern Iraq", *BASOR* (1952), pp. 11-24.

¹⁵ H. Bobek, "Klima und Landschaft Irans in Vor- und Frühgeschichtlicher Zeit", *Geographischer Jahresbericht aus Österreich* 25 (1954), pp. 1-42. Hereafter "Bobek (1954), *Geog. Jahresbericht aus Ost* 25".

¹⁶ H. Bobek, "Nature and Implications of Quaternary Climatic Changes in Iran", *Changes of Climate. Arid Zone Research*, UNESCO 20 (1963), p. 406.

¹⁷ H. E. Wright Jr. "Pleistocene Glaciation in Kurdistan", *Eiszeitalter und Gegenwart* 12 (1962) p. 156.

¹⁸ Wright, *Science* 161, p. 156.

Lake Rezaiyeh

A decrease of either 3°-5° C or 12° C in mean air temperature during the Pleistocene from that of today would have raised the water level of Lake Rezaiyeh. Working from present day precipitation totals Bobek claims that a decrease in 3°-5° C would produce the same water level as in the late Pleistocene. Using the same method Bobek claims that a 12° C drop in mean air temperature would result in a much higher water level, causing the lake to overflow. In fact the water level in the lake during the Pleistocene remained at about 1350 m.¹⁹ without an outlet. Bobek concludes, therefore, that temperatures during the Pleistocene were 3°-5° C lower than today, not the 12° C lower suggested by Wright.

Conclusion

In conclusion the evidence at present available does not indicate a climatic change entailing more than 3°-5° C rise in mean air temperature at the end of the Pleistocene. The depression of the snow-line according to Bobek's placing, the water level of Lake Rezaiyeh and the Zeribar pollen diagram, neither individually nor together, can be used conclusively to show a climatic change of greater proportions. Seasonal extremes of cold in winter and drought in summer may have been mitigated to allow the gradual invasion of oak forest. Otherwise the effect on the vegetation patterns would have been small. Areas which are now marginal for the distribution of wild wheat and barley would have been smaller during the height of the last phase of the Last Glaciation, reducing the number of hunting and foraging grounds. Significant climatic change did not occur until about 6000 B.C. by which time agriculture in the Zagros was well established.

It seems likely that man's first attempts at cultivation were on a small scale, entailing the removal of bushes and scrub in the primary habitats of wild cereals. Probably fire was used since it is an effective way of clearing unwanted vegetation in areas where wild cereals were growing. In addition it opens up new habitats, increasing light, reducing competition from other plants and allowing mutants to survive. It increases the moisture available, since in dry zones fire conserves moisture for shallow rooted crops by limiting the growth of deep-rooted species.²⁰ Phosphates, calcium, potash and other elements in the soil are greatly increased. This leads to high yields: ratios of 100 : 1 per unit of seed planted have been recorded for first year yields.²¹ To start with man need not consciously have made use of these new fire cleared areas. He would have been collecting from primary habitats of wild cereals and most probably transported the seeds accidentally to secondary habitats in the newly burnt areas. In time, however, the use of fire to clear undergrowth and the sowing of cereal seeds in the ash would have become deliberate.

Archaeological evidence for burning comes from ninth and eighth millennium sites both within and outside the oak-pistachio belt of the Zagros. Heavy ash lenses appear in the lower levels of Ali Kosh, the Bus Mordeh phase.²² Further analysis is necessary to ascertain whether it was wood ash or some other ash, such as reeds or dung. At Mureybit ashy deposits were the result of burning reeds which grew down by the river.²³ Lewis suggests²⁴ that much of the ashy deposits at Mureybit and Ali Kosh is the result of wind borne ash, produced by burning vegetation to clear fields. Ganj-Dareh was almost totally destroyed by fire. Much of the deposit at Sarab was ash.²⁵ Heavy ash lenses are visible in the profile of the unexcavated neolithic site of Tepe Abdul Hosein in Luristan.²⁶

It may be noted in addition that cereals are fire selected, that is they both survive burning and flourish in its wake. At Shanidar Cave small wild cereal pollen goes back to the earliest Mousterian levels. It is succeeded at about 8-7000 B.C. by larger pollen grains.²⁷ This appearance of large

¹⁹ Bobek (1954), *Geog. Jahresbericht aus Ost* 25.

²⁰ Henry T. Lewis "The Role of Fire in the Domestication of Plants and Animals in Southwest Asia: A Hypothesis", *Man* 7 (1972), p. 210. Hereafter "Lewis, *Man* 7".

²¹ E. R. Wolf, *Sons of the Shaking Earth* (1959), pp. 58-9.

²² F. Hole, K. V. Flannery and J. A. Neely, *Prehistory and Human Ecology of the Deh Luran Plain*, University of Michigan 1, (1969), pp. 37-9.

²³ Personal communication from J. Mellaart.

²⁴ Lewis, *Man* 7, pp. 211-2.

²⁵ Personal communication from F. Hole, 22.10.1975.

²⁶ C. Goff and J. Pullar, "Tepe Abdul Hosein", *Iran* VIII (1970), pp. 199-200.

²⁷ A. Leroi-Gourhan, "Pollen Grains of Gramineae and Cerealia from Shanidar and Zawi Chemi", *Domestication and Exploitation of Plants and Animals* (1969), p. 145. Hereafter Leroi-Gourhan, "Pollen Grains".

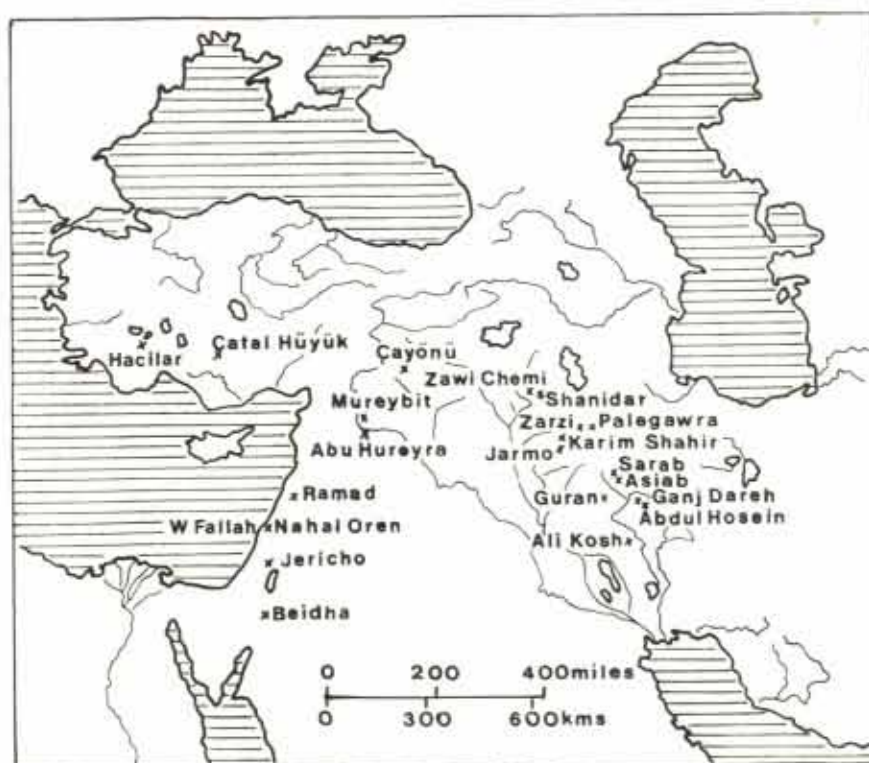


Fig. 2. Site Location Map.

"Cerealia type" pollen may indicate the development of a domesticated cereal. Working on Helbaek's estimate of the time necessary to effect the morphological changes exhibited by domesticated grain, two millennia of cultivation preceded the appearance of the large *Cerealia* pollen at Shanidar Cave in the late ninth millennium. At Zawi Chemi Shanidar a somewhat similar pattern occurs, an increase in the percentage of small pollen more or less coinciding with the appearance of larger pollen. Lewis suggests that this increase in pollen size was the result of the deliberate use of fire.²⁴

To summarize, the Zeribar pollen diagram may be interpreted to show cultivation starting in the Zagros around 12000 B.C. This began as simple removal of scrub to facilitate the growth of cereals. Once the potentialities of fire both for clearing vegetation and for enriching the soil were appreciated the early cultivators used it deliberately. This resulted in major changes in the plant communities and prospered such fire selected species as cereals.

The Distribution of Wild Cereals

The Zagros region was undoubtedly a key area in the early cultivation of cereals. The only early stratified examples of "wild" emmer, *Triticum dicoccoides*, occur in or adjacent to the Zagros, at Çayönü,²⁸ Jarmo²⁹ and Tepe Guran.³⁰ Unfortunately cereal remains from archaeological sites are very rare in Iran, a lack which could certainly be overcome by the excavation of early prehistoric sites in the Zagros, such as Tepe Abdul Hosein near Nahavand. Theoretically it is possible for wheat and barley to grow almost anywhere in the Zagros. Wheat is extremely adaptable. There are, however,

²⁸ R. H. Braidwood, H. Cambel, C. L. Redman and P. J. Watson, "Beginning of village farming communities in south-eastern Turkey" *Proc. Nat. Acad. Sci.* (1971), pp. 1238-9. Hereafter "Braidwood et al., *Proc. Nat. Acad. Sci.*".

²⁹ H. Helbaek, "The palaeoethnobotany of the Near East and

Europe", *Prehistoric Investigations in Iraqi Kurdistan* (O.I.P. 31, 1960), p. 181. Hereafter "Helbaek, O.I.P. 31".

³⁰ K. V. Flannery, *The Prehistoric Environment of Tepe Guran* (in press).

certain limiting factors. The minimum, optimum and maximum temperatures for effective germination vary with other environmental conditions as well as with different species, varieties and conditions of seed. Optimum temperatures are approximately 20°–25° C. Weak germination occurs at slightly above 0° C and 40° C.³¹ The second limiting factor of wheat production is the moisture available. This is extremely difficult to measure since it depends on the amount of precipitation, when it falls, how it is distributed annually, what the evaporation rate is, what the run-off is, and the type of soil. Most of the world's wheat is produced in semi-arid and sub-humid regions, that is in areas with between 254 mm. and 762 mm. of rainfall per annum. Some is, however, produced in regions having as little annual precipitation as 200 mm. by growing the crops once in two years and having the land lie fallow in the alternate years to conserve moisture.³² Wheat grows better on stiff clay loams which are well drained rather than on loose sandy or peaty soils or on wet clays.³³ Barley will not tolerate extreme cold but because it ripens faster than wheat can in fact be grown at higher altitudes and further north. Some spring barleys may mature in 60–70 days after sowing. Like wheat, barley will not grow well in a humid climate. It can tolerate warm steppe and desert conditions as well as, if not better than wheat. It prefers well drained fertile loam soil but will grow on salty and alkaline soil whereas wheat will not.³⁴

The best micro-environments for wild cereals will provide both light and moisture conserving vegetation. Lightly wooded areas would provide better soil, more constant moisture, and less competition from other grasses and weeds. Those areas of the Zagros having a vegetational climax of oak-pistachio forest whether or not they are now denuded, would have provided the best micro-habitats for wild cereals. This is the majority of the Zagros area.³⁵ Within these broad areas, however, there would have been pockets where wild wheat and barley would have grown well, indifferently, or not at all.

There are two ways of assessing the original distribution of wheat and barley:

1. The presence of seeds of wild species on archaeological sites.
2. By analogy with the modern distribution of wild wheats and barleys in primary habitats.

Harlan and Zohary have relied heavily on the second method in drawing up their distribution maps which are consequently unrealistically restrictive. Their distribution maps are based on primary occurrences of wild wheat and barley. Man is most likely to have been cultivating and generally disturbing the micro-habitats of the best farming areas for millennia, which minimizes the botanists' chances of finding cereals in primary habitats.

The anomaly between the present day primary occurrences and archaeological finds is most marked in the case of *T. dicoccoides*. Harlan and Zohary³⁶ hypothesized that "emmer was probably domesticated in the Upper Jordan watershed". In view of its occurrence at sites in the Zagros region this must be regarded as too restricted an area.

The modern distribution of wild einkorn extends over most of Western Asia. Wild einkorn has been found, however, in eighth millennium contexts at Mureybit, Abu Hureyra, Ali Kosh and Aceramic Hacilar which lie outside the distribution according to Zohary.³⁷ It seems likely that in each of these cases it had already been moved from its natural habitat and was in the early stages of cultivation. Bearing in mind the wide distribution of einkorn, there seems to be little reason for regarding south-east Turkey as the area where einkorn was first domesticated as suggested by Harlan and Zohary.³⁸

The present day distribution of wild barley is sufficiently wide to avoid the apparent inconsistencies presented by this distribution of the wild wheats. The archaeological occurrences of wild barley all lie within the modern distribution.

³¹ R. F. Paterson, *Wheat. Botany, Cultivation and Utilization* (1965), p. 40. Hereafter "Paterson (1965), *Wheat*".

³² *Ibid.*, pp. 122–3.

³³ Jane M. Renfrew, *Palaeoethnobotany* (1973), p. 66.

³⁴ *Ibid.*, pp. 80–1.

³⁵ Zohary, *Bull. Research Council of Israel* 1963.

³⁶ J. R. Harlan and D. Zohary "Distribution of Wild Wheats and Barley". *Science* 153 (1966), pp. 1074–80. D. Zohary subsequently changed his mind and now agrees that *T. dicoc-*

coides does in fact grow outside Palestine. (D. Zohary, "The Progenitors of Wheat and Barley in Relation to Domestication and Agricultural Dispersal in the Old World", *Domestication and Exploitation of Plants and Animals* (1969), p. 66 note 17. Hereafter "D. Zohary, *The Progenitors of . . .*").

³⁷ D. Zohary, "The Progenitors of . . .", p. 50 fig. 1.

³⁸ Harlan and Zohary, *Science* 153, p. 1079; D. Zohary, "The Progenitors of . . .", p. 59.

It seems likely that the distribution of wild cereals at the end of the Pleistocene was more extensive than the present distribution. Intensive agriculture and grazing in the most favourable areas of the Zagros would tend almost to eliminate primary stands of wild cereals, on which current distribution maps must be based. The necessary environmental conditions for wild cereal growth obtain today, and there is no reason to suppose they did not do so in the past. Finally, wild cereals have been found in archaeological contexts outside the modern distribution areas indicating a wider ancient distribution.

The Origins of Domesticated Cereals

Before continuing it is necessary to distinguish between cultivation and domestication of plants. If an agent deliberately modifies the environment to facilitate the growth of a selected species it is then cultivated.³⁹ A plant may, however, be cultivated for hundreds of years before it can be considered domesticated. In a domesticated plant a gene mutation has taken place and the plant cannot revert to its natural state.⁴⁰ A domesticated plant is likely to exhibit morphological changes which a cultivated plant will not. The brittle rachis of a wild plant, for example, aids its dispersal. Man harvests the grain of the stiff rachis plant which holds its seed longer. By this selection the wild plant loses its dispersal mechanism and is dependent on man's sowing it to survive. In so doing man lessens the competition from other wild plants. Whether a particular seed, or collection of seeds, can be considered wild or cultivated (as opposed to domesticated) depends to some extent on the actual morphology of the seed. For this reason a domesticated seed can be considered an artifact.⁴¹

The earliest plants domesticated in the Near East appear to have been wheat and barley (table 1). Wheat is the richer of the two grains but barley has the advantage of tolerating a more saline soil and lower altitudes.⁴² It is high in food value. Both wheat and barley are quickly collected. Harlan averaged 2.05 kilos per hour over 2½ hours collecting with his hands and 2.45 kilos using a sickle blade.⁴³ The grain (caryopsis), a one seeded fruit, of both wheat and barley stores well and is compact and dry.⁴⁴ Experiments have shown grain will germinate after storage of less than one year up to thirty-two years, depending on conditions.⁴⁵ Drying the grain artificially for long term storage seems to have been practised from very early times. The ovens found at early sites, which may have been used to parch the grain and release it from the tight glumes,⁴⁶ would have had the effect of prolonging storage. Ovens have been found at Ali Kosh,⁴⁷ Mureybit,⁴⁸ Çayönü⁴⁹ and Hacilar.⁵⁰ Apparently this was a technological advance of which the inhabitants of Beidha were unaware.⁴⁶ Storage pits are known from several sites (see below). The advantages of wheat and barley as food, both from the point of view of nutrition and of convenient storage are considerable.

Any attempt to recognize the earliest domesticated cereals in the Near East must rest on a clear understanding of the differences between the domesticated grain and its wild forebears. Unfortunately there is not universal agreement among botanists on which of the various wheat species that occur on prehistoric sites are wild and which domesticated.

³⁹ H. Helbaek, "The plant husbandry of Hacilar", *Excavations at Hacilar 1*, by J. Mellaart (1970), p. 194. Hereafter "Helbaek, Hacilar 1".

⁴⁰ H. Helbaek, "Plant collecting, dry-farming and irrigation agriculture in prehistoric Deh Luran", *Prehistory and Human Ecology of the Deh Luran Plain* (1969), p. 403. Hereafter "Helbaek, Deh Luran Plain".

⁴¹ H. Helbaek, "Domestication of food plants in the Old World", *Science* 130 (1959), p. 365.

⁴² C. D. Darlington, *Chromosome Botany and the Origins of Cultivated Plants* (1963).

⁴³ Jack R. Harlan, "A Wild Wheat Harvest in Turkey", *Archaeology* 20 (1967), pp. 197-201. Hereafter "Harlan, Archaeology 20".

⁴⁴ Herbert G. Baker, *Plants and Civilization* (1964), p. 10.

⁴⁵ Peterson (1965), "Wheat . . .", p. 45.

⁴⁶ H. Helbaek, "Pre-pottery neolithic farming at Beidha", *Palestine Exploration Quarterly* 98 (1966), p. 62. Hereafter

"Helbaek, P.E.Q. 98".

⁴⁷ H. Helbaek, "Palaeo-ethnobotany", *Science in Archaeology*, ed. D. Brothwell and E. Higgs (1963), p. 177.

⁴⁸ The first "Fire Pit" at Mureybit is recorded from Stratum II. A burnt structure containing charcoal and cinders is recorded for the earliest levels, Stratum I. An open fireplace was found on virgin soil and another above. About a thousand charred seeds were found from the vicinity of the fire pits in Stratum XI. (Van Loon, "The Oriental Institute Excavations at Mureybit, Syria. Preliminary Report on the 1965 campaign", *J.N.E.S.* 27 (1968), pp. 267-9).

⁴⁹ "Pit-ovens" varying in diameter from 1.2-2.0 m. and in depth from 30-50 cm, from which tree bark, a few seeds and charcoal were obtained, were found in the earliest prehistoric layers, phase I. (Braidwood *et al.*, *Proc. Nat. Acad. Sci.* 1971, pp. 1238-9).

⁵⁰ J. Mellaart, *Excavations at Hacilar* (1970), pp. 5-6.

TABLE I

Principal Food Crops Found on Sites in Western Asia up to the Seventh Millennium

Sites	Dates B.C.	Wild Einkorn	Einkorn	Wild Emmer	Emmer	Bread Wheat	Wild 2-row barley	Hulled 2-row barley	Naked 2-row barley	Hulled 6-row barley	Naked 6-row barley	Oat	Millet	Pea	Lentil	Vetch	Flax
Ali Kosh (B.M.)	7000-6500	x	x	-	x	-	x	-	x	-	-	-	-	-	-	-	-
Ali Kosh (A.K.)	6500-6000	-	-	-	x	-	-	x	-	x	-	W	-	-	-	-	-
Ali Kosh (M.J.)	6000-5600	-	-	-	x	-	-	x	-	-	-	W	-	-	-	x	-
Tepe Guran	6500-5500	-	-	x	-	-	x	x	-	-	-	-	-	-	-	-	-
Sarab	c. 6200				x												
Jarmo	c. 6500	x	x	x	x	-	x	-	-	-	-	-	-	x	x	x	-
Hacilar (Ac)	c. 7000	x	-	-	x	-	-	-	-	-	x	-	-	x	x	x	-
Çayönü	c. 7000	x	-	x	x	-	-	-	-	-	-	-	-	x	x	x	-
Jericho PPNA	c. 7500	-	x	-	-	-	-	x	-	-	-	-	-	-	-	-	-
Jericho PPNB	c. 6500	-	x	-	x	-	-	x	-	-	-	x	-	x	x	-	-
Jericho PPNB	c. 6500	-	x	-	x	-	-	x	-	-	-	x	-	x	x	-	-
Beidha PPNB	c. 7000	-	-	-	x	-	x	-	x	-	-	W	-	-	-	x	-
Nahal Oren	c. 10000	-	-	-	x	-	x	-	-	-	-	-	-	-	-	-	-
Mureybit	c. 7800 +	x	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-
T. Abu Hureyra	c. 8000	x	-	-	-	-	x	-	-	?	-	-	-	-	x	x	-
Ramad	c. 6500	-	x	-	x	C	-	x	-	-	-	-	-	-	x	-	-

W = Wild

C = Club wheat

(based on J. Renfrew, "The Archaeological Evidence for the Domestication of Plants; Methods and Problems", *Domestication and Exploitation of Plants and Animals* (1969); M. Hopf, "Plant Remains and Early Farming in Jericho", *Domestication and ...* (1969); W. van Zeist and A. Casparie, "Wild Einkorn, wheat and barley from Tell Mureybit in Northern Syria", *Acta Bot. Neerl.* 17, 1 (1968); P. Mortensen unpublished material; R. J. Braidwood *et al.*, "Beginning of village farming communities in south-eastern Turkey", *Proc. Nat. Acad. Sci.* (1971); R. W. Dennell, "The Phylogenesis of *Triticum dicoccum*: A Reconsideration", *Economic Botany* 27 (1973); J. Mellaart, *The Earliest Settlements in Western Asia*. C.A.H. fas. 59 (1967); A. M. T. Moore, "The Excavation of Tell Abu Hureyra in Syria: A preliminary report". *PPS* 41 (1975); H. de Contenson, "Tell Ramad, a Village of Syria of the 7th and 6th Millennia B.C.", *Archaeology* 24 (1971)).

In the case of the diploid wheat, einkorn, there is no problem. Wild einkorn is the direct ancestor of the cultivated form. The artificial environment created by man's cultivation of the soil and the mutation and recombination of genes as the result of selectivity is sufficient to account for its emergence.⁵¹

The difficulty arises with the tetraploid wheat, emmer. There are two forms of emmer: *Triticum dicoccoides*, generally known as "wild" emmer, and *T. dicoccum*, generally regarded as "cultivated" emmer. Both forms are fully interfertile. The most generally accepted view, that of Helback,⁵² is that *T. dicoccoides* is the direct ancestor of *T. dicoccum*. Unconscious selection by man of the mutants with tough rachis over two millennia would have been sufficient to account for the appearance of the domesticated form of emmer. A contrary view has been expressed by Zhukovskij.⁵³ He claims that there are no grounds for considering *T. dicoccum* as a cultivated form of *T. dicoccoides*, although it might be the result of a cross between the latter and another wild grass. If, in fact, *T. dicoccoides* is the ancestor of *T. dicoccum*, seeds of the former should appear in earlier archaeological contexts than the latter. So far *T. dicoccoides* has only been found in association with cultivated emmer. *T. dicoccum*, however, has consistently been found in the earlier archaeological contexts: at Ali Kosh in all three phases,⁵⁴ at Beidha PPNB,⁵⁵ at Jericho PPNB⁵⁶ at Aceramic Hacilar c. 7000 B.C.⁵⁷ and at Nahal Oren (Wadi Fallah)⁵⁸ sealed below Kebaran deposits not later than 10000 B.C. There are three possible explanations for this:

1. *T. dicoccoides* is a feral offshoot of *T. dicoccum*, and therefore chronologically would appear in later contexts.
2. *T. dicoccum* has both a wild and domesticated form, the former with a brittle rachis, the latter with a tough rachis, but without any marked changes in grain morphology.
3. *T. dicoccum* is the progeny of *T. dicoccoides* and was indeed domesticated at Nahal Oren before 10000 B.C.

What this amounts to is that either it is impossible on taxonomic grounds to decide which of the two forms of emmer is wild and which domesticated, or wheat was domesticated in Palestine by 10000 B.C. This presupposes at least two millennia of previous cultivation to effect the necessary mutations.⁵⁹

The origin of domesticated barley poses a second unsolved botanical problem. Three species of barley were important during the ninth to seventh millennia in the Near East. There are two domesticated forms, one six-row (*Hordeum vulgare* L. *emend*) and one two-row (*Hordeum distichon* L.), and one wild form, *Hordeum spontaneum*, which is two-row. The question, then, is whether there was an as yet unidentified wild six-row barley as well.⁶⁰

The question is relevant to the archaeologist because, if *H. spontaneum*, the two-row wild form, is the only ancestor of the six-row domesticated forms, then three mutations would have been necessary for the development of wild two-row hulled barley to naked six-row domesticated barley: Two-row, hulled, brittle axis → 1. two-row, hulled, tough axis → 2. six-row, hulled, tough axis → 3. six-row, naked, tough axis.

⁵¹ Helback, *Hacilar* 1, p. 202.

⁵² Helback, *E.B.* 20, p. 352. Sir Joseph B. Hutchinson, "Essays on Crop Plant Evolution" (1965). Hereafter "Hutchinson (1965), Essays . . .", cf. Bell p. 77, Riley p. 109; Baker (1964), *Plants and Civilization*, p. 69; Peterson (1965), *Wheat*, ch. 5.

⁵³ P. M. Zhukovskij, *Cultivated Plants and their Wild Relatives*. (1950), translation by P. S. Hudson 1962. Commonwealth Agricultural Bureaux, p. 2. Hereafter "Zhukovskij (1950), *Cultivated Plants*".

⁵⁴ Helback, *Deh Luran Plain*, p. 403.

⁵⁵ Helback, *P.E.Q.* 98.

⁵⁶ M. Hopf, "Plant Remains and Early Farming in Jericho", *Domestication and Exploitation of Plant and Animals* (1969), pp. 355-9. Hereafter "Hopf (1969), *Plant Remains* . . ."

⁵⁷ Helback (1970), *Hacilar* 1, p. 198.

⁵⁸ R. W. Dennell, "The Phylogenesis of *Triticum dicoccum*: A Reconsideration", *Economic Botany* 27 (1973), pp. 329-31. R. W. Dennell, Contribution in: T. Noy et al. "Excavations at Nahal Oren, Israel", *PPS* 39 (1973), p. 92.

⁵⁹ Helback, *E.B.* 20, p. 350.

⁶⁰ A wild six-row barley, *H. agriocrithon*, was discovered in 1938 by Åberg but has subsequently been found only in what appear to be secondary habitats in very scattered areas, Tibet, Israel, Transcaucasia, and Turkmenia. It does not breed true and Zohary regards it as a hybrid. (D. Zohary, "Is *Hordeum agriocrithon* the Ancestor of Six-Rowed Cultivated Barley?", *Evolution* 13 (1959), pp. 279-80). Helback does not regard it as truly wild. (Helback, *O.I.P.* 31, p. 110).

Mutations are regular but not frequent in nature, unless some external stimulus is applied. If the mutation rate is one per two thousand years or more as hypothesized by Helbaek then six millennia might have elapsed between the first cultivation of barley and its appearance in a six-row naked form at Aceramic Hacilar at c. 7000 B.C.

The archaeological sequence of events is quite clear. The earliest barley in an archaeological context is wild two-row barley from the early ninth to late eighth millennia levels at Mureybit.⁶¹ The first evidence for cultivated barley, both the hulled two-row and the naked six-row varieties, appear at about the same time, in the eighth millennium when the brittle rachis was in the process of being replaced by a tougher rachis.⁶² Hulled six-row barley did not appear until after 6000 B.C., possibly because its transpiration rate was higher and it was dependent on irrigation for survival.⁶³ The botanists, however, remain baffled. "Why this has come about defies explanation on the basis of accepted genetical views."⁶⁴

One further factor ought to be considered. Barley is extremely adaptable and its behaviour is, to a considerable extent, dependent on its environment. Zhukovsky maintains that the difference between two-row and six-row barley is rather arbitrary as two-row barleys under certain conditions, such as the mountains of Tibet, China and the Himalayas, behave as six-row. Certain forms in the Near East behave as two-row in the plain and six-row in the mountain.⁶⁵ Bell would endorse this, pointing out that there is a definite association of genotype with region.⁶⁶ The distinction between six-row and two-row barley may be botanically invalid.

The important point to emerge from this digression is that botanists are far less positive about what constitutes domesticated barley than archaeological literature tends to suggest. Bell⁶⁷ writes "There is no agreement as to what are primitive forms of cultivated barley or what characters in themselves may be regarded as primitive".

It is possible, by working back from the first appearance of domesticated grain, to suggest dates for the beginning of agriculture in various parts of Western Asia. The chronology is, however, complicated by the uncertainty of whether or not *T. dicoccoides* is "wild" emmer and the ancestor of *T. dicoccum*. If it is not, then was there a wild and cultivated form of *T. dicoccum* distinguishable only by the toughness of the rachis? If this is the case it is not possible at the moment to say definitely at which sites emmer was domesticated and at which sites it was wild.⁶⁸ In the case of barley the situation is similarly complicated by not knowing definitely how naked six-row barley evolved.

The earliest known indications of cereal cultivation in Western Asia come from Palestine. Apart from Palestine the earliest domesticated cereals appear in the eighth millennium. At Hacilar both domesticated emmer and naked six-row barley were found in the aceramic levels of the eighth millennium. In the case of the emmer, where one mutation is responsible for the change from wild to domestic states, cultivation must have started in the tenth millennium. The earliest date for the cultivation of barley is more difficult to arrive at. If one complex gene mutation is responsible for the change from hulled two-row barley to naked six-row barley then the cultivation of barley began at about the same time as wheat. If three separate gene changes were responsible at the rate of one every two millennia, six thousand years of cultivation could have elapsed before the appearance of the naked six-row barley in the eighth millennium i.e. barley was being cultivated at 13000 B.C. This does seem to be too early and it is unlikely that barley was being cultivated separately from wheat. A conservative estimate would put the beginning of cereal cultivation in Anatolia in the tenth millennium.

⁶¹ J. Cauvin, "Découverte sur l'Euphrate d'un village natufien du IX^e millénaire av. J-C à Mureybet (Syrie)", *Comptes Rendus. Académie des Sciences, Paris* 276 Serie D (1973), pp. 1985-7; W. Van Zeist, "The Palaeobotany of The Oriental Institute Excavations at Mureybit, Syria: Preliminary Report on the 1965 Campaign. Part III", *J.N.E.S.* 29 (1970), pp. 167-76.

⁶² Helbaek, *Hacilar* 1, p. 219.

⁶³ *Ibid.*, p. 223; H. Helbaek, "Ecological effects of irrigation in ancient Mesopotamia", *Iraq* XXII (1960).

⁶⁴ Helbaek, *Hacilar* 1, p. 221.

⁶⁵ Zhukovskij (1950), "Cultivated Plants . . .", p. 6.

⁶⁶ G. D. H. Bell, "The comparative phylogeny of the temperate cereals", *Essays on Crop Plant Evolution*, ed. Sir J. B. Hutchinson (1965), p. 88.

⁶⁷ *Ibid.*, p. 84.

⁶⁸ It is possible that einkorn was cultivated as a weed of the emmer fields. It has been found cultivated at Ali Kosh in the Bus Mordeh phase and at Jericho PPNB.

The situation is paralleled in Eastern Anatolia at Çayönü where domesticated emmer appears in the eighth millennium.

Ali Kosh, on the western slopes of the Zagros, has the earliest occurrence of domesticated cereals so far known in Iran. Domesticated emmer and einkorn appear in the eighth millennium at Bus Mordeh which means cultivation must have been being practised since the tenth millennium or that the domesticated cereal was brought to the lowlands at a later date.

In the Inner Zagros the earliest known domesticated grain appears in the seventh millennium at Tepe Guran. Domesticated hulled two-row barley (one mutation) suggests that the cultivation of barley started in that area in the ninth millennium. At Sarab, domesticated emmer appears in the late seventh millennium which indicates that it was being cultivated by the ninth in the Kermanshah area.⁶⁹

It seems likely that the appearance of domesticated cereals in the Zagros rather later than in Palestine and Anatolia is purely accidental. Tepe Ganj-Dareh is the only excavated site in the Inner Zagros with a date comparable to that of Hacilar and Çayönü. The botanical remains are at present undergoing analysis. Wild wheat and barley grow in the Zagros now and grew there in the seventh millennium. Rainfall is adequate for dry farming and there is no reason to suppose it was not so at the end of the Pleistocene. In addition the Zeribar diagram shows a rise in weeds associated with disturbed soil at c. 12000 B.C. It is reasonable to suppose, therefore, that a primitive form of cereal cultivation was practised in the Zagros as early as the thirteenth to the twelfth millennia.

POPULATION PRESSURES AND SHIFTING CULTIVATION

The appearance of weeds of cultivation in the Zeribar pollen diagram, the use of fire and the distribution of wild cereals all point to a long period of experimentation and adaptation, starting somewhere around the thirteenth millennium and resulting in the appearance of domesticated cereals in the eighth millennium in Iran and earlier than the eleventh in Palestine. The gradual change from hunting-gathering to cultivation and then agriculture entail increased input in man-hours in relation to output in produce. The economist Boserup has given new impetus to the understanding of what prompted the change from extensive to intensive methods of land use.⁷⁰ The basis of her thesis, which has subsequently been widely discussed by demographers and archaeologists,⁷¹ is that population growth in primitive societies obliged the forager to turn to cultivation, and the early cultivator to turn to more labour intensive forms of cultivation and agriculture.

On the basis of present archaeological material and site distribution patterns estimates of population levels, of growth or decline during the Pleistocene, must remain hypothetical. Most of the arguments about demographic behaviour during the Pleistocene are based on ethnographic parallels drawn from existing hunting-gathering societies in the more hostile of the world's environments. It is quite reasonable to suppose that hunter-gatherers in more clement climes would have developed different cultural adaptations to pressures on food resources. Nevertheless, there are certain conditions imposed by the very nature of mobility which may be universally applicable.

Studies of present day hunter-gatherer bands show strong cultural restrictions on any increase in population densities. Kinship laws, taboos and exogamy all affect the band size,⁷² and infanticide is common in a number of modern band societies.⁷³ There are several reasons why hunter-gatherers would wish to maintain low population densities. Increased population densities result in social friction. This has been demonstrated both for subprimate⁷⁴ and human societies⁷⁵. The effect of a rapidly increased density, such as that imposed by limited summer pasture in the Zagros, would be

⁶⁹ Helbaek found at Sarab impressions of domesticated emmer associated with many seeds of *Adonis* which is a weed that grows on cultivated land. This provides strong corroborating evidence for agriculture at Sarab (information courtesy of Mary McDonald 2.7.76).

⁷⁰ Ester Boserup, *The Conditions of Agricultural Growth: The Economics of Agrarian Change under Population Pressure* (1965).

⁷¹ B. J. Spooner (ed.), *Population Growth. Anthropological Implications* (1972), cf. esp. Smith and Young, pp. 1-59.

⁷² Martin H. Wobst, "Boundary Conditions for Paleolithic

Social Systems: A Simulation Approach", *American Antiquity* 39 (1974), pp. 147-78.

⁷³ Richard B. Lee and Irven de Vore (eds.), *Man the Hunter* (1968), cf. Birdsell, p. 239; Balıkcı, p. 81; Washburn, Sherwood and Lancaster, p. 302.

⁷⁴ John B. Calhoun, "Population density and social pathology", *Scientific American* 206 (1962), pp. 139-48.

⁷⁵ R. B. Lee, "Work effort, group structure and land-use in contemporary hunter-gatherers", *Man, Settlement and Urbanism*, ed. Ucko, Tringham and Dimbleby (1972), p. 182.

more severely felt than a slow and imperceptible increase. In addition foraging requires mobility over a large area. It is often those who cannot move themselves rather than those who cannot feed themselves that are eliminated in hunting societies. It is unlikely that man was ever more mobile than his food supply obliged him to be⁷⁶ but the harsh winters in the higher parts of the Zagros and the dry summers of the low Zagros and Khuzistan have probably always made transhumance necessary (Fig. 3). This twice annual migration would restrict a woman to nursing one child at a time.

A further consideration is that, had the population during the Pleistocene grown at anywhere near its potential, the world would long since have reached saturation. The human race has inhabited the earth for at least two million years; for more than 99 per cent of this time he lived as a hunter-gatherer. Birdsell estimates that in an "unlimited" environment the human population will double every generation.⁷⁷ A generation can be estimated to be between sixteen and twenty-five years. In spite of this, during the Palaeolithic, each generation did little more than replace itself. If the world population at the beginning of the Christian era stood at 250 million the previous rate of population growth would have been approximately 1 per cent in 500 years; at this rate it would have taken 37,000 years for the population to have doubled itself.⁷⁸

The maximum potential number of offspring, based on a woman marrying as early as possible and not restricting her family, is estimated to be on average seven or eight in Asia.⁷⁹ Only two are necessary to replace the previous generation. If this estimate is used for the Pleistocene the ratio of actual surviving offspring to potential offspring was about 1 : 4. Even allowing for a high infant mortality rate and natural accidents to reduce the surviving population, this figure suggests that voluntary action was taken to reduce population densities through most of man's existence as a hunter-gatherer. It seems unlikely, therefore, that there was any real population growth prior to sedentism.

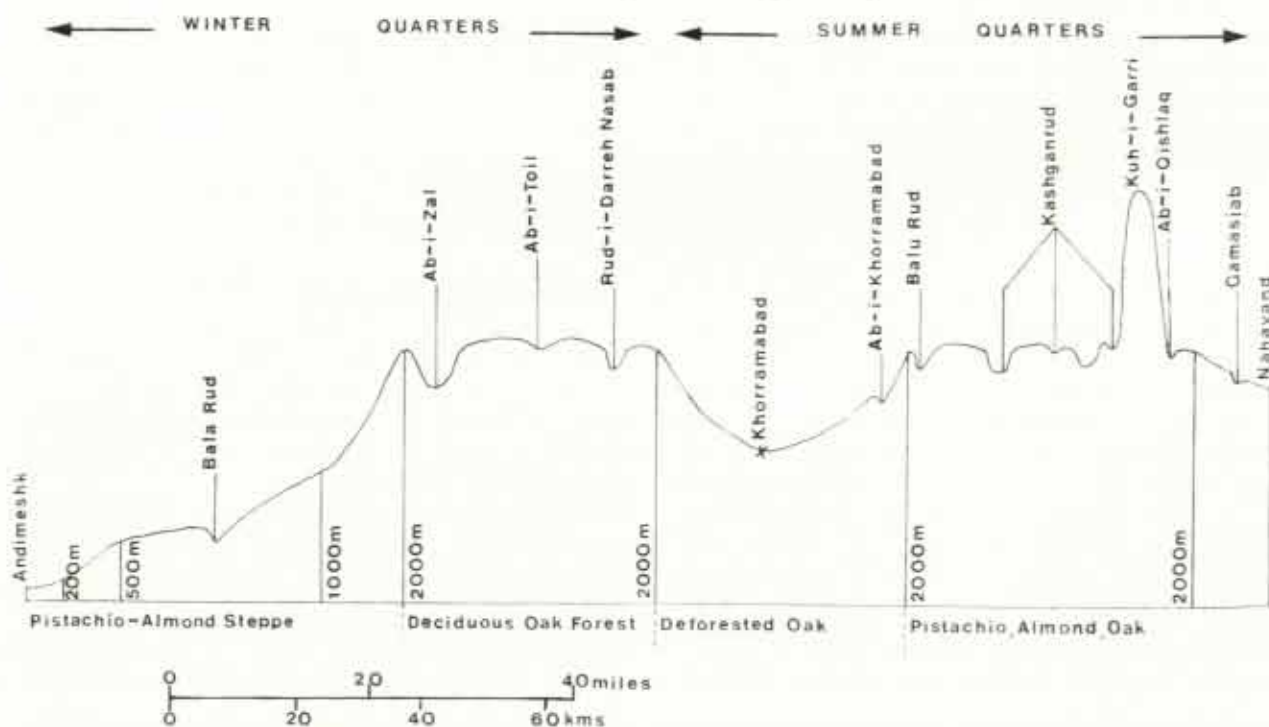


Fig. 3. Cross Section through the Zagros from Andimeshk to Nahavand.

⁷⁶ Carl O. Sauer, "Early Relation of Man to Plants", *Geographical Review* IV (1947).

⁷⁷ J. B. Birdsell, "Some population problems involving Pleistocene Man", *Population studies: animal ecology and demography. Cold Spring Harbor Symposia in Quantitative Biology* 22 (1957), pp. 49-51.

⁷⁸ Colin Clark, *Population Growth and Land Use* (1968), p. 62. These figures are based on the questionable assumption that two people only were the progenitors of the human race; if more than one couple is posited the rate of growth would have been even slower.

⁷⁹ *Ibid.*, pp. 22-3.

On the other hand lack of population growth does not preclude the possibility of uneven population distribution and increased densities in some areas. It can be assumed that transhumance was as necessary to the early hunter-gatherers as it is for tribesmen today. During the winter the tribes leave the higher parts of the Zagros in the north-west and look for the warmth of the low plains in Khuzistan in the south and western foothills of the Zagros. They have to be in a position to exploit two different ecosystems and the closer together they are the less walking is necessary. The Zagros Mountains

TABLE 2

Chronological Distribution of Palaeolithic Sites in Iran, the Zagros, and Iraqi-Kurdistan

SITE	LOCATION	PERIOD
Khunik Cave	Khorrasan	M
Kc-Aram I	Khorrasan	M
Jahrom	Fars	M
Shiraz area	Fars	M
Shanidar	Iraqi-Kurdistan	M B Z
Babkhal	Iraqi-Kurdistan	M
Spilik	Iraqi-Kurdistan	M
Serandur	Iraqi-Kurdistan	M
Barda Balka	Iraqi-Kurdistan	A
Hazer-Merd	Iraqi-Kurdistan	M
Barak Rock Shelter	Iraqi-Kurdistan	Z
Hajiyah Rock Shelter	Iraqi-Kurdistan	Z
Karim Shahr	Iraqi-Kurdistan	Z
Zarzi	Iraqi-Kurdistan	Z
Palegawra	Iraqi-Kurdistan	Z
Turkaka	Iraqi-Kurdistan	Z
Kowri Khan	Iraqi-Kurdistan	Z
Ghamari	Iranian Zagros	M
Kunji Cave	Iranian Zagros	M
Gar Arjeneh	Iranian Zagros	M B
Bisitun Cave	Iranian Zagros	M Z?
Warwasi	Iranian Zagros	M B Z
Ghar-i Khar	Iranian Zagros	M B Z
Kal-i Daoud	Iranian Zagros	M
Gar Kobeh	Iranian Zagros	M
Humian I	Iranian Zagros	M
Barde-Spid	Iranian Zagros	M Z
Tamtama	Iranian Zagros	M
Pa Sangar	Iranian Zagros	B Z
Yafteh Cave	Iranian Zagros	B
Sar Cam	Iranian Zagros	A
Pal Barik	Iranian Zagros	A
Hulailan area	Iranian Zagros	7M 8UP 7Z

A = Acheulean

M = Mousterian

B = Baradostian

Z = Zarzian

UP = Upper Palaeolithic

Total: Mousterian (over all Iran) - 28

Upper Palaeolithic (Zagros only) - 34

provide a number of complementary ecosystems within a comparatively small area because of the varied relief and topography (Fig. 3). If, during the final phase of the Last Glaciation, the measurable climatic differences were rather severer winters and drier summers, the result would have been to reduce the area and number of viable hunting habitats. With these so reduced at certain times of the year more people would have been exploiting the same area. This imbalance of population distribution would have led to greater densities in the food producing areas without any self-generated "population explosion".

The actual number and distribution of known archaeological sites supports the theory that there were increased population densities in certain parts of the Zagros between 20000 and 8000 B.C. Were the hypothesis correct one would expect to find a scatter of Mousterian sites throughout the country, with a concentration in the Zagros, followed by increasing numbers of Baradostian and Zarzian sites in the Zagros. Bearing in mind that the time span covered by the Mousterian is at least as long as that of the Baradostian and Zarzian together this is in fact what is found (Table 2).

Increased population densities in the areas of wild food resources will put pressure on the consumer to raise the harvest yield. Early attempts at cultivation are seen therefore less as a matter of choice than of compulsion. This is because there are certain disadvantages inherent even in a primitive system of cultivation sufficient to dissuade the hunter-gatherer from cultivating until he had to. Cultivation entails greater input in man-hours of labour than foraging. Ground must be cleared, seeds collected and sown, weeding undertaken, and predators discouraged. As cultivation becomes more intense the input in man-hours of labour increases. Weeding intensifies, tools and hoes are necessary to deal with the weeds, fencing must be erected and storage facilities provided to deal with the surplus. By the time the cultivator has become a full time farmer the ratio of in-put in man-hours to food produced has risen greatly. The rewards are not always commensurate with the labour expended. At the same time the farmer is at the mercy of the weather far more than the forager. The hunter-gatherer can live off the land under harsher conditions and with less expenditure of energy than the farmer. A modern Bushman puts the question succinctly asking "Why should we plant when there are so many mongongo nuts in the world"?⁸⁰

Shifting Cultivation

A primitive form of cultivation involving a certain amount of clearing, probably with fire, and a fairly high degree of mobility is that of "swidden" or "shifting cultivation". It is a more intensive form of land use than hunting and gathering and involves clearing primary and secondary forest or bush. The debris, fallen trees, bush and scrub, is then burnt and crops are planted in the ashes with the use of dibble sticks. The chief advantage of this is that yields are very high. The same land may be cropped for one to three years in succession then left fallow for a number of years. Where there is no shortage of land the fallow period may last twenty to thirty years allowing time for the growth of secondary forest. If sufficient land is available and secondary forest is recultivated at long enough intervals the system can be profitable indefinitely.⁸¹ If land is not available the fallow period must be reduced to ten or fewer years. This is sufficient only to allow the growth of scrub and bush. The amount of ashes from the burning decreases. Roots not destroyed by fire must be removed by hoeing, which is not necessary under a long fallow system, resulting in increased leaching of the soil, poorer crops and finally the invasion of grasses.

Shifting cultivation/agriculture is at present practised in the tropical conditions of south-east Asia and South America. There is evidence, however, both from the buried pollen record and tools that it was practised in prehistoric Europe.⁸² The Zeribar pollen record and tools found on early agricultural sites suggest that it was also practised in the Zagros. Small scrub oak will grow 1-2 m. in the course of as many years, if protected from goats or other destructive agents. The slow growing vegetation of the

⁸⁰ R. B. Lee, "What Hunters Do for a Living, or, How to Make Out on Scarce Resources", *Man the Hunter*, ed. Lee and de Vore (1968), p. 33.

⁸¹ John D. Freeman, *Iban Agriculture. A Report on the Shifting Cultivation of Hill Rice by the Iban of Sarawak*, Colonial Research

Studies 18 (1955), p. 130. Hereafter "Freeman (1955), *Iban Agriculture*".

⁸² H. Godwin, "Agriculture in N.W. Europe", *Essays on Crop Plant Evolution* (1965), p. 11.

Zagros combined with the circumscribed area of cultivable land would have led quickly to a fairly short fallow shifting cycle. When land becomes scarce the fallow period becomes shorter and greater efforts, such as fertilization and hoeing, must be made to regenerate the soil. Due to land shortage and slow growing vegetation the change from shifting agriculture to intensive agriculture was probably quite rapid in the Zagros.

Eight major types of swidden agriculture practised today may be distinguished.⁸³ An analogy can then be presented for the development of prehistoric shifting cultivation. The first four types might be chronologically arranged to represent the gradual adaptation of hunter-gatherers to shifting agriculture.

1. Predominantly hunters and gatherers, but practising shifting cultivation to a small extent. The Arnhem Landers of Australia would fit into this category.⁸⁴ They rely mainly on hunting and fishing but the women spend some time digging.

2. Depending mainly on shifting cultivation, but with some support from hunting, fishing or gathering, e.g. Lala, Bemba and Zande of southern Africa.⁸⁵

3. Depending almost entirely on shifting cultivation, with almost no other source of food production, e.g. Iban of Sarawak and the Hanunoo in the Philippines.⁸⁶

These three probably represent the most self-contained stage of shifting agriculture. In the Zagros the Epipalaeolithic of c. 12000-9000 B.C. would probably fall into these three categories.

The following five depend either on some sedentism or on pastoralism. These would represent a developed neolithic or post-neolithic stage of cultural development.

4. Predominantly pastoralists, but also practising some shifting cultivation.

5. Depending mainly on shifting cultivation with some pastoralism.

6. Depending mainly on shifting cultivation but with some permanent form of cultivation.

7. Some shifting cultivation, some permanent cultivation and also some pastoralism.

8. Depending mainly on some permanent form of agriculture with some shifting cultivation.

Chronologically type 4 might be changed with type 5, 6 or 7. Type 8 would probably not have been practised until the post-neolithic. This would parallel the permanent settlements with dependent semi-permanent settlements described by Mortensen.⁸⁷

One of the chief effects of shifting cultivation is that it circumscribes the movements of the band. Even at the most primitive levels of shifting cultivation, represented by the first four types above, it is easier to return to cultivate secondary forest than to clear primary forest. Once a cycle of land exploitation is established it becomes worth-while to store grain for sowing or consuming at a future date. Modern swidden farmers include both those who are mobile, moving themselves, their families and goods to new ground regularly, and those who are sedentary, cultivating in rotation areas which are within walking distance of their homes. The entire range of possible combinations between mobility and permanence is represented by one form of extant swidden farming or other (Fig. 4).

The first, mobile form might be exemplified by the "milpa" agriculturalists of West Africa. These people have no permanent buildings and when the forest has been cut within a radius of two or three miles they move to new lands. The tribe may return to this previously deforested area after decades, by which time the secondary forest is well established.⁸⁸

Sedentary "swidden farmers" may be exemplified by the Kuikuru Indians of central Brazil. They practise slash-and-burn cultivation to raise manioc but have managed to maintain their village sites in approximately the same location for ninety years.⁸⁹

⁸³ R. F. Waters, "The nature of shifting cultivation, a review of recent research", *Pacific Viewpoint* 1 (1960), pp. 67-8.

⁸⁴ Margaret McArthur, "Food Consumption and Dietary Levels of Groups of Aborigines Living on Naturally Occurring Foods", *Records of the Australian-American Scientific Expedition to Arnhem Land 2: Anthropology and Nutrition*, ed. C. P. Mountford (1960). F. D. McCarthy and M. McArthur, "The Food Quest and the Time Factor in Aboriginal Economic Life", ed. C. P. Mountford, *op. cit.*

⁸⁵ D. U. Peters, *Land Use in Serenje District, Rhodes-Livingston Paper 19* (1950). Audrey I. Richards, *Land, Labour and Diet in*

Northern Rhodesia (1939). Pierre de Schlippe, *Shifting Cultivation in Africa. The Zande System of Agriculture* (1956).

⁸⁶ Freeman (1955), "Iban Agriculture".

⁸⁷ P. Mortensen, "Seasonal camps and villages in the Zagros", *Man, Settlement and Urbanism* (1972), pp. 293-7.

⁸⁸ O. F. Cook, "Milpa Agriculture", *Annual Report of the Smithsonian Institution for 1919* (1921), pp. 307-26.

⁸⁹ K. J. Pelzer, "Pioneer Settlement in the Asiatic Tropics", *American Geographical Society, Special Publication 29*, New York (1945).

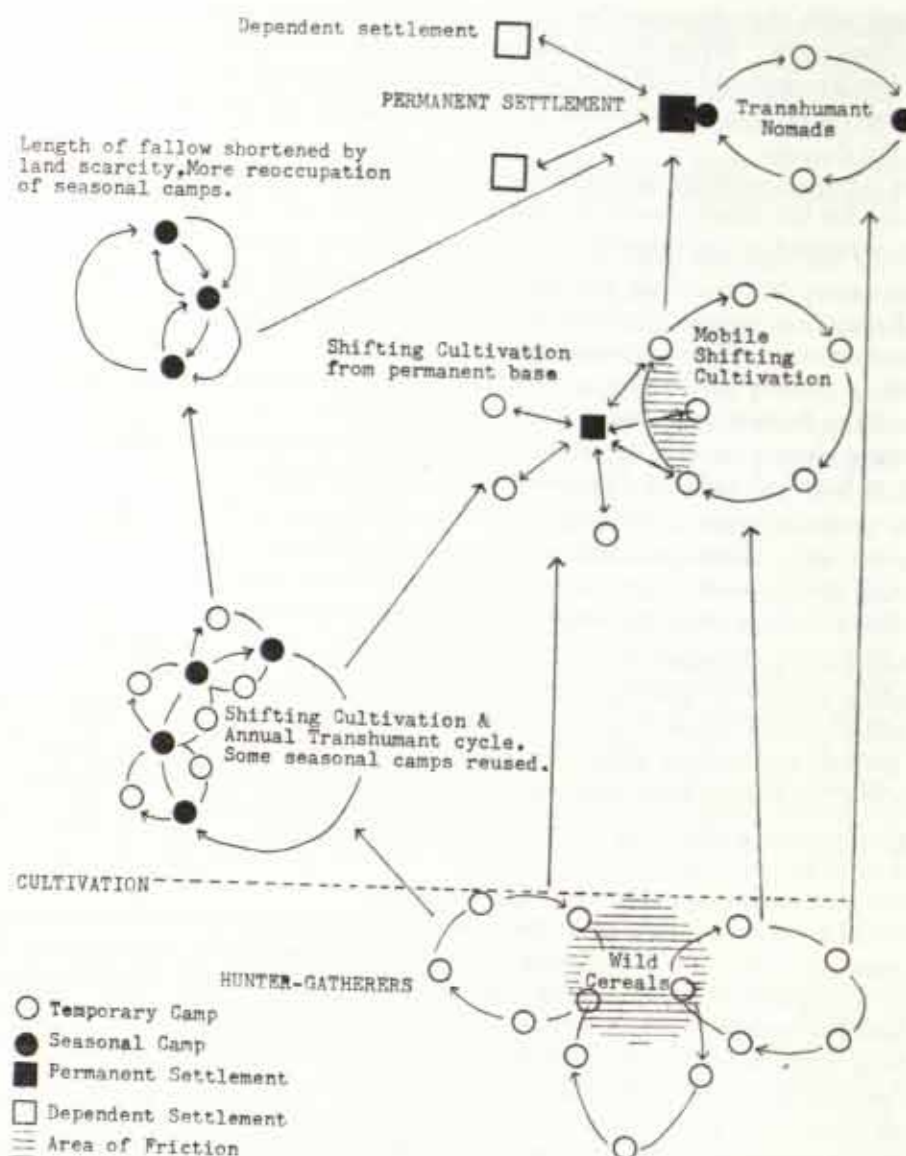


Fig. 4. Development of Subsistence Patterns in the Zagros.

Other swidden agriculturalists have adopted semi-sedentarism. In the outer islands of the Netherlands Indies shifting cultivators build a hut in the ladang, if it is too far away from their village, during the harvest. When the harvest is over they return to the village.⁸⁰ The Iban build temporary domestic headquarters, called "dampa", which are subsidiary to the main long houses occupied by families engaged in the cultivation of paddy. The family holdings become dispersed by annual abandonment of secondary jungle cultivated plots and it is necessary to build a temporary dwelling place. These may be built 10 km. from the main long house which is visited quite regularly during residence in the dampa.⁸¹

The mobility of swidden farmers is largely dependent on the density of population living off a fixed area. A smaller tribe has a greater chance of being sedentary since it needs to bring less land

⁸⁰ R. L. Carneiro, "Slash-and-burn Agriculture: a Closer Look at its Implications for Settlement Patterns", *Men and Cultures*,

ed. A. F. C. Wallace (1960).

⁸¹ Freeman (1955), "Iban Agriculture".

into the system. A larger tribe may be flung out centrifugally to exploit more land. How much land must be exploited to produce the necessary yields depends very largely on the type of crop under cultivation.

In areas where cereal formed an important part of the diet people would have tended to congregate where wild or cultivated wheat and barley grew best. This may explain the lopsided appearance of land exploitation in Hulailan. A concentration of base camps and temporary stations in the southwestern hills and along the Saimarreh, and a scarcity of Upper Palaeolithic remains along the Jazman Rud and Sub-Ab-Warbar suggests to Mortensen that vegetation and game were especially abundant in the Saimarreh area. He concludes, however, that the lack of settlements in part of the valley argues against a greater level of population in the Hulailan area at the end of the Pleistocene.⁹² If, however, the area was populated by shifting agriculturalists, operating from seasonal bases or camps, this would be exactly the sort of settlement pattern that would emerge.

Shifting cultivation, then, tends to decrease mobility by imposing a cyclic pattern of land exploitation. The yield of the cultivated cereals would have been increased in areas of pressure on the wild food resources. Increased production combined with a cyclic system of land exploitation would have presented a need for storage facilities. Early spring in the Zagros can be a time of hunger for returning tribes who have not stored some surplus before leaving for the south in the autumn. A cyclic system of land exploitation, the reduction of mobility, the production of surplus produce and the need for storage facilities are chronologically and causally very closely related.

Storage facilities, therefore, can be expected in the early stages of cultivation, even before the grain stored shows the characteristics of domesticated cereal. At Ganj-Dareh jars, probably used for storage, were an important feature of level D in the eighth millennium.⁹³ At Zawi Chemi Shanidar a "roughly circular feature" was uncovered in the early neolithic layer and might be interpreted as a storage pit.⁹⁴ Storage pits were also found in the Zarzian levels at Shanidar and Neolithic sites of Karim Shahr,⁹⁵ Mureybit,⁹⁶ Ain Mallaha,⁹⁷ Sarab and Asiab. Level SV5 at Sarab consisted of shallow pits⁹⁸ and at Asiab there were large, more or less round and shallow basins⁹⁹ which may have been associated with food storage.

Surplus grain storage would have further reduced the need for mobility by making it possible to winter in the highlands of the Zagros. At this point population increase can be expected. A woman is not only relieved of the burden of transporting her children on the twice annual migration but is also encouraged to produce more to provide the manpower for the more intensive agricultural methods. Population increase at a sedentary neolithic site has been demonstrated at Çatal Hüyük.¹⁰⁰

In addition to the early appearance of storage pits a second archaeologically observable feature will result from cultivation. A greater reliance on cereals for food will be reflected in technological adaptations in the tool kit. New tools become necessary both to process the grain and to tend the soil. At Shanidar polished celts make their appearance at the same time as the large *Cerealia* pollen. At Zawi Chemi domestic sheep and polished celts come in with the increased percentages of *Cerealia* pollen and the advent of the larger pollen grains.¹⁰¹ In Iraqi-Kurdistan the Zarzian levels at Palegawra

⁹² P. Mortensen, "A Survey of Early Prehistoric Sites in the Hulailan Valley in Lorestan", *Proc. IIrd. Annual Symposium on Archaeological Research in Iran* (1974), p. 38, "Survey and Soundings in the Hulailan Valley 1974", *Proc. IIIrd. Annual Symposium* . . . (1975), p. 5; "A Survey of Prehistoric Settlements in Northern Luristan", *Acta Archaeologica* 45 (1974), pp. 19-20.

⁹³ P. E. L. Smith, *Iran VIII* (1970), p. 179; *Iran X* (1972), pp. 166-8.

⁹⁴ Ralph S. Solecki, "The 1956-57 Season at Shanidar, Iraq. A Preliminary Statement", *Sumer* 14 (1958), p. 105.

⁹⁵ R. J. Braidwood and B. Howe, *Prehistoric Investigations in Iraqi Kurdistan* (OIP 31, 1960), pp. 52-3. Hereafter "Braidwood (1960), O.I.P. 31".

A fragmentary structure consisting of a curved wall of limestone pieces about 30 cm. thick with a diameter of about 2 m. had a floor of hard packed mud. It was found in Stratum I and

might have been used for storage. It seems quite likely that the "16 perfectly round and vertical pits" lined with red clay, in Stratum VII-XIII first were used to store grain which was then fired and dried. "Subsequently the pits had been relined up to three times in the same way". (Van Loon, *J.N.E.S.* 27).

⁹⁷ J. Perrot, "Le gisement Natufien de Mallaha (Eynan), Israël", *L'Anthropologie* 70 (1966), pp. 437-84.

⁹⁸ No evidence of cereal or other vegetable material was found associated with these pits. In Hole's view they were not used for storage (personal communication 22.10.75) but no other explanation of function has been proposed.

⁹⁹ R. J. Braidwood, B. Howe and C. Reed, "The Iranian Prehistoric Project", *Science* 133 (1961), p. 2008.

¹⁰⁰ J. Lawrence Angel, "Early Neolithic Skeletons from Çatal Hüyük", *Anatolian Studies* 21 (1971), pp. 77-98.

¹⁰¹ Leroi-Gourhan, "Pollen Grains", pp. 143-7.

produced a chipped celt and a quern fragment.¹⁰² Chipped celts, querns and pestles were found at Karim Shahr.⁹⁸ The post-Zarbian site of Çayönü in eastern Anatolia had celts, querns, handstones and hammerstones in phases I-II.¹⁰³ Comparable utensils are found in sites of approximately the same age in the Iranian Zagros. Ground stone tools are known from Asiab, and pestles, mortars and querns are common in levels A-D at Ganj-Dareh.¹⁰⁴ Ground stone tools associated with agriculture are found in the same horizons in Palestine and Syria.¹⁰⁵ There is ample evidence based on the proliferation of ground stone tools that even before the ninth millennium the inhabitants of the Zagros were relying heavily on cereal grain for food.

Two further effects of cultivation are reflected in the tool assemblages of the post-Zarbian neolithic sites of the eighth millennium. Whereas it is certainly true that sickle blades can be used to cut vegetation other than cereals it is surely no coincidence that they become important in the tool assemblage after the beginning of cultivation and at the start of what might be called "agriculture". By the time sickle blades become important the morphological change from the brittle rachis of the wild cereal to the tough rachis of the domesticated had been effected. While it makes little difference to yield per man hour whether wild grain is harvested by hand or by blade,¹⁰⁶ the aid of a blade would clearly be an advantage once the brittle rachis of the wild cereal had turned to a tough rachis. At that point cereal would have been growing in thicker stands and would have been cut at the stalk level in bunches.¹⁰⁷ Chronologically, therefore, sickles become of importance some time after the beginning of cultivation.

At about the same time tools associated with weeding and soil preparation can be expected. The hoe has been found at Jarmo and Tepe Guran¹⁰⁸, and indicates a more labour intensive form of agriculture than the clearing and burning techniques of the earlier shifting cultivators.

The practice of shifting cultivation would have had as great an impact on the fauna of the region as on the flora. Agriculture all over the world expels the big to medium-sized game. As soon as the vegetational cover is cleared the larger animals flee. The animals that inhabit wheat fields and scrubland are small: rabbits, hare, fox, game birds, possibly pig. Goats would have remained to be hunted in the hills, and a few deer would have been crowded into the retreating woodland. Economically there would have been a greater reliance on small game for meat. These are in fact the animals found at many sites in the time range 10000-8000 B.C. such as Palegawra, Karim Shahr,¹⁰⁹ and Ganj-Dareh.¹¹⁰ This fits into the end of Flannery's "Broad Spectrum Revolution" which began before 20000 B.C. and was marked by a greater reliance on "fish, crab, water turtles, molluscs, land snail, partridges, migratory water fowl (and possibly wild cereal in some areas?)"¹¹¹

To summarize, changes in the pollen record prior to 12000 B.C. suggest early shifting cultivation at that time gradually developing into more intensive forms of cultivation. This resulted in the recognizable mutations in the morphology of domestic grain found at neolithic sites of the eighth millennium in Iran. It also led to the introduction of tools associated with agriculture such as sickle blades and hoes.

Flannery has suggested that population pressure at the end of the Pleistocene drove terminal hunter-gatherers into marginal areas where they were forced to cultivate to increase food production. This is because motives for cultivating would have been lacking in areas where yields from wild sources were already abundant.¹¹²

At this point a clearer definition of "optimal" and "marginal" zones should be made. Within the general area of wild cereal distribution there are both "optimal" and "marginal" zones of production. An optimal zone will provide an approximately ideal environment for wild cereal growth.

¹⁰² Braidwood, *O.I.P.* 31 (1960), p. 58.

¹⁰³ Braidwood et al., *Proc. Nat. Acad. Sci.* (1971), pp. 1238-9.

¹⁰⁴ Smith, *Iran* VIII and X.

¹⁰⁵ At El Wad there were storage basins, limestone mortars and basalt pestles. Mortars have been found at Erq al-Amar, Kebara, Ain Mallaha, El Khiam, Nahal Oren (Wadi Fallah) and Beidha. Mortars, pestles, querns and rubbers were also found at Abu Hureyra. D. A. E. Garrod and D. M. A. Bate, *The Stone Age of Mount Carmel* (1937); J. Perrot "La Préhistoire Palestinienne", *Extrait du Supplément de la Bible VIII*, (1968), pp. 286-446; D. Kirkbride, "Five seasons at the Pre-Pottery Neolithic village of Beidha in Jordan", *P.E.Q.* 98

(1966), pp. 8-72; A. M. T. Moore, "The Excavation of Tell Abu Hureyra in Syria: a Preliminary Report", *P.P.S.* 41 (1975), pp. 50-77.

¹⁰⁶ Harlan, *Archaeology* 20.

¹⁰⁷ I am indebted to Dr. T. C. Young for this observation.

¹⁰⁸ Smith and Young (1972), *The Evolution of Early Agriculture*.

¹⁰⁹ Braidwood, *O.I.P.* 31 (1960), p. 58; p. 53.

¹¹⁰ Personal communication from P. E. L. Smith.

¹¹¹ K. V. Flannery, "Origins and Ecological Effects of Early Domestication in Iran and the Near East", *Domestication and Exploitation of Plants and Animals* (1969).

¹¹² Ibid.

Within the main areas of cereal distribution, defined as the oak-pistachio belt of the Zagros, there would have been areas which were less than optimal owing to soils which were leached, too dry or otherwise unsatisfactory. These would have been treated as marginal zones by the early cultivators and avoided until there was nowhere else left to go. Within the marginal areas of cereal distribution would have been favoured niches with good soil, drainage, a high water table and proximity to rivers. These would have been first sought after and exploited as optimal zones. It would be contrary to common sense husbandry to attempt to increase yields in low producing areas. It is more likely that pressure on wild resources began in optimal areas. The harvester, in competition with his neighbours for the best wild cereal stands, would have been likely to clear some of the unwanted trees and shrubs to increase yields within the optimal areas. Having invested time and labour in clearing the ground the early cultivator would have returned the next year and harvested again. There is no reason why he should not have continued to return to the same area as long as the yield was sufficient for his dependants' needs. When the soil was exhausted and the crops were poor a new area would have been cleared. Only when one group of shifting cultivators found themselves in competition with another would they be forced to change their subsistence methods. They can then do one of two things:

1. They can move out to marginal areas and cultivate once every two years as the Bedou of Jordan do,¹¹³ in which cases they will still be shifting rather than settled.
2. They can practise intensive cultivation.

Archaeologically this would lead to signs of cultivation in the optimal zones first. It is quite possible that shifting cultivation did not reach the marginal zones at all and that agriculture was brought fully developed from the highlands to the lowlands. A plant growing at the limit of its range is more likely to change in response to its environment. Even were the grain morphologically still "cultivated" when brought to the marginal area it would very soon be "domesticated". Thus domesticated grain would have appeared at about the same time in marginal and optimal zones. Precise dates for sites where wild and/or cultivated grain, and domestic grain were found would be necessary to substantiate this argument. In addition it should be applicable to areas outside the Zagros as well as to the Zagros itself.

Jericho is now, and probably always has been, in an oasis, and had domesticated einkorn and two-row hulled barley in PPNA and PPNB and "domesticated" emmer in PPNB.¹¹⁴ Beidha lies on the Wadi Musa, and is protected by a high ridge, the Jebel Shara, which catches rain and acts as a water reservoir for springs. According to Kirkbride it was probably forested in the eighth millennium.¹¹⁵ Both cultivated emmer and wild barley were found in eighth millennium deposits at Beidha.¹¹⁶ Nahal Oren (Wadi Fallah) is sufficiently near the Mediterranean coast to catch the moisture bearing westerly winds and can thus be described as being in an optimal zone. *T. dicoccum* has been found there in eleventh millennium contexts. It may be that domesticated cereals appear earlier in Palestine because the land in the optimal zones was in such short supply.

Çayönü lies in a well watered part of eastern Anatolia and to this extent can be considered an optimal area. Both *T. dicoccum* and *T. dicoccoides* were found in eighth millennium contexts there.

In the Zagros, Ganj-Dareh, which is well protected and well watered, ought also to show early cultivated and/or domesticated grain. Shanidar is in an optimal zone in the western flanks of the Zagros and the pollen is suggestive of domesticated cereal in the ninth to eighth millennium with cultivated cereal, indicated by the increased percentages of small *Cerealia* pollen, immediately preceding the advent of the large pollen.¹¹⁷

The inhabitants of the Bus Mordch phase at late eighth millennium Ali Kosh may well have been amongst the first farmers forced out of an optimal and into a marginal zone with an already partly developed agriculture. The same could apply to the inhabitants of Mureybit and Abu Hureyra which had wild einkorn and barley, possibly under cultivation, in the ninth millennium. Mureybit, however,

¹¹³ Gertrude Bell, *Letter to H. B. March 20th (1900)*.

¹¹⁴ Hopf (1969), "Plant Remains", pp. 355-9.

¹¹⁵ D. Kirkbride, *P.E.Q.* 98, p. 54.

¹¹⁶ Helbaek, *P.E.Q.* 98.

¹¹⁷ Leroi-Gourhan (1969), "Pollen Grains".

is strategically placed on the banks of the Euphrates and the early cultivators may have settled there from choice rather than necessity.

The sites of Tepe Guran, Sarab and Jarmo, all optimally situated and dating approximately to the seventh millennium B.C. would have been established considerably later than the earliest manifestations of cultivation. Perennial villages such as these may be chronologically closely related to the intensification of agriculture.

It would be unwise to expect a uniform pattern of development covering the establishment of early villages and the intensification of agriculture. While primitive shifting cultivation, being partially dependent on a change in environmental conditions during the terminal phase of the Last Glaciation, may have been a fairly universal phenomenon, later development would have proceeded at very different rates. If a combination of circumstances, with rivalry for land as one of the greater factors, led to the start of farming it is highly unlikely that everyone was affected at the same time.

Once progress has been made towards establishing the first permanent villages and practising more intensive agriculture not only will further agricultural development occur at different rates throughout the Zagros but a number of alternative subsistence patterns also become possible. In present day Iran three basic subsistence patterns are recognizable (Fig. 4):

1. The tribal nomads such as the Bakhtiari, the Qashgai, the Basseri¹¹⁸ and the Lurs who move from summer to winter quarters annually with their animals. They buy their wheat and clothes from settled villages.
2. Settled villages which depend on their own farming for food. Some of the villagers are still transhumant. Sometimes when one branch of the family grows too large, the head of that branch will leave with his immediate family and take to the tents with his herds. He may return to the settled village in summer for water and pasture.
3. Towns dependent on food produced by peasant farmers.

All kinds of combinations of the first two subsistence patterns are possible: settled villages with dependent semi-permanent sites, regular seasonal camp sites, twin villages inhabited by one family all the year round but by different members of the family. Villagers from such a system might be called semi-transhumant. In winter half the villagers of a Luri village will head south to a village belonging to relatives, leaving the senior members to keep guard in their absence. In Jordan a tribe will plant its fields, leaving perhaps one guard, lest the animals should eat the growing corn, while the rest move to another area for the summer.¹¹⁹ The following year, the land is left fallow and the fallow of the previous year is sown. All these patterns are ultimately dependent on agriculture or on both agriculture and permanent settlement.

SUMMARY AND CONCLUSIONS

Clearly a great many factors are involved in discussing the how, where and when of agricultural beginnings in the Zagros. The distribution of natural resources in the Zagros was of prime importance. Not only were wild cereals locally available, but they are also very adaptable, highly nutritious and easy to store. In addition they are fire selected, which means they thrive under primitive cultivation techniques which involve the use of fire for clearing fields. The tetraploid wheat, emmer, however, is a hybrid which means that it was not always available to man. While man had no deliberate part in the raising of emmer wheat, once it was there it became the most important of the wild cereals for human consumption. Moreover wild cereals thrive in lightly wooded areas. The destruction of competing vegetation, whether deliberate or not, creates an environment highly favourable for the growth of weeds, hybrids and mutants, such as wheat and barley. While man could have invented an alternative technology to process the cereals, he was certainly aided by the abundance of heavy stone in the Zagros

¹¹⁸ F. Barth, *Nomads of South Persia* (1961).

¹¹⁹ Gertrude Bell, *Letter to H.B. March 20th* (1900). Carl O.

Sauer, *Agricultural Origins and Dispersals* (1952), pp. 20-2.

for manufacturing mortars, pestles, grinders, querns and pounders, and the many chert sources providing raw material for the chipped stone tools. Furthermore he had reached a sufficiently advanced stage in his cultural evolution to appreciate the possibilities of manipulating the environment by the use of fire, to recognize that what you sow you reap, to use the natural resources and to adapt his technology to primitive cultivation. While all of these factors, and probably many more, were part of the necessary conditions for the beginning of cultivation they did not themselves provide the stimulus to initiate it.

A hunter-gatherer, especially in favourable environments, tends to be more leisured, more secure, and better fed than neighbouring agriculturalists. Even the most primitive farmer must spend more time on chores, in return for which he harvests more. The whole harvest, however, may be destroyed by bad weather conditions. The forager, in those circumstances, has alternative food sources to draw on. It is unreasonable, therefore, to expect the hunter-gatherer to turn to cultivation before he was obliged to. It is probable that increased population densities in the best food producing areas of the Zagros stimulated the hunter-gatherer to cultivate. This population pressure was created by a reduction in the marginal cereal zones of the Zagros at the height of the terminal phase of the Last Glaciation. The result was a gradual increase in the population density of hunter gatherers in parts of the richest cereal producing areas of the Zagros.

Greater population densities in the optimal areas of the Zagros led to attempts to increase the yield of wild cereals by practising primitive cultivation. This disturbance of the ecology shows in the Zeribar pollen diagram. Percentages of pollen rain of weedy plants which invade disturbed or impoverished land began to rise in the thirteenth millennium B.C. The presence of numbers of people alone would account for some of the disturbance, so it is likely that cultivation began about the twelfth millennium in the Zagros. The cyclic exploitation of the land, necessitated by primitive shifting cultivation, would have encouraged the use of storage facilities and the production of surplus produce. This in turn would have led to decreased mobility since it became possible to winter in the Zagros rather than migrate. At the same time the shortage of cereal growing land in the Zagros would have led to shorter fallows, further decreasing mobility. As cultivation developed slowly into intensive agriculture and movement was circumscribed permanent settlements began to appear along with the early domesticated grain. So far the earliest in Iran comes from seventh millennium sites, but it seems likely in view of finds in Eastern Anatolia, Syria and Palestine that domesticated cereal can be expected from much earlier deposits in the Zagros. Once the first permanent settlements are established a real rise in population can be expected. In addition a variety of subsistence patterns, all partially dependent on permanent settlements, become possible. These changes in exploitation patterns occurred at different rates throughout the Zagros and it is a process that in part continues today.

THE NEOLITHIC AND CHALCOLITHIC PERIODS IN THE MAHIDASHT

By Louis D. Levine and Mary M. A. McDonald

In September, 1959, the Iranian Prehistoric Project, under the direction of Robert J. Braidwood, began the first detailed survey of prehistoric settlements of a limited area in the central western Zagros.¹ The area included the Kermanshah, Mahidasht and Shahabad plains as well as some smaller valleys in the immediate vicinity. The survey continued until January 15 1960, when a programme of sondages and excavations began, lasting until June of the same year. With the Iranian Prehistoric Project, it can be said that the systematic investigation of central western Zagros prehistory began. Both prior to Braidwood's work, and in the fifteen years which followed, others passed through the same area or parts thereof and recorded sites,² but it was not until the summer of 1975, when the Royal Ontario Museum launched the Mahidasht Project, that anything approaching the intensity of Braidwood's work was repeated in the area. That fifteen year interval saw, however, a greatly increased pace of exploration and excavation in the surrounding regions, and a greatly expanded discussion of some of the issues raised by Braidwood concerning the prehistory of the Near East. It is as a result of the pioneering work of Braidwood, and building upon his survey and the efforts of others in the area that the Mahidasht project achieved the results that marked the end of the 1975 season.

The limits of the present discussion can be set both chronologically and spatially.³ While the Mahidasht project identified some 550 sites in the Kermanshah and Mahidasht valleys (hereafter we will refer to this area as the Mahidasht), we will discuss only those which fall in the time range from the beginning of the pottery Neolithic to the end of the Chalcolithic. Spatially, we will limit ourselves to the Mahidasht only, and exclude from this discussion, except for occasional references, the other valleys surveyed by Braidwood. It should be noted at the outset that the areas within the Mahidasht surveyed in 1959 and those surveyed in 1975 only partially overlap, and that the maps and statistics presented here represent both of the surveys combined. That we can include the 1959 results is due to the generosity of Braidwood, who has kindly assigned his material to the Royal Ontario Museum for study and publication. Ms. McDonald is currently preparing that material, while Levine is working on the 1975 collections. It should also be noted that combining the area covered by the Braidwood survey with that of the Mahidasht 1975 survey still accounts for only approximately 50 per cent of the valley, and it remains unclear to what extent these results can be generalized for the remainder of the area.

The techniques used for the 1959 survey were never made explicit. The 1975 survey divided the valley into a 100 kilometre square grid, using the Universal Transverse Mercator projection as the basis for its work. First, air photographs at a scale of approximately 1 : 20,000 were examined for most of the squares, and then the area was traversed by vehicle looking for all sites visible on the landscape. Finally, local inhabitants were questioned for the location of possible sites. No systematic intensive walking surveys were carried out in the 1975 season, but we have reason to suspect that our coverage was relatively good. Very few of the Braidwood sites (where walking survey was apparently employed) missed detection, except in areas which have since been intensively developed for agriculture or industry, and Dr. Robin Dennell, who walked over some of the areas we surveyed found only two or three sites which had been missed by the methods employed by our regular teams.

¹ R. J. Braidwood, "Preliminary Investigations Concerning the Origins of Food-production in Iranian Kurdistan", *Brit. Assoc. Advan. Sc.* 17 (1960), pp. 214-18; R. J. Braidwood, B. Howe, C. A. Reed, "The Iranian Prehistoric Project", *Science* 133 (1961), pp. 2008-10.

² For bibliography, see L. D. Levine, "Archaeological Investigations in the Mahidasht, Western Iran—1975", *Paleorient* 2 (1974), pp. 487-90; L. D. Levine, "The Mahidasht Project", *Iran* XIV (1976), pp. 160-1.

³ The target area and the area actually surveyed are discussed in Levine, 1974 and 1976 (see note 2).

Another important limitation on the results which we are presenting here should be noted. For the identification and assignment of sites to a time range, we have relied almost entirely on the painted pottery so characteristic of the Neolithic and Chalcolithic periods in the Zagros. Exclusion of the plain wares and the lithics was dictated not by choice, but by a lack of time to process this material. While one suspects that the picture gained from the painted pottery is substantially correct, time may prove that it must be modified in detail once these other components of the cultural assemblages are examined.

Ceramic sequence

We have been able to isolate six painted wares that seem to fall into the Neolithic-Chalcolithic time range.

Sarab Tadpole: Sarab Tadpole-painted pottery has already been described and illustrated in the Jarmo report⁴ and the Tepe Guran preliminary report.⁵ This motif is restricted to small vessels with flat or rounded bases and slightly concave vertical walls. Vessel bodies are usually less than 10 mm. thick and bases sometimes even thinner. The ware is buff, tempered with fine straw. About half the sherds have a grey core.

Both inner and outer surfaces are wet-smoothed and burnished and the design is applied in powdery red paint over the burnish. Motifs, usually on the diagonal, range from a "splatter" pattern to the tadpole blob-and-drag effect, to more carefully rendered shapes such as squares or circles linked by diagonal lines.

Sarab Geometric: Ware B has also been illustrated in the Tepe Guran report⁶ and resembles Sarab Tadpole in shape, tempering and surface treatment. The over-all painted design of the Tadpole ware is replaced by bands at the base and rim consisting of solid triangles and zig-zag lines.

Sarab Linear (Pl. Ia, first two rows): Little of the Sarab Linear ware has been excavated and the small surface sherds available yield limited information on shapes and surface treatment. A bag-like shape seems most common. Body sherds are rounded and sometimes carinated. Rim sherds are often slightly concave, and a few are everted.

This ware, like the two discussed thus far, is also straw-tempered and buff, but with tempering somewhat coarser than in Sarab Tadpole and Geometric. Most sherds are over 10 mm. thick, and the core is usually incompletely oxidized. A few sherds appear to bear a buff slip and at least some were burnished on the outside. Most inside surfaces have been worn away. Black paint was used on approximately a third of the sherds; the rest are painted with a powdery red paint.

The paint is applied in thin lines and sometimes bands. Most common motifs are acute-angled zig-zags or chevrons under the rim, crosshatched diamonds, and crosshatching in wide horizontal bands. Bands with a checkerboard pattern also occur.

White on Black (Pl. Ia, bottom row): This ware, like Sarab Linear ware, is represented by a limited sample of small sherds, and little can be said about shape. There are some inturned rims, and one flat base with flaring walls. A few thicker sherds may come from straight-sided vessels. Sherds range in thickness from 6-15 mm., the average being 10 mm. Sherds are tempered with fairly coarse straw, and the core is usually grey.

The outside surface is covered with a black slip or paint. In most cases the surface has a powdery feel but a few sherds have clearly been burnished. The sherds are decorated with a thick white paint usually applied in lines 2-3 mm. wide. Commonly bands of three or more of these lines will be used to circle a vessel in straight or wavy or zig-zag bands, and much of the surface is covered with design. Zig-zag bands with a checkerboard pattern are also common.

Roughly two-thirds of these sherds bear a burnished red slip on the inside surface. The inside surface of the other sherds has been buff slipped or left untreated.

⁴ R. J. Braidwood, B. Howe, et al., *Prehistoric Investigations in Iraqi Kurdistan*, S.A.O.C. 31 (1960), pl. 15.

⁵ J. Meldgaard, P. Mortensen and H. Thrane, "Excavations

at Tepe Guran, Luristan", *Acta Archaeologica* XXXIV (1963), pp. 97-133.

⁶ Meldgaard et al., "Guran", fig. 18.

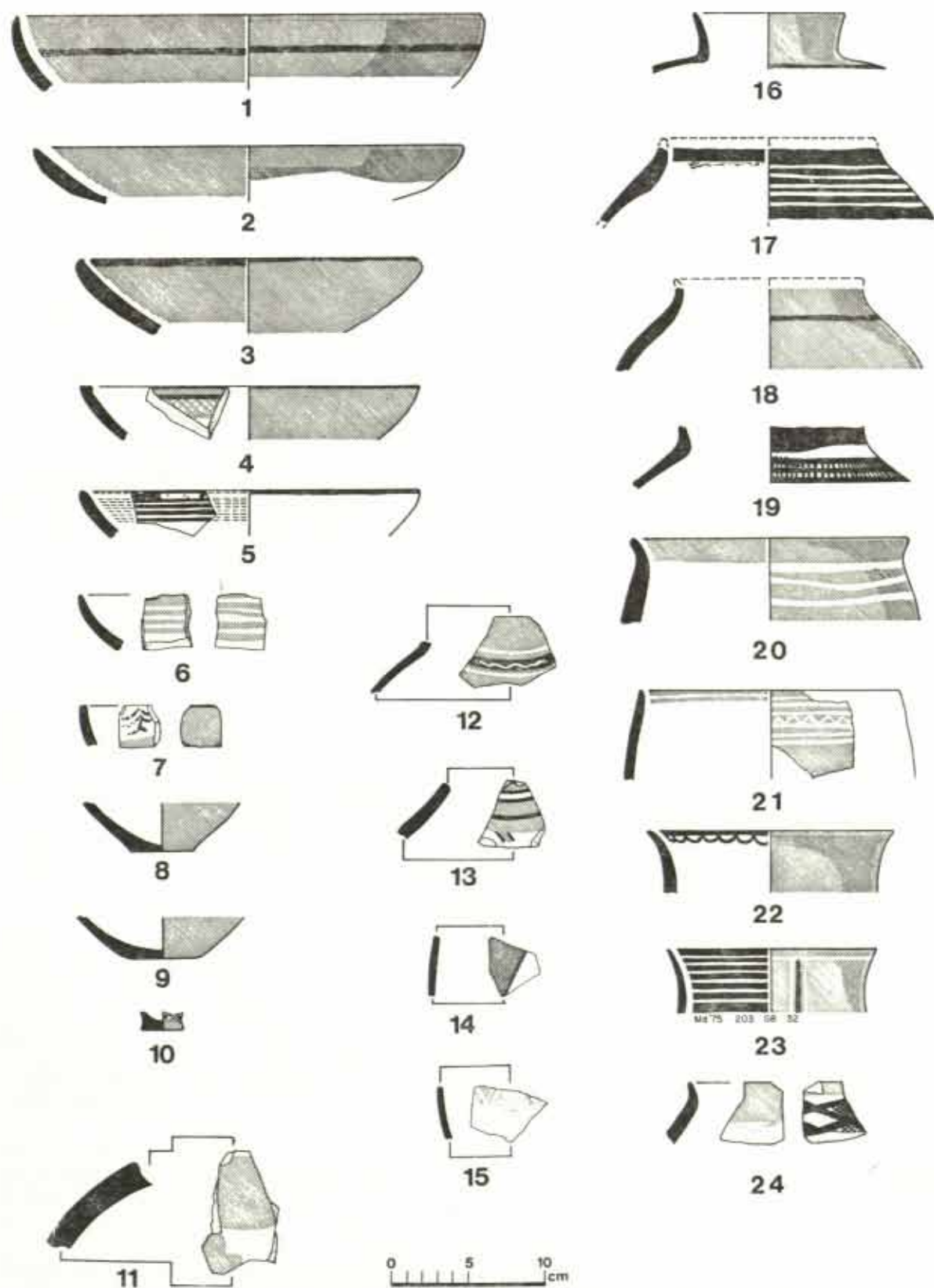


Fig. 1. "J" ware pottery from the Mahidasht. Hatched zones represent red slip or paint; solid black zones, reddish-brown, brownish-black and black paint; stippled zones, faint brownish-grey paint.

"J" Ware (Fig. 1; Pl. Ib): R. J. Braidwood had noted some "Halafian" elements in the surface sherds from some of the sites discovered by the Iranian Prehistoric Project in 1959-60. He included these sherds as well as various red-slipped and burnished sherds in his "Model 6",⁷ occupying a position in his chronological chart between the Sarab assemblage of Model 5 and Ubaid elements of Model 7.

Painted sherds from both these Braidwood collections and the Md. 75 survey sites were compared with Halaf sherds in the R.O.M. study collection. Wares, surface treatment and paint were strikingly similar in the two groups. Sherds from the Md. samples are fairly hard, with fine mineral inclusions, and sometimes fine to medium straw tempering. The core is buff and usually completely oxidized. Sherds range in thickness from 4-16 mm., with most falling between 8-12 mm. Striations on the inside surface of some vessels may indicate that they were turned on a slow wheel.

The paint on some of the Halaf type sherds from the Mahidasht and the classical Halaf sherds is predominantly a streaky red-brown that ranges to brownish black depending on thickness of application. Often a painted design is reddish-brown while the line bordering that design is much darker, as though a second or thicker coat was applied. A few sherds bear a much redder paint, or a solid black paint, or a faint brownish-grey paint. It is not yet clear if these are different from the reddish-brown paint, or variations of it. A white paint or slip is sometimes used.

Motifs on the Mahidasht sherds are all duplicated on Halaf sites, but the known repertoire in the Mahidasht is limited. The most common motif is crosshatching in bands or triangles. Open bowls often sport a series of narrow horizontal bands inside and out at the rim. Cables, pendant rim loops, checkerboard designs and sigmas also occur. Often two or more of these elements, together with zones of solid colour, appear on the same sherd.

Since most of these surface sherds are small there is little information available on shape. There are a number of slightly constricted pots with everted rims, and a few collared jars. Bowls with slightly inturned rims are common. Rims are rounded, pinched, or flattened. Flat bases, disk bases, and one or two button bases occur in the collection.

Mahidasht sites with this painted buff ware also yielded both a red slipped and a black slipped ware. These were quite similar to each other in shape and biscuit, as well as in painted decoration, the most common motif being a horizontal line or lines in white and/or black paint on the red slipped ware, and a similar line or lines in white on the black slipped ware. Eventually, sherds were discovered that showed the red slipped ware on one surface, and the black slipped ware on the other. Further analysis indicated that this group of red or black slipped wares should probably be considered along with the Halaf wares as a single group. Not only were many of the shapes the same, but the slip itself on the one group could be compared with the paint on the Halaf sherds. This unity was confirmed by the discovery of a number of sherds which combined the red slip on one side with the Halaf-like paint on buff on the other surface. Eventually, the entire corpus was taken to represent a single ware, which we called "J" ware.

Despite the apparent close relationship between paint-on-buff and slipped wares in the Mahidasht, few close parallels can be found for the slipped wares outside the area. Braidwood in his field notes and 1960 article notes the similarity between red-slipped ware from the Mahidasht and the "Wiped-Burnished Ware" found in Phases D and E of the Amuq sequence in levels also bearing Halaf pottery.⁸ Perkins mentions the use of white paint on a red ground on sherds from Gawra and Arpachiyah.⁹ On the other hand there is no mention of painted slip ware at Banahilk.¹⁰ On the whole it appears that painted slip wares, if they occurred at all, were a minor element in Halaf assemblages outside the Mahidasht.

Ubaid related wares (Pl. II): Our treatment of these wares will be somewhat more cursory than that given to the preceding groups, if only because the "Ubaid" phenomenon is so much better known than the earlier pottery groups. At present, Ubaid wares found in the Mahidasht can be divided into two

⁷ Braidwood, "Preliminary Investigations . . . Kurdistan" (1960), p. 216.

⁸ R. J. Braidwood and L. Braidwood, *Excavations in the Plains of Antioch. I. The Earlier Assemblages*, O.I.P. LXI (1960),

pp. 160-2.

⁹ A. L. Perkins, *The Comparative Archaeology of Early Mesopotamia*, S.A.O.C. 25 (1949), p. 24.

¹⁰ Braidwood and Howe, *Prehistoric Investigations* (1960), pp. 33-4.

main subwares, with other, more marginal phenomena mixed in. The first of the Ubaid subwares is a straw tempered variety, with the temper varying from coarse to quite fine. The surface is matt, and straw holes often show through. The paint is streaky, but the motifs are well within the range of Ubaid motifs known in the Zagros. A detailed analysis of the motifs has not yet been carried out.

The second subgroup is different in fabric, although it too falls well within the range of Ubaid type sherds. It is finely tempered, with little or no visible inclusions, and with the use of mineral as well as finely chopped vegetable matter. The surface is matt, as is the paint, which is thickly applied, and not streaky like the straw tempered wares. This ware, while closer to Seh Gabi period ware¹¹ or the so called Giyan Vc ware than the straw tempered variety, is still not fully comparable. The Mahidasht paint never has the high gloss so characteristic of the latter two sites, even when the vessels are overfired, as they often are. Indeed, the high gloss paint is virtually absent from the Mahidasht sites.

While technically falling outside the painted wares, it should be noted in this discussion that a number of sites displayed Dalma impressed wares in conjunction with Ubaid wares. A quick check showed no clear-cut correlation between Dalma ware and either of the two Ubaid sub-wares.

Finally, Godin VI type painted wares are extremely rare in the Mahidasht material.¹² A few sherds appear at Dehshavar, a site with a strong Uruk period component, but they occur rarely if at all on sites with earlier Ubaid occupations.

Relative and absolute chronology (Fig. 2)

While the order of the various wares has not yet been established in a stratigraphic column at a single site, various anchor points are available for both the beginning and the end of the sequences. Thus, the excavations at Tepe Guran and at Jarmo have established that the earliest components are the Tadpole ware and Sarab Geometric,¹³ while the placement of the "Ubaid" component at the end of the sequence is so well demonstrated as to need no documentation. There are, however, problems concerning even these well established wares.

The first four groups of pottery discussed, the Tadpole ware, Sarab Geometric, Sarab Linear and White on Black all occur infrequently. Among the survey collections available to us, they are often represented by a single sherd for any given site. The 1975 work, moreover, added only two sites to those already found by Braidwood, and the sum total of sites on which these wares are represented is only nine. This combined with the fugitive nature of the red paint that tends to disappear on surface sherds, casts some doubt on the validity of the reconstruction proposed.

With all these qualifications in mind, we nevertheless propose the following sequence. The earliest wares are the Tadpole and Geometric. They are not completely contemporary however. In the Mahidasht they appear together at only one site, Sarab itself, and separately at four others. At Tepe Guran, Tadpole ware appears earlier in the sequence than Geometric, but both persist to the top of the Neolithic deposit, the Tadpole style evolving a little through time.

The other two wares, Sarab Linear and White on Black, do not occur in the Guran sequence and appear to be somewhat later in time. They both occur at Sarab, but in small quantities only. Of the four other sites with Linear pottery, two also have Tadpole sherds, while the other two yield "J" ware and in one case Ubaid sherds. White on Black pottery occurs on five sites. It is found with Tadpole

¹¹ T. C. Young, Jr., and L. D. Levine, *Excavations of the Godin Project: Second Progress Report*, R.O.M. Art and Archaeology Occ. Paper 26, 1974.

¹² T. C. Young, Jr., *Excavations at Godin Tepe: First Progress Report*, R.O.M. Art and Archaeology, Occ. Paper 17, 1969; Young and Levine, *Godin II*, 1974. The recovery of the sequence at Godin and Seh Gabi raises a number of problems in connection with the prehistory of western Iran during the fourth millennium B.C. This article is not the vehicle for a discussion of these, but two points must be made. First, the typological reconstruction of the stratigraphy of Giyan V proposed by D. E. McCowan, *The Comparative Stratigraphy of Early Iran* (1942), p. 13 ff., while useful when first published,

must now be abandoned. The subdivisions a-d on the basis of absolute levels are shown to be a mixture of diverse materials. Thus, for example, Giyan Vd (-8 to -10 metres) contains material from Godin IX, Godin VI and Godin III. From this stems the second observation. It must now be questioned whether Godin VI and the Godin VI component of Giyan Vd are "Ubaid" related, or whether they are something quite distinct. Until this question is resolved, we treat them as a separate unit and do not include this material in our discussion of "Ubaid" related pottery.

¹³ Braidwood and Howe, *Prehistoric Investigations*, Meldgaard et al., "Guran".

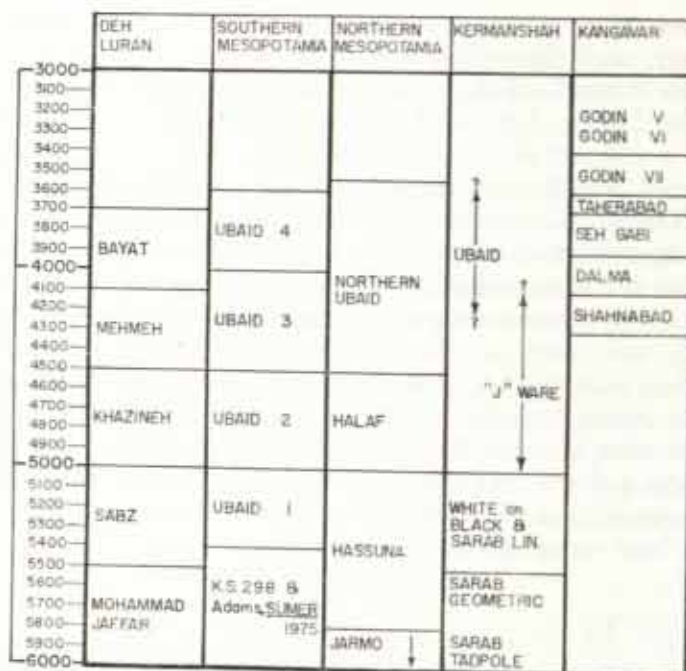


Fig. 2. Tentative chronology for the Kermanshah and Kangavar valleys in the Pottery Neolithic and Chalcolithic periods.

ware on Sarab and one other site, alone on one site, and in conjunction with Chalcolithic wares on the other two.

There are unfortunately few close correspondences at present to either Linear or White on Black pottery outside the Mahidasht. Sarab Linear seems comparable to Goff's Early Ceramic Straw-tempered Painted Wares from Luristan.¹⁴ The shapes of the Linear ware (bag-like pots) and the decoration may suggest a Hassuna/Samarra affinity,¹⁵ but the range of motifs is much more restricted than the classical assemblages associated with that phase of Mesopotamian prehistory.

There are no reports of the White on Black ware in the literature. It was found on a site in the Shian Valley near Shahabad in the 1960 site survey. Otherwise two White on Black sherds were found in the Kangavar Valley in what must be secondary context to Mound C at Seh Gabi.¹⁶

Because of the absence of Sarab Linear and White on Black wares at Guran, their rarity at Sarab, their tendency to occur on sites that also bear "J" ware pottery, and their admittedly tenuous links with late neolithic pottery elsewhere, it may be that these wares represent one of the last phases of the Neolithic period in the Mahidasht. It is impossible on the evidence at hand to say if one predates the other, or if they are contemporary. It is possible, moreover, that there are one or more Late Neolithic ceramic phases as yet unidentified in the Mahidasht.¹⁷

The earliest Chalcolithic painted ware seems to be one we have labelled "J". As was already noted, at least part of this ware bears affinities to the Halaf wares of northern Mesopotamia in both design and method of manufacture, albeit in a rather remote sense for the most part. The ware is perhaps best characterized as a local central Zagros variant of the Halaf. In terms of site continuity, "J" ware is found on two sites with Sarab Linear, on two sites with White on Black pottery, and is

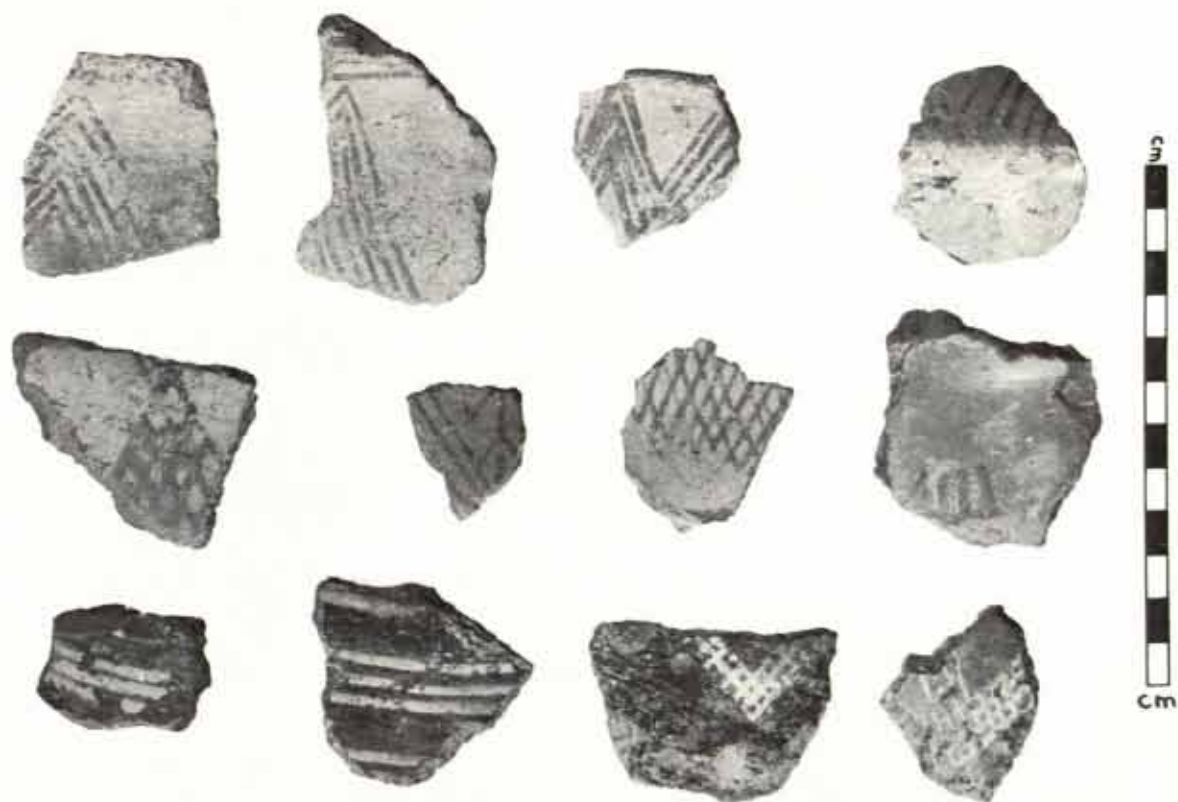
¹⁴ C. L. Goff, "Luristan before the Iron Age", *Iran* IX (1971), Fig. 2: 1, 3-5.

¹⁵ Motifs similar to Sarab Linear motifs are illustrated in P. Mortensen, *Tell Shimshara: The Hassuna Period* (1970), Fig. 67, a-e, Fig. 81, a, g, k, Fig. 92, a-e.

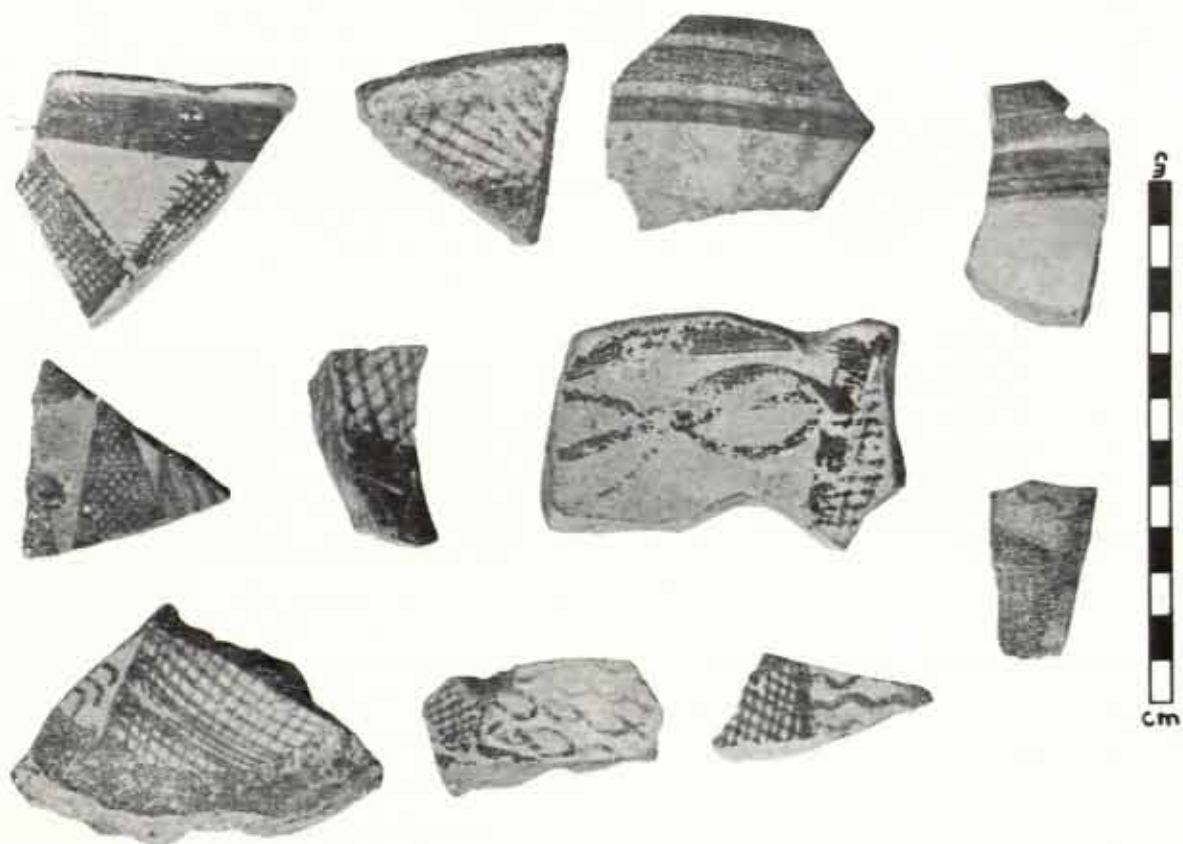
¹⁶ L. D. Levine, and C. Hamlin, "The Godin Project: Seh Gabi", *Iran* XII (1974), pp. 211-13.

¹⁷ Mortensen, based on his evidence from Hulanian (see P. Mortensen, "A Survey of Prehistoric Settlements in Northern

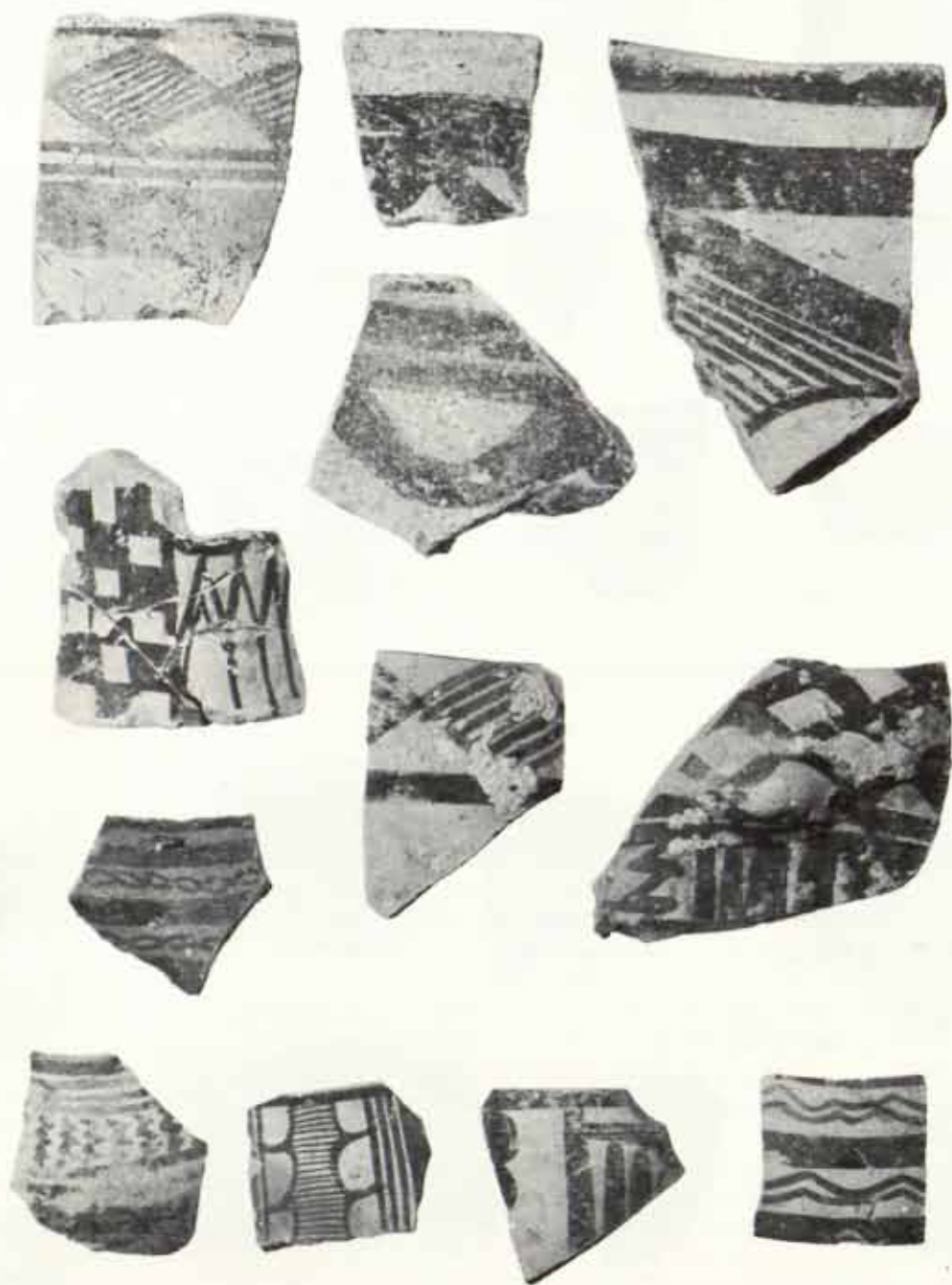
Luristan", *Acta Archaeologica* 45 [1974], pp. 1-47), suggests (pers. comm.) that we consider the possibility of a short-lived phase in the Mahidasht characterized by red-slipped ware, but without painted pottery. Because similar red-slipped wares seem to span all phases of the late Neolithic and Early Chalcolithic in the Mahidasht, it would be difficult to identify such a phase from surface materials, except at a single-component site.



Pl. Ia. Sarab Linear sherds (row 1 and 2) and White on Black sherds (row 3) from the Mahidasht.



Pl. Ib. "J" ware paint-on-buff sherds from the Mahidasht and from neighbouring valleys.



Pl. II. Painted Ubaid sherds from the Mahidasht. Top row, straw-tempered sherds.

found alone on twelve sites. Most frequently, however, it is found on sites with Ubaid type pottery, which seems to follow it chronologically.

The latest of the painted pottery groups discussed is the Ubaid. This group, which is the most common of the early painted wares in the Mahidasht, falls within the Ubaid tradition, but has not yet been compared with similar assemblages in detail. As noted, it is not the same as the Seh Gabi period/Giyan Vc painted wares in technique, and it also appears to differ from Susiana Black on Buff materials. Once again, it can perhaps best be characterized as a local variant within a wide-ranging tradition.

The evidence for chronological separation of the Ubaid wares is still unclear. At Seh Gabi and in the Solduz sequence,¹⁸ Dalma wares precede the Ubaid wares, and at Tepe Giyan, Dalma painted wares come early in the Vb sequence, and are followed by Vc material which is still Ubaid but devoid of Dalma according to the publication.¹⁹ We would suspect that a similar situation obtains in the Mahidasht, but until this material is excavated, it is unlikely that a clear answer to this problem will emerge.

The absolute dates of Sarab Tadpole and Geometric wares are fixed by the radiocarbon dates from Sarab and Guran. The Sarab dates indicate that the site was occupied from at least 6000-*c.* 5650 b.c.²⁰ Both Tadpole and Geometric pottery occur throughout the sequence. At Guran, Tadpole wares appear in level O, Geometric wares in level M, and both continue to level D, the top of the Neolithic sequence. Using a radiocarbon date from Guran and typological correlations, Mortensen²¹ assigns a date of *c.* 6100 b.c. for the level O occupation and *c.* 5500 b.c. for that of level D. Dates of *c.* 6000-5500 b.c. for the Tadpole-Geometric phase in the Mahidasht therefore seem reasonable.

The next date that we can even approximate is the appearance of the "J" ware, which is a middle or more probably late Halaf phenomenon. At present, we would propose *c.* 5000 for the start of this period, leaving half a millennium for the Sarab Linear ware and the White on Black ware.

The transition from "J" ware to the Ubaid is more difficult to pinpoint. The date of this transition is in large measure dependent upon our analysis of the Dalma wares and their context. The material from Dalma Tepe itself provides no clue other than to bracket its occurrence between the Hajji Firuz and the Pisdeli assemblages.²² Hamlin assigns this material to the period 5000-4000 b.c., but is justly cautious in this assessment. The only date from Dalma is 4036 \pm 87 b.c. (P-503).

At Seh Gabi, a thick deposit of Dalma material underlies the "Seh Gabi" period assemblage on Mound B. At the nearby Mound C, the Shahnabad assemblage, which must be earlier than the Dalma, has produced three radiocarbon determinations, all consistent with one another and with their stratigraphic position. They cluster around 4200 b.c.²³ Thus, it would seem that the Dalma material is confined to the end of the fifth millennium, rather than filling the whole 1000 year period.

In the Mahidasht, Dalma wares occur together with Ubaid wares. This also seems to be true at Tepe Giyan, where Dalma sherds are found at the same absolute levels as "Ubaid" type sherds. Finally, at Seh Gabi, a minor but distinct component of the Dalma period levels was the occurrence of Ubaid type painted sherds that are distinct from the later Seh Gabi painted ware, but similar in fabric, paint and motif to sherds from the Mahidasht and from Tepe Giyan. All of this would indicate that the Dalma wares found in the Mahidasht are contemporary with at least part of the Ubaid assemblage found there, and that a fixed date of the end of the fifth millennium for the presence of the Ubaid in the Mahidasht is reasonable. What remains uncertain is whether this date represents the first appearance of Ubaid type sherds, or whether these are already present before the appearance of the Dalma wares.

¹⁸ R. H. Dyson, Jr., "Problems in the Relative Chronology of Iran, 6000-2000 B.C.", in *Chronologies in Old World Archaeology* (R. W. Ehrich, ed., 1965), pp. 215-56.

¹⁹ G. Contenau and R. Ghirshman, *Fouilles de Tépé Giyan* (1935).

²⁰ *Radiocarbon* 5 (1963), pp. 91-2. We are using the convention of writing "b.c." in lower case letters to indicate Libby (5568 Half-life) radiocarbon years.

²¹ P. Mortensen, "Additional Remarks on the Chronology of

Early Village-farming Communities in the Zagros Area", *Sumer* XX (1964), pp. 28-36 and Fig. 8.

²² C. Hamlin "Dalma Tepe", *Iran* XIII (1975), pp. 111-27.

²³ The dates which follow (5568 Half-life) were kindly supplied by Dr. R. Stuckenrath of the Smithsonian Institution:

SI 2668	6220 \pm 80	4270 b.c.
SI 2669	6195 \pm 105	4245 b.c.
SI 2670	6055 \pm 80	4105 b.c.

Just as the beginning of the Ubaid is unclear, so too is the end of that period. Material from the Godin/Seh Gabi sequence is our most important source for discussing this question.²⁴ As we have indicated, the Dalma period must start about 4100 b.c. in the Kangavar valley. Between this date and the Godin V phenomenon, which must be dated to approximately 3200 b.c., we have to accommodate the Dalma, Seh Gabi, Taherabad, Husseinabad and Cheshmeh Nush material. As all of these, aside from the Taherabad, are represented by considerable deposits either at Seh Gabi or Godin, it seems reasonable to divide the 900 years involved into more or less equal parts, allowing 100 years for Taherabad, and 200 years each for the others. Taherabad is the last Ubaid phase, so the Ubaid period would seem to end about 3600 b.c. in the Kangavar valley. Since the two following phases are not well represented in the Mahidasht, it is difficult to know whether this date of 3600 b.c. reflects the end of the Ubaid around Kermanshah, or if we need to push this date even lower.

Site distribution and settlement density

As is apparent from the chart showing the number of sites per period in the Mahidasht (Fig. 3), there is a general trend towards more intensive settlement of the valley with time. Little can be said about Neolithic site distribution, because our sample is so small. To a degree, this may be attributed to a combination of sampling technique and burial of earlier material under later cultural deposits. Yet a third factor, however, may be masking our ability to find early sites. It is now clear that the proposal made by Vita-Finzi²⁵ that alluviation took place sometime in the last thousand years is true. Work by Brookes and Dennell, as part of the 1975 survey, indicates that as much as two metres of alluvium has been laid down since the beginning of the Islamic period.²⁶ If many of the Neolithic sites were small, and occupied for relatively short periods of time, then insufficient mound-building would have gone on for them to still be apparent above the present alluvium. The little that can be said about the distribution is that it does not seem to be restricted to any particular part of the valley. Sites have been found in the Marik drainage, along the Qara Su, and at springs that border the fans along the sides of the valley.

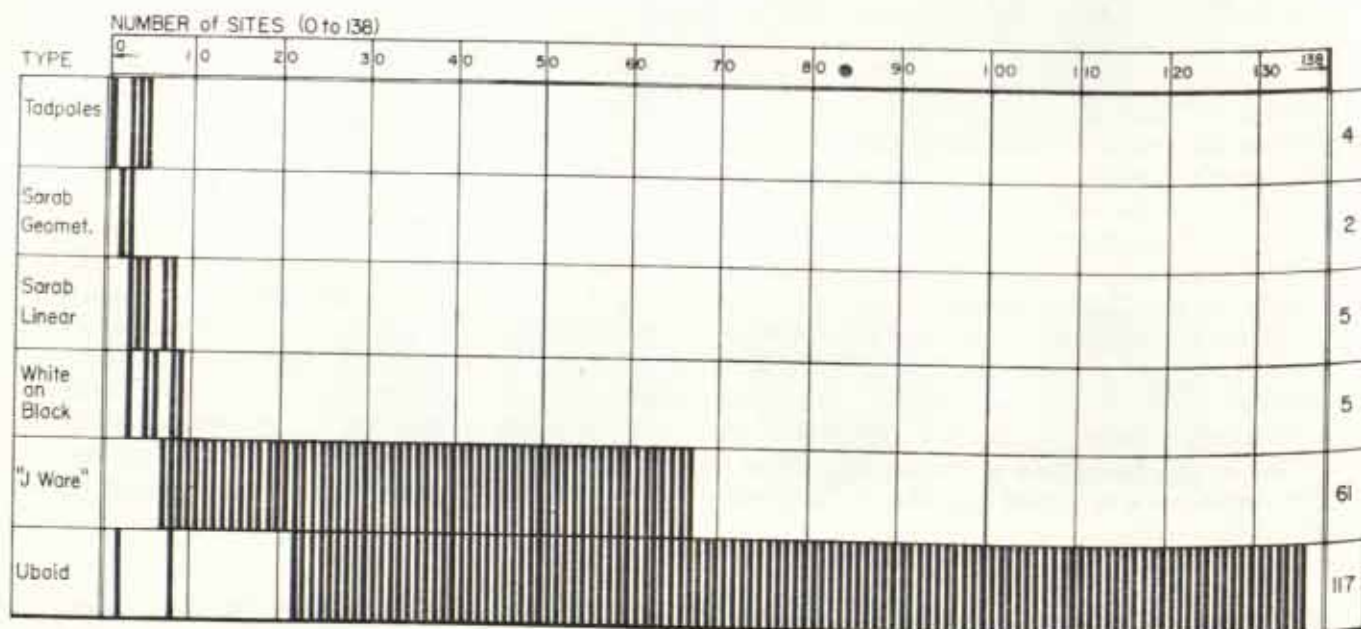


Fig. 3. Chart showing number of sites per period in the Neolithic and Chalcolithic in the Mahidasht. Each vertical line represents one site.

²⁴ T. C. Young, Jr., and H. Weiss, "The Godin Project: Godin Tepe," *Iran* XII (1974), pp. 207-11.

²⁵ C. Vita-Finzi, "Late Quaternary Alluvial Chronology of

Iran", *Geologische Rundschau* 58 (1968-9), pp. 951-73.

²⁶ I. A. Brookes, "Mahidasht '75, Geomorphological Reconnaissance", Report to Mahidasht Project, 1975 (n.d.).

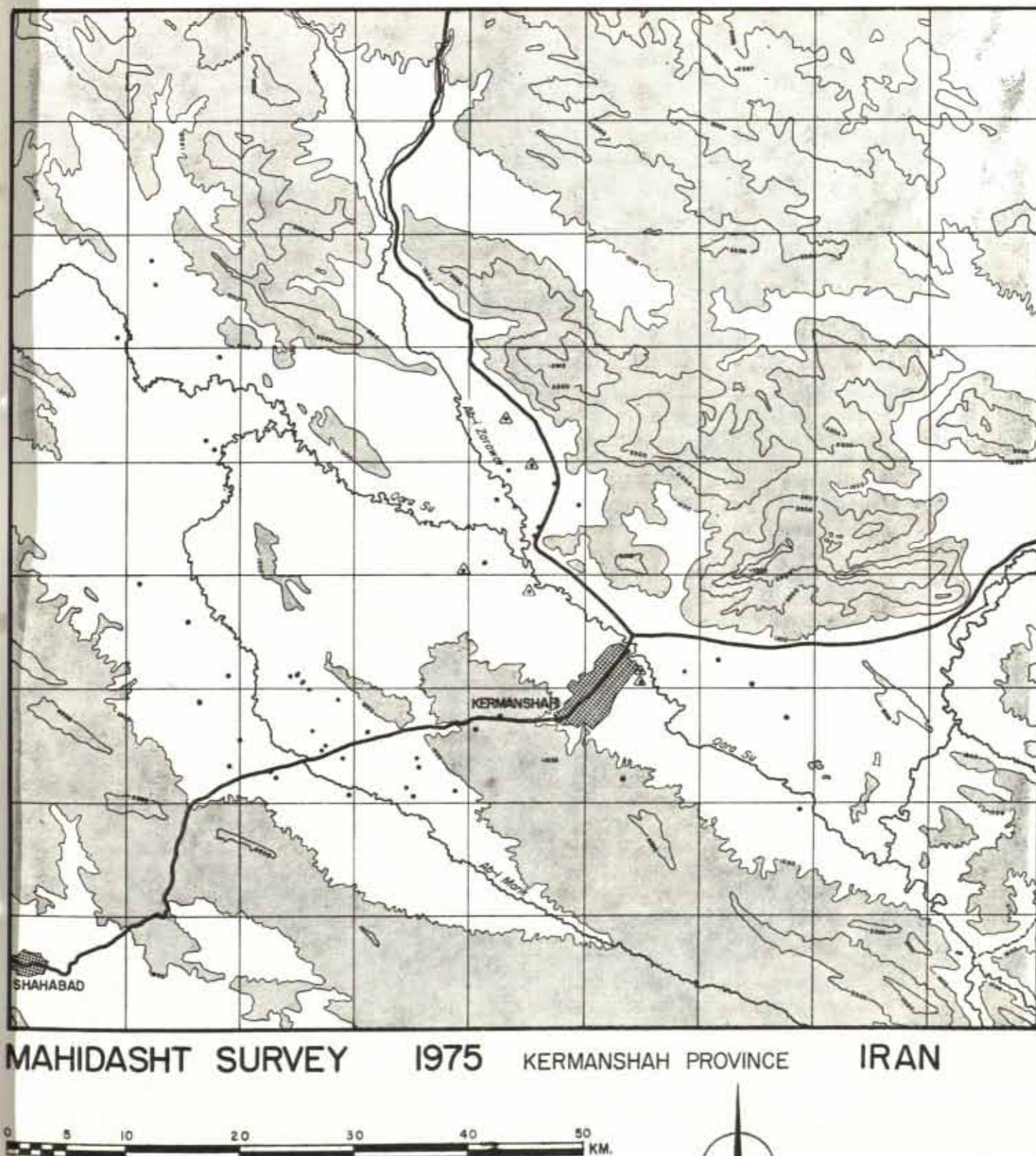


Fig. 4. Map showing location of "J" ware sites in the Mahidasht discovered in the 1960 and 1975 surveys. Δ Sites found in the 1960 survey and not visited in 1975.

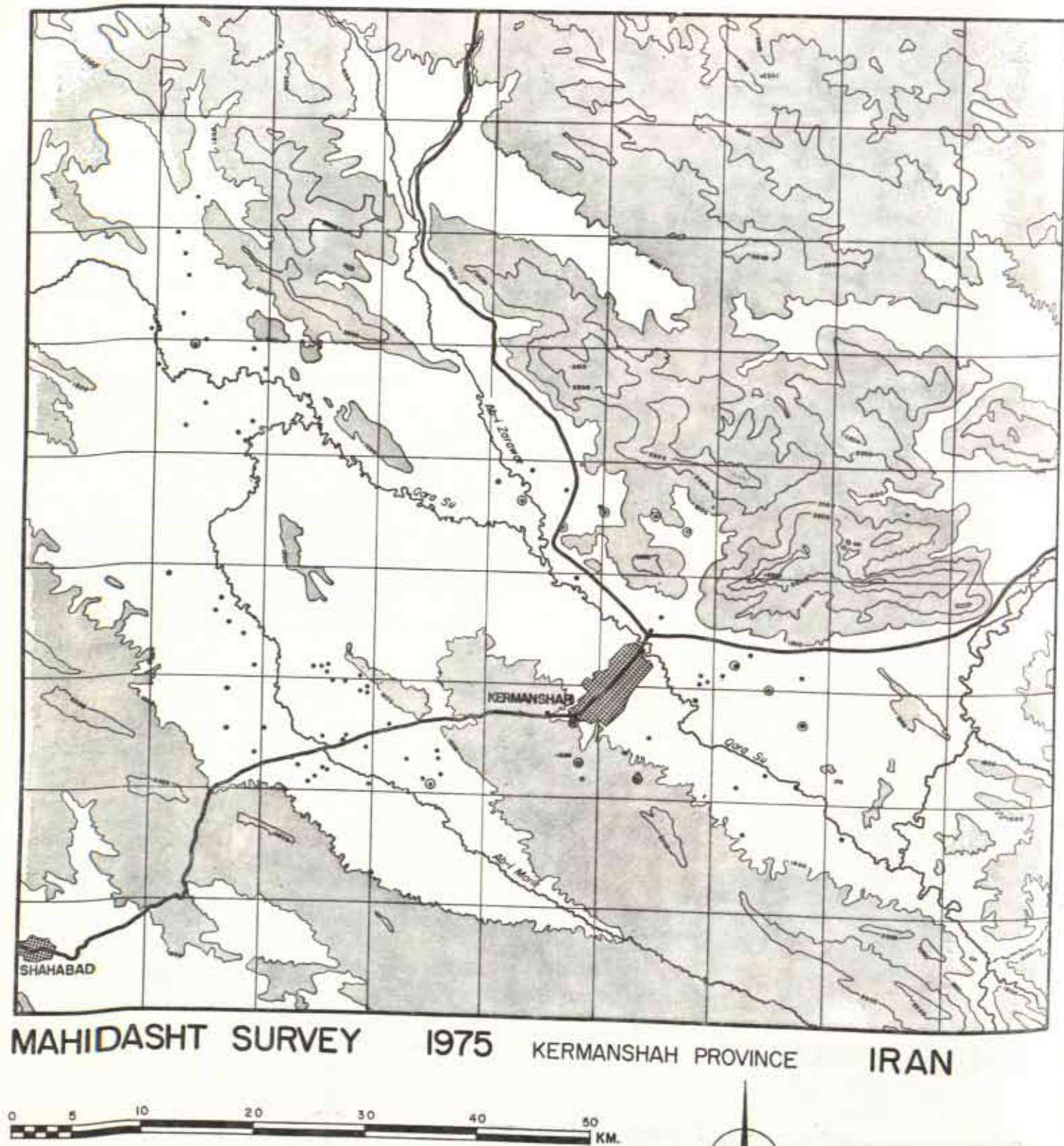


Fig. 5. Map showing location of Ubaid sites in the Mahidasht discovered in the 1960 and 1975 surveys. ○ Ubaid sites bearing Dalmatian pottery.

Even assuming a large sample error, the increase in the number of sites at the beginning of the Chalcolithic is remarkable. For the "J" ware period, a total of sixty-one sites have been identified. The distribution of these sites in terms of modern soil drainage is of some interest²⁷ (Fig. 4). 45 per cent of the sites are found on well to moderately well-drained soils. This is a figure that continues virtually unchanged into the later Ubaid period, when 46 per cent of the sites are on the same soils. Of note for the "J" ware sites, however, is that 35 per cent are found on poorly drained soils, and only 20 per cent are on sloping higher ground, rather than bottom land. When we add to these figures the fact that virtually every "J" ware site is located on a wadi or small stream bed, even when we include the upland sites, we can assume that a reasonable and consistent water supply was of some importance in site location.

This situation contrasts markedly with the later Ubaid site distribution (Fig. 5). First, it is important to note the great increase in density of the settlement pattern. Where the earlier period saw sixty-one sites in the valley, the Ubaid has almost double that number at 116. Of these, as we noted, 46 per cent are on better drained soils. But the number on poorly drained soils drops markedly to only 20 per cent, while upland sites climb to 34 per cent of the total. Furthermore, many sites are now removed from water sources, or at least water sources that would be sufficient for agricultural purposes.

Recent work on the palaeoclimate of Iran appears to shed some light on these settlement patterns. Palaeolimnological studies in the Central Zagros have produced evidence for a post-glacial "climatic optimum" that might correspond to the Atlantic Period in Europe²⁸ or the Altithermal Age in parts of North America.²⁹ Pollen sequences from Lakes Zeribar and Mirabad and plant macrofossils and diatoms from the Zeribar cores indicate that temperatures warmer than present-day values prevailed in the area from c. 6000 b.c.³⁰ Rainfall data are harder to interpret, but it seems that from the start of the warm period until about 4000 b.c., the area was somewhat drier than today or at least subject to fluctuations in rainfall. Beginning about 4000 b.c. a period of increased effective humidity prevailed, caused perhaps by an increase and stabilization of precipitation, lowered temperatures, or both.

Portions of this Early Holocene climatic reconstruction are supported by independent evidence from elsewhere in Iran. Researchers in the Persian Gulf suggest that the area was arid and hot in the Early Holocene, and occasionally more humid after about 4000 b.c.³¹ Sedimentation patterns in the north-eastern part of the Persian Gulf indicate that it was drier than it is today in the Zagros Mountains during the Early Holocene transgression period of the Gulf, a period ending about 4000 b.c.³² Further, the geomorphologist Bobek found evidence for a post-glacial hyperarid period in North Central Iran.³³ He suggests 4000 b.c. as a possible terminal date for this long dry period.

When we meld palaeoclimatological data and site distribution, the following picture emerges. During most of the Neolithic, the Mahidasht was experiencing a gradual warming, which reached a period of optimum temperatures by the fifth millennium. This optimum, which was warm but dry, corresponds to the large scale "J" ware settlement pattern, a pattern in which sites are situated on ground that tends to be poorly drained and retains moisture, or where the sites are located near readily utilizable sources of water, where small scale irrigation could be carried out with a minimum of capital investment. About 4000 b.c. there is perhaps a slight drop in temperature, but hardly enough to affect the basic potential of the region as prime agricultural land. At the same time, there is a marked increase in effective humidity, freeing the settlement pattern from dependence on ground water and irrigation. Many sites formerly on poorly drained soil are abandoned, and of newly established sites,

²⁷ F.A.O. Khuzestan Soil Survey Project, Soil Map of the Larger Mountain Plains in the Karkheh Headwater Area, Reconnaissance Survey. 1:250,000 (1959).

²⁸ K. W. Butzer, *Environment and Archaeology* (1971), chap. 31; F. Oldfield, "Late Quaternary Vegetational History in South West France", *Pollen et Spores* VI (1964), pp. 157-68.

²⁹ E. Antevs, "Geologic-climatic Dating in the West", *American Antiquity* 20 (1955), pp. 317-35; H. E. Wright, Jr., "Review of Water, Weather and Prehistory by R. Raikes", *American Anthropologist* 71 (1969), pp. 159-61.

³⁰ W. Van Zeist, "Late Quaternary Vegetation History of Western Iran", *Review of Paleobotany and Palynology* 2 (1967),

pp. 301-11; K. Wasylikowa, "Late Quaternary Plant Macrofossils from Lake Zaribar", *Rev. Palaeobot. Palynol.* 2 (1967), pp. 313-18; H. E. Wright Jr., "Natural Environment of Early Food Production North of Mesopotamia", *Science* 161 (1968), pp. 334-9.

³¹ B. H. Purser, *The Persian Gulf* (1973), p. 15, fig. 3.

³² M. Sarnthein, "Sediments and History of the Postglacial Transgression in the Persian Gulf and Northwest Gulf of Oman", *Mar. Geol.* 12 (1972), pp. 245-66.

³³ H. Bobek, "Klima und Landschaft Irans in vor und frühgeschichtlicher Zeit", *Geogr. Jber. Ost.* 25 (1954), pp. 1-42.

a much higher percentage are located on well drained soils and well away from any possible source of irrigation water. Improved climatic conditions must have allowed a much larger area to be put under dry farm or rainfall agriculture, without any substantial alteration in the subsistence base. Also with the move to well-drained soils there was probably an increased benefit of better cereal crops, which are ill-suited to waterlogged land.³⁴ Thus the Mahidasht was capable of supporting a much larger population than before without any intensification of the base subsistence pattern. This is reflected in the number of sites, almost double that of the earlier "J" ware period.

The explanation just advanced is not meant to be a return to climatic determinism. Rather, we are suggesting that climate was one of a number of factors that influenced human adaptive systems in a highland zone of Iran during the Neolithic and Chalcolithic periods.

Other factors which affected the adaptive systems, and conversely the way the adaptive systems affected the settlement patterns, are difficult to assess with our present evidence. A preliminary analysis of site size and distribution indicates that by the "J" ware period some settlements had already reached five hectares in area, and that this situation continued into the later Ubaid phase. While both wares occur on mounds of even larger size (up to ten hectares), they are in such cases just one part of a multi-component site, and there is no indication that the entire site was occupied in this early phase. For the five hectare figure, however, there is good evidence for the entire site being settled even in these early time ranges. Thus, it would seem that the beginnings of a settlement hierarchy are to be linked with the intensive occupation of the valley in "J" ware times, and the occurrence of these larger sites in all parts of the valley surveyed thus far would suggest their functioning as central points for a more extensive village-based pattern. This, and other subjects such as shifting interactions between the Mahidasht and adjacent areas, will serve as the basis for future work in and around Kermanshah.³⁵

³⁴ J. M. Renfrew, *Palaeoethnobotany* (1973), pp. 66.

³⁵ The authors would like to thank T. C. Young, Jr., and Mary M. Voigt for reading the manuscript and suggesting valuable

changes. The graphics were prepared by Claus Breede to whom we tender our thanks.

ISTOKI KOMPOZITSII I ETAPY FORMIROVANIYA ANSAMBLYA SHAKHI-ZINDA ("THE ORIGINS AND ARCHITECTURAL DEVELOPMENT OF THE SHĀH-I ZINDE")

By N. B. Nemtseva*

Translated, with additions, by J. M. Rogers and 'Ādil Yāsīn

TRANSLATORS' PREFACE

Dr. Nemtseva's article on the architectural history of the Shāh-i Zinde represents a summary of her work over more than fifteen years. Not unnaturally, therefore, many of her references are to her earlier reports, and we have endeavoured to give resumés of those accessible to us and to reproduce some of her earlier plans. We have also incorporated resumés of various articles by other scholars, including V. A. Bulatova, L. I. Rempel' and B. N. Zasyrkin, and in particular, the valuable, incomplete, survey of the inscriptions of the Shāh-i Zinde by V. A. Shishkin, to clarify or amplify her text at certain points. These additions are indicated by square brackets: we have otherwise attempted to preserve her text, though one paragraph on her page 99 has been relegated to a footnote as being somewhat over-stated for Western readers. The justification for this "scissors and paste" approach is the exceptional importance of the Shāh-i Zinde, which has generated continuous Soviet archaeological activity since Vyatkin's sondages of 1925-6, all virtually unnoticed in the West, where the most recent "systematic" survey of the monuments remains E. Cohn-Wiener's *Turan* (Berlin 1930), now thoroughly out of date. Regrettably, this work has never been co-ordinated.¹ We cannot attempt anything more ambitious here than a preliminary conspectus of some of the major archaeological work of recent years: too few of the original excavation reports have been accessible to us. The present article illustrates, anyway, the preoccupations and presuppositions of Soviet mediaeval archaeologists and current Soviet views on the reasons for the major building works of the 11th-12th and 14th-15th centuries in Samarkand.

For clarity, two somewhat artificial distinctions have been made in the present translation. "The Shāh-i Zinde" refers to the cemetery as a whole, and "the shrine of Qutham b. 'Abbās" to the shrine alone. And, although the Citadel of Afrāsiyāb was an integral part of mediaeval Samarkand, it has been useful to limit "Afrāsiyāb" to the pre-Mongol citadel, within which the Shāh-i Zinde arose, leaving "Samarkand" for the town *extra muros*, which developed in particular after the destruction and subsequent desertion of Afrāsiyāb in 1220. Any translation of archaeological terminology demands a careful balance of freedom and accuracy. Paraphrase has often seemed the best solution, but where

* This was first published in *Sovetskaya Arkheologiya*, 1976, No. 1, 94-106; the pagination of the original is indicated in the margins. Note that in addition to the standard abbreviations, the following works, cited frequently in the notes, are referred to as follows:

Afrasiyab *Afrasiyab. Afrasiyabskaya kompleksnaya arkheologicheskaya ekspeditsiya*, ed. Ya. G. Gulyamov, I (Tashkent 1969); III (Tashkent 1974).
Arends A. K. Arends (ed.), *Iz istorii epokhi Ulugbeka* (Tashkent 1965).
Khadr Mohamed Khadr, with an introduction by Claude Cahen "Deux actes de waqf d'un Qarāhānide d'Asie Centrale" *JA* CCLV (1967), 305-34.
Pugachenkova *Iz istorii velikogo goroda*, ed. G. A. Pugachenkova (Tashkent 1972).
Zakhidov *Iz istorii velikogo goroda*, ed. G. A. Pugachenkova. II. *Ansambl' Shakhi-Zinda* edited P. Sh. Zakhidov. (Tashkent 1970).
The translators wish to express their gratitude to Dr. O. F. Akimushkin of the Institut Vostokovedeniya, AN SSSR (Leningrad), for obtaining this rare volume for them.

¹ See, nevertheless, V. A. Shishkin's valuable article "K istorii arkheologicheskogo izucheniya Samarkanda i ego

okrestnostei", *Afrasiyab* I, 3-121.



63282

it has seemed desirable to construe the evident *meaning*, rather than the expression, this has been done with caution and some agnosticism.

The plans, which have been re-drawn by Dr. 'Ādil Yāsīn, virtually all lacked both orientation and scale. One may deduce an orientation from Dr. Nemtseva's preliminary excavation plan of "the madrasa of Tamghāch Bughrā Khān" (Fig. 4), which is oriented due E-W. However, some error is involved, since Professor E. F. Kennedy, having kindly consulted Ūlūgh Beg's *Ẓij-i Gūrkhāni*, informs us that the *qibla* at Samarqand is $52^{\circ} 54'$ south, which means that, whatever credence we place in the archaeological conclusions, not one of the buildings of the Shāh-i Zinde is anything like correctly oriented: this is embarrassing in a cemetery, where one might expect burial vaults to observe the *qibla*. Compass-points must, therefore, be taken as very approximate indeed. It might also have been possible to deduce a general scale from the same Fig. 4, but there is no evidence that Fig. 1, 2, 3, 6 and 9 are to scale. It has, therefore, seemed better to treat them as sketch-plans. The plan of the final state of the Shāh-i Zinde (Fig. 9) has not been improved, though it plainly could be. However, we have had no access to any original plans, and the danger that added details may well be misleading or out of date has led us to await the publication of Dr. Nemtseva's scale drawings. Some spot heights, deduced from the text, have been added to make the contours clearer.

To avoid bespattering the text with *Translators' Notes* we have adopted the following conventions:

When monuments are designated alphabetically, we have followed English not Russian alphabetical order.

Dates followed by an asterisk * indicate that the date is attested by an inscription.

Double asterisks ** ... ** indicate an interpolation which has not been judged to be worth a footnote, since of these there are enough already.

Regarding the *qibla*-orientation at Samarqand Professor E. S. Kennedy has very kindly contributed the following note:

In the *ẓij* of Ūlūgh Beg Samarqand has the co-ordinates: lat. $39; 37^{\circ}$, long. $99; 16^{\circ}$; and Mecca lat. $21; 40^{\circ}$, long. $77; 0^{\circ}$. By two-way linear interpolation in the tables published by D. A. King ("Al-Khalilī's *qibla*-table" *JNES* XXXIV (1975) 81-121) I make it that Ūlūgh Beg's *qibla* for Samarqand is $S-52; 54^{\circ}-W$ (i.e. $52^{\circ} 54'$), where I estimate the error as not greater than, say, a third of a degree. The tables are much more precise than this statement would seem to indicate, but al-Khalilī takes the co-ordinates of Mecca as lat. $21; 30^{\circ}$, long. $67; 0^{\circ}$. The 10° longitude difference offers no difficulty; but the $10'$ latitude difference cannot be dodged. Since the mediaeval astronomers had no precise means for longitude determination the true Samarqand *qibla* would be different from this, perhaps not enormously. E.S.K.

THE ORIGINS AND ARCHITECTURAL DEVELOPMENT OF THE SHĀH-I ZINDE

94 The extant monuments ** of Central Asia ** are valuable evidence not only for architectural evolution, but also for the technology, the religious history and the detailed historical reconstruction of the great cities of the Middle Ages.

Architectural complexes, many with successive building periods covering several centuries, are also important evidence for over-all planning. These were rarely designed by architects *in abstracto* but, on the contrary, were governed by hard facts, including the pre-existing buildings, ** the topography of a site **, their intended functions and a patron's means. Such considerations may also occasionally have been subordinate to the over-all architectural effect, current fashion and the builders' own architectural and technical capacities.

The architectural history of the Shāh-i Zinde is thus of prime importance. Its angular, heavily built-up ** central ** corridor running across the ruined walls of Afrāsiyāb is almost a reminiscence of one of the narrow main streets of the mediaeval Citadel. This impression is not fortuitous. Work

over the past fifteen years² suggests that the Shāh-i Zinde originated in the mid-11th century on the edge of a heavily populated, built-up quarter in the south-east sector of Afrāsiyāb (Fig. 1), and its ultimate appearance still reflected the original street-plan of the quarter.

With the ruin of Afrāsiyāb in May 1220, followed by the displacement of ** Central ** Samarqand southwards to the area of its former suburbs/*rabāḍ*s,³ the Shāh-i Zinde became a cemetery outside the town. However, though isolated on the deserted Citadel, its subsequent development was throughout closely linked with the urban development of Samarqand. This clearly shows in its general plan the varying orientation of buildings of various periods, the emplacement of the entrances to the cemetery, the choice of architectural perspectives and the situation of domed crossings and other junctions.

95 The determinant building periods of the Shāh-i Zinde were evidently the 11th–12th and the 14th–15th centuries. 16th–19th century building was on a minor scale and made no fundamental change to its plan or to its appearance. However, the 11th–12th century constructions had almost entirely disappeared by the late 14th century and till recently were the subject of conjecture on the basis of defective evidence. The primary axis was mistakenly held to be a "Western corridor", running westwards from the northern group of mausolea, even though traces of 11th–12th century structures had been noted all along the ** main ** N–S axis.⁴ However, work in the 1960s demonstrated that the N–S axis was already primary in the 11th–12th centuries and that the 14th–15th century building programme basically followed it. The principal determinants of this early plan were the contours of the site and the urban topography (roadways, *maydāns*, watercourses and the city wall) of Afrāsiyāb/mediaeval Samarqand.

The development of the Shāh-i Zinde was thus primarily determined by an earlier habitation area. The main N–S axis was found to correspond exactly to the emplacement of a thoroughfare (9th–10th century or even earlier) lying below the present paved corridor of the Shāh-i Zinde⁵ and paved, like other thoroughfares of Afrāsiyāb, with crushed stone—shale from Choban Ata, ** the Jabal Kūhak of the Arab geographers **.

The 11th–12th century complex was bounded on the south by the inner ditch of the *shahristān* wall of Afrāsiyāb, and on the north by the bed of an irrigation canal located north-west of the Shāh-i Zinde running towards the shrine of Ḥaḍrat-i Khidr⁶ at the Kāsh Gate of pre-Mongol Samarqand, where the main leaden aqueduct, the Jūy-i Arziz, entered the Citadel. The remaining walls in this sector were still to be made out, with a canal, overlaid by a roadway from the 13th century onwards, running parallel to them. Perpendicular to this was the roadway which came to form the north-south corridor of the Shāh-i Zinde. Further traces of the southern sector of the *shahristān* have been obliterated by a cemetery, now some centuries old. However, the ground plan, together with literary sources (to be reviewed below) gives an adequate idea of the topography of the surroundings. The earliest structures

² N. B. Nemtseva, "Stratigrafiya yuzhnoi okrainy gorodishcha Afrasiyab", *Afrasiyab* I, 153–204. A series of sondages was undertaken between 1959 and 1965. The pre-Islamic pottery was dated by reference to comparative Central Asian stratigraphy—particularly the Pyandzhikent material for the 7th–8th centuries. Levels were dated from the bed-rock upwards ** 163–4 **. The stylobate of a building 16 m. square with a flat floor of trampled earth with charring yielded primarily 4th–2nd century B.C. pottery. This was on the south-west slope of the walls, evidently near the south gate of Ulugh Beg. A canal, leading towards the shrine of Ḥaḍrat-i Khidr, re-dug several times and later a mediaeval roadway, yielded mostly early pottery, that of the latest periods being 10th–13th century ** 166–78 **. A sondage inside the "chille-khāne" ** 186 ** inside the shrine of Qutham b. 'Abbās yielded mainly 10th–early 11th century pottery and a partially conserved living area with 9th–11th century pottery. This demonstrated in Nemtseva's view that the shrine was not pre-11th century. This dating by pottery and the relatively sparse coin-finds evidently convinced Nemtseva. However, the fine chronology of Afrāsiyāb wares, both glazed and un-

glazed, which she assumes, needs revision and some justification. See also *eadem*, "Ansaml' Shakhi-Zinda v XI–XII vv. (po arkhologicheskim materialam)", *Zakhidov*, 120–69 and particularly 122.

³ The most useful sketch plans of the suburbs and surrounding areas are those in A. M. Belenitsky, I. B. Bentovich and O. G. Bol'shakov, *Srednevekovy gorod Srednei Azii* (Leningrad 1973) 221, Fig. 92; 225, Fig. 93. The former is not reproduced here because it locates the madrasa attributed to Ibrāhīm b. Naṣr Tamghāch Bughrā Khān at the West, Nawbahār, Gate, which conflicts with the present author's claim that it was in fact at the south, Kāsh Gate.

⁴ B. N. Zasyupkin, *Arkhitektura Srednei Azii* (Moscow 1948), 79; V. A. Lavrov, *Gradostroitel'naya kul'tura Srednei Azii* (Moscow 1950), 148; G. A. Pugachenkova and L. I. Rempel', *Vydavushchiesya pamyatniki arkhitektury Uzbekistana* (Tashkent 1958), 109; G. A. Pugachenkova *Samarkand, Bukhara* (Moscow 1968), 32 ff.

⁵ Nemtseva, "Ansaml' Shakhi-Zinda v XI–XII vv.", 160–1.

⁶ *Eadem*, "Stratigrafiya yuzhnoi okrainy gorodishcha Afrasiyab", *Afrasiyab* I, 175, 204.



Fig. 1. Sketch plan of the shahristān of mediaeval Samarqand (the Citadel of Afrāsiyāb).

1. Inner Citadel.
2. Bukhārā Gate.
3. The Bāb al-Šīn/China Gate.
4. Great Mosque.
5. Siyāb Canal.
6. Bāb Nawbahār/West Gate.
7. Shahristān (Citadel).
8. Kāsh Gate (Bāb al-Hadīd/Darwāze-yi Āhanīn).
9. Madrasa ascribed to Ibrāhīm b. Naṣr Tamghāch Bughrā Khān.
10. Shrine of Qutham b. 'Abbās.
11. Shāh-i Zinde.
12. Āb-i Mashhad canal.
13. Rabad, the shahr-i bīrūn (post-Mongol Samarqand).

arose at the intersection of the main N-S roadway and the canal inside Afrāsiyāb. At the East was the 11th century complex of Qutham b. 'Abbās, which was to be the religious focus of the later cemetery. The remaining structures were opposite, on the west, facing the shrine. The early cemetery was thus primarily a series of monumental façades running south from the canal to the city walls (Figs. 2-3).

By the late 11th century, however, there was a second line of façades along an E-W axis, some 15-16 m. south of the present "western corridor" (traces visible on Fig. 6). This was fixed by the line of the canal running perpendicular to the N-S axis along which ran the boundary walls of the northernmost structures of the pre-Mongol group, the shrine of Qutham b. 'Abbās and a madrasa attributed to Ibrāhīm b. Naṣr Tamghāch Bughrā Khān erected there in 1066.⁷ By the late 12th century, the two roadways were of roughly equal length (90-95 m. N-S and 80-85 m. E-W (compare Figs. 3 and 6).

⁷ Khadr, 330-3. The text of the *waqfiyya* ** 325 ** gives no foundation date.

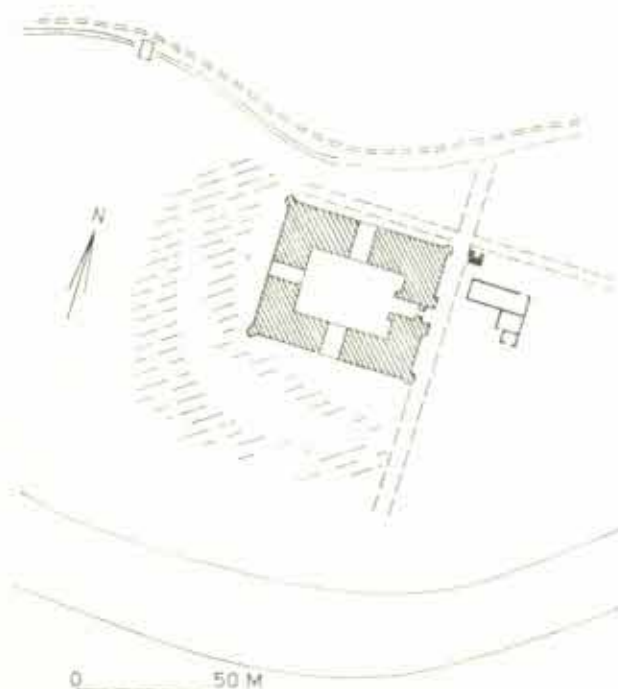


Fig. 1a.

The 11th–12th century remains excavated thus showed three types of building at this primary stage of the Shāh-i Zinde—a shrine, a madrasa and, later, a cemetery (Fig. 1a). First, the shrine which, naturally enough, in view of its focal importance, was restored over and over again. From the outset it appears to have been a two-storeyed complex of rooms, somewhat similar in disposition to the present shrine (Fig. 3). It comprised a (suppositious) mausoleum/*gūr-khāne* (a); with a *ziyārāt-khāne* (b) above, which was subsequently rebuilt; an underground “*chille-khāne*”; and a minaret (d) conserved to part of its original height. There was also an adjacent half-underground hall (?*masjid*?) with wooden consoles for a flat roof. Part of the entablature was brought to light beneath the floor of the 15th century *masjid* near the antechamber/*miyān-khāne* of the present complex.⁸ (Fig. 3).

[Bartol'd's suggestion that the shrine overlay some pre-Islamic sanctuary seems to have been disproved.⁹ However, the inscription in the dial on the cenotaph (735/1334–5) of Qutham b. ‘Abbās, *raḍīya Allāh ‘anhumā*,¹⁰ must refer to both father and son, which suggests that Bartol'd's association of the cult with the rise of the ‘Abbāsids may not be far from the truth. If so, it leaves unanswered the question why a legendary ‘Abbāsīd hero should have remained unhonoured till the 11th–12th centuries, and the Qarakhānīd and Seljuk interest in the shrine posited by Soviet scholars remains to be explained.

The first state of the shrine is difficult to reconstruct. Bartol'd observes that one of the earliest references to it is in al-Sam‘ānī's *Kitāb al-Ansāb* (s.v. “al-Kashānī”)—al-Sam‘ānī died in 562/1166—otherwise it passes unmentioned in the contemporary historians. The basic evidence is thus a fragmentary inscription on a wooden console and frieze, ** *gh* ** *ara Allāh lahā wa li-wālidayh wa li-jamī‘ al-muslimīn yār* ** *ā* ** *him al-rāḥimīn bi-tārīkh Muḥarram* . . . , not unambiguous, but more characteristic of the formulation of a foundation than a funerary inscription.¹¹ Nemtseva observes that although it was discovered under 11th century debris from (abandoned) habitations, with straw, sawdust and a

⁸ Nemtseva, “Ansaml’ Shakhī-Zinda v XI–XII vv.”, 131–5.

⁹ *Turkestan down to the Mongol Invasion* (London 1928; 1958), 91–2.

¹⁰ V. A. Shishkin, “Nadpisi ansamblya Shakhī-Zinda”, *Zakhidov*, 51, 71.

¹¹ V. M. Filimonov, “Drevneye rezhnoye derevo iz kompleksa Kusam-ibn-Abbasa v ansamblye Shakhī-Zinda”, *Izvestiya Zedchikh Uzbekistana* 1 (Tashkent 1962), 267–78; read by Shishkin, *op. cit.*, 51, 71, unillustrated.



Fig. 2. Sketch plan of the southern sector of Afrāsiyāb in the 11th century.

1. Shrine of Qutham b. 'Abbās: (a) *mausoleum/gūr-khāne*; (b) *ziyārāt-khāne* with underground *masjid* (*chille-khāne*?); (c) semi-underground chamber with carved wood consoles and entablature (excavated 1963); (d) minaret.
2. Madrasa attributed to Ibrāhīm b. Naṣr Tamghāch Bughrā Khān (c. 458/1066) (excavations of 1960s and 70s).

few fragments of common 10th–11th century pottery, it was evidently from a room built partly against the *ziyārāt-khāne* on the north and partly against the “underground *masjid*”, at the same level as the latter, so that it must be contemporary with both. Since the *ziyārāt-khāne* and the *chille-khāne*/underground *masjid* show no break in bond, they and the wooden entablature, which is not necessarily roof-timbers, must all be contemporary.¹² The wood was doubtless scrapped when the upper 15th century *masjid* was built.

The only other pre-Mongol element is the 11th century minaret (Fig. 3), the base of which was cleared in 1962, built into the north-west corner of the shrine. Its function is obscure, and the shrine never had another. However, it is evidence that the 11th century “creation” of the shrine posited by Nemtseva may have involved the transformation of some pre-existent mosque or *masjid* into a funerary

¹² Nemtseva, “Ansambl’ Shakhi-Zinda v XI–XII vv.”, 125 note 7, 132–3, 130–1.

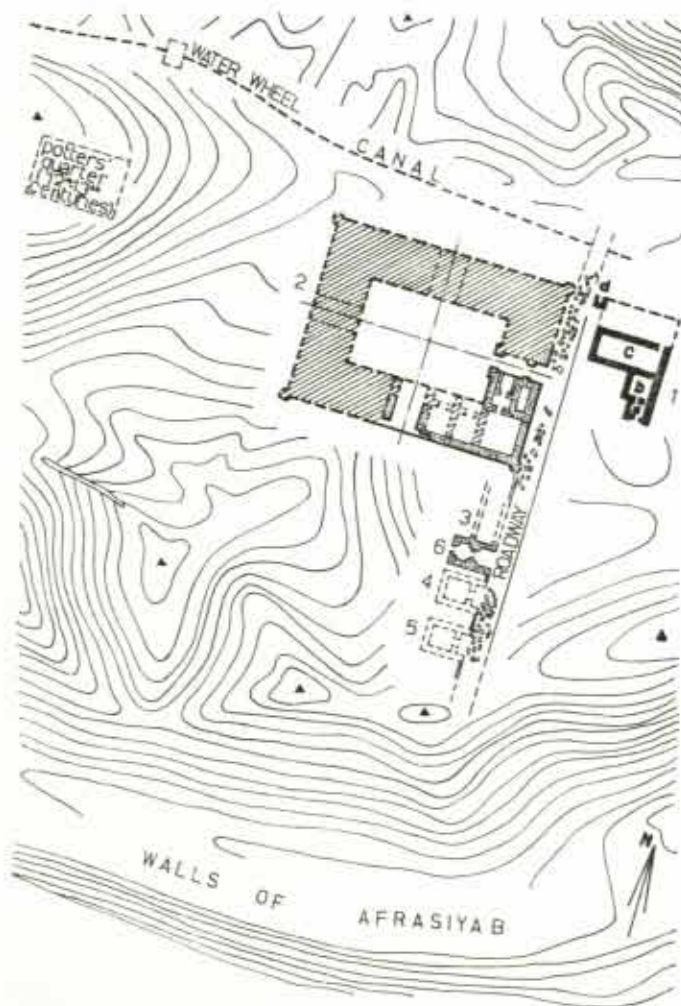


Fig. 3. The Shāh-i Zinde in the 11th-13th centuries. Sketch plan.

1. Shrine of Qutham b. 'Abbās.
2. Madrasa attributed to Ibrāhīm b. Naṣr Tamghāch Bughrā Khān.
3. Mausoleum (A) (11th century) (excavated 1964).
4. Debris of Mausoleum (B) (c. 1100) (excavated 1962).
5. Debris of Mausoleum (C) (1150-1200) (excavated 1963).
6. Mausoleum (D) (early 13th century) (excavated 1965).

construction by the addition of a "mausoleum". In fact, under the 14th century cenotaph, in a brick vault (*lahd*), virtually at foundation level, and datable by brick dimensions to the late 11th century, if not earlier, was an undisturbed common burial.

The first major restoration was evidently in the 14th century. All the basic elements seem to have been rebuilt simultaneously, and on the foundations of the earlier buildings: the supposedly pre-14th century carved and painted plaster from the suppositious mausoleum is not. The upper storey then consisted of a shrine-chamber/*ziyārāt-khāne* for pilgrims, a *masjid*, an antechamber/*miyān-khāne* and an ambulatory. Below was the mausoleum with the "underground *masjid*" south-east of it. On the south-west was a domed rectangular building. The west entrance had early 14th century carved wooden doors and a contemporary carved wooden lintel, evidently from some earlier construction. Anomalies in the stairways connecting upper and lower storeys suggest that the "underground *masjid*" was originally entered from the exterior, and indeed on the south is a blocked up entrance.

The upper south-east room contains the cenotaph with its inscription, anomalously, at the north end, up against the grille and scarcely visible.¹³ Since other decorative elements of the chamber are from elsewhere, possibly from the building destroyed when the upper *masjid* was built, Filimonov suggests that the cenotaph was originally differently placed or that this was not the original *ziyārāt-khāne*. Beyond the grille is a domed chamber with a *mihrāb* in its west wall and a completion inscription, possibly referring only to its redecoration, of 735/1334-5 * on the carved glazed plaques of the transitional zone.¹⁴

Ibn Baṭṭūṭa's description of the cenotaph—black wood, encrusted with precious stones and with silver bands¹⁵ may scarcely seem to apply to the present *lājvardīna* cenotaph of the shrine, which is presumably also to be dated 735/1334-5. However, Filimonov has ingeniously, if not entirely convincingly, argued that Ibn Baṭṭūṭa's description of the shrine shows it as it was after, not before, the restoration. It is chronologically possible, since he was in Khwārazm in 1333, and well have been in Bukhārā and Samarqand as much as a year later. Moreover, travellers of the time were notoriously inaccurate in architectural description. But for the clear testimony of the sources, for example, the Mamlūk description of the Masjid-i 'Alī Shāh at Tabriz, which collapsed about 1325, would never be taken as referring to an Il-Khānid building.¹⁶

The later reflections are more difficult to date. The porch bears a construction inscription of Sayyid Yūsuf Shīrāzī dated 407/1404-5*, virtually contemporary with the "mausoleum of Tūmān/Tūmen Āqā" opposite.¹⁷ Abū Ṭāhir Khwāja's *Samāriyya*, written in the 1830s, mentions, moreover, a further inscription on the porch, now hidden under a thick coat of plaster, of Abū Sa'id (855-73/1451-69), more probably relating to the accession of his son, Aḥmad (873-99/1469-94), and perhaps to the influence of his "evil genius", Khwāja Aḥrār. Certain similarities with the Āq-Sarāy mausoleum at Samarqand erected by one or other of these two rulers¹⁸ cast some doubt on B. N. Zasyrkin's assertion, therefore, that the upper *masjid* of the shrine is 16th, and not 15th century in date.¹⁹

[This skeleton chronology is corroborated by Nemtseva's own findings. Despite systematic excavation the area immediately south of the shrine yielded no 11th-12th century mausolea.²⁰ The discovery of the wooden console and entablature beneath a complex habitation area with canalisation, common pottery and late 10th-11th century coin-finds, leads her to conclude that the shrine was *deliberately* constructed in an (abandoned) habitation area. So many shrines, however, are built around suppositious burials that the force of this conclusion is difficult to evaluate.]

This early complex has no precise analogy in the ** Central Asian ** Islamic architecture of the period. Its actual plan was evidently determined not by any pre-existing building but by the requirements of the *ziyāra*, pilgrimage to shrines, which has been shown to be standard practice by the 11th century. The suppositious tomb of Qutham b. 'Abbās, the Prophet's cousin and a legendary Muslim martyr of Central Asia, officially sponsored as a shrine by the 'ulamā' of the time,²¹ presupposed a variety of different annexes for the cult and performance of the *ziyāra*. It is thus the earliest extant conjunction in Central Asia of the henceforth inseparable constituents of Muslim shrines—a *gūr-khāne*, a *ziyārāt-khāne* and their appropriate dependencies.

¹³ Shishkin, *art. cit.*, 51, 71.

¹⁴ Later painted inscriptions on the plaster, recorded by Shishkin, *ibid.*, include one dated 761/1359-60.

¹⁵ H. A. R. Gibb, *The travels of Ibn Baṭṭūṭa*, III (Cambridge 1971), text 52-4, translation 568.

¹⁶ V. Tiesenhausen, "Kratkiye zapiski i svedeniya o mecheti Ali-Shakha v Tebrize", *Zapiski Vostochnogo Otdeleniya Imperatorskogo Russkogo Arkheologicheskogo Obshchestva* I (1886).

¹⁷ Shishkin, *art. cit.*, 43, 67.

¹⁸ Pugachenkova, "Ishrat-Khāneh and Ak-Saray, Two Tīmūrid mausoleums in Samarqand", *Ansambli* V (1963), 177-89, who dates the Āq-Sarāy to the reign of Sultan Aḥmad ** 187 **.

¹⁹ "Voprosy izucheniya i restavratsii ansamblya Shakhi-Zinda", *Zakhidov*, 91-3.

²⁰ Nemtseva, "Ansambli Shakhi-Zinda v XI-XII vv.", 120-69, especially 125 note 3.

²¹ Nemtseva attributes the official sponsorship of the cult of Qutham b. 'Abbās to the expansion of the Sūfī orders—the building of the tomb of al-Ḥakīm al-Tirmidhī, the founder of the Ḥākimiyya *ṭarīqa* (died 255/869 or 285/898) (cf. Pugachenkova, *Termez, Shakhriyabz, Khiva* (Moscow 1976), 30-41); or the tomb dubiously identified as that of Abū Sa'id b. Abī'l-Khayr (died 1049), since Pugachenkova (*Puti razvitiya arkhitektury Yuzhnogo Turkmenistana pory rabovladieniya i feodalizma* (Moscow 1958), 277-84) has not remarked that he died and was buried in Khurāsān (cf. *EP*, art. "Abū Sa'id ibn Abī'l-Khayr"), with a "*khānqāh*" attached. But, on the other hand, the tomb-shrine of the lawyer Abū Ḥanīfa at Baghdad was furnished at the same time with an important madrasa, founded in 459/1067, attached to it (G. Makdisi "Muslim institutions of learning in eleventh-century Baghdad", *BSOAS* XXIV (1961), 1-56 and especially 17-23). "Saints"

[continued on next page]

[Nemtseva's dating of the shrine of Qutham b. 'Abbās to the 11th century is, however, compatible with the existence of some earlier, possibly even pre-Islamic cult, transferred from elsewhere in Samarqand, as L. I. Rempel' has already suggested.²² The shrine of Ḥadrat-i Khidr, at the old South Gate of Afrāsiyāb, was largely demolished and rebuilt in the mid-19th century, but was evidently a 14th century restoration, as the many 14th century tile fragments now in the Victoria and Albert Museum attest, very probably of an earlier foundation. Excavations there brought no burials or any pre-Islamic shrine to light in 1965. However, the anonymous *Qandiyya-yi Khurd*,²³ a prime, even if virtually unusable source for the history of the monuments of Samarqand, since it conflates (presumably) 12th, (certainly) 15th and even 17th century traditions and, being a *ziyārāt*-book, is neither architecturally nor topographically helpful, devotes much of its text to ** 26 ** Qutham's escape from a pagan incursion. Pursued into Afrāsiyāb through the Iron Gate ** Bāb al-Ḥadīd/Darvāze-yi Āhanīn ** he came to that place which was to be his tomb. There he was led by a man in shining green, that is, Khidr, down a well made ready for him *az 'ālam-i fānī ba-'ālam-i bāqī*, where he continued to reign underground. At Tīmūr's behest, one of his emirs went down the well to find a palace with sumptuous gardens and rich stables and an audience hall, the Court of the Souls of the Just, with a radiant personage enthroned between Khidr on his right and Ilyās on his left, ** 43 line 23; the text, reflecting the 'Abbāsīd associations of Qutham, has Abu'l-'Abbās for Khidr, 36 line 14 **.

Throughout ** for example, 21-2 ** Qutham is generally referred to not by name but as the Shāh-i Zinde/The Living King, the Shāh-i Jawānān/The King of Youths, or merely the Shāh. His role as the slayer of the Infidel, an immortal, the patron of the waters²⁴ and the protector of virtue, is very much that of Khidr/St. George, as F. W. Hasluck showed for Anatolia, Mesopotamia and North Syria, even to his rule underground.²⁵ This fully bears out Rempel's conclusion that the Qutham of the *Qandiyya* is a syncretistic figure, but with elements borrowed also from Siyāwush, an obvious source for a cult of Khidr at Samarqand, and three youths of the Avestan pantheon—Tishtriyya/Sirius, the morning star and bringer of rain; Farr, the fertility god; and Sraush, the evening star, the protector of virtue and one of the judges of the dead. Finally, there are associations with the Soghdian god of the waters, Apanm-Napat.

It is impossible to determine from the *Qandiyya* to which recension of the text these legends regarding Qutham relate: if it was early, obviously, the question why a cult of Qutham-Khidr only developed

²² "Ob otrazhenii obrazov sogdiiskogo iskusstva v Islam. (K voprosu o kul'takh Shakhī-Zinda, Khazret-Khizra i Khodzha Daniyara v Samarkand)", *Pugachenkova*, 36-52.

²³ See C. A. Storey, *Persidskaya Literatura. Bio-bibliograficheskyy obzor*, ed. Yu. E. Bregel, II (Moscow 1972), 1112-15; Irāz

Afshār's text *Qandiyya dar bayān-i mazārāt-i Samarqand* (Tehran 1334/1955), the pagination of which is used here, is a reprint of Mir 'Abd al-Ḥakīm Tājir's edition (Samarqand 1327/1909).

²⁴ Rempel', *art. cit.*, 41 and 46-7.

²⁵ *Christianity and Islam under the Sultans*, I (Oxford 1929), 319-36.

continued from previous page

is a poor English translation for *awliyā*, who included prophets or patriarchs, relatives of Muhammad (*sayyids*, *ashraf*), martyrs in the western sense of the term, lawyers, scholars, but relatively few *Ṣūfīs*. Not all appear to have attracted cults, and not a few had multiple shrines.

Nemtseva's assumption that the '*ulamā*' were officially involved is implausible. In the 11th century, Islam may conceivably have accepted the *ziyāra*, but was extremely suspicious of *taṣawwuf*; hence the anachronism of her "*chille-khāne*". Nor, in the wider context of Khurāsān, Western Persia, Iraq, Syria and Egypt, is it proper to speak of a basic shrine-type. By the 11th century interest in the *awliyā* had grown to the extent of biographical dictionaries, like the *Hilyat al-Awliyā* of Abū Nu'aym al-Isfahānī (died 430/1038) or the *Sifat al-Safwa*, the Hanbali Ibn al-Jawzī's abridgement of it. However, the first comprehensive *ziyārāt*-book so far known appears to be the *Kitāb al-Ziyārāt* of Abū'l-Ḥasan 'Alī b. Abī Bakr al-Harāwī (died 611/1215) (tr. J. Sourdel-Thomine as *Guide des Lieux de Pèlerinage* (Damascus 1957), see pp. xxxv, xx-xxi). The orthodoxy of the *ziyāra* was accepted, not only by Ibn

al-Jawzī, but also by al-Harāwī's virtual contemporary, the Mālikī Ibn Jubayr, whose *Rihla* records the cemeteries he visited on his way to Mecca. This indicates official toleration, though not sponsorship, but their accounts show no connexion, even in the 12th century, with the expansion of institutionalized *Ṣūfism*. The numerous later *ziyārāt*-books, mostly 14th century or later, on the contrary, concentrated on the ritual or devotional aspects of the *ziyāra*, which doubtless provoked Ibn Taymiyya's denunciation of it, and at this stage the association of *mazārs*/*ziyārāt* and *taṣawwuf* was often emphasized. Nemtseva's unquestioning assumptions that the cult of Qutham was officially sponsored by the 11th-12th century '*ulamā*'; that the shrine contained initially a *chille-khāne*, an adjunct of the more advanced and enthusiastic *faqīhāt* from the 14th century onwards; or even that the *zāwiya* to which Ibn Battūta alludes was actually a *khānqāh* are all, therefore, dangerously anachronistic. The early history of the *ziyāra* certainly deserves more detailed consideration, and it is to be regretted that Mme. Sourdel-Thomine's promised study of it has not yet appeared.

in the 11th century still arises. On the other hand, 10th century Samarqand had a well-known Manichaean colony/*khānagāh-i Māniwiyyān*,²⁶ and A. S. Melikian-Chirvani has argued that at least up to the time of Yāqūt, Islamic authors demonstrate detailed knowledge of and interest in Buddhist monuments, toponymy and imagery²⁷; hence though in Central Asia the persistence of Buddhist tradition is best documented for Bukhārā with its annual idol-market, the Bāb Nawbahār at Afrāsiyāb suggests an allusion to a Buddhist *vihāra*. Even if an earlier shrine of Qutham b. 'Abbās, therefore, was not simply moved bodily to (what became) the Shāh-i Zinde, the evidently persistent pre-Islamic deities of Samarqand, possibly with Buddhist elements as well, would certainly have prompted official action on the part of the strongly Ḥanafī Qarakhānids. The creation Nemtseva postulates would then have been not a move to recognise "the cult of the saints", but a re-invocation of this legendary Infidel-slayer to Islamicise an intractable population.]

After 1050 (by 1066, according to the Qarakhānid *waqfiyya*²⁸) across the way, facing the shrine, was founded a madrasa in the name of Tamghāch Bughrā Khān, the first independent Qarakhānid ruler of Samarqand. The crossroads at the town canal thus gained architectural importance (Figs. 2-4).

This madrasa, one of the largest buildings of the group, measured 44 × 55 m. Though all but its south-east quadrant had been destroyed, remains of the southern and eastern axial *iwāns* suggested that

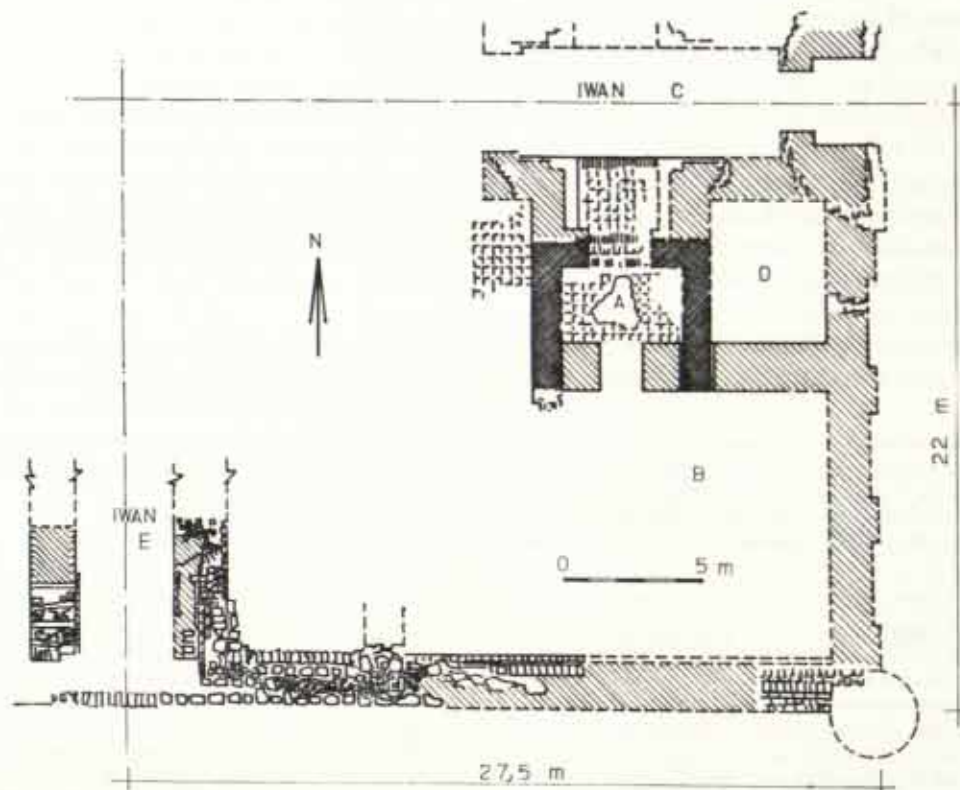


Fig. 4. Excavated sector of an *iwān* building on the Shāh-i Zinde with proposed restorations. (A) evidently with walls older than the remaining (all contemporary) walls; (B) room 9.7 m. square, possibly originally domed; (C) entrance *iwān* with inner porch, cruciform in plan, with deep niches, evidently with terra cotta revetted arches, and brick soffits at the sides; (D) small room, much ruined, no indication of entrance; (E) cross-axial *iwān*, which evidently also served as a side-entrance. After Nemtseva, "Medrese Tamgach Bogra-Khana v Samarkande (iz arkheologicheskikh rabot v ansamble Shakhi-Zinda)" *Afrasiyab* III, 102, Fig. 2.

²⁶ V. Minorsky, *Hudūd al-'Ālam*. "The Regions of the World." *A Persian Geography* (A.H. 372-A.D. 982) (London 1937), 113, 352.

²⁷ "L'évocation littéraire du bouddhisme dans l'Iran musulman", in *Le monde musulman et l'Iran*, ed. J. Aubin, II (Geneva-Paris 1974), 1-72.

²⁸ *Khadr*, 330-3. The madrasa is undated in the text which he gives, and the date, Rajab 458/June 1066, refers to the foundation of a hospital outside Afrāsiyāb (see page 62 of the present article); cf. N. B. Nemtseva, "Medrese Tamgach Bogra-Khana v Samarkande (iz arkheologicheskikh rabot v ansamble Shakhi-Zinda)" *Afrasiyab* III, 125-7.

it was originally a four-*iwān* construction. The Qarakhānid *waqfiyya* specifies, *inter alia*, *mawāḍi' li-dars al-'ilm*/one or more *dars-khānes*, a *masjid* and a garden, as well as cells for students, though without indicating their disposition. The architectural remains, however, seem to foreshadow the great madrasas of 15th–16th century Transoxania—domed corner rooms for the *dars-khāne(s)* or the *masjid*; a group of small rooms for Qur'ān-reading or the teaching of *adab*; cells round a central courtyard for students, ** though from the *waqfiyya* it appears that some lived out **; and an axial entrance-*iwān*, with passages off to the side-ranges, perhaps a forerunner of the characteristic articulated entrances of the later ** Transoxanian ** madrasas. The building faced east on to the N–S axis. Its most imposing feature was a grand rectangular entrance/*pīsh-tāq*, with foliate, epigraphic and angular interlacing bands of framing decoration. The side wings of the façade had triple blind arcades faced, typically for 11th–12th century Transoxania, with ornamental brickwork (Fig. 5).

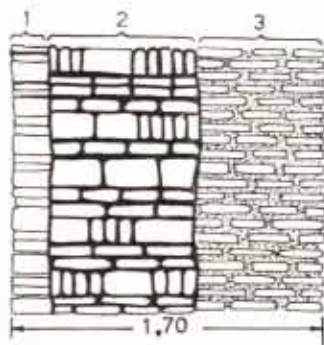


Fig. 5. Decorative brick-bonding from the façade of the "Madrasa of Tamghāch Bughrā Khān", possibly mid-11th century, after Nemtseva "Medrese Tamgach Bogra-Khana v Samarkande", Afrasiyab III, 112, Fig. (b).

[This restoration is largely conjecture. Excavations in 1959–60 and 1972 (see Fig. 4)²⁸ revealed characteristically 11th–12th century brick walls on a variety of foundation materials, all evidently destroyed when the mausoleum of Burundūq was built in the 1380s–90s. These were of a large corner room (B), 9.7 m. square, oriented E–W, with a narrow passage in its north wall by an antechamber (A) to a long entrance *iwān* (C), and a cross-axial *iwān* (E) which was also a side-entrance. A small enclosed room (D), east of (A) was too ruined for its entrance to be determined. The doorway of (A) appeared to be part of an older building. However, it was accepted that (A)–(E) were contemporary, and the two *iwāns*, (C) and (E), suggest that the remains discovered were one quarter of a four-*iwān* construction, the exterior dimensions of which could be deduced as 55 m. E–W and 44 m. N–S. The foundations of cells on the courtyard between (B) and the cross-axial *iwān* (E) then suggest a madrasa.

On the basis of bottle-glass disks in the rubble of (B), Nemtseva suggested that (B) had a domed octagonal transitional zone, though on the plan (Fig. 4) the walls do not appear to have been reinforced to bear its weight. This she identifies as a domed *dars-khāne* ** 133–4 **, by analogy with the madrasa at Shāh-i Mashhad recently discovered in Ghūr, with a domed *masjid* posited at the opposite corner of the building, though this could not have been *qibla*-oriented. The inner porch was a cruciform construction with brick *suffas* and deep niches with corner pilasters also showing remains of terra cotta revetment and, as in (B), traces of the polychrome painted plaster of the upper walls: it may possibly have been domed.

The remains of the grand eastern façade include terra cotta with *naskhī* inscriptions—*al-mulk li'llāh*, *al-wāḥid al-qahhār*—decorative brick bonding (see Fig. 5) and deep blind niches on either side of the porch recalling the walls of the large mausolea at Merv and Sarakhs described and dated by Pugachenkova to the 11th–12th century. However, ** 116 ** only the diagonal wooden armature of the porch suggests that it may have been a *pīsh-tāq*, and corner-buttresses (the term used is *guldaste*)

²⁸ Nemtseva, *art. cit.*, note 28, 99–144.

have been added, though none came to light, to give a virtual prototype for the 15th century madrasa of Ūlūgh Beg on the Rīgistān, a restoration justified by Nemtseva's contention that Transoxanian madrasas formed a distinct type ** 133-4 **, which persisted into the Timūrid period.

If, for the sake of argument, this conjectural restoration is accepted, the question of its date now arises. She rejects its identification ** 126 ** with Abū Ṭāhir Khwāja's *Madrasa Quthamiyya*, founded by Sanjar near the Āb-i Mashhad canal, on the grounds that, stylistically, the 1130s would be too late for the exterior decoration. However, dated or datable 11th-12th century monuments in Khurāsān and Transoxania are so few that stylistic considerations cannot be conclusive. Nemtseva's crucial evidence is the *waqfiyyas* of two Qarakhānid institutions, drawn from later treatises on *shurūf*, of Ibrāhīm b. Naṣr, who took the title of Abū Ishāq Tamghāch Bughrā Khān on his accession as independent ruler of Samarqand in 438/1046-7—one of a hospital outside Afrāsiyāb (witnessed 458/1066), and the other of a madrasa, evidently inside Afrāsiyāb (undated). The beginning of the latter reads:

fa-amara bi-ittikhādh ("ordered to be brought into use") *madrasa takūn majma'an li-ahl al-'ilm wa'l-dīn muttasilā bi'l-shahd* (read *mashhad*) *mushtamila 'alā masjid wa mawāḍi' li-dars al-'ilm wa maktaba li-ta'lim al-Qur'ān wa majlis maqrā . . . wa majlis mu'addib ta'lim al-nās al-adab* (sic) *wa duwayrāt wa sāha* (courtyard) *wa bustān . . . wa jamī' dhālik dākhil madīnat Samarqand bi-mawḍa' minhā tu'raf bi'l-Bāb al-Jadīd* (read *Hadīd*).³⁰

Nemtseva adds to this somewhat unsatisfactory text the important rider ** 127 note 39 ** that O. D. Chekhovich has located 16th and 18th century MSS of the *Muḥīṭ al-Burhānī* of Ibn Māja, one of Khadr's actual sources, in which the *mashhad* is expressly stated to be that of Qutham. On the basis of this, she disputes O. G. Bol'shakov's identification of the *Bāb al-Hadīd*, actually only known from the sources as one of the gates of Samarqand, Timūrid, as the West, Nawbahār, Gate of Afrāsiyāb,³¹ and, by elimination, settles upon the South, Kāsh, Gate. This is, of course, insufficient to establish that *bi-mashhad Qutham* is not a later interpolation, and although Khadr's text is far from satisfactory, the translation of *mashhad* as "shrine" in the context is dubious, since the second of the madrasa's boundaries is later specified as *wa'l-thānī lāziq sāha mansūba ilā'l-Khātūn al-Malika bint al-Tarkhān Beg wa lāziq* ** *fāriqayn* ** *waqf 'alā mashhadihim*, which plainly refers to a Qarakhānid royal mausoleum and not to a shrine at all. Cahen's conclusion that the madrasa, like 12th century Syrian madrasas, was a funerary construction, thus appears to stand.³² This would, incidentally, explain Nemtseva's observation that the *mashhad* was in some respects better endowed, for example, with Qur'ān-readers, than the madrasa, since mausolea generally were.³³ Further evidence that the area was already a cemetery (despite her assertion to the contrary, see pages 52-53 above) is provided by the mention of the tomb of Lāchīn Beg, omitted in Khadr's text but noted by Chekhovich in his 16th century MS of the *Muḥīṭ al-Burhānī*.

Ibn Baṭṭūṭa's mention of a *zāwiya* for visitors at the shrine is then cited as evidence for the continued existence of the Qarakhānid madrasa into the 14th century,³⁴ but on the basis of Bartol'd's incautious remark that the same building might be now a madrasa, now a *khānqāh*, which he himself, in any case, restricted to 18th-19th century Central Asian (ignorant) usage.³⁵ Ibn Baṭṭūṭa's terminology is, however, so loose that without additional testimony the use of *zāwiya* is no evidence that he was referring to

³⁰ Khadr, 325.

³¹ Bol'shakov, "Dva vakfa Ibragima Tamgach-Khana v Samar-kande" *Strany i Narody Vostoka* X (Moscow 1971), 172.

³² Khadr, 311.

³³ Nemtseva, *art. cit.*, note 28, 139.

³⁴ Gibb, *The Travels of Ibn Baṭṭūṭa*, III, text 52-2; translation 568.

³⁵ See his "O pogrebenii Timura", tr. J. M. Rogers as "The Burial of Timūr", *Iran* XII (1974), 70-1, and references.

The transformation of either the Qarakhānid or the Seljuk madrasa into a *khānqāh* would have posed considerable legal problems, since the two types of institution were carefully distinguished. A madrasa specified as such in its *waqfiyya* ** cf. Khadr 325 ** and the property endowed upon it could not later have become a *khānqāh* with the same endowments

without a court case, since such changes were precisely anathematized at the conclusion of any *waqfiyya*. The property could, of course, simply have been expropriated, or else converted (a dubious legal process, known as *istibdāl*, occasionally sanctioned by Hanafī or Shāfi'i *qāḍīs*, for example, in Mamlūk Egypt). Evidence for *istibdāl* in mediaeval or Timūrid Central Asia has not been forthcoming, but nor is there evidence or, indeed, reason, for assuming that the earlier madrasa was confiscated, since building space was scarcely at a premium in southern Afrāsiyāb. Ibn Baṭṭūṭa's testimony (see page 63 of the present article) appears to rule out the identification on topographical grounds. But if it did not, the only obvious alternative conclusion is that if either of the madrasas had been converted into a 14th century *khānqāh*, they had long been ruined or disused.

an abode for Šūfīs. Indeed, his words, "... outside ** the tomb ** is a large canal which traverses the hospice at that place ..." appear to rule out any identification with the Qarakhānid madrasa. It also fails to explain why, if the madrasa was still usable as lodging for visitors in the 1330s, it had become so ruined by the 1380s or 1390s that the mausoleum of Burunduq could partly occupy its place.

The madrasa, as the *waqfiyya* text makes clear, was already built up on three sides and had only a street façade. It was not, therefore, physically attached to the shrine of Qutham b. 'Abbās, nor is there any reason for considering it as institutionally dependent upon it. Even if "the cult of the saints" ** 142-4 ** were to explain the shrine as the creation of institutionalised Šūfism, it would not explain the Qarakhānid madrasa, which was Ḥanafī, any more than it would explain the madrasa founded at the tomb-shrine of Abū Ḥanīfa at Baghdad in 458/1067. *Fuqahā'* and *fuqarā'*, so far from being interdependent, remained for long deeply suspicious of one another, and, despite the appearance of joint *ribāṭs* for lawyers and Šūfīs in late 12th century Baghdad,³⁶ the 'ulamā' were only thoroughly penetrated by *taṣawwuf* in the later 14th century. The point of founding a madrasa at the shrine is thus obscure.

Nemtseva concludes that the excavations demonstrated the existence of an early four-*iwān* building, later overlaid by 14th-15th century mausolea. From its plan it may well have been a madrasa. However, her proposed restoration appears to depend excessively upon the plans of much later Samarqand buildings. Had it been, on the contrary, a Qarakhānid *funerary* madrasa its plan might well have been very different.³⁷ Its identification with the madrasa described by the Qarakhānid *waqfiyya* and the proposed designation of the rooms excavated may, therefore, be held non-proven. But its institutional dependence upon the shrine of Qutham b. 'Abbās must be rejected.

In view of these arguments, a paragraph on page 99, which would, in any case, appear overstated to Western readers, has been relegated to footnote 37.]

100 By the late 12th century, excavation suggests, the west side of the N-S axis, from the town canal virtually to the walls, was built up (Figs. 2-3). Due south of the madrasa was a building (A) of indeterminate purpose, without a revetted façade but with walls 1.5-2 m. high and 80 cm. thick,³⁸ partly showing beneath the foundations of the late 14th century mausoleum bearing the fabrication inscription of the Ustādh 'Alī Nasafī. Further south was mausoleum (B), from which a mound of decorative elements, including large fragments of carved terra cotta revetment (1100-1150) and a corner pilaster lying face downwards, were discovered on the east side of the corridor, 9 m. north of the octagonal canopy tomb of the 1430s.³⁹ Near the mausoleum of Uljay/Ölchei Shād-i Mulk Āqā (built by her mother, Turkān Khātūn, 20 Jumādā II 773/December 1372) *, another mausoleum (C) with an *iwān*-porch was brought to light. Of this there remained the east wall and a mound of typically Transoxanian unglazed terra cotta fragments carved on two planes (late 12th century), which permitted partial restoration of the richly decorated façade. Many other finds of carved 12th century terra cotta,

³⁶ J. Chabbi, "Fonction du *ribāṭ* à Baghdad du V^e siècle au début du VIII^e siècle", *REI* XLII/1 (1974), 101-21.

³⁷ E. Herzfeld, "Damascus. Studies in Architecture. I", *Ars Islamica* IX (1942), 1-53; II, *Ars Islamica* XII-XIII (1943), 13-70.

Nemtseva's assertion that the area was not a cemetery at the time of the foundation of the madrasa is borne out neither by the *waqf 'alā mashhadihim* of the *waqfiyya* (Khadr, 325) nor by her own article, "Medrese Tamgach Bogra-Khana ..." (cited in note 28 above), 127, where she remarks that O. D. Chekhovich's 16th century MS of the *Muḥiṭ al-Burhānī* refers to the tomb of a certain Lāchin Beg. "The location of the madrasa and the shrine," she adds, "in the south-east sector of Afrāsiyāb is relevant to the function of the Shāh-i Zinde at this early stage of its development. The conjunction of a madrasa, the Islamic equivalent of a mediaeval University, where not only future *imāms* but also lawyers, diplomats and theologians were trained, with the "mausoleum of Qutham b. 'Abbās", the cult-centre of a saint, indicates that the south-

east sector of Afrāsiyāb in the mid-11th century was primarily a cultural and religious centre, and the absence of any reference to funerary constructions in its *waqfiyya* ** see, nevertheless, above ** indicates that the cemetery is a later accretion. This conjunction recognized the interconnexion between the various services jointly offered by the madrasa and the shrine, including pilgrimage (the *ziyāra*), the organisation of the major religious feasts, memorial rites and the teaching of theology and more mundane subjects—*adab*, involving literature, history, ethics jurisprudence, etc.—to students."

In the light of Makdisi, *art. cit.*, and A. L. Tibawi, "Origin and character of *al-madrasah*", *BSOAS* XXV (1962), 226-38, Nemtseva's observations appear overstated.

³⁸ Suggesting that the later 14th century mausoleum was built on its foundations.

³⁹ The dispersion of the fragments is not easily explained, and it is not to be excluded that they are from more than one mausoleum.

some partially blue-glazed, indicate that there were further fine façades among this pre-Mongol group, though their precise location has yet to be determined.⁴⁰

[Nemtseva's earlier report gives further details of the mausolea excavated south of that of Burundūq, of which she describes only the most important.⁴¹ (A) was originally small with a façade to the north but was then flanked by mausolea on the north and south. (B), south-west of (A), had an entrance evidently on the east. (A) was, however, attached to it as a sort of antechamber, so that (B) in effect, and quite remarkably, had two entrances. (C) was then built up against the north wall of (B), also facing east, so that (A) was apparently encapsulated. However (C) is untypically narrow, almost passage-like, and it is highly probable that it encroached to the south upon (A)-(B) to form a square ** 150 **. The floor-levels of (A) and (B) correspond to the 11th-12th century pavement-levels of the N-S corridor: this, and the terra cotta facing, suggests a date of c. 1100 for (A), and c. 1150 for (B). (C) was evidently later, but no date is suggested.

Details of further buildings are then given ** 150-62 **, though their lettering does not apparently follow the sequence of the present article. South of the mausoleum signed by the Ustādh 'Alī Nasafī, remarkable terra cotta finds indicated the presence of a mausoleum (D), perhaps c. 1100, though a Qarakhānid mausoleum of this early date need not have been so far from the shrine. A final mausoleum (E) had a façade 11 m. long at the north wall of Shād-i Mulk Āqā, with star and cross terra cotta revetment, the stars being 90 cm. in diameter. The decoration must be late 12th century, though it corresponded to the 10th-11th century pavement level of the corridor when, presumably, the area was still inhabited.⁴²

Then, at the south-east corner of "Ustādh 'Alī Nasafī" (cf. Fig. 9), built into the south wall, Nemtseva excavated * 162-66 ** two walls of an undatable construction, (F), with an outlet-pipe at floor-level through its south wall. This suggested to her the plumbing of the ablutions of some no longer extant mosque or *khānqāh* to the north, though it may, equally have been a fountain/*sabil*. Built up against this was (G), an undecorated rectangular mausoleum, with a deep *iwān*-porch and niches in its three interior walls. It contained a late burial at floor level, but beneath it was a vault with a child burial ** 164 ** ruined when the upper structure collapsed, but re-used later in the 15th-16th centuries ** 166 **. Its date is obscure. The original floor-level was much below that of any 14th century mausoleum, and the plan resembles that of a (12th century) tomb at Dakhistān near Merv. However, early burial vaults, even in such grand mausolea as the tomb of Sanjar at Merv, are virtually unrecorded; the vault is more characteristically 14th century; and the building, if an early foundation, may well be a 14th century reconstruction. ** 166 **]

By the 12th century, therefore, the Shāh-i Zinde had changed significantly. There was clearly a considerable cemetery round the tomb of Qutham b. 'Abbās, and the remains of several mausolea south of the madrasa, evidently of the feudal or religious notabilities of the time, testify to the growing religious importance of the Shāh-i Zinde in southern Afrāsiyāb. But it also retained its importance as an educational centre up to the destruction of Afrāsiyāb by the Mongols. At the zenith of Seljuk power in Transoxania, probably in the 1130s, Sanjar founded the *Madrasa Quthamiyya*, the remains of which ** if they are not those of the madrasa attributed to Ibrāhīm b. Naṣr Tamghāch Bughrā Khān, since the four-*iwān* plan only became widespread in the 12th century ** have yet to be discovered.⁴³ All in all, the architectural remains and the many fragments of rich architectural decoration so far excavated at the Shāh-i Zinde, which combine profound traditionalism with progressive tendencies, show the builders of 11th-12th century Samarqand to be at least the equals of those of Bukhārā,

⁴⁰ Cf. the square terra cotta tiles with a blue-glazed central medallion from the mausoleum of the late Qarakhānid, Ibrāhīm b. Hasan, illustrated as the frontispiece to Rempel's *Arkhitekturny ornament Uzbekistana* (Tashkent 1961), exact location unknown, now in the Samarqand Museum, and unglazed terra cotta tile-fragments (ibid. Fig. 114/1-2), without provenance, also in the Samarqand Museum.

⁴¹ Nemtseva, "Ansaml' Shakhi-Zinda v XI-XII vv.", 120-69.

⁴² (E) of the article resumed here evidently corresponds to (C) of the present text. Cf. the specimens illustrated by Rempel,

loc. cit., note 40.

⁴³ S. L. Volin, "Stareishiye pis'menniye izvestiya o Shakhi-Zinda", *Izvestiya Uzbekskogo filiala Akademii Nauk SSSR* II (Tashkent 1940), 62, citing the *Mughrab fi tartib al-Mu'rib* of Nāṣir b. 'Abd al-Sayyid (1143-1213). The alleged mention of the *Madrasa Quthamiyya* in ** al-Naysābūrī's ** *Tārīkh-i Nishāpūr* has been traced by Bartol'd to Abū Tāhir Khwāja's *Samāriyya*, tr. by V. L. Vyatkin as *Samariya. Opisanie drevnosti i musul'manskikh svyatin' Samarqanda* (= *Spravochnaya Knizhka Samarqandskoi Oblasti* VI) (Samarqand 1899), 176.

Uzgend and Termez/Tirmidh and, indeed, to have played a leading role in the evolution of the mediaeval architecture of Transoxania.

The general economic collapse following the destruction of Samarqand by the Mongols in 1220 led to the gradual desertion and ruin of these 11th–12th century buildings in the south of Afrāsiyāb. However, their final disappearance dates to the 14th century, more precisely to Timūr's reign when, round the widely revered shrine of Qutham b. 'Abbās, there were massive new building works and the 11th–12th century monuments were used as brick-quarries or built over. However, the economic revival of the late 13th century is also reflected there. On the west side of the N–S corridor a mausoleum (D) (Figs. 3–6) was built up against (A). It was an innovation at the Shāh-i Zinde, comprising a ** domed ** mausoleum/*gūr-khāne* and an open entrance-*iwān* almost exactly equal in area.

By the early 14th century, the topography of Afrāsiyāb had changed markedly. Following the displacement of Samarqand in the post-Mongol period into the outer town/*shahr-i birūn*, the 11th–12th century mausolea were overwhelmed by cemeteries which obliterated all traces of the street-system of the early mediaeval habitation area. Only one essential artery remained in the southern sector of the old Citadel, an east–west road running along the dry bed of a town canal from the north of the cemetery to the South/Kāsh Gate (the "Iron Gate") of Afrāsiyāb.

[The earliest evidence for 14th century building activity on the Shāh-i Zinde, which remains difficult to interpret, is the bottom half of a foundation inscription on a panel of cobalt-glazed carved terra cotta, now in the Victoria and Albert Museum (No. 648, 644.1900), with a date *wa dhālik fī Jumādā al-Ākhir sanat 722* (in figures) "from the medrese of the Shāh-i Zinde". Which madrasa? Unfortunately, the beginning is missing, so that the chances of identifying the founder or the foundation are poor. However, since 722/1322 was the year in which Tarmashīrīn Khān, the first Muslim ruler of the area for many decades, gained power, the foundation inscription may relate to some unrecorded building works to mark his accession.]

Between 1300 and 1360, where an E–W roadway met the earlier group of buildings there arose the present "northern group" of mausolea. At the intersection of the two axes was built the mausoleum of Khwāja Aḥmad (1340s) athwart the street and closing it off to the north. On the east side, closing off the western axis, was built an (anonymous) mausoleum of a lady, dated Šafar 762/December 1360* (Fig. 6).

[The building sequence of these two mausolea raises a problem, since the anonymous mausoleum, which, for what it is worth, Abū Ṭāhir Khwāja's *Samāriyya* ascribed to Qutlūgh Āqā, an early wife of Timūr's, was originally an isolated construction richly faced on three sides.⁴⁴ However, somewhat mysteriously, it was built only 70 cm. from the ** earlier ** mausoleum of Khwāja Aḥmad, though at an angle to it. Zasyrkin rightly observes that the siting of both mausolea must be related to the main way into the Shāh-i Zinde, which in the mid-14th century was on the west].

The intersection of the two original axes of the pre-Mongol group ** slightly to the south of the present "Western corridor" (see Fig. 6) ** at the 11th century minaret and by the madrasa was marked (in the 14th, and not in the 15th century, as was formerly supposed) by a four-bay domed crossing "the upper *chahār-ṭāq*", drawing together the 11th–12th group to the south, the complex of Qutham b. 'Abbās to the east and the "northern group" of 14th century mausolea. The pre-Mongol buildings at the crossing of the two axes, with revetted façades on the north and east, were thus incorporated into a small enclosed court, facing west towards the road to Afrāsiyāb, surrounded on three sides by buildings of similar aspect. The court was simultaneously linked by the *chahār-ṭāq* with the whole of the older part of the Shāh-i Zinde to the south. Most of this, including the "Madrasa of Tamghāch Bughrā Khān", which by this time had changed its function and was a *khānqāh* for lodging pilgrims to the shrine of Qutham b. 'Abbās, was, nevertheless, still in existence. ** However, see page 63 and note 35 of the present article. It is worth reiterating that if the madrasa was still habitable, it becomes difficult to explain its ruin by the 1380s or 1390s, when the mausoleum of Burunduq was partly built on its foundations.**

⁴⁴ Zasyrkin, "Voprosy izucheniya i restavratsii ansamblya Shakhi-Zinda", *Zakhidov*, 75.

The second intensive building period of the 14th century dates to Tīmūr's reign. The lay-out of the old cemetery changed radically, and the pre-Mongol buildings disappeared. The scale of building between 1370 and 1405, including the erection of new mausolea on earlier foundations, the inventive conversion of the group which had hitherto more or less conserved its pre-Mongol character, fully compare with Tīmūr's replanning of Samarqand itself at this time, when whole quarters were razed, new streets were laid out and new groups of buildings realized.

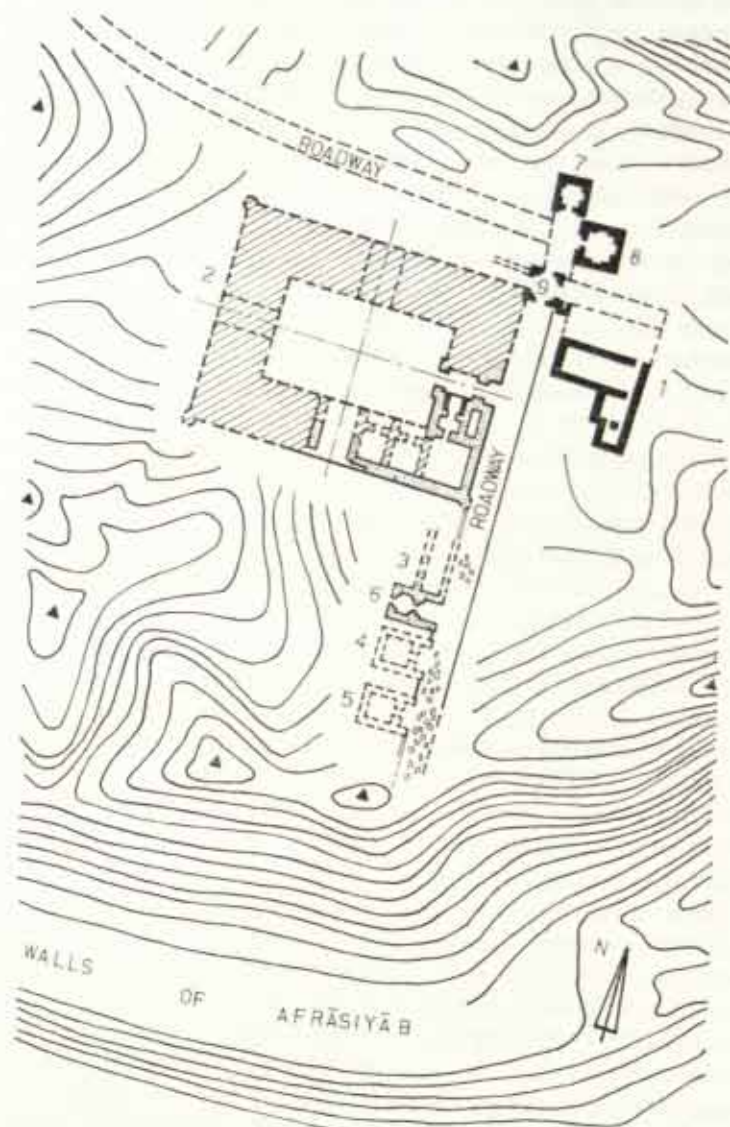


Fig. 6. The Shāh-i Zinde in the early 14th century. Sketch plan.

1. Shrine of Qutham b. 'Abbās.
2. Madrasa attributed to Ibrāhīm b. Naṣr Tamghāch Bughrā Khān.
3. Mausoleum (A) (11th century).
4. Mausoleum (B) (c. 1100).
5. Mausoleum (C) (1150-1200).
6. Mausoleum (D) (early 13th century).
7. Mausoleum of Khwāja Aḥmad (1340s).
8. Mausoleum of an anonymous lady (13 Šafar 762/12 December 1361)*.
9. The upper domed crossing/chahār-ṭāq. The E-W axis appears to have been the first "western corridor" before it came to be built up along the roadway some 10-15 m. to the north.

Most of the splendidly-decorated mausolea of the Shāh-i Zinde date from this period. They are a series of architecturally novel, structurally similar, single-domed tombs, each unique in its way, building upon the architecture and decorative techniques of their predecessors to create a balanced unity, at once architecturally and decoratively harmonious.

The function of the Shāh-i Zinde again changed. Under Tīmūr it became a cemetery outside his own newly walled city for the Royal family and high feudal dignitaries.

[This assertion needs qualification. As Zasytkin remarks, the mausoleum of Tīmūr's sister, Shīrīn Bika Āqā (787/1385-6)*, is the only building on the Shāh-i Zinde in which his personal initiative is recorded.⁴⁵ Arguably, the tomb of Uljay/Ölchey Shād-i Mulk Āqā (20 Jumādā II 773/29 December 1372)* is a royal tomb, since it was built by her mother, Turkān Āqā, but otherwise the foundations of a later wife, Tūmān/Tūmen Āqā, a *khānqāh* and a mausoleum (only the latter dated, 808/1405-6)*, are the only evidence independent of Abū Tāhir Khwāja's *Samāriyya*, which ascribes the anonymous mausoleum of Šafar 762/December 1360 to Qutlūgh Āqā, one of Tīmūr's first wives, that the cemetery was treated, even by the ladies of Tīmūr's family, as royal. If it was royal, it was not dynastic, and the relatively late date of Shīrīn Bika Āqā in series suggests that other, so far indeterminate, factors governed Tīmūr's choice of the Shāh-i Zinde for her mausoleum. This raises the question, of course, why it became alternatively an *aristocratic* cemetery.]

Multiple sondages brought twelve new 14th-15th century mausolea to light, differing little in principle from contemporary domed mausolea, like Tughlū Tekin (Dhu'l-Qa'da 777/March-April 1376)*.⁴⁶ However, they provided useful supplementary evidence for the evolution of Transoxanian

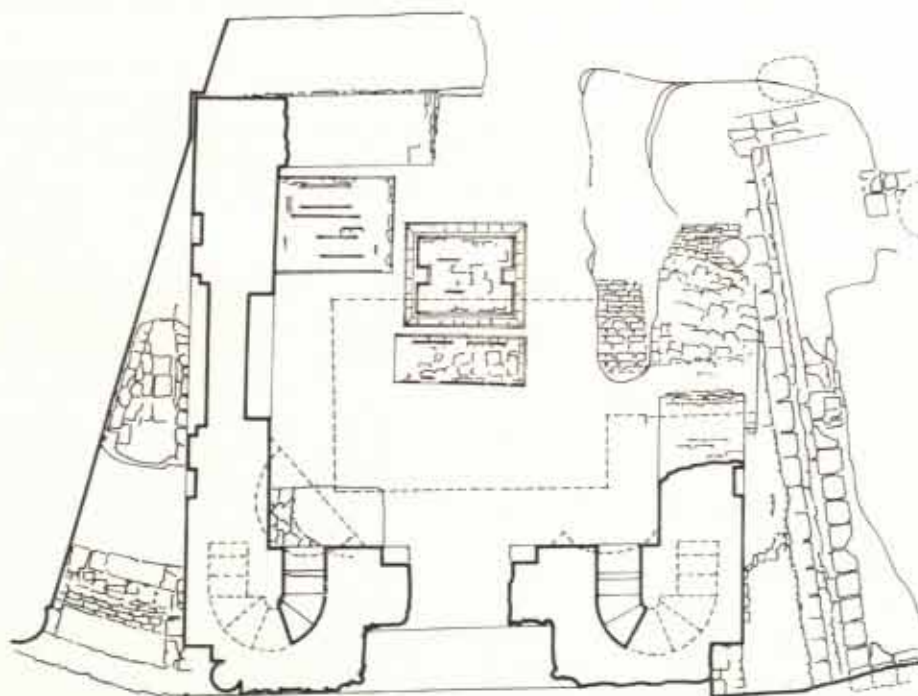


Fig. 7. Plan of the mausoleum of Tughlū Tekin (Dhu'l-Qa'da 777/March-April 1376)* showing the south-east corner which collapsed from subsidence soon after its erection and the north-west corner, partially overlaid by (the foundations of) Shīrīn Bika Āqā (787/1385-6)*. After Bulatova and I. I. Notkin, "Mavzolei Tuglu-Tekin (Emira Khuseina). K istorii izucheniya", Zakhidov, 197, Fig. 2.

⁴⁵ Ibid., 104-6.

⁴⁶ Cf. V. A. Bulatova and I. I. Notkin, "Mavzolei Tuglu-Tekin (Emira Khuseyna)", *Zakhidov*, 194-219, largely resuming Bulatova's earlier report, "K istorii slozheniya ansamblya Shakhi-Zinda v XV v.", *Arends*, 256-73. See also Nemtseva, "Issledovaniya v zapadnom koridore" arkhitekturnogo ansamblya Shakhi-Zinda", *Istoriya i Material'naya Kul'tura*

Uzbekistana V (Tashkent 1964); eadem, "K istorii 'srednei gruppy' mavzoleyev v ansamble Shakhi-Zinda", *Materialy i issledovaniya po istorii i restavratsii arkhitekturnykh pamyatnikov Uzbekistana I* (Tashkent 1967), 95-115; eadem, "Maloizvestny mavzolei iz ansamblya Shakhi-Zinda", *Obshchestvennye nauki v Uzbekistane VIII-IX* (1969), 43-50.

single-domed mausolea and give a clearer idea of the scale of Timūrid development of the Shāh-i Zinde, its rise as the cemetery of the aristocracy and its culmination in the late 14th–15th centuries (Fig. 9).⁴⁷

[The mausoleum of Tughlū-Tekīn (*sic* in the inscription read by M. E. Masson, but no longer extant⁴⁸) was oriented virtually due E–W, the burial vault being N–S (see Fig. 7). The north-west corner though now overlaid by the foundations of the mausoleum of Shīrīn Bika Āqā (787/1385–6),* was evidently originally free-standing, since both north and east faces have decorative revetment. It overlies an earlier brick vault, oriented N–S, with an oblique entrance at the south-east corner. The authors associate the vault with the transformation of a habitation area at the walls of Afrāsiyāb into a cemetery in the late 12th century. In fact, no other burial vault associated with the mausoleum, which is not itself Mecca-oriented, came to light, though the vault itself should have been. The characteristic brick vaulting evolved much more slowly than mausoleum construction. The brick-dimensions given by the authors are, therefore, not conclusive evidence for an early date, since they may have been re-used, and Nemtseva (Figs. 9–14) may well be right to regard it as 14th century.

The interior shows signs neither of tile revetment nor decorated plaster, and the upper part of the mausoleum was too ruined for the transitional zone, or even the windows, if any, to suggest a restoration. Nor was it possible to determine whether the façade, more a *pish-taq*, had originally a moulded profile. One remarkable feature is that the two entrance buttresses contain staircases, recalling those of the larger 12th–14th century mausolea of Iran and Central Asia, perhaps for running repairs to the roof or the dome, but with no obvious serious purpose. Might not these suggest that the mausoleum was early but that it was later given a decorative revetment, to which the date on the inscription read by Masson referred?

Be that as it may, the mausoleum was unstable. Built on the very edge of Afrāsiyāb, virtually at the crown of its ruined walls, it rapidly suffered from subsidence. Excavations in 1952–3 brought to light a series of three terraces, evidently contemporary, designed to stabilise the buildings in this area (Fig. 8). The south-east corner collapsed and was restored with a makeshift buttress, but by the time the foundations of Shīrīn Bika Āqā encroached upon it, it was clearly ripe for redevelopment. Despite Ūlūgh Beg's additional stabilising terraces on the south, by the early 15th century the mausoleum must have been totally ruined.]

104 Some of the pre-Mongol structure evidently survived up to the 1360s. For the first buildings of this period (three mausolea excavated on the west side of the N–S corridor (Fig. 9–10 to 12)) and the mausoleum of Shād-i Mulk Āqā (Fig. 9–13) were built up against the 13th century mausoleum (D) (Fig. 6–6), well to the south of the madrasa and away from the shrine-complex of Qutham b. 'Abbās. However, the extensive building activity of the 1370s–80s then overran part of the ruined city wall of Afrāsiyāb, where, over a short distance, the mausolea of Tughlū-Tekīn (Dhu'l-Qa'da 777/March–April 1375) *Amīr-zāde* (Shawwāl 788/October–November 1386)* and the ** domeless ** mausolea IV and V, ** excavated respectively in 1957 and 1961 **, prolonged the narrow N–S corridor (Figs 9–10 to 16).

It was the works of the 1380s–90s which finally destroyed the 11th–12th century structure (A) (see pages 63–64 of the present article), and the madrasa attributed to the Qarakhānid Ibrāhīm b. Naṣr Tamghāch Bughrā Khān. In their place arose the undated mausoleum bearing the signature of the Ustādh 'Alī Nasafī (Fig. 9–18); the Anonymous Mausoleum II (Fig. 9–19) (1390s), sometimes hitherto erroneously known as that of Ūlūgh Sultān Begīm on the basis of a misreading of its inscription, which is defective anyway; the mausoleum of the Emir Burunduq (Fig. 9–20) (1380s or 90s); and the complex of Tūmān/Tūmen Āqā (Fig. 9–22 to 23) (c. 1400). However, the area due south of the shrine of Qutham b. 'Abbās remained devoid of buildings throughout. ** Systematic ** excavation has brought no architectural remains to light along the eastern side of the corridor between the shrine and the 14th/15th century mausolea built on the old wall of Afrāsiyāb. This area may ** conceivably ** be

⁴⁷ Notkin, "Razvitiye struktury odnokupol'nogo sooruzheniya XIV–nachala XV v. v ansamble Shakhi-Zinda", *Arkhitekt.*

turnoye Nasledstvo XIII (Moscow 1961), 181–8.
⁴⁸ Cf. Shishkin, *art. laud.*, 15.

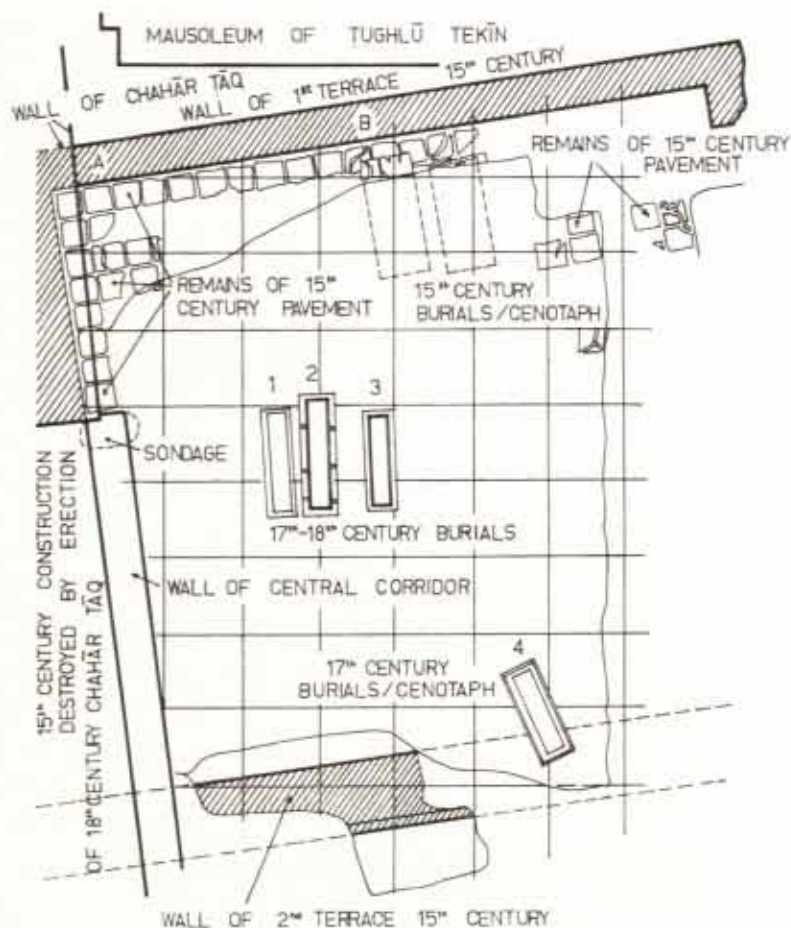


Fig. 8. South façade of the mausoleum of Tughlū-Tekīn. Diagrammatic plan of excavations, showing 15th century terracing, paved 15th century mausoleum, with floor disturbed by later 15th and 16th/17th century burials, all ultimately ruined by the erection of a chahār-tāq (late 18th century) at the south-west corner of Tughlū-Tekīn. After V. A. Bulatova, "K istorii slozheniya ansamblya Shakh-i Zinda v XV v.", Arends, 260, Fig. 3.

the open space/*sāha* belonging to Malika Khātūn mentioned in the *waqfiyya* of Tamghāch Bughrā Khān as one of the boundaries of the madrasa.⁴⁹

The northernmost building excavated on the east side of the corridor was mausoleum V (Fig. 9-17) (late 14th century), built on a mound on the inner side of the walls of Afrāsiyāb, lying 6-7 m. back from the line of the present corridor: its position evidently marks a bend between the city wall and the open space beyond it south of the shrine.

Between 1400 and 1410 the western axis of the cemetery ("the western corridor") leading towards the old Kāsh Gate of Afrāsiyāb began to take architectural shape. The mausolea built here (Fig. 9-24 to 28) (excavated 1961-2) appear to be an intermediate stage in the evolution of the Shāh-i Zinde between the developments under Tīmūr, which kept within the walls of Afrāsiyāb, and the construction of the "lower group" on the south slope of the walls under Ūlūgh Beg in the 1430s.

Excavation brought to light the remains of five single-domed mausolea with porches, generally similar in plan and dimensions to the 14th-15th century mausolea on the main N-S axis of the Shāh-i Zinde. The "western corridor" thus basically follows the earlier plan of the main axis. The north side

⁴⁹ Khadr, 331. This appears, however, to be a misunderstanding of his text ** 325 ** ** *lāziq* ** *sāha mansūba ilā'l-Khātūn al-Malika bint al-Tarkhān Beg*. *Al-Khātūn al-Malika* is a pair of titles, not a name; and since the *sāha* (courtyard, court, open

space; not a *maydān*) is mentioned as one of the boundaries of the madrasa, it can scarcely have been both west of the shrine and well to the south of it across the roadway.

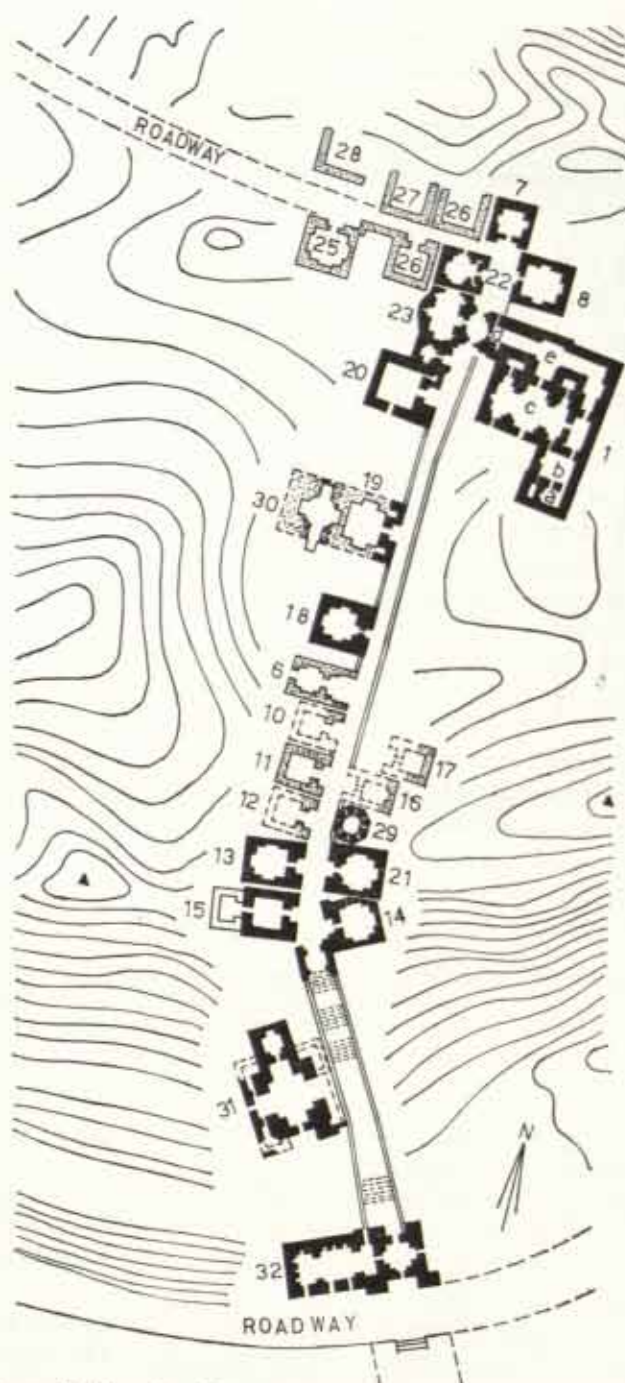


Fig. 9. Buildings dated by an inscription are marked with an asterisk *.

The Shāh-i Zinde 1350-1450.

1. Shrine-complex of Qutham b. 'Abbās. (a) "mausoleum"/gūr-khāne; (b) ziyārāt-khāne; (c) masjid (15th century); (d) minaret (11th century); (e) surrounding corridor/mi'yān-khāne or ambulatory.
6. Mausoleum (D) (13th century) excavated 1965.
7. Mausoleum of Khwāja Ahmad (1340s).
8. Mausoleum of an anonymous lady (13 Šafar 762/12 December 1361)*. For what it is worth, Samāriyya ascribes the mausoleum to Qutlugh Āqā, one of Timūr's first wives.
9. Chahār-tāq (14th century).
10. Mausoleum III (1360s-70s) (excavated 1964-5).

[continued on facing page]

of the mausoleum ascribed to Tūmān/Tūmen Āqā (808/1405-6)* (Fig. 9-22) and the two mausolea on the southern side of the corridor (Fig. 9-26 and 27), joined by a monumental façade, created a narrow corridor, some three metres wide at its junction with the northernmost group of mausolea. On the "town" side, towards the old Kāsh Gate of Afrāsiyāb, this corridor doubles in width, since the two end mausolea are set back to form an open space or *maydān*. However no trace of any monumental porch or entrance *chahār-tāq* was found. Although from the 13th century onwards this route had been the only approach to the Shāh-i Zinde, it had apparently no grand entrance.

The concluding formative stage in the evolution of the Shāh-i Zinde was under Ūlūgh Beg. The architectural transformation it brought was similarly a by-product of the contemporary architectural and institutional development of Samarqand. The works of the 1420s-30s were principally on the south slope of the ruined walls of Afrāsiyāb, though mausolea were added to the "central group" and the shrine-nucleus of Qutham b. 'Abbās was restored yet again.

[In view of Nemtseva's insistence upon the focal importance of the shrine, it is noteworthy that Ūlūgh Beg's concentrated works on the southern side of the Shāh-i Zinde—his monumental porch, *masjid* and terracing—could not be further away from it. Admittedly, the monumental entrance of 838/1434-3*, with quasi-dedicatory inscriptions to Qutham b. 'Abbās,⁵⁰ was now on the town side of 15th century Samarqand. Ūlūgh Beg evidently intended to dedicate the whole cemetery to Qutham, the legendary martyr, a unique phenomenon in Islam. However, the *baraka* of shrines was generally held to increase with proximity and would have been better exploited by building up the empty space south of the shrine. His purpose, therefore, remains obscure.]

The buildings of this period abandon the single-domed mausoleum type of the 14th century, and instead, new architectural forms, original plans and imaginative compositions were realized. For the

105 Shāh-i Zinde, this architectural change represented yet another change of emphasis.

⁵⁰ Shishkin, *art. laud.*, 10-11, 53-4.

continued from previous page

11. Mausoleum II (1360s-70s) (excavated 1964-5).
12. Mausoleum I (1360s-70s) (excavated 1964-5).
13. Mausoleum of Shād-i Mulk Āqā, evidently built by her mother, Turkān Āqā, Tīmūr's elder sister (20 Jumādā II 773/29 December 1372)*.
14. Mausoleum of Tughlū Tekin, often known as that of the Amīr Husayn (Dhu'l-Qa'da 777/March-April 1375)*. Underlying vault perhaps 12th century.
15. Amīr-zāde mausoleum (Shawwāl 788/October-November 1386)*. Underlying vault (excavated 1953) 14th century.
16. Mausoleum IV (excavated 1957).
17. Mausoleum V (late 14th century) (excavated 1961).
18. Mausoleum bearing the craftsman's signature, Ustādh 'Alī Nasafī.
19. Anonymous Mausoleum II (1390s) (excavated 1959). Sometimes known, on the basis of a misreading of its inscription, as that of Ūlūgh Sultān Begim.
20. Mausoleum of Burundūq (1380s-90s). Revetment restored in 15th century.
21. Mausoleum of Shīrīn Bika Āqā bint Tarāghāy (787/1385-6)*.
22. Mausoleum attributed to Tūmān/Tūmen Āqā (808/1405-6)*.
23. Mosque-khānqāh of Tūmān/Tūmen Āqā. Undated but with the tombstone of an emir, Abū Sa'id Mahdī b. Haydār (died Jumādā II 733/1332-3 or 833/1429-30)*. The script looks characteristically 14th, not 15th century.
- 24-28. Mausolea on the "western corridor" (second state) (excavated 1961-2).
29. Octagonal canopy mausoleum. Undated but perhaps 1430s.
30. Burial vault (15th century) (excavated 1968).
31. Mausoleum attributed to Qāḍī-Zāde Rūmī (died 1436). The attribution has been questioned. (See note 51 of the present article).
32. Entrance porch, *chahār-tāq* and *masjid* (838/1434-5)*.

The 15th century terracing in the south-east sector, deducible from the three flights of stairs, is not shown. In this area, opposite 31, there may have been a complex of Ūlūgh Beg's, destroyed after his assassination in 1449. The area south of the shrine of Qutham b. 'Abbās appears never to have been built up.

The dating of this list relies very much upon V. A. Shishkin's unfinished article, "Nadpisi v ansamble Shakhi-Zinda", in *Zodchestvo Uzbekistana. Materialy i issledovaniya*. II. Ansambl' Shakhi-Zinda (Tashkent 1970), 1-71.

By the 1430's the "western corridor" had lost its 13th century importance as the sole entrance to the cemetery from the town, and the main entrance was transferred to the south. The (re)-planning of Samarqand under Tīmūr, the construction of Ūlūgh Beg's Observatory, and the upkeep of a road to it south of the desolate walls of Afrāsiyāb, all favoured the building of a grand entrance. This (838/1435-5)*, which included a winter-mosque and a gate-house (*darvāze-khāne*; Arabic *bawwāba*) or *chahār-tāq* (Fig. 9-32), fixes the southern commencement of the *ziyāra*. The steep gradient of the ruined walls of the Citadel was broken by broad terracing with buttress-walls and flights of steps. On the first terrace was built a two-domed mausoleum, traditionally that of Qāḍi-Zāde Rūmī, the first Director of Ūlūgh Beg's Observatory (died 1436),⁵¹ with a porch facing south (Fig. 9-31).

Slightly to the north of the "central group" was built an octagonal tomb-tower ** actually, a canopy-tomb ** (Fig. 9-29), of a type foreign to the Shāh-i Zinde, with a tall façade, a striking contrast to the earlier portal-mausolea beside it. In the same period a cruciform vault was built behind the Anonymous Mausoleum II (1390s) (Fig. 9-30), the first and only burial vault of the Shāh-i Zinde with interior decoration.

With the decline of the Tīmūrid dynasty in the later 15th century and its supersession early in the 16th century by the nomad Uzbeks under Muḥammad Shaybānī Khān and his successors, controlling all Transoxania and even, for a short period, Khurāsān, Samarqand ceased to be a capital, though conserving its position as an important political and cultural centre. Building activity in the 16th-17th centuries was concentrated at Bukhārā. The Tīmūrid cemetery was deserted; the Shaybānids buried none of their own dynasty there; no further grand mausolea were erected; and those of the 14th-15th centuries gradually fell into ruin.

Archaeology has established that the decay of the "western corridor", Mausoleum (D) (13th century), mausolea I-V (14th century) and the collapse of the walls and dome of the Anonymous Mausoleum II (1390s) and of Khwāja Aḥmad, can be dated as early as the 16th century. By the early 17th century, most of these were completely ruined, serving as mere foundations for mean funerary constructions (1600-50), no reminiscence of the former splendour of the Shāh-i Zinde. The notable architectural traditions of the 11th-12th centuries and of Tīmūrid Samarqand had been totally forgotten. The foundations of six late 16th or early 17th century mausolea and half-underground cenotaphs/*sagana* have been excavated. Undecorated, architecturally unadventurous, without proper foundations and with walls only 60-70 cm. thick, and built of re-used, sometimes even unbaked, brick, they are mostly grouped on the ruined areas on the west side of the "central group", keeping the line of the 14th and 15th century façades. The inscriptions on their marble gravestones show them to be burials of the urban middle classes.

The desertion of the Shāh-i Zinde was not, however, the only reason for the disappearance of the Tīmūrid tradition of mausoleum construction, which partly reflected, evidently, the general evolution of Central Asian funerary architecture. The period saw the gradual replacement of the characteristic 10th-15th century monumental mausoleum by, principally, platform-tombs (*dakhma* or *takht*), family mausolea with a marble facing, covering the burial vault within.

In the late 18th-early 19th century, Ūlūgh Beg's southern terraces were replaced by a single flight of stairs. Simultaneously, at the summit of the old walls a second canopied entrance/*chahār-tāq* was built.

[Bulatova observes that this late *chahār-tāq* preceding Tughlū-Tekīn (Dhu'l-Qa'da 777/March-April 1375)* and the Amīr-Zāde (Shawwāl 788/October-November 1386)* overlies 17th century remains and part of a 15th century terrace.⁵² It is a makeshift construction, resolving the problem of the differing levels on the east and west sides of the corridor by simply boring into the foundations of the 14th and 15th century buildings. It cannot be as late as the 19th century, otherwise the works would

⁵¹ Shishkin, *ibid.*, 12-14, 56-7, points out that the mausoleum is undated and that, though plainly of Ūlūgh Beg's time, is only attributed by tradition to Qāḍi-Zāde Rūmī.

⁵² "K istorii slozheniya ansamblya Shakhi-Zinda v XV v.", *Arendi*, 268, citing Zasyapkin, "Issledovaniye mavzoleya pripisyvayemogo Kazi-Zade Rumi", in *Arkhitektura Respublik*

Srednei Azii (Moscow 1961). She observes that the west side of the corridor, being steeper than the east, needed three terraces to the latter's two. Neither set is indicated, except for the steps, on Nemtseva's sketch plan (Fig. 9) in the present article.

have been recorded in Abū Ṭāhir Khwāja's *Samāriyya* (written in the 1830s), and is, therefore, most probably to be associated with Shāh Murād Beg's restoration of the Rigistān in the late 18th century.

The replacement of the three terraces by a single staircase inevitably steepened the gradient, since they had all been overlaid by multiple burials ** 273 **. Consequently, the paved corridor of the upper group of mausolea had to be lowered ** 270 **. This was scraped virtually to its 11th–12th century paving, actually a metre and a half below the foundations of Tughlū-Tekīn, showing 11th–12th century burials, datable by sherd material, below. More than anything, this explains⁵³ the poverty of evidence for 12th–13th century frequentation, attested by Nemtseva's Mausoleum (D) of the present article, which must simply have been scraped away.⁵⁴

Between 1800 and 1850 a few, architecturally insignificant, structures appeared in the "lower" ** sc. southern ** group. To the north-east of Ūlūgh Beg's entrance block was added a small madrasa (1812–13) with a columned flat-roofed summer *iwān* mosque opposite. This marks virtually the end of building at the Shāh-i Zinde.

The unique group of funerary monuments at the Shāh-i Zinde, mostly from periods when the prosperity of Samarqand was at its peak, namely the 11th–12th and 14th–15th centuries, is a synthesis of the architectural and decorative techniques of these periods. The primordial plan, determined by the contours of the site and the urban topography of late mediaeval Afrāsiyāb, remained the basis of its plan throughout the subsequent stages of its development. The main groups arose variously at different times over the broken terrain. They include an enclosed northern court, two main corridors intersecting at right angles, small open spaces, construction in accordance with the demands of architectural perspective, and the panoramic "lower group", dispersed on the southern slopes of the ancient walls. Thus were the talent and inventiveness of the mediaeval builders organically fused into a single ensemble, a harmony of forms and colour.

[One fundamental problem persists. If the *raison d'être* of the Shāh-i Zinde were the (suppositious) grave of Qutham b. 'Abbās one would have expected such an important 'Abbāsīd "saint" to have attracted far more burials, far earlier and, very probably, far more haphazardly than appears to have been the case. Indeed, if one takes, with Nemtseva, the foundation of the madrasa attributed to Abū Ishāq Ibrāhīm b. Naṣr Tamghāch Bughrā Khān as one of the earliest datable phases of the Shāh-i Zinde, it was, from c. 1050 onwards for four centuries primarily an aristocratic cemetery. Why was this, and why did not minor graves crowd in upon it? It seems scarcely possible that they did not, as they did after its "desertion" by the Shaybānīds in the 16th–17th centuries, in which case the architectural remains are misleading and concentration upon them gives only a partial view of the development of the Shāh-i Zinde.]

It is not even clear that the shrine of Qutham b. 'Abbās, despite the inscriptions on the monumental southern entrance added by Ūlūgh Beg (838/1434–5)* was the focus. How thus to explain the very differing orientations of the 11th–12th and 14th–15th century mausolea which appear (cf. Figs. 6 and 9) to follow the contours of the site, or follow caprice, or follow each other, but rarely to follow the *qibla* and scarcely at all the shrine? And why should not the shrines of Ḥaḍrat-i Khidr, who, to judge from the *Qandiyya*, contributed largely to the legendary persona of Qutham, or Khwāja Dāniyār (later identified in popular tradition with the Prophet Daniel), a legendary rain-maker and of considerable importance in the immortality cult, since the monstrous cenotaph of his shrine at Samarqand is allegedly meant to cover his body, which continued to grow in the tomb,⁵⁵ have attracted cemeteries of equal size and importance? Dr. Nemtseva's survey raises, in fact, more problems than it solves.]⁵⁶

⁵³ *art. cit.*, note 52, 269.

⁵⁴ Bulatova and Notkin, "Mavzolei Tuglu-Tekin (Emira Khuseyna)", *Zhukhovskii*, 194–219.

⁵⁵ Rempel, *art. cit.*, note 22, 39.

⁵⁶ C. E. Bosworth's forthcoming article "Qutham bb, al-'Abbās" in *EI*² should also be consulted. I am grateful to the author for this reference.

THE FIRST ENGLISH GUIDE BOOK TO PERSIA: A DESCRIPTION OF THE PERSIAN MONARCHY

By R. W. Ferrier

On the 20th of January 1638 a Consultation was held by the factors of the East India Company at Bandar 'Abbās about Nicholas Wilford, who had died on December 26th 1637 on his way to Persia from Surat, in north-west India, where the Company had its Presidency. "Nicholas Wilford skillful in the art of painting recommended from the Earle Marshall" had been sent out by Charles I "upon some special business to the King of Persia" and travelled in the East India Company's ship, the *Jonas*.¹ The special business consisted of presenting to Shāh Šafī presents, letters and pictures from Charles I, visiting and drawing ancient buildings, taking particulars of local manufactures such as textiles and dyeing, bringing back statues, inscriptions, etc., and inquiring about a silk contract on a royal basis.

Such were the instructions for Wilford. Amongst his possessions, of which an inventory was presented to the Consultation, there figured painting materials; clothes, including three pairs old cuffs, one pair old russet boots and two pairs spurs; two looking glasses; and books, amongst which were the Book of Common Prayer, Ovid's *Metamorphoses* in French, Quintus Curtius, one on architecture, one on perspectives, a book of flowers stamped and others as well as "Herberts booke". This was the first reference in Persia to *A Relation of Some Yeares Travaile, Begunne Anno 1626 into Afrique and the greater Asia, especially the Territories of the Persian Monarchie: and some parts of the Orientall Indies, and Iles adjacent, Of their Religion, Language, Habit, Discent, Ceremonies, and other matters concerning them, Together with the proceedings and death of the three late Ambassadors, Sir Dodmore Cotton, Sir Robert Sherley and the Persian Nogdi-Beg* (Naqd 'Alī Beg), by Thomas Herbert, published in London in 1634.

Thomas Herbert, whose family had been settled in York for some generations but claimed descent from the great Welsh family of Herberts through Sir Richard Herbert of Colebrook, Monmouth, was born the son of Christopher and Jane, née Akroyd, in the late autumn of 1606 and baptized on November 4th of that year. He was educated at St. Peter's Grammar School, York, and had a somewhat indeterminate period of university residence at Oxford, where he was variously reported as a Commoner at Jesus and Queen's Colleges, but the absence of academic distinction is perhaps confirmed by the omission of his name from the University register. He was also reported to have spent some time at Trinity College, Cambridge, where an uncle, Dr. Ambrose Akroyd, was a Fellow. Doubtless, Herbert's university experience was more social than scholarly, a stepping stone towards the great City and Court life which held out such attractive, but frequently deceptive, prospects for the man-about-town. Herbert's family were merchants, but it is likely that such a life had little appeal to him. On the death in 1625 of his father, who left a small estate, he travelled to London where the family had business connections. Within a short time he had attracted the attention of William Herbert, Earl of Pembroke, who "owning him for his kinsman and intending his advancement, sent him to travel in 1626, with allowance to defray his charges". This was the embassy of Sir Dodmore Cotton to Shāh 'Abbās I, the subject of Herbert's book, which lasted from March 23rd 1627 to January 12th 1629, and which judged by either diplomatic or commercial standards was a sad, unfortunate and unsuccessful affair.

After his return, Herbert waited on his patron, the Earl of Pembroke, for a meeting which was eventually granted. The Earl one day "invited him to dinner the next day at Baynard's Castle in London, died suddenly that night, April 10th 1630". His successor, his brother, Philip, was apparently uninterested in the exploits of the young traveller. In spite of fulsome and lavish praise bestowed upon him in the dedication of the book that "your Lordship's protection may have the same operation on

¹ See R. W. Ferrier, "Charles I and the Antiquities of Persia, The Mission of Nicholas Wilford", *Iran* VIII (1970), pp. 51-6.

me, the Sunne hath upon barren ground, to call out some usefull herbe, and by virtue of your owne influences" or being regarded as Herbert's "pilot", "the Patrone of Vertue, and my safeguard both from the Ignorance of these who can find fault at home, and the malice", he clearly remained indifferent to the claims of professed kinship, or those of a more material nature. This was disappointing, but not disastrous, for Herbert had an amiable character, not over-ambitious and not too committed and he seems to have aroused resentment neither by his opinions nor his manner of life. In short, a moderate man not given to excess and not likely to offend. On the fringes of the courtly life he enjoyed the friendship of the Earl of Arundel and other notable courtiers, and he was befriended by the King.

Before marrying in April 1632, Lucia, daughter of Sir William Alexander, Gentleman Usher to Charles I, he had travelled on the Continent. After his marriage it seems that he ceased regular attendance at Court and spent most of his time at York or in the country. In 1634 the first edition of his book was brought out, followed four years later by a second one. On the outbreak of the Civil War in 1641, Herbert took up the Parliamentary cause and was appointed a commissioner in the army of Lord Fairfax, to whom he was related and well-known. In May 1646 he was one of the commissioners who arranged the terms of the royalist surrender of Oxford. In January 1647 Herbert was chosen to attend upon King Charles I as his guard in his captivity, and was made a Groom of the Bed-chamber. His humanity, sympathy and antiquarian interests helped to form a bond of mutual respect between the King and himself, lightening the last months of the monarch's life, when Herbert was his sole companion. Accompanying the King to the scaffold, a witness at his execution, Herbert was present at his burial at Windsor. Whilst maintaining his loyalty to the Parliamentarians, he was sorry for the plight of the King. In a moving elegaic account of the last days of Charles I, *Threnodia Carolina*, which was published in 1678 towards the end of his life and which is almost a variation on the theme of *vanitas vanitatum*, he reflected on the fate of the King, so that "by his example we are taught that greatest persons many times meet with adverse changes and are forced to bow under the strokes of misfortune, yea in their highest exaltation". The memories of his Persian experiences and his services in the Civil War had doubtless impressed themselves upon his sensitive nature in this respect.

With the Restoration, the even tenor of his life resumed and the services which he had rendered to Charles I were recognized with a baronetcy on July 3rd 1660. He passed his time between his estates at Tintern in Monmouthshire, his London house at Petty France and his place in York in Petergate, mostly in literary and antiquarian pursuits. These interests resulted in two donations to the Bodleian Library in 1666 by Herbert "a learned antiquarie", of manuscripts mostly on philosophical, historical and theological subjects, but including some mid-17th century Persian *firmāns*. Two more editions of his book appeared in 1665 and 1677, tripling in length, a tribute to his reading rather than to further travels, but what they gained in fuller content, they lost in the spontaneity of the first volume; more erudite, they are less personal. Dutch editions had appeared in 1658 and 1663. His first wife, who bore him several sons and daughters, died in 1671 and in November of the same year he married Elizabeth, daughter of Sir Gervase Cutler. He died in York in his 78th year on March 1st 1682 and was buried there in the church of St. Crux. Herbert's was not an exceptional life, but it was a noble one, a notable achievement in a difficult period.

So much for Herbert, the man. What was the occasion of his travelling to Persia? By a curious coincidence, in 1615, just as factors of the East India Company, Richard Steel and John Crouther, had been dispatched into Persia to investigate the possibilities of trade there, Sir Robert Sherley was being sent by Shāh 'Abbās I for the second time to Europe on a diplomatic mission, primarily to Spain with a view to summoning up support against the Turks. Sir Robert and his wife arrived in England in December 1623 and were received in audience by James I at Newmarket on January 28th 1624. With a personal interest in the silk trade, he supported the proposals of Sherley against the opposition of the majority of the London merchants, who felt that the trade with Turkey would be jeopardized. He was even prepared to undertake it himself, but this project ended with his death on March 27th 1625. At all events, neither the enthusiasm of the King nor the advocacy of Sir Robert prevailed on the merchants to entrust him with negotiations with Persia over silk. They disbelieved his claims to bring the "sole Trade of raw Silke unto this kingdome out of Persia", doubted his pretensions to be the Shah's ambassador and had "noe need of Sir Robert Sherley's helpe, neither desire to have anything to doe with him".

Sherley, feeling that he had come to the end of this particular diplomatic mission, petitioned the new King, Charles I, for his permission and assistance to depart. Before any decision was taken, the unexpected arrival of yet another Persian ambassador, Naqd 'Alī Beg, with a royal merchant, Khwāja Shāhsuwār, in mid-February 1626, confused and complicated the situation to a remarkable extent.² Naqd 'Alī Beg not only repudiated Sherley as an ambassador from the Shāh, but for good measure on a public occasion not only tore up the credentials which Sherley was showing to him but also "gave a blow on the face with his Fist". Sherley was amazed and confounded, Charles I disconcerted at such an outrage to one he had long known and whom he considered and treated as an ambassador. The King was anxious that the affront be rectified and the status of Sherley cleared, so he proposed that the East India Company should not only transport Naqd 'Alī Beg back, but also Sherley and the ambassador he intended to send to Shāh Abbās, Dodmore Cotton. After demurring for a while at the expense, the Company finally assented and the three ambassadors left in April 1626 from London to catch the outgoing fleet, which they however missed.

So the ambassadorial trio, separately, unwillingly and morosely returned to London where for the following year they bided their time. Sir Dodmore Cotton, as he had become, became less enthusiastic at the prospects for his mission, the instructions for which had been issued at Whitehall on April 15th 1626. Charles I expressed his consternation that there had "fallen out so strange an accident upon the arrival here of a Second Ambassador from Persia" and requested reassurance about the status of Sir Robert Sherley and an explanation of Naqd 'Alī Beg's conduct, in the name of justice and civility. Cotton was also required to confirm "our friendship to the Shah of Persia". Lastly, he was expressly ordered not to involve himself in the affairs of the East India Company in Persia. Finally on March 23rd 1627, Good Friday, the *Rose* sailed with the fleet from Dover for India to Swalley, the port of Surat, which they reached on November 30th. Before their arrival there, Muhammed Khwāja Shāhsuwār's son died, to be followed by Naqd 'Alī Beg just before they reached Swalley. They left Swalley on December 18th and came to anchor off Bandar 'Abbās on January 6th 1628. Later, on July 13th, Sir Robert Sherley died in Qazvin and was followed ten days afterwards by Sir Dodmore Cotton. Within six months, Shāh 'Abbās too was no more. The actors in the ambassadorial drama had finished their travels for all time.

Such was the historical context of Herbert's *Relation*. Herbert was cautious, almost diffident about writing his book, for "Many stormes it has endured for company, but more hot dayes, which have Sun-burnt my lines, as well as face. And though I am on shore, yet I feare, the Sea is not yet calme; for each Booke, sent into the World, is like a Barke put to Sea, and as liable to censures as the Barque in to foule weather". Maintaining his metaphor, he explains his decision to publish by asserting that "When I landed, I thought to have hoyst saile no more; but Friends whose breath is powerfull, have once more lancht mee into the deepe (and may it prove a faire gale) by commanding these rude and indigested notions from me, which being accompanied with truth and simplicitie (the soule of Historie) are then like the Elements, In most splendour and perfection when least mixt and troubled with Quotations or Observations of other men". It seems probable that there circulated in manuscript a preliminary account of his travels, a common practice of the time, particularly with poetry, and that his friends encouraged him, "my wel-wishers (who have offered, a civill violence to friendship, in forcing my private satisfactions, into publique shame)". It was not his intention at first, certainly not in the first edition, to display his knowledge, to pad out the footnotes, but rather "I was on my way to many Countries, and Travellers have enough to do with varietie, In men and manners, which make up a Librarie to themselves; besides the scituations and present beings of Cities and Territories".³

In his description of the perils of the sea during his voyage we may notice his sparse, concise, pithy style, his interest in natural phenomena, his general knowledge and his human sympathy.

² See Ferrier, "The European Diplomacy of Shāh 'Abbās I and the First Persian Embassy to England", *Iran* XI (1973), pp. 75-92.

³ Quotations from Herbert are taken from the first edition of 1634.

And here (the wind something abating) wee felt excessive heat, that, and the losse of a Sailer falling from the shrouds into the mercilesse waves perishing their, was all our sorrow. Yet a little was added, for under sixe degrees, at midnight so violent and forcible a storme of raine poured on our Ships; that in lesse space then two houres, the Skiffe, which was fastened to the upper Decke was fild with it, & which aggravated the gust, was the fury of Thunder and flashes, which mightily raged with the raine. Nor is the weather rare about the Æquinoctiall; by Mariners termed the TORNADOES: and tis so uncertaine, that now you shall have a quiet breath and gale, and suddenly an unexpected violent gust, and storme, so fierce, that many times the ships will feele no helme.

Yet in my judgement this is most unhappy to the Sailers, who in those raines hanging in their sailes and standing on the Deckes, after the action, commonly go to sleep (the weather being terrible hot) in their wet clothes, which stinke very much of that ill digested showre, and thereby beget long diseases and mortall, as the Calenture, Scorbute or Scurvie, Feauers, Fluxes, Aches and the like: which (did they but forebeare ARACK or strong liquours, and shift themselves out of those nasty infectious wet clothes, when they take their rest) might be prevented.

The one and twentieth of APRILL, because we had no wind, and lying so neere the Sunne, the weather was very sulphurous and raging hot, so that (albeit we had Deckes and Awnings to shade us, and were almost naked) we could enjoy no rest, nor eate, drinke, lie still, or what else without excessive sweating day and night.

This calme and immoderate heate continued with us seven dayes; only on the five and twentieth day, when PHŒBUS was in his height and glorie, a long spout of stinking raine Pyramide wise, dissolved it selfe very neere us.

This hideous CATARACT, as I conceive is exhaled by the Suns powerfull Attract, and converted into an ill congested Cloud, wanting height and heate, is forced into a violent eruption, which dissolved by the penetrating Sunne, effudes itself altogether (whence it had beginning) into the Ocean, and with such fury, that many times great ships, are sunke or dasht in pieces by it, and when the raine is spent, out of that Cloud is issuant so forcible a whirlwind, as breeds feare and admiration; the wind and raine so impetuously tormenting the Seas, that sometimes the surges or Sea-flashes doe rebound top-gallant height.

After he arrived in Gombroon, his land journey took him from the south northwards, from the coast to the Caspian and back, by way of Lār, Shīrāz, Isfahān, Ashrāf, Tehrān, Qazvin and Kāshān, to mention only the larger cities which lay along the route generally taken by the majority of travellers in the 17th century. His first descriptions are of the island of Hormuz and the port of Gombroon. Hormuz he describes as "once as bigge as Exeter, the buildings faire and spacious, with some Monasteries, and a large Buzzar, or Market. Of most note and excellencie is the Castle, well seated, entrencht and fortified. In a word, this poor place, now not worth the owning, was but ten yeares agoe, the only stately City, in the Orient 'and over which now' the fruitfull Cloudes weepe . . . in sorrow of her desolation". Herbert refers to the capture and sack of Hormuz by Persian forces under Imām Qulī Khān with the assistance of ships of the East India Company's fleet in 1623.⁴ As a consequence, "this poore Citie was defrauded of her hopes, continuing glory" and "disrobed of all her braverie, the Persians each moneth conveigh her ribs of wood and stone, to aggrandise Gombroone, not three leagues distant, out of whose ruines, shee begins to triumph". In contrast to the recent catastrophe, Herbert quoted the old couplet,

If all the World were but a Ring
Ormus the Diamond should bring.

It is tempting to ascribe to Herbert's acquaintance with Andrew Marvell, especially as they both enjoyed the friendship of Lord Fairfax, Cromwell's outstanding general, the same image which Marvell used in his evocative poem *Bermudas* to convey the splendour, beauty and opulence of the island,

He hangs in shades the Orange bright,
Like golden Lamps in a green night.
And does in the Pomgranates close,
Jewels more rich than Ormous show's.

⁴ On this event, see C. R. Boxer ed. and tr., *Commentaries of Ruy Freyre de Andrada* (London 1930).

For Herbert, the extravagance and destruction of Hormuz is a cautionary tale, a reminder of the frailty of human endeavour, the pride before the fall, the lottery of fate. A similar gentle scepticism colours his view of Persepolis, for after recounting its magnificence and grandeur in early times when festooned with jewels, he remarks, "But how time has demolisht her glory, as most of all the Wonders of the World, how she lies now subiected give me leave a little to rest upon her pleasant bankes of Byn-damir". Is there an echo heard in Moore's *Lalla Rookh*?

There's a bower of roses by Bendermeer's stream,
And the nightingale sings round it all the day long:
In the time of my childhood 'twas like a sweet dream,
To sit in the roses and hear the bird's song.
No, the roses soon wither'd that hung o'er the wave,
But some blossoms were gather'd, while freshly they shone,
And a dew was distill'd from their flowers that gave
All the fragrance of summer, when summer was gone.

Herbert describes the Palace of Darius and other buildings of Persepolis about which the inhabitants of Marvdasht who "so little know or value memory, that they daily teare away the monument for sepulchres and benches to sit upon" hardly cared;

A little further from the entrance are two Towres of like shape and bignesse. Neere which is another part of the gate, wherein is engraven a PEGASUS: an invention of the SCULPTOR, to expresse his workmanship, these are the portals to that APOLLO, supported by a hundred white marble Pillars, a top of which now inhabit the pious Storkes: the fashion of this roome exceeds all the other in circuit, and bravery. Adioyning is another foure-square roome, whose blacke marble wals are yet abiding. Tis I say foure square, each square ninetie paces, all foure amounting to three hundred and sixtie, it has eight doores, foure of which are sixe paces broad, the other foure of halfe that breath, every doore has seven engraven marble stones fixt one upon another, each stone in length foure yards and height five quarters, all which eight doores are exquisitely engraven with Images of Lions, Tygres, Griffins, and Bulls of rare sculpture and proportion, a top of each doore is of stone the Image of an Emperour in state, holding in his hands a staffe and Scepter.

A third Chamber ioynes to the former, which (these people tell us) was a receptacle for the Queene and Ladies, tis of a Quadrangular but not equall forme, to sides sixtie, the other seventie paces.

A fourth Chamber is next, two sides twentie, the other two thirtie paces, which Nurserie, though of blacke shining marble, is not yet obscured in her glorie: the wals are rarely engraven with Images of huge stature, and have beene illustrated with Gold, which in some places is visible, the stones in many parts so well polisht, that they equall for brightnesse a steele mirrour: this Chamber has its wals of best lustre. But Age and Warres, two great consumers of rare monuments, has turned topsie-turvie, this, as many other things, and left nought but wals to testifie the greatnesse of that glory and triumph it has enjoyed.

There is a touch of that melancholy sadness which suffuses Shelley's *Ozymandias*, that "shattered visage", which proclaims,

My name is Ozymandias, King of Kings.
Look on my works, ye Mighty, and despair!
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare,
The lone and level sands stretch far away.

In these poetic reflections, 'Umar Khayyâm's quatrain is not to be forgotten, a reminder that in spite of linguistic differences, the common language of poetry is the expression of human emotions.

The Worldly Hope men set their Hearts upon
Turns Ashes or it prospers: and anon,
Like Snow upon the Desert's dusty Face
Lighting a little Hour or two—is gone.

Lest it should be assumed that Herbert was all poetic sensitivity, a dreamer in the company of the Muses, his encounter with the ladies of Āmul, who were "beautified with complement and daintie feature", or his observations on the roofs of Tehran show another aspect of his character:

One day, when the weather was exceeding hot, I went to the water-side (neere the bridge over which the night before we entred the Citie) where thinking by helpe of many Popler-trees to shade my selfe from outrageous PHÆTON, seven or eight beauteous (but not bashfull) Damozels suddenly, naked, came forth of the river to admire my habit, having never scene any EUROPEAN there before, some wonders at my clothes, some my spurres, others my haire (differing from the mode of that Nation) by which I became jealous of their honesty and left them, but by enquiry I perceived, it was an affected novelty, and when the men (such time usually as the sonne, is in his Meridian) goe to sleepe, the women then enjoy the river, and coole their heate, in both kinds too much abounding there.

Their habits only a smocke of Callico Lawne, wrought at hands necke and skirts, with silke and gold.

The House where we lodged, ore-topping all the other, from its Tarrases, I could view over all the City, each house top spred with Carpets, whereon slept a man and his peculiar SERALIO, some had three, some sixe, others twelve female beauties sleeping by him. Twas indeed rashly done of me to view them. Their Orders punish it, with no lesse terror, then by shooting an Arrow into his braine that dares to doe it.

Such are some of the aspects of the character of Herbert, as revealed through his Persian travels.

Returning to his journey, let us follow him as a guide through Persia. Gombroon, Bandar 'Abbās, as it was renamed in honour of Shāh 'Abbās I to commemorate the Persian successes over the Portuguese, was according to Herbert, "a dozen years agoe, so short from the title of a Citie, that it could not boast of twelve houses, at this time, having very neere a thousand", Tehrān then having three thousand. The diversion of trade from Hormuz to the mainland had benefitted Bandar 'Abbās. After the establishment of factories by the English and Dutch East India Companies and with the protection of their fleets against the raiding ships of the Portuguese, merchants were attracted to trade there, particularly the Banians from Gujerat and Sind. These Indians were "the most subtle and faire spoken Merchants in the Orient. Here they sell all sorts of Fruits, Seeds, Roots, Drugs and Rose-water". They were permitted to follow their religious practices. The heat was intolerable in summer; "the Country about Gombroone be sterile and sandy", but in the winter "there is abundance of all things necessary, chiefly fruits and flowres" most of which were brought from other places. Herbert noted the windows which "are large like those in Italy, and instead of Glasse use wooden trellizes or casements". He thought the adornments of the women remarkable in silver or gold, brass and ivory and set with jewels, but though "their beauties are so delicate and charming" they were "the most ugly and impudent Whoores in all Persia".

Leaving Bandar 'Abbās "furnisht with twenty-nine Cammels, and twelve Horse", the ambassador's party spent their first night in a caravanserai. This was a "common receptacle of all Travellers, such being at every Manzeil or resting places, through these Kingdomes, in regard there be no Innes, and unlesse they carry with them their Kitchin, they are like to want provision to eate, in all places through their Journey". As far as Lār their route lay across what John Fryer called a "Map of Purgatory", a "Sea of Sand", a region "up Hill and down Hill, through broken Rocks and unsteady stones, through kindled Fires from sulphurious Caverns, and the more raging effects of the burning Orb".⁵

Herbert found Lār, where they spent five days, "famous for nothing but a Castle and Buzzar, which is large, strong and beautiful", the castle, "the order and scituation" of which "equalising if not preceding any other in Persia". The trouble was that the city had suffered from an earthquake thirty years previously which had greatly damaged it and reduced the number of houses from five to two thousand. Herbert also mentions the attention paid to it by Imām Qūlī Khān, who "ransacked the Towne" and was responsible for "the great famine and povertie of this Kingdome". He was not

⁵ John Fryer, *A New Account of East India and Persia* (London 1698), pp. 228, 232, 235.

impressed with Lār nor with its arak, "the baseness of it such, that so little came in my belly, as was possible, because it corrupts the body, hurts the eyes, and breeds long Wormes like a Lute-string in their legges that love it".

Setting out from Lār, Herbert and the party "upon good Mules, who though slow, are sure of foot, and Emblemes of Sobrietie", passed through a countryside which was "desart, sterile and full of loose sand and dangerous, it also shewes huge high Hills, on every side, travell which way you will: without grasse, river, herbes, or what else, a Pilgrim, in those inhospitable Desarts might desire (a few Date-trees excepted, which stand rather as markes to pars by, than other service)". The stages to Shīrāz were enlivened by encounters with tribesmen and a dervish. Herbert, like many others, was attracted to the romantic aspects of their life. Not far from Lār he saw "three score blacke Pavilions, wherein we found nothing, but what gave mirth and beautie. These are a people who live wholly in Tents . . . they have no certaine habitation, they delight in motion, they graze and feed here and there, with all their substance". The Persian "hocus pocus" encountered near Banaru was no mean performer of "rare trickes with hands and feet, hee trod upon two very sharpe Persian Semiters with his bare feet, then laid his naked backe upon them, and suffered a heavy Anvill to be laid on his belly, on which two men beat two Hore-shoes forceably: that tricke done, he thrust Knives and Arrowes thorow many parts of his armes and thighes, and by meere strength of his head tooke up a stone of sixe hundred pound waight, which was fastened to the ring with his haire, and in like sort tore asunder a Goats head with his forelock, still crying Allough wheddow", as well he might. Such wandering entertainers were a feature of Persian life.⁶

It is at Bīrīs that Herbert first mentions a religious building, an Imāmzādeh. Commenting that it appeared more attractive from afar rather than from close by, he describes the tomb in some detail, along with the reputedly holy objects of the saint, and remarks that the "church underfoot is neatly matted" and that "none can enter with boots or shoes on, because the place, they say, is holy". Herbert, while not approving, is not intolerant and does not mock the customs or superstitions. He was generally not impressed by pomp and grandeur and certainly, as his beliefs showed, objected to exaggerated display in religion. He accepted the blue tiling in the mosques, as he indicated in his references to those in Shīrāz where "the refulgent spendour of their blueness, gaine admiration in the beholders" and where most "are round like Theaters, their outside tyling, pargetted with azure stones, resembling Turquoises". He appreciated other churches less in Shīrāz that "Zeale and Wealth together have richly adorned their monuments with precious fragments of Brasse and Stone, and what Art is defective in, Nature and Gold has made up its wants, each Sepulchre boasting of an hundred Lampes and silver Sockets". In Isfahān "the Moscheas, or Churches are large and handsome, that at the West side of the Mydan is most beautiful, tis round built with good white marble five yards high from the Sole, the rest is dried Bricks coloured over with Poses of Arabique and like worke". He mentions the muezzin, "a well voiced boy from the Tarrasse or top of their Churches sings Eulogies to Mahamet and Ally, their voices are shrill and heard farre off".

It is one of the features of Herbert's account that he is more concerned with people, their customs and behaviour, than abstractions; moreover, he is as interested in social entertainment as in royal pageantry. So he describes the embassy's entry into Lār, when many "men of note gallantly mounted, with great courtesie brought us thither". The closer they approached the town, however, the more animated the *istiqbāl* became, when "a Poetique fury thundered us a speech of welcome, and thereupon the Kettle-drums and other their Ingling instruments strove to deafe us". Thus by the time they reached the town with "the whoores bells, roaring of the Mules and Asses, with the shooting and clamour of two thousand people", not even Vulcan and the Cyclops could have made themselves heard. After the ambassador and his entourage were taken to their lodgings, the welcoming party, in a typical Herbertian aside, "without more ceremony (tired, I suppose, with the former) left us".

Herbert noticed the contrast between this form of reception and that of the Court, where usually there was a lavish display of silk carpets on the ground, a magnificent array of gold plate and a wonderful

⁶ For an exposition of the role of such tricksters and mountebanks in Middle Eastern life, see C. E. Bosworth, *The Medieval*

Islamic Underworld, the Banū Sāsān in Arabic Society and Literature. Part 1, *The Banū Sāsān in Arabic life and lore* (Leiden 1976).

spread of delicious dishes, not that Herbert really appreciated the Persian cuisine, for he spoke disparagingly of the basic Persian dish of pilan, contrasting it with the splendid setting for the meal and the opulent dishes and vessels from which they ate and drank (see below, p. 84). Nevertheless, around the room, "with there backs to the wall were seated fiftie or sixtie Beglerbegs, Sultans and Chawns, who sit like so many statues, rather then living men". In that phrase Herbert catches the atmosphere of the Safavid Court, the absolutism of the monarchy and the awe in which Shāh 'Abbās I was held. Such occasions were generally more imposing than enjoyable.

Herbert was very much attracted to Shīrāz, "a very pleasing object", whose "prime beutie" was her churches, and her gardens, which "abound more in fruits then flowres, as Pomegranats, Pome-citrons, Muske and Water-melons, Quinces, Peares, Apples, Oranges, Grapes, Almonds, Figs, Currans, Pistachoes, Plums, Cheries, and Apricockes, to which are added the comely Cypresses, Pines and Chenor-trees". He liked the wine which "is like the French, but better tasted", for it has "the best Grape in Asia". In short, he was of the opinion "that this place for Wine, prettie Women, Fruites and gallant People, compares with any part of Persia".

Between the boisterous behaviour at Lār and the formal decorum of the Court, came the receptions which they attended in Shīrāz, of which the most splendid were offered by the "Duke of Shiraz", Imām Qulī Khān. On the first occasion "at our Ambassadors alighting, we were conveyed into the Dukes Gallery, which was very long and richly furnisht with Plate, rich Carpets, dancing Wenches and Ganimeds". The Duke sat at the very end "crosse-legged like a Taylour, but his fierce aspect and bravery denied that title, he stirred not one foot, till our Ambassadour was at him, and then standing up, embraced him, we had Wine, Women and a Banquet to accompany us, and after two houres stay departed."

The following day the entertainment was more lavish and imposing, as Herbert describes it:

We were ushered into the Banqueting-house, a large open roome, and supported with twenty pillars richly gilded, the Rooffe of imbest gold, the ground spread with rich silke Carpets, this looked into a large four-squared Court, round, in which were placed the prime men of the Citie, and in another Court five hundred common people, all which the Duke had invited to declare his greatness. The Banqueting Hall had a State at the end, of Crimson Satten, embroydered with Pearles and Gold. . . . Then the Duke himselfe entered, with thirty Gentlemen, viz. slaves, in Crimson satten-quilted Coats and Turbants, every Turbant wreathed about it with chaines of Rubies, Turquoises, Emeralds, and the like of great lustre and value.

The Duke himselfe was attired in a Coat imbrodered with silver, upon it, he had a vest or Gowne of great length, so thick powdered with Orientall glittering stones that the ground of it could scarce be scene, and twas invaluable, his Tulipant and Sandals had like lustre.

Between Shīrāz and Isfahān, Herbert came to Yazd i-Khāst "where is the best Carravans-raw about her. This Towne is seated in a low Narrow valley, sunke downe in midst of a large plaine, whereby you cannot see it till you be at it, did not an eminent Castle mounted higher, point it out". Isfahān impressed him, "beautiful and ancient", "a Citie of as great extent as Fame, and as ancient as famous, and no lesse proud then ancient", and whose "chiefe Ornaments" were "the Mydan, (or great Market, the Hummums, or Hot-houses), the Moscheas, the Kings Palaces and the Gardens". It was round like Paris, nine miles in circumference and had "three hundred thousand soules at most". The Maidan was "the heart of the Citie and to say truth, all the bravery, concourse, wealth and Trade is comprised in her. . . . It is built in forme of our royal Exchange . . . with four isles, and a court within, called the Hippodrome, so cald from their running with horses there. Tis stored with all Merchandises, chiefly Drugs, and to this place daily resort most Nations as English, Dutch, Portugals, Arabians, Turkes, Jewes, Armenians, Muscovians, and Indians".

Although Shāh 'Abbās was not in Isfahān on their arrival, they were welcomed with the usual cortège of Court officials, merchants, European residents, towns people, dancers, drummers and four thousand horsemen. Shortly afterwards they were entertained by the Agent of the East India Company, who "had at night, a pond of water set round with wax-lights, and spent many Squibs and Fire-works which flying high, made all the Citie wonder", a favourite kind of display in the royal festivities of Isfahān. Later, the head of the Armenian community, Khwāja Nazar, who lived in Julfa, which was

on the other side of the Zāyandeh Rūd, "and seated in the same sort as Southwarke is to London", invited them to a feast, "and gave us royall welcome, amongst other meate, wee had a Pigge roasted (a meate abhorred by Mohametans and Jewes) the Wine bottles and flat cups we drunke in, were of pure gold". To Herbert his visit to Persia must have appeared as the visible proof of the Persian reputation for ostentation on a grand scale, as for example in Spencer's discription of the House of Pride

. . . whose glorious view
Their frayle amazed senses did confound:
In living Princes court none ever knew
Such endlesse riches, and so sumptuous shew;
Ne Persia selfe, the nourse of pompous pride
Like ever saw.⁷

Herbert was in Isfahān for three weeks, "no time idle", and he not only seems to have spent much time sight-seeing but to have enjoyed himself. The mosques he found "large and handsome" but he liked best the Masjid-i-Shaykh Lutf 'Allāh which was finally completed not long before his arrival and was in his opinion the "most beautiful, tis round built with good white Marble five yards high from the Sole, the rest is dried Bricks, coloured over with Posies of Arabique and like worke".⁸ The gardens were "many both large and delightful" and he describes in some detail "Nazar-jareed", Hazārjarīb, approached through the Chahār Bāgh, with its excellent view of "a great part of the Citie", streams, cascades, varieties of fruits and pavilions. He passed over the bridge for which 'Allāh Verdi Khān was responsible "archt and supported with five and thirtie Pillars, under which is a streame of water, sometimes so broad as the Thames at London, but other sometimes neere dried up". Herbert remarked on the 'Ālī Qapū where "the roomes are covered with rich Carpets" and the King's Mint and was obviously fascinated by the importance of the Public Baths. They were "round, spacious and costly, one of which built by this King, cost fiftene thousand pound sterling, ere it was finished, they are much given to bath, and it is most of their Physick, it is prevalent too against the lues venerea, and that disease not a little infects the lustfull. The men goe in the afternoone, the Women at morne, and guided by the Eunuches". The pleasure-loving aspects of Persian life he clearly noticed, like Chardin after him, and saw where the "night life" was centred. "At the North end of the Mydan, is eight or nine roomes, like Chappels hung with Lampes, which being many and cleare, give a dainty splendour, hither sometimes the King repaires and sees the Sodomiticall Boyes and Wenches dance, and sport together, and when he is away, the people have them". The Zoroastrians in Isfahān were not highly regarded by the Persians and Herbert mentions their customs, particularly that of burial, with little comment, but he was saddened by the earlier persecutions the Armenians had suffered from the Turks and Persians.

From Isfahān they travelled towards the Caspian Sea having "guides and a Convoy to direct us, the Starres were theirs, without whose ayme there is no certaintie", "travelling all the night and reposing (I cannot say sleeping, the Gnats so troubled us) all the day", for "the Sunne is so fiery and makes the Sands so scalding on the day time". Herbert noticed the contrast between the little walled estates of the Shāh placed at intervals along the route and the "miserable inhospitable wilde" wastes of the Dasht i-Kavīr where "the sand by the fury of Tempests lies in great drifts, like mountaines, so light and unstable, that the high wayes are never certaine, whereby passengers are often involved and overturned, they and their Camels, and so perish in the mercillesse sands". They rode between twenty and thirty miles a night if the going was not too rough. Shāh 'Abbās I had shelters built along the way, as a "safeguard against stormes" but "though strong and spacious yet (because their foundation is sandy)" in spring "were yearly torne asunder in peece meale, and no signe left of their once being there." Of more permanent assistance was the causeway constructed by Shāh 'Abbās, "built by incredible labour and expence, over a miserable Desert, nothing but Salt (not unlike pure Snow) where note that the

⁷ Spenser, *Faerie Queene*, Book I, Canto IV, 7, 11. 2-7.

⁸ Upham Pope was of a similar opinion: "This is pure architecture, flawless and serene, and still as perfect as on the day of

dedication three hundred years ago", *Persian Architecture* (London 1969), p. 93. See also Robert Byron on its lyrical exterior, *The Road to Oxiana*, 1936, pp. 176-98.

while Wilderness is so deepe and boggie, that Horse, Camell or Elephant, if they goe from the Causey are plunged and buried in the Salt and Bogge". There was also danger from thieves. After the salt-flats and quick sands the terrain changed into mountain peaks as they ascended the Elburz Mountains "as if", in a rather far-fetched classically inspired metaphor, "Olympus had beene cut into Dedalian Labrynths".

Once into Māzandārān, which was "pleasant and rich", part of the province of Hyrcania of ancient knowlege, Herbert noticed the difference in the countryside, "full of Wood, which, both befriends them against Winter colds, and shades them from the parching Sunne", and full of wild animals "Leopards, Tygres, Wolves, Foxes, Apes, Antilopes, Red and Fallow Deere", some of which was exaggeration. The gnats, flies and scorpions were however very real and unpleasant if they bit or stung, but the people were pleasant and full of character. They were "affable, and delight in novelities". In spite of a reputation among other Persians "making the men brutish and the women unchast", they proved "very faire and amiable (which we credit, finding so) and so kind and loving unto Travellers". They wore "apparell like the Irish Trooses, their heads have a high woollen Cap, furred with their sheepskins".

It was at Ashrāf, a place of little consequence apart from the splendid residence and complex of royal gardens which were begun in 1612, that the embassy had its audience with Shāh 'Abbās, its principal honour and greatest disappointment. The party was ushered into a reception area with "a prettie Marble Pond . . . the rest spread with silke Carpets". They were then "feasted with a dish of Pelo, which is Rice boyled with Hens, Mutton, Butter, Almonds and Turmerack: but how meane soever the diet was, the furniture was excellent, pure beaten gold, both dishes covers, flaggons cups and the rest". Afterwards they were lead across "a large delicate and ordoriferous Garden to a house of pleasure" through a low room "round and spacious, the ground spread with silke Carpets, in the midst a Marble Tancke full of Chrystalline water (an Element of no small account in those Torrid habitations) and rounde about the Tancke, vessels of pure Gold, some fild with wine others with sweet smelling flowers". The view was wonderful across the mountains to the Caspian Sea beyond, as Herbert observed.

At the end of another room furnished "with three times more vessels of Gold, set there for pompe and observation",⁹

sate the Potshaugh or Great King, crosse-legged, and mounted a little higher then the rest, his seat having two or three white silke shags¹⁰ upon the Carpets.

His attire was very ordinary, his Tulipant could not out-value fortie shillings, his coat red Callico quilted with Cotton, worth very little, his sword hung in a leather belt, its handle or hilt was gold, and in regard the King was so plaine attired, most of the Court had like apparrell on for that day.

Yet the plate and Jewels in that House argued against povertie, a Merchant then there, imagined it worth twentie millions of pounds. . . .

The chamber wherein he was entertained, had the sides painted and gilded very beautifully, though indeed the Verse may be inverted, *Materia superabat opus*, and not *materiam*.¹¹

⁹ Donald Wilber believes that the audience took place in the Bagh-i-Sahib Zaman, see *Persian Gardens and Garden Pavilions* (Tokyo, 1962), p. 135.

¹⁰ A cloth having a velvet nap on one side, usually of worsted, but sometimes of silk (O.E.D.).

¹¹ The identity of the painter is uncertain. Herbert refers to him in the 4th edition, p. 175, as "One John a Dutch man (who had long served the King) celebrated his skill here to the admiration of the Persians and his own advantage". Hanway seems to have accepted Herbert's opinion in his description of the royal palace, "here are also several portraits, which seem to have been done by a Hollander, but no masterly hand", *An Historical Account of the British Trade over the Caspian Sea* (London 1753), Book I, p. 293. Dr. J. Carswell, "East and West: a Study in Aesthetic Contrasts (Part 1)", Sir Thomas Herbert and his travel writings", *Art and Archaeology Research*

Papers 11 (Dec. 1972), p. 77, has written that "There is reason to believe that this John, a Dutchman, was the Flemish painter 'Giovanni' who accompanied the Italian traveller Pietro della Valle to Persia in 1617, and then left him to work for the Shah". Professor M. A. P. Meilink-Roelofs, "The Earliest Relations between Persia and the Netherlands", *Persica* VI (s-Gravenhage 1974), p. 25, believes that "John the Painter can be identified with Jan van Hasselt", a Dutch painter acquainted with Huybert Visnich the first Dutch Agent in Persia, who became "prominent as court painter and favourite of Shāh 'Abbās", *ibid.*, p. 13.

In my view, it is possible to reconcile these apparent differences in identification by assuming, not without justification, that the two persons are one and the same. Della Valle arrived in Constantinople from Venice in mid-1614 having met

[continued on next page]

Although Shāh 'Abbās was courteous, even friendly in doffing his turban, an uncouth act for a Persian "for tis a shame with them to be bare-headed", he hardly took the embassy seriously and no further audiences took place at Ashraf. Herbert did not find him a sympathetic figure or approved of his "severe justices" or his tortures. He gives instances of his cruelty to people and his jealousy towards his own family, especially his eldest son, 'Abbās Mirza, when "by the like dislike and mutabilitie of Shaw Abbas his humours, they were degraded, trod upon, mutilated, some their eyes put out, some their eares and noses cut off, and others in other members, here captived and almost famished". The royal progresses of the Shāh were big events, particularly when accompanied by the ladies of the Court.

They left Ashraf and Farahābād "the best Towne for beautie, greatnes and wealth in the Kingdome of Hircania", with its "sumptuous Palace", where some of the rooms "are wrought with Pictures of vile and unseemely pastimes, better forgot then memorised". They then proceeded through

continued from previous page

on the boat a young Flemish painter. A year later requiring pictures of "tante figurine colorite, di tutti gli habiti Turcheschi" (Della Valle, *Viaggi* (Rome 1630), Parte Prima, p. 278), to send to his friend Sig. Mario Schipano, Della Valle called upon the young painter who had become his friend and was staying with the Venetian ambassador. The painter complied through friendship or convenience "anche volglia, e speranza, di condurlo con me, quando io parlo di qui, per tutti i viaggi, che farò, solo a fine di fargli dipingere molte cose curiose, che in diversi paesi andero trovando", *ibid.*, p. 279. Furthermore, he painted "diversi ritratti curiosi del naturale" whilst in Constantinople. On leaving the city, Della Valle referred to him as "Giovanni, il mio pittore, pur Fiammingo", p. 304, and they voyaged with other members of the Italian's suite to Egypt where they saw the Pyramids, Alexandria, Cairo and other sights, and where some paintings were done. On leaving Cairo, Giovanni is just referred to as "il Pittore", *ibid.*, p. 475, and in Aleppo there is evidence of coolness between the two men, for the painter failed to find a private lodging, made the arrival of Della Valle known to the Venetian Consul, and was involved in a fracas with another man's servant for which his master had to pay, *ibid.*, pp. 614-17, 628-9. Once again it is as "il Pittore", p. 655, that he leaves Aleppo for Baghdad and Baghdad for Persia, p. 706. In Hamadān, Della Valle records an unfortunate incident at a reception when the painter refused to give way to his master, but they remained together even after reaching Isfahān, where more pictures were done of Della Valle's residence and the Royal Menagerie, particularly of some elephants, *ibid.*, Parte Seconda, Vol. 1, p. 41. Already, however, Della Valle, after a visit to a royal house where he saw some inferior paintings, suspected that he would lose the services of his painter, "se il Re vedrà, e conoscerà, qualche opera delle sue". By the time Della Valle wrote his third letter from Isfahān, on December 18th 1617, he was regretting that he had lost all but one of his former servants, and the painter never reappeared in his company, but became a follower of the royal court along with William Robbins, an English jeweller, and others.

As for Johan Lucassen Van Hasselt, he was known to Visnich in Aleppo prior to 1620, and when the Dutch East India Company was first established in Persia in mid-1623, he was employed sometimes as a translator. He himself claimed to the States-General in June 1630 that he had travelled in Italy, Constantinople, Egypt, Jerusalem, Aleppo and Babylon before he came to Isfahān (the same places in the same order as had been visited by Della Valle), and that it was he who had suggested to the Shāh a direct sea-borne trade between Holland and Persia as the English had undertaken, see H. Dunlop, *Bronnen Tot de Geschiedenis der Oostindische Compagnie in Perzie 1611-1638* (s-Gravenhage 1930), p. 722, *Propositie van Johan Van Hasselt*, June 26th 1630. He could have been in Isfahān when the first English Agent, Edward

Connock, arrived in March 1617 and would have learnt of Robert Sherley's services for the Shāh in Europe. After assisting Visnich to establish the Dutch Agency in Persia and finding that their respective interests clashed, he was asked by the Shāh to accompany Mūsā Beg on his embassy to Holland. This left Persia on February 10th 1625, and arrived in Texel on February 9th 1626; it was marked by quarrels among the entourage. The Directors of the Dutch Company announcing the embassy's arrival wrote of it being accompanied by "Sr. Giovanni Luycasz Hasselt", and the Persians referred to him on at least one occasion as "Sieur Johanny".

He was back in Isfahān in April 1628, Dunlop, p. 225, in Qazvin in August, when Sir Robert Sherley and Sir Dodmore Cotton died there, and was involved in the disposal of some of their goods, *ibid.*, p. 249, according to Visnich. This, of course, agrees with Herbert's account, *A Relation*, p. 125, that "a Dutch Painter (who had served the King of Persia twenty yeares)", "John the Flemming", had tried to rob Sherley's widow, Teresa, of her jewels and belongings, but was foiled by Mr. Hedges of the embassy party, who concealed some of her jewels. The painter nevertheless, with the connivance of Mahmet 'Alī Beg, the Shāh's principal minister with whom he was friendly, obtained most of Sherley's possessions.

Herbert may have been misinformed about "the twenty years", but it obviously seemed some long period to those who knew, and it could well have been eleven years. In the following months Van Hasselt was looking after his private commercial transactions as well as attending to the Shāh's business, and was undermining the position and informing upon the Dutch Agent, Visnich. Back in Isfahān on August 24th, he left the city on November 25th, reaching Shirāz on December 5th, Lār on the 18th and Bandar 'Abbās on the 28th. He made accusations against Visnich to the newly-arrived Dutch ambassador, Van Jan Smidt, in Bandar 'Abbās, who had arrived on February 5th 1629, and also against Mūsā Beg, who was returning to Persia. Van Smidt in a letter to the Governor-General in Batavia, refers on four occasions to Van Hasselt as "heer Giovanni", "Sr. Giovany", "Sr. Giovanni" and "Sr. Giovany", Dunlop, p. 292. On July 10th he wrote a "Remonstratie" in Batavia to the Governor-General attacking Visnich. By mid-June 1630 he was again in Holland proclaiming himself as Agent of the Shāh empowered to negotiate a treaty with the States-General, Dunlop, pp. 721-8, to the annoyance of the Dutch East India Company, who criticized their officials for letting him take a passage on a company ship and disputed his credentials because of the death of Shāh 'Abbās in January 1629, Dunlop, p. 375. For some eighteen months he negotiated a treaty which was of little more real practical value to Persians or Dutch than they already enjoyed. Such was the adventurous, unscrupulous character of Johan Lucassen van Hasselt, "Giovanni", "John the Flemming" as it emerges from the evidence.

the Elborz Mountains where "the height did not so animate us, as the danger descending, the path was so uneven and craggy". Mount Demavand was climbed around, an unpleasant experience because of the "Sulphur, which makes it in the night sparkle as does Vesuvius, 'tis so offensive to mount up, that you cannot doe it without a Nose-gay of strong Garlicke". It had nevertheless its use because of the hot baths, "to which resort decrepit and unsound people from afarre in mightie multitudes". Tehrān watered by a small stream provided "a thankfull tribute of sundry fruits", had "a sweet though hot aire in the morning, but in the Sunne's ambition, hot and fiery" and contained three thousand dwellings. Tabriz in Herbert's time was past its best, "being inferiour to *Spawhawn* and *Cazbeen*, in circuit, wealth, and beauty" as a result of the wars with the Turks in the 16th century.

Qazvin was the next town of consequence to be visited, "seated in a faire even place, no Hill of note in thirtie miles affronts it" with fruits abounding. Though the mosques and hammams were "resplendent with Azure paint . . . the other buildings, they content the inhabitants, but to the affected Traveller yeeld small wonder or amazement". Nevertheless, Herbert was attracted by the King's Palace and he noted several architectural details, "built of raw Bricks, trellized with carved Windowes, both painted and varnished with blew, red and yellow, mixt with Arabique knots and poesies of Gold and Azure".¹² He also noted the Persian delight in mirrors there. Herbert seems to have been much interested in the fate of some loads of Indian tobacco, for which Shāh 'Abbās commanded "the Camel-men to have their noses and eares cut off, the forty load of Toback . . . was put into a large earthen Pipe (the ground) and fired, whose blacke vapour upon free cost, gave the whole City infernall incence, two whole dayes and nights together". Such was the arbitrary behaviour of the Shāh, who sometimes allowed smoking and sometimes not. It was in Qazvin too that Sir Robert Sherley and Sir Dodmore Cotton died. The reception Sherley received on his return, according to Herbert, "merited much better than you see, he then obtained when he most expected it".

The rest of the embassy, now lead by the chaplain, Dr. Gooch from Trinity College, Cambridge, made their way homewards, reaching Qum with its variety of fruits, which Herbert obviously liked and which then apparently showed no sign of religious intolerance. It was "a pleasant fruitfull and healthy City, and the people curteous . . . has two thousand Houses in her, well-built sweet and well-furnished, her streets are wide, her Buzzar faire, and her mosque of most honourable esteeme among them . . . the aire here is second to none for freshnesse, nor wants this Towne any fruit requirable". Kāshān too impressed Herbert for "it is well-seated, well peopled, and well built: over-topt by no Hill, nor watered by no great streame, which augments the heat chiefly when Sol resides in Cancer. . . . The people are orderly and more given to trade, then in some greater Townes about her. Silkes, Satens, and Cloth of Gold are here in great abundance, and at reasonable prices". He praised the Caravanserai as the best he saw in Persia "able and fit to entertaine the greatest Potentate of Asia. Yet built for Travellers to lodge in, upon free cost by act of Charitie. Tis two large stories high, the materiall brick varnished and coloured with knots and *Arabian* letters poesies of azure, red and white, from its Basis tis built six foot high of good stone. The Fabrique is quadrangular . . . in the middle is a faire large Court . . . about it are spacious and fragrant Gardens". But Herbert does not omit to mention the scorpions of Kāshān.

Such were some of the descriptions of the towns which Herbert visited in the course of his travels in Persia. His book also contains much incidental historical matter which was current at the time, accounts of the religion and the lives of the Kings of Persia. Since what interested Herbert most was people rather than places, it is in his "discourse of the life and habit of the Persians at this present" that he reveals his experience among them, "otherwise that which is written would seeme harsh and imperfect". He notes first that "the Persians from the Duke unto the Peasant [are] slaves unto the King, who is Supreme in and over all. Thats the reason, having so much good marble, they build with unburnt clay, because their lands and houses be not hereditary". The men were accomplished swordsmen and bowmen and "valiant, proper for the most part, Olive coloured, mirthful and venerious". "No Nations in the Universe has better nor more daring spirits in fight or exercise, then Persia has".

¹² An interesting account of Herbert's visual powers of observation and description, with many illustrations, is to be found in Dr. Carswell's work already cited. Dr. Carswell considers

Herbert a pioneer in this respect among the early travellers. I am indebted to him for a copy of his article.

For clothes they wore sashes about their heads and,

In Triumphs I have seene them wreath long chaines of Pearles and Rubies about their Turbants, of great value and beautie. Their out Garment or Vest is commonly of Callico quilted with Cotton, some weare them of parti-coloured silkes, some of Sattin and some of rich gold or silver Chamlets, and other of cloth of gold and Tinselled: they affect varietie of colours as Emblemes of diuersitie of Joyes and pleasure. Blacke is not knowne among them, they say tis dismall and a signe of hell and sorrow: their sleeves are strait and long (therein different from the TURKES who have them wide and short) the coat reaches to their calves and beares round by being ingirted with a towell of silke and gold eight or nine yards long: under this garment they weare a smocke couloured like our Scottish plad, and in length agreeing to our demi-shirts: their breeches are like Irish troozes, hose and stockings sowed together, and sometimes they reach but to the ancles, two or three inches naked to their shooes which have no latchets, are of good leather, and what colour you will (blacke excepted) they are usually sharpe at the toe, and turning upwards, the heeles shod with thin Iron, and end with small nailes in seemely order. Some againe (especially such as travell much) have short coats or calzoones of cloth without sleeves, lined with Furies of PERSIAN Sheepe, Sables, Foxes, Mushwhormes or Squirrels, and can suffer short wide stockings of English cloth or Kersies, the heeles faced with coloured leather which too when they ride they make use of, their Boots are well sewed, but ill cut, save that their widenesse beats off the showres. They use no Gloves, nor Rings of gold.

Herbert found the Persian ladies attractive, but he thought their role in life unenviable:

The women as unseene may passe unspoken of, what may be expected I shall publish it.

Of those who were visible and took part in receptions, banquets and the like he found,

Their stature is meane but straight and comely, and incline rather to corpulency then leanness, their haire blacke and curling, their fore-heads high and pure, eyes Diamond-like, having blacke lustre, their noses high, mouthes rather large then sparing, thicke lips and cheekes fat, round and painted, so that without error, their complexions cannot be deciphered: those that come in assemblies are best reputed of, though by profession Whores, they are rich habilimented, their heads rounded with a golden caule: their cheekes tintured with Vermillion, their noses and eares hung with Jewels of price and bignesse, and about their faces (tied to the chin) a rope of orient pearle of exceeding value, if not counterfeit: their hands are painted with flowres or posies, as be their feet and legs, both which are denudated in their dances, which elaborately they performe with bells and antiques: their habit or gowne is to their mid-legs, some of Sattin, some of Tissued-stuffes, of rich imbrodery in gold or silver, these looke wantonly, drinke strongly, laugh extremely and covet really mens monies, esteeme, reputation and honesties.

Then there were,

The other women belonging to SERAGLIOES or HARAMMS, live discontented. Eight or ten lustfull women, by the law subjected to one (and he perhaps an impotent man) their only libertie is to haunt the Gardens, which being spacious, receive many, where they parly at pleasure, but not free from Eunuchs their jealous ARGOES, whose sole care, is from out of the womens lavish abundant talke, to screw out something may be gratefull for the King, touching the Nobles (anotomized by these women) by which many great ones come to unexpected destruction.

This situation was later admirably depicted by Montesquieu in his *Lettres Persanes*. For the rest,

Other women when they goe abroad, wrap themselves in a large receiving sheet which tyed to the head reaches to her feete, opening only to the eyes a very little to beget passage, [although the engraving in the text discloses a rather rounded wide-eyed face of delicate features] they passe and repasse unknowne and unrespected, nothing lesse among them then praise of beautie, because nothing so familiar with them as cruell Jealousie.

Some aspects of domestic life Herbert found curious, for "Their houses, (to speake generally) within are poore and sordid, a Carpet, a Pan, and a Platter, epitomizes all their Furniture. . . . Their diet is soone drest, soone eaten, soone digested and soone described". "The better sort sit upon Carpets crosse-legged . . . they use no spoones, for hands are ancienter". The main dish, then as now, was "Pelo", cooked in its different ways. Strange to an Englishman they were "no great Rost-meat-men", but eat camel, goat, sheep and hens, but poor people seldom. They had cheese and butter

"but such as squemish English stomachs will disdaine at". The Persians drank Sherberts frequently. "At meales they are merry and no way offensive . . . they will be drunke, but is voluntary, no man compels it". The Poor on the other hand "are seldome drunke, but the cause is prevalent, they cannot get it".

In the general course of life "They are very facetious in discourse, they are not very inquisitive about forreigne affaires, they are content with home occurrents, and affect more sensual delights for their lustful bodies, then by uncertain stories to perplexe their mindes". For general pleasures the men,

Twixt meales (which are three aday at eight, twelve, and foure) they meet often in houses, like our Tavernes. Where is vendible Wine, Arack, Sherbert, Tobacco suckt through water by long canes or pipes, issuing from a boule or round vessell: they spit but seldome (the *Jewes lesse*) and that liquor which most delights them is Coffa or Coho; a drinke brewed out of the STYGIAN Lake, blacke, thicke and bitter, distrained from Berries of that quality, though thought good and very wholesome, they say it expels melancholy, purges choler, begets mirth, and an excellent concoction. OPIUM (of which NOGDIBEG tooke so much as poysoned him) is of great use and vertue with them taken moderately, they are alwayes chawing it, tis good against vapours, cowardize and the falling sicknesse: it makes them strong and long in VENUS exercises.

His comments on history and religion show little that is original, but sufficient to inform the uninformed who constituted most of his readers. On customs he remarked that "the mariages have not much ceremony" and was surprised at burials which were "exactly performed by hired women, who for five houres space, scratch their ugly faces, howle bitterly, teare their false haire, swoone and counterfeite sorrow abominably". Herbert noted the Persian attention to clean linen and their addiction to riding, the wearing of swords and archery. He provided a reasonable transcription and pronunciation of their alphabet, a brief vocabulary and selection of common phrases. The only real omission for a modern reader is the lack of information on trading activities, but this has to be related to contemporary interests which would not have placed such an importance on such a subject or felt it desirable that it should be included.

Such was Herbert's *Relation*. He had a final adventure before he left Persia, when he fell ill with dysentery either from the vaporous mists that hung about Mount Demavend or "immoderate gormundizing their delicious fruits, which abounding we affected in too great measure". In his "tedious sicknesse", he writes, "I wanted not the helpe and opinion of the Kings best Doctours, who though they hoped of my recovery, gave me small appearance of it, yet I tooke what they prescribed mee, and gave them Gold what they desired, so that it became a hard question, whether my spirits or Gold decayed faster. In this weaknesse, I was forced to travell 300 miles, hanging upon a Camell and when I most hoped for recovery, Morod their famous Aesculapius, seeing no more money, limited my life to five dayes more existence. It was the more terrible, cause he had seen Mecha and never after lied, as was told me". Part of Herbert's success and his adaptability was his slightly cynical, tongue-in-cheek, sense of humour and his faith, for as he said, "At sea I learnt to pray, though I was taught it from my cradle".

It is clear that Herbert was impressed by "the magnanimity and noblenesse of mind" of Persians, but unhappy at the cruelty and poverty he noticed. He was clearly fascinated by the exercise and display of power as he witnessed it at the court of Shāh 'Abbās I, with the monarch supreme over all his subjects, from nobles down to peasants (see above p. 86). This he believed resulted in advancement through royal favour rather than hereditary principles. Although a Parliamentarian at heart, Herbert was also a traditionalist. It was not the possession of power that was wrong, but its abuse. This element of instruction in an account of adventure and travel is particularly poignant in view of Herbert's later attendance upon Charles I, whose own excess and vanity lead to the scaffold.

Thomas Herbert's *Description* was then a remarkable youthful achievement. He was modest, simple, observant, sympathetic, good humoured and candid. His *Relation* is, with its illustrations, an entertaining and interesting story of his experiences and observations accompanying Sir Dodmore Cotton's embassy. It rightly deserves its place in the annals of travel literature as the First English Guide Book to Persia.¹³

¹³ A version of this article was delivered at the Royal Asiatic Society in December 1973 in a lecture forming one of their

series connected with their 150th Anniversary Celebrations.

SOME VERNACULAR BUILDINGS OF THE IRANIAN PLATEAU

By Elisabeth Beazley

Fifteen years ago, a huge legacy of fascinating and often beautiful vernacular buildings survived on the Iranian Plateau. Many occurred chiefly in the villages, but others had their grander counterparts in the towns. Some are either unique to Iran or may be prototypes of buildings elsewhere.

In another ten years' time, unless positive action is taken, most will have crumbled. Their rapid disappearance derives from a variety of good reasons. A redundant building, constructed of stone in a temperate climate, may survive many years as a ruin. But these Iranian buildings are chiefly built of unbaked mud-brick. Any mud-brick building quickly deteriorates without constant maintenance; this inevitably ceases once a building is no longer useful. The fierce climate of the Plateau accelerates this process.¹

Technological innovations of the first half of this century are the root cause of their redundancy. Modern refrigeration, new sources of power, the internal combustion engine and the use of chemical fertilizers have overtaken such buildings as ice-houses, mills, caravanserais and pigeon towers. Landlord's houses and buildings such as hunting lodges have been neglected, both on account of absenteeism and also of land-reform.

Few Iranians or visitors have had time or inclination to look at such buildings, partly because the huge number which survived until comparatively recently has tended to make them commonplace, but also because Iran has such a wealth of architectural and artistic treasure which has demanded prior attention. However, there are some notable exceptions.

There seems to be little new in this situation. Readers may notice that the literary sources noted in this article are confined in range. Few travellers, either today or in the past, have been sufficiently interested to record vernacular buildings. Those that have (notably John Fryer in the seventeenth century, C. J. Wills in the nineteenth and Hans E. Wulff in the twentieth) have shown a general interest in both Persian buildings and customs which is rare.

The notes which follow are the result of sporadic field work from 1961 till 1975.² During this time examples of the following types of building were noted, some briefly. They are listed here in the hope (justified by experience) that others travelling in Iran, or who have lived there, may have information to contribute (which would be much appreciated): ice-houses, cisterns, water mills, wind-catchers, windmills, animal mills, houses, hunting-lodges, agricultural buildings, shepherd's shelters, pigeon towers and caravanserais.

The first three, ice-houses, cisterns and water-mills, are the subject of the main body of this article. Notes on wind-catchers and pigeon towers are also included. These buildings combine two skills in which the Iranians excel. First, the design and execution of domes and vaults in mud-brick, which result in beautiful buildings, often constructed for mundane purposes. Secondly, the Persian imagination and ingenuity, which is unrivalled in making the best use of water in a hostile desert

¹ The first International Colloquy on the Conservation of Mud Brick Monuments was held in Yazd in 1973. Mr. D. B. Stronach lectured on the experiments in conservation being undertaken at Tepe Nush-i Jan. The UNESCO ICOMOS Conservation Conference was held in Yazd, 1976. Papers are to be published.

The use of mud brick is included in the research being carried out by a team under the leadership of Dr. Brian Spooner of the University of Pennsylvania which is studying the ecological history of the Central Deserts of Iran, and is working under the Iranian Department of the Environment.

² I am indebted to a large number of people for help in this work. Above all to the practical encouragement of Mr. D. B. Stronach, Director of the British Institute of Persian Studies, over a long period. Miss Susan Ross comes last but certainly not least in a long list of those to whom I am most grateful for help at various stages. Her present work as an Institute Fellow studying *Badgirs* (wind-catchers) is a direct result of our 1975 expedition. I am also particularly grateful to Mr. Khalil, who accompanied us on several field trips, for his invaluable assistance.

environment. In this the Iranian contribution to the world's technology is probably unique. It has been pointed out that other areas such as Central Australia or the deserts of the USA with similar climatic conditions have no agriculture whatsoever.³

ICE-HOUSES (*YAKH-CHĀL*)

The common use by the Persians of ice and snow for cooling drinks and food was reported by John Fryer in the late seventeenth century: "They mightily covet cool things to the Palat. Wherefore they mix snow, or dissolve ice in their Water, Wine or Sherbets,"⁴ he wrote (and of Isfahan) "... the Poor, have they but a Penny in the World, the one half will go for Bread, and dried Grapes, and the other for Snow and Tobacco . . .".⁵ Outside Shiraz he saw that ice was stored in "Repositories" which he tantalizingly describes only as "fine buildings"⁶ but it seems likely that they were similar to the huge domed structures still to be seen in parts of Iran. Only a few survive, most as disintegrating ruins, although they were in common use only a few years ago. By Fryer's time the practice of storing ice was probably already long established, possibly having been introduced by the Mongols. (Ice-houses in China were known as early as the eighth century B.C.; they were probably small thatched buildings, like their successors there.)

In Britain, ice was not then considered to be a common necessity and was certainly not for the poor, but the ice-house was to become a feature of the great eighteenth-century estate, as it was in France. However, the English ice-house is as a bantam's egg to an eagle's when compared with those of the Iranian Plateau. There the great demand led to buildings of monumental scale and size. Fig. 1 shows the Stourhead ice-house,⁷ one of the larger English examples, drawn to the same scale as a typical Iranian ice-house at Yazd.⁸ However, the principles governing the design of each are the same: the ice has to be insulated and kept dry. The differing climates made insulation a far greater problem in Iran, and drainage of prime importance in damp, temperate Britain.

Obtaining the ice was another matter. Iran is not only largely desert, but fresh water is rare and even in winter, when the temperature falls to freezing at night, the mid-day sun is hot. Huge quantities of ice would be needed to fill these vast, domed wells. Some was brought as blocks of snow from the mountains, but the ingenious Persians, ever inventive in their masterly adaptation of desert conditions, had an imaginative and simple answer. Alongside each ice-house is a long shallow channel, about 100 × 10 m. and 40–50 cm. deep, which is entirely shaded by a great wall, longer than the pool and as much as 12 m. high; the wall is constructed of rammed earth and mud-bricks made from the earth which was excavated to form the channel. The channel is lined with tiles to make it watertight.

C. J. Wills gives a clear description of ice-making in the latter part of the nineteenth century: "The delicious AB-I-ROOKHI (stream of Rookhnabad) is diverted from its course on the first cold night. A few inches of still clear water is collected in the pond, by morning it is frozen, at night the water is collected in the pond, by morning it is frozen, at night the water is again admitted and another inch or two of ice is made. When three to six inches thick the ice is broken and collected for storage in a deep well on the spot; and so day by day the process goes on during the short winter, until the warehouses are full. Should the supplies from these be exhausted by a very large demand, ice, or rather blocks of snow, are brought from the mountains; but as these are some distance, and snow melts faster than ice, the weights being equal, the price rises."⁹ Persians who remember the work in ice-houses tell us that on clear frosty nights water would be diverted from a stream to the ice pool. The ice formed was usually skimmed off in layers of about one inch. It was packed hard down, each layer insulated by straw (and presumably rammed as in Britain). Then the door was sealed and the ice

³ Hans E. Wulff, *The Traditional Crafts of Persia*, Cambridge, Mass. 1966, p. 245.

⁴ John Fryer, *A New Account of the East Indies and Persia being Nine Years Travels 1672–81*, Reprinted 1912, vol. III, p. 149.

⁵ *Ibid.*, vol. II, p. 248.

⁶ *Ibid.*, vol. II, p. 218.

⁷ Surveyed by Geoffrey Locke. See his "Icehouses", *National*

Trust Newsletter, No. 24 (Autumn 1975), p. 20.

⁸ Shown to us by Mr. Mahmoud Mashroufeh, who kindly spared considerable time to further this survey during our stay in Yazd in 1975.

⁹ C. J. Wills, *The Land of the Lion and the Sun (Modern Persia). Being Experience of Life in Persia from 1866–1881*, London 1891, p. 241, where an icehouse near Shiraz is described.

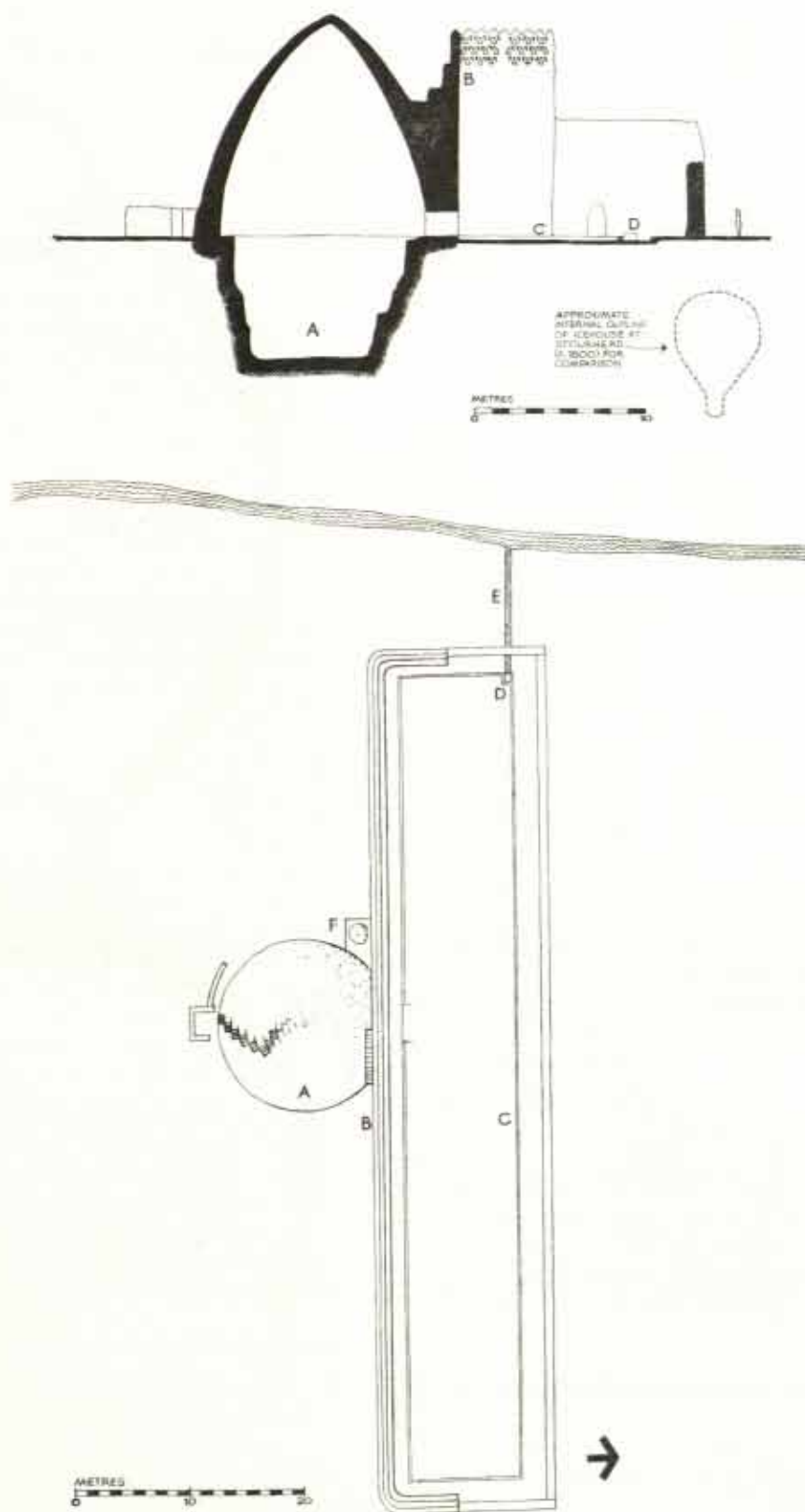


Fig. 1. Icehouse at Yazd: plan and section.

kept until it was needed in summer. The man in charge of the ice-house would probably be responsible for the cistern in the village and might also look after the mosque. Villagers would be asked to contribute towards his wage and the repairs of the ice-house.¹⁰

The low cost of the ice and the way it was used was also explained by Wills. "The great thing in such a place is the cheapness of ice, for about 15s in dear years and 5s. in cheap ones, ice can be obtained all through the warm weather, and in fact is used from May to October, as no one would think of drinking anything uncooled. A huge block is thrown down each morning by the ice seller—it is supposed to weigh 14 lbs. The Persians well understand the art of making water ices and ice-creams, and varieties unknown to us are made by them, such as tamarind juice, pomegranate and cherry water ices, iced mast or curdled milk, and various ices of pounded fruits such as apricots and cherries, which are very good.

Ices, however, are served with them on a more lavish scale, and a larger quantity eaten, than with us. When I accompanied Captain St. J—, in a call he made upon the Muschir, four conical ices, the size and shape of an ordinary sugar loaf, were placed in handsome Chinese porcelain basins before each of us. In fact the cheapness of provisions generally causes among the well-to-do a lavishness and profusion, not to call it waste, unknown in Europe."

The ice-house is best understood from the illustrations (Figs. 1 and 2; Pl. Ia and b). Barely half-a-dozen have been seen, although hundreds must have been in use even thirty years ago, particularly in the vicinity of rich cities on the edge of the desert, like Yazd, and on caravan routes.

Those measured ranged from 9 to 14 m. in internal diameter. The overall internal height of that at Yazd is c. 19 m. The disused ice-houses had often been used as rubbish dumps so it was not possible to investigate the method of drainage (if any). One or two had boldly decorated walls, the bricks near the top being laid in open checkered patterns and the tops crenellated. Most spectacular perhaps was the pair of ice-houses found on the outskirts of Sirjan (Fig. 2); the ice-walls which linked them curved to give extra shade, giving a plan form like some huge winged creature.¹¹

Although a mass of nineteenth century literature is available on English ice-house construction, notably

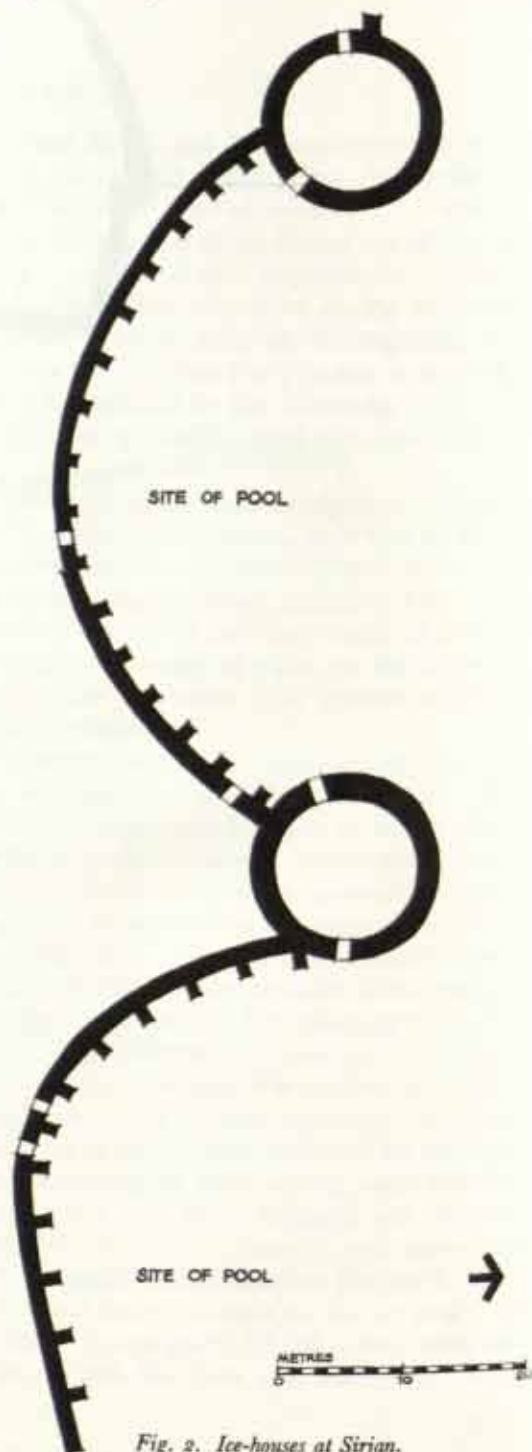


Fig. 2. Ice-houses at Sirjan.

¹⁰ Verbal description of the custom in the Kashan area c. 1925, given to Miss Susan Wright.

¹¹ Other ruined icehouses which have been seen include that near Mahoudabadasaid (with a curved wall) 1975; one in a

garden near Taft 1971; one near Mahabad 1975; and one beside the modern road (the old caravan route) to the west of Abarquh 1971. Figs. 1 and 2 drawn by Mr. Desmond Thomas from surveys made by the author and Miss Susan Ross.

in garden encyclopaedias such as Loudon's, or in books like Papworth's *Rural Residences*, almost nothing seems to have been written on examples outside Europe. The notable exception is the redoubtable Mrs. Fanny Parkes, whose *Wanderings of a Pilgrim in Search of the Picturesque* gives a vivid account of life in India in the second quarter of the nineteenth century. She describes the ice-pits of Allahabad: "My husband has the management of the ice concern this year. It is now in full work, the weather bitterly cold, and we are making ice by evaporation every night." At first glance the principle might be thought to be similar to the Iranian method, the word "evaporation" perhaps having crept in unnecessarily. But such assumptions are shown to be wide of the mark by the unexpected statement of this careful author: "The highest temperature at which ice was made in 1846 at Cawnpore was 43° of Fahrenheit, or 11° above freezing point".¹² Her drawing¹³ shows that the ice was not made in the channel as in Iran. Instead, the channel or pit, which was a cubit deep, was filled with dry straw; on it were placed small bowls which were filled from pitchers and the ice was made in these. Presumably the bowls were porous; evaporation would lower the temperature of the water and the dry straw would insulate the bowls from the heat radiated from the ground—on a still clear night the temperature of the water could be several degrees lower than that of the air immediately above the surrounding ground. Even so, this explains nothing fully, and it would be interesting if any reader could provide a complete answer. Mrs. Parkes reported that her husband's work went on until February 19th, by which time over 107 tons of ice had been made. It was stored in small thatched buildings similar to those used in China.

This single Indian example makes one wonder whether there is not more to be learnt about Persian techniques than might at first be imagined. Although modern methods of refrigeration have made the ice-house obsolete in both Britain and Persia, in both countries there are people who can remember its use. Indeed, in Persia one or two almost certainly still function.¹⁴

WATER-MILLS

Power in Iran, as elsewhere, traditionally relied upon man and animals before water became a prime-mover. Stone querns may still be used on a small scale domestically, and perhaps a camel mill survives deep in some bazaar.¹⁵ The majority of water-mills are now powered by oil-driven machinery, hardly surprising in a country where water is in places more precious than oil.

Two types of water-mill survive in Iran: the Vitruvian mill, the type common throughout the western world with its water-wheel set vertically on a horizontal axis; and the little-known Greek mill with its water-wheel set horizontally—the fore-runner of the turbine.

In 1961, when this survey began, it was wrongly assumed that the Vitruvian mill would be more common than the Greek mill on the Iranian Plateau. However, the reverse seems to be true. Indeed, we can only report two Vitruvian mills, both near Isfahan (at Lahijan and near Pir Bakran). Each has an exceptionally attractive site, the mill forming a small island in the mill-stream. Each was worked by two water-wheels, one on each side. The reasons for both the preference for the Greek mill and the lack of evidence of its existence became apparent as work proceeded.

Greek mills were first recorded during the first century B.C. in Thessalonica (whence their name) and in the Pontus, and it is probable that they came into fairly wide use in the Eastern Mediterranean and Near Eastern countries from this time. By the fourth century A.D. they had spread to Ireland and China,¹⁶ but who is to say that they were not invented spontaneously in different parts of the world?

The Greek mill, with its direct transference of power from a horizontally set water-wheel to a millstone fixed above it on the same axle, is only an extension of the idea of the rotary quern, using

¹² Mrs. Fanny Parkes, *Wanderings of a Pilgrim in search of the Picturesque*, London 1852, vol. I, pp. 78–83. The date of the work she describes is 1828.

¹³ *Ibid.*, vol. I, p. 358.

¹⁴ A small icehouse, with a spiral maintenance step running its full height, was seen outside the caravanserai of Za'farinch

on the old caravan route east of Sabzevar in 1970. It was sealed and we understood it to be in use, hence we could not enter it.

¹⁵ A henna mill was seen working in Yazd and a linseed mill in the bazaar in Isfahan, both powered by camels, in 1961.

¹⁶ Charles Singer, ed. *A History of Technology*, Oxford 1957, vol. II, ch. 17 "Power" by R. J. Forbes, pp. 593–5.

water power instead of man power. An abundance of slaves made such development superfluous, and it was not until a labour shortage made the old system unworkable that the water-powered Greek mill, rotating its millstone once for each turn of the wheel, came into use. However, such mills could only temporarily satisfy the increased demand and the Vitruvian mill was invented. The simplest Vitruvian mill, with its vertically-set water wheel, turned its millstone five times for each revolution of the wheel.¹⁷ The persistence of the Greek mill seems to depend on a relatively small supply of grain to be milled by a small water supply, there being no real efficiency in the construction of the far more complicated machinery of the Vitruvian mill, unless there was sufficient grain to be ground (no Greek mill has been reported in the valleys of the Nile or Euphrates). It has also been suggested that in Europe the Greek mill was to some extent ousted by the introduction of the feudal system, in which the lord of the manor owned one central mill, to which the peasants brought their corn instead of milling it individually.

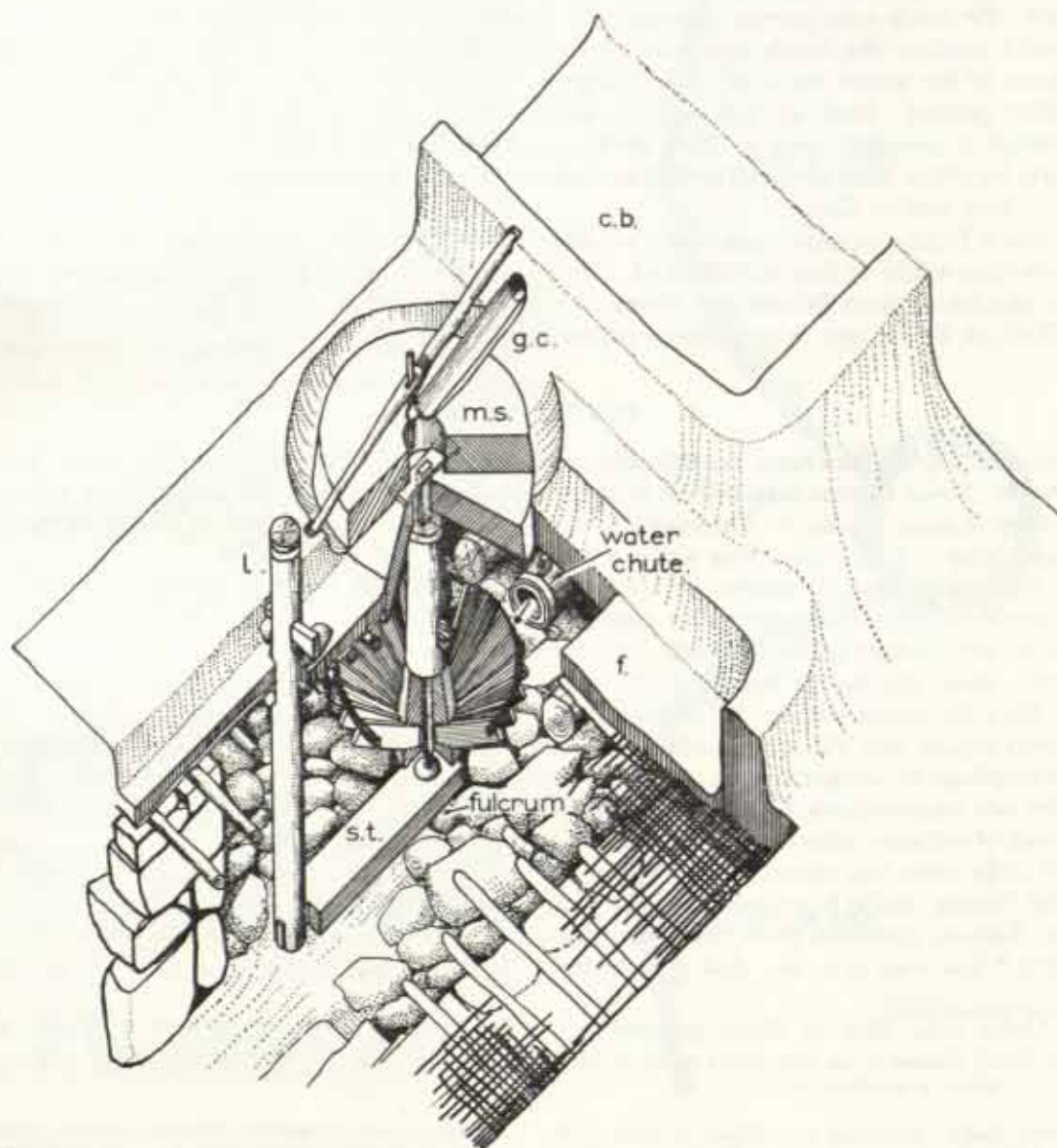


Fig. 3. Sketch showing machinery of mills at Band-e-Amir; the floor of the grinding room has been cut away to show the water-wheel.

¹⁷ Ibid.

This may partly account for its survival in the Shetland Islands, where the mills of this type were in use until the mid-twentieth century and where, under Norse rule and subsequently, the feudal system never operated.¹⁸

It is perhaps hardly surprising that the Persians with their long tradition of efficient use of water favour the Greek mill which is powered by a small quantity of water directed at high velocity to turn the horizontal water-wheel (see Fig. 3¹⁹). First, the water from the leet pours in a torrent down the vertical "chimney" (a drop varying from 3.20 to 7.40 m. in those measured). Near the bottom of the chimney it rushes down a wooden tube of narrow bore which ends in a nozzle; this further constricts the jet which is directed to the water-wheel itself. The wheel is housed in a small space right under the heart of the mill. It is half-filled with rushing water if the mill is working, and is usually difficult to reach without a long, wet crawl in the dark. Therefore, few water wheels were actually examined. That at Band-e-Amir (Pl. IIc and Fig. 3) is a shallow cone-shape, like an inverted coolie hat, made up of timber blades set in a big timber axle (diameter 28 cm.). The jet of water is directed into the top. That at Doshmanziari (see below) is remarkably like those seen in the Shetland Isles; the blades or paddles are set in a massive hub, and these are struck tangentially by the stream of water.²⁰

The vertical axle passes up through a fixed millstone set in the floor of the grinding room above the wheel-house to turn the upper millstone which it supports. The iron tip of the axle rests on a timber sole-tree which acts as a lever whose precise position can be varied by the fine adjustment of the lightening rod; thus the closeness of the millstones and the fineness of the flour can be controlled.

Millstones vary remarkably little in diameter. Those measured were 93, 96 and 103 cm. (in Shetland they varied from 68–91 cm.). The grain in Iran is fed from a plastered bin (or a separate store) integral with the building, not from a hopper as is common elsewhere. In both cases, however, the wheel itself is used to cause vibration in order to ensure a flow of grain. In Iran a vertical stick, sprung in tension against the hole in the upper stone, vibrates the chute from the corn bin (taking the place of the clapper where a hopper supplies the grain).

It is difficult to convey adequately the sculptural quality of the inside of an Iranian grinding room, particularly when it is cut into the rock face. The fine shapes of the plastered bins and other containers, the wheel housing which curves round the millstone, the curve of the roof, whether vaulted or rock cut, and the walls, themselves often also curved, are whitened with a fine coating of flour dust. This covers everything in a working mill (including the millers) except for the spinning focal point of the hard grey millstone and the dry yellow corn streaming into it (Pl. IIb).

When first investigating the Greek mill in Iran, some fifteen years ago,²¹ it seemed that such mills

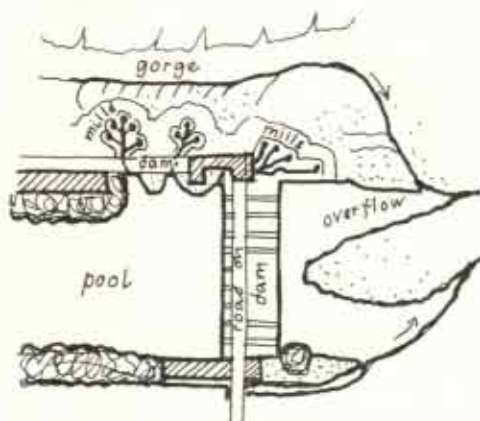


Fig. 4. Layout plan of mills at Band-e Amir.

¹⁸ Elisabeth Beazley, "Greek Mills in Shetland", *The Architectural Review*, CXXXIV (July 1963), pp. 62–4.

¹⁹ Reconstruction of a mill at Band-e-Amir by M. E. Weaver, surveyed in 1963 with the author and Mr. Ralph Pinder-Wilson.

²⁰ Details supplied by Miss Susan Wright from a drawing made by the miller, 1975.

²¹ Elisabeth Beazley, "Greek Mills in Iran", *The Architectural Review*, CXXVII (April 1967), pp. 311–13.

were rare, but in 1975 it became apparent that there may have been many more on the Plateau than was suspected. The necessity to get a sufficient fall of water in a relatively flat area means that some mills—perhaps many—are underground. Perhaps the only sign of their existence on the surface may be a ventilator, and the jube which is in fact a mill leet, which runs at ground level and then drops in the “chimney” down which the water pours in a torrent to the underground water-wheel. There is, for instance, a disused mill immediately outside the Zoroastrian cemetery at Yazd, of which few visitors can be aware. After turning the water-wheel, the water runs into a *qanāt* system. This may have given rise to the idea that some mills are positioned in *qanāts*. This seems unlikely, since the all-important drop to the wheel would entail very deep excavation with the mill, say, 4 m. below the *qanāt*.

Whenever possible, the mill is constructed on a hillside to make the most of the natural fall. Then at least half the mill can be cut out of the ground like a cave and it can be conveniently reached from the lower level.

There is considerable variety in the grouping of the mills, since this depends on the quantity of grain to be ground and on the water supply. By far the most spectacular are the groups of mills below great irrigation dams. The dam of Band-e-Amir in Fārs was built in c. 960 A.D., possibly on Achaemenian foundations.²² The mills were surveyed in 1963 when some dozen were seen, but we were told that there had been thirty working in recent times (Figs. 4 and 5 and Pl. II²³).

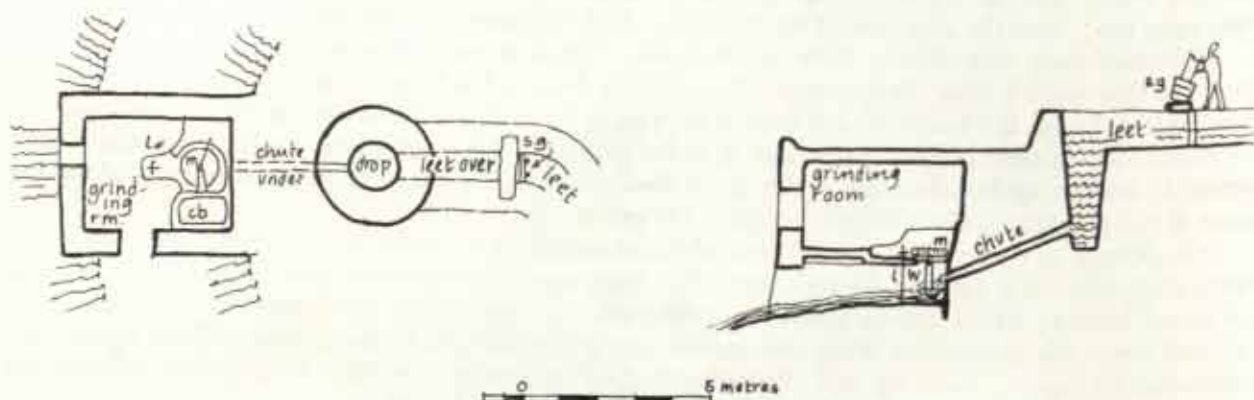


Fig. 5. Plan and section of a typical mill at Band-e Amir.

The prime function of this great dam was to provide a reservoir for irrigation of the Marv-e Dasht (the plain to the east of Persepolis), but presumably it was also used to provide power for water-mills from an early date. The mills are grouped in three clusters fed by leets. In plan, they look rather like some botanical diagram. Three main leets are led off from the side of the dam. From these a leet is taken for each mill, each controlled by its own sluice gate. The gate is simply constructed and operated; it is like a wooden, two-handled flat shovel and is positioned by a cross slab on the leet.

Walls were of rubble masonry except for the wheel and mill houses which were partly cut out of the rock. The flat roofs were of timber and mud, since the presence of water meant that trees flourish. In other places where timber was scarce, the roofs were of brick vaulting and walls often of unbaked brick.

Another important group of mills which survives is that below the huge Sasanian dam at Shushtar which was illustrated by Madame J. Dieulafoy (some of these were working in 1971).²⁴

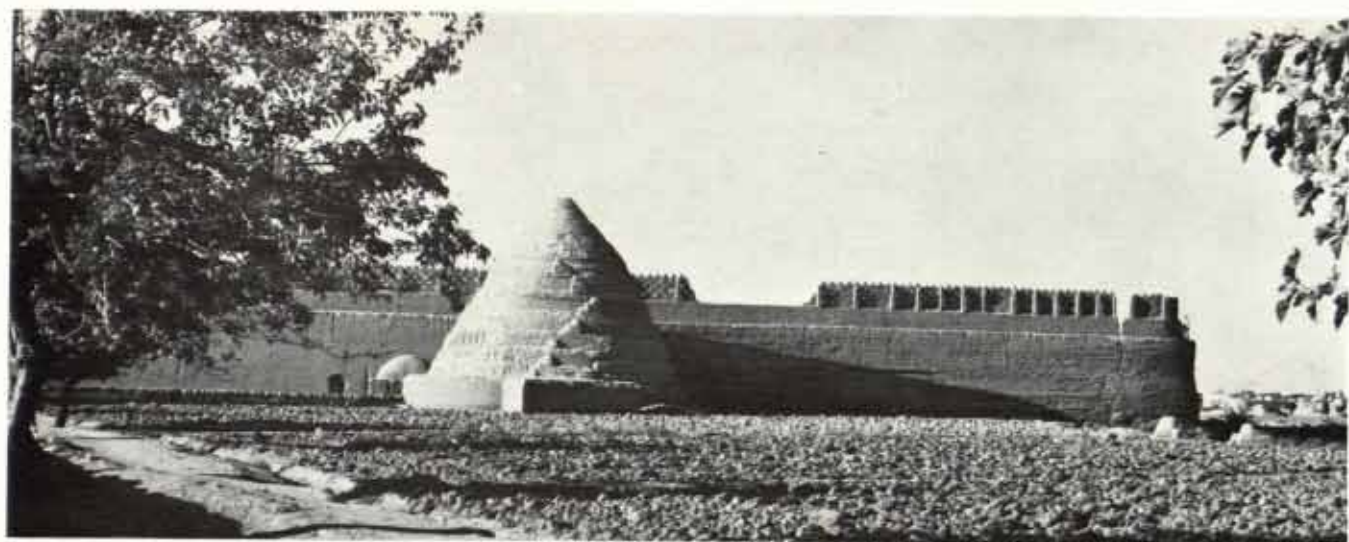
However, most groups of mills are on a much more modest scale. Above Estebānat (south-east of Shiraz) there is a series of six stone-built flour mills just above the town²⁵ fed by a rushing mountain stream. It is bordered on one side by gardens and on the other by small bouldered alps shaded by walnut and chenar trees—an idyllic spot. We were told that there were mills in the town which

²² Wulff, *op. cit.*, p. 246.

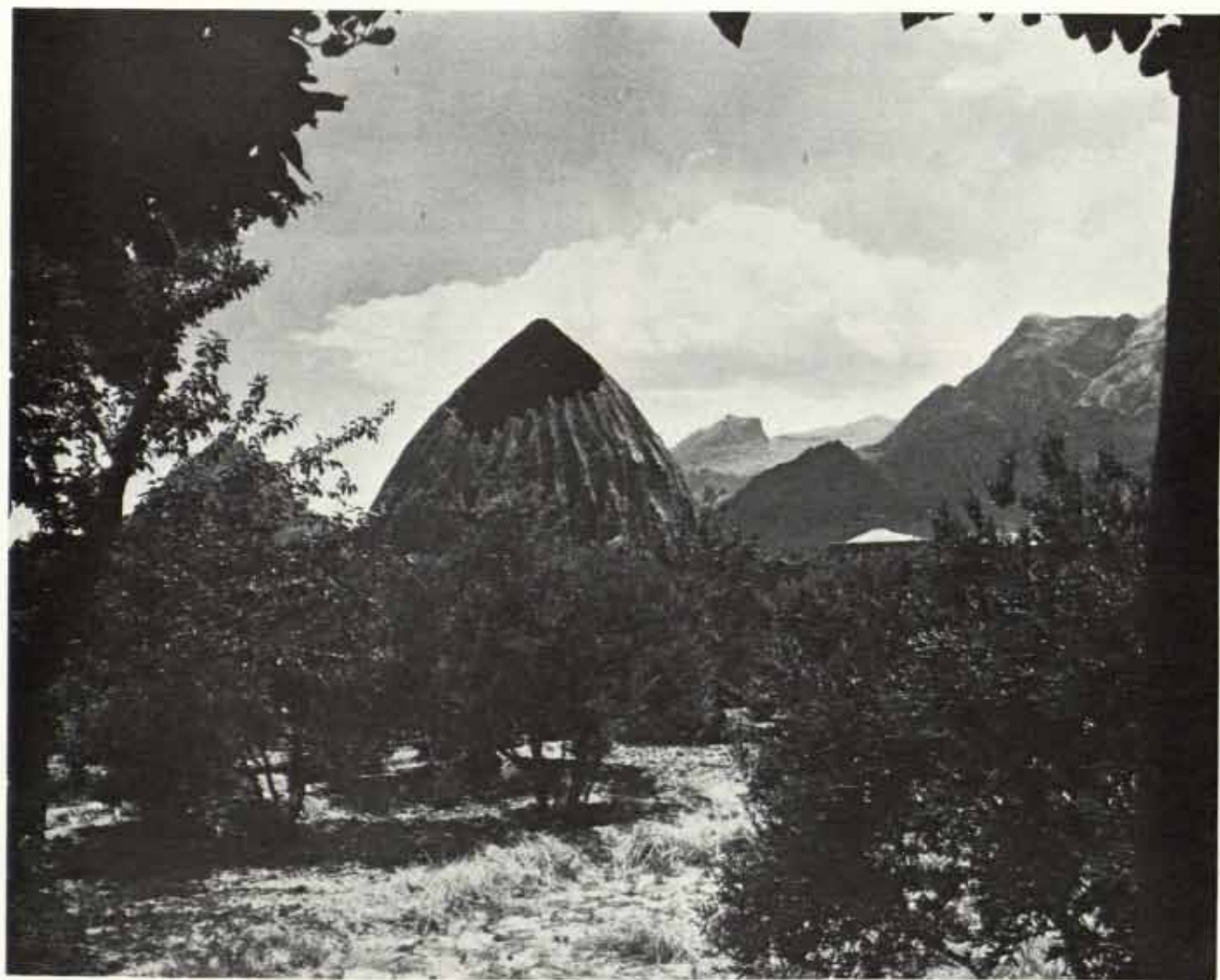
²³ Photographs by Miss Olive Kitson.

²⁴ J. Dieulafoy, *La Perse, La Chaldée et la Susiane*, Paris 1887, p. 680.

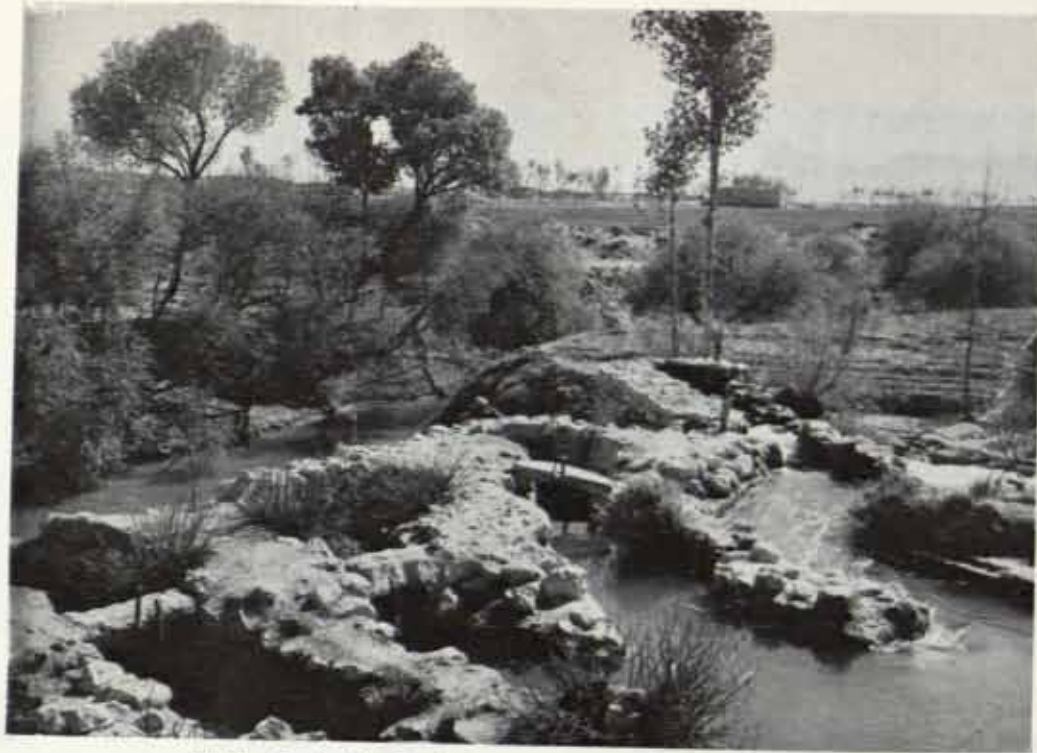
²⁵ Immediately above the new Tourist Inn.



Pl. Ia. Icehouse and shade wall near Yazd, 1975.



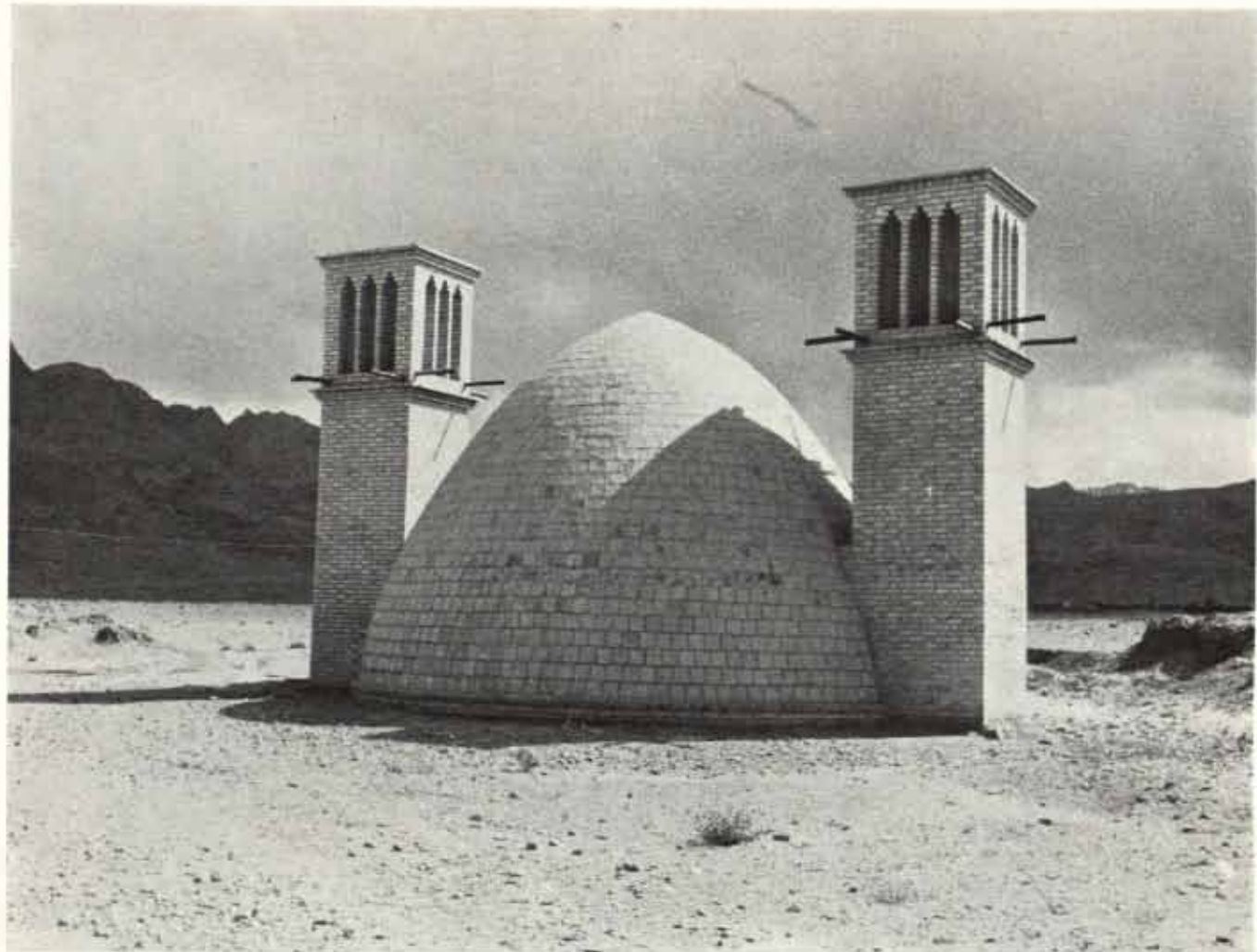
Pl. Ib. Shell of a ruined icehouse near Taft, 1970.



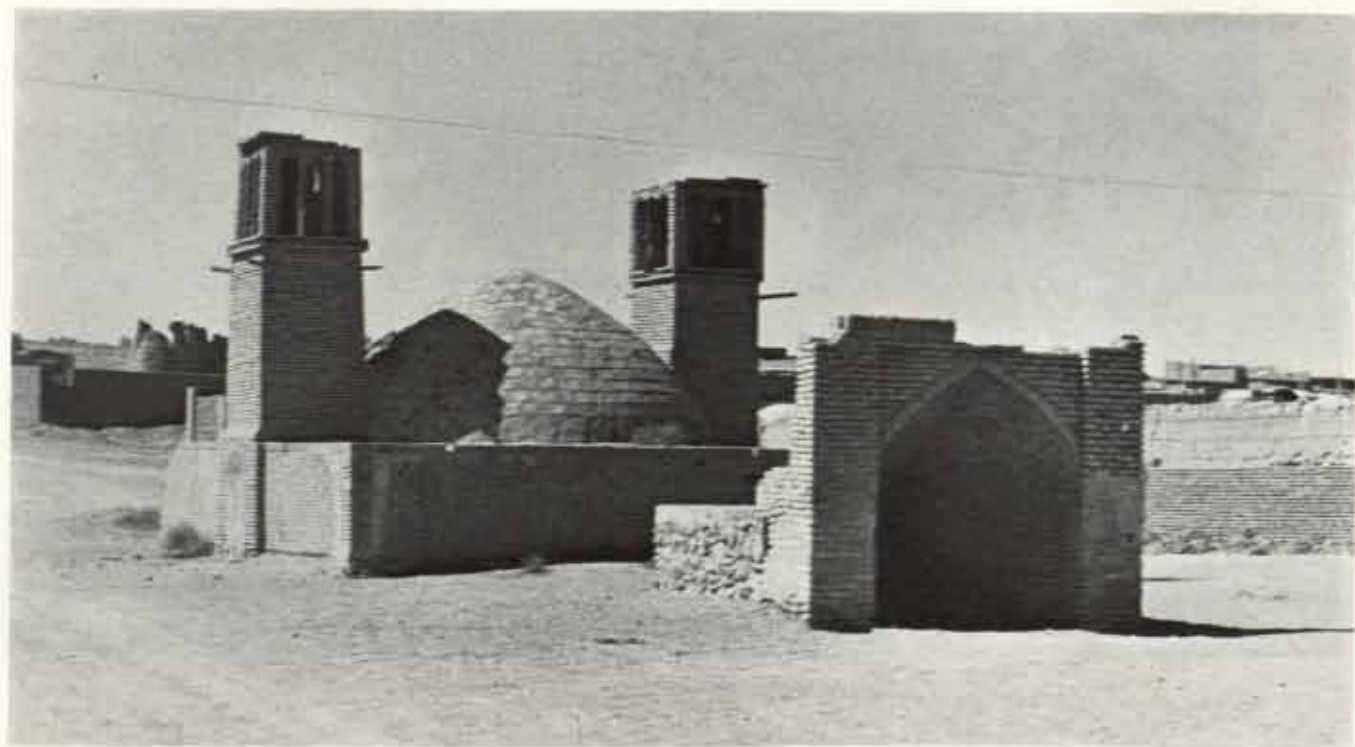
Pl. IIa. Greek mills, Band-e-Amir, 1963: mill leets and "chimneys".



Pl. IIb. Greek mills, Band-e-Amir: left, the mill wheel directly over the water wheel. Right, the water wheel. The base of the lower mill-stone, through which the top of the axle of the waterwheel passes, can be seen between the floor timbers (above). The upper mill-stone rests on the axle. The iron tip of the axle rests on the sole plate; thus by slight adjustment of the position of the sole plate the precise clearance between the two mill-stones can be controlled. A jet of water is directed by the wooden pipe into the water wheel. The peg driven into it prevents the water forcing out the lining which restricts its bore and thus increases the velocity of the water.



Pl. IIIa. A new cistern with two wind-catchers, near Yazd, 1961.



Pl. IIIb. A cistern near Muhammadiyyeh, 1975.



Pl. IV. A painted pigeon tower near Pir Bakran, 1970.

produced "oil for the face". North of Qutabad (near Jahrom) were the remains of another series but these were built along a jube. The caravanserai at Aliabad, outside Pusht-e-dam (in the Dasht-e-Lut), had its own underground mill (and hammam).

The single mills were the biggest. Of these, that at Ferouseh, seventeen kilometres south of Abdeh, has one of the most attractive settings. It is still working by water power, and this in itself may be considered to be a curiosity by the local inhabitants: when we enquired of the existence of any such mills at a petrol station in Abdeh (a promising place-name for anyone in search of a water-mill), we were immediately directed to it. The mill is in a high walled enclosure, like that of a garden, on the outskirts of a village beside a poplar wood, and was actually working when we found it. Fortunately the miller returned while we were there. The only visible building in the enclosure was a watch tower which could be reached from the underground mill. Only the domed roof of the mill, crowned by a ventilator, and the noise of the grinding, betrayed its existence. It was fed by a good jube with the usual arrangement of sluices. Other parts of the enclosure were walled off, partly as a garden and partly for animals.

The mills described so far have been discovered and recorded as part of a survey covering a wide area. A much more detailed account is given below of a grain mill in Fars, at Deh No, Doshmanziari.²⁶

The mill was built c. 1940 by a group of men who pooled their funds. It is now used less than when built, because an oil-powered mill has since been constructed in the village itself. The water-mill is some distance from the village, where it can be powered by the river and is less convenient. Payment is made in kind to the miller.²⁷ A donkey-load of wheat is about 20 *mans* and of this the miller takes one *man* (6½–7 kilos). The miller, who lives in a house in an orchard nearby, is a Sayyid; all the Sayyids living in the village take the proceeds from the mill for the twelve days after the New Year, as a customary right.

At the time of Professor A. K. S. Lambton's great survey (1948–49), the revenue of a mill might be set aside to defray the expenses of a mosque, and this may still hold true.²⁸

WATER STORAGE IN CISTERNS (*ĀB-ANBĀR*)

Persian prowess in the skill of water collection and storage is based on long experience. Indeed, the *qanāt* system was recorded during the reign of Darius I, and *qanāts* now in use in the south of the Sahara are known as "Persian work".²⁹ The *qanāt*, or underground water channel, through which water is carried by gravity from a water-bearing stratum at a higher level (usually near the base of mountains) to a village or oasis on the Plateau, has been recorded by many travellers,³⁰ so will only be mentioned briefly here. A *qanāt* is beautifully simple in its basic conception, but the skill of those who plan and construct these ingenious tunnels is hard to exaggerate. Certainly an understanding of the system, both its potential and its limitations, is essential to the appreciation of settlement on the Plateau. It accounts for flourishing settlements many miles from any source of water, and for the collapse of the same towns and villages if the life-giving *qanāt* has been cut either by a natural disaster or the hostility of an enemy.

The fascination of the *qanāt* has led more recent travellers to ignore other less spectacular systems of water collection, such as that of the conservation of sheet wash in the desert: the trapping of the flood water following the rare but heavy rainstorms which occasionally occur in areas of otherwise arid plateau. Indeed, no traveller would choose to be on the road following such weather, so it is hardly surprising that only one reference has been found. This again comes from that indomitable seventeenth-century recorder John Fryer: "... the other [method of obtaining water] is immediately from the Heavens, reserved in cisterns built by the charity of well-disposed persons; out of which the Poor, the Covetous, and Slaves, Flocks and Herds too, are often supplied, when a plentiful Rain has made them

²⁶ Miss Susan Wright, an anthropologist working in this area, kindly made these notes specially for this survey.

²⁷ This seems to have been a general practice. See A. K. S. Lambton, *Landlord and Peasant in Persia*, London 1953, p. 389.

²⁸ *Ibid.*, p. 349.

²⁹ Wulff, *op. cit.*, p. 250.

³⁰ See, for instance, Lambton, *op. cit.*, pp. 217, 437; and A. Smith, *Blind White Fish in Persia*, London 1953, pp. 92–5, 156.

overflow . . .".³¹ It was only after careful examination of the ground that isolated structures (Fig. 6) which we thought to be desert shelters were recognized to be cisterns³²—this function having first been dismissed since there seemed to be no source of water supply. Low banks of earth and stone (often less than a metre high) contain the water, which is guided by an almost imperceptible fall in the ground towards the cistern. The water flows in through a hole at ground level and is taken out as needed by a bucket through a small door. The cistern is protected from the sun by a dome or vault

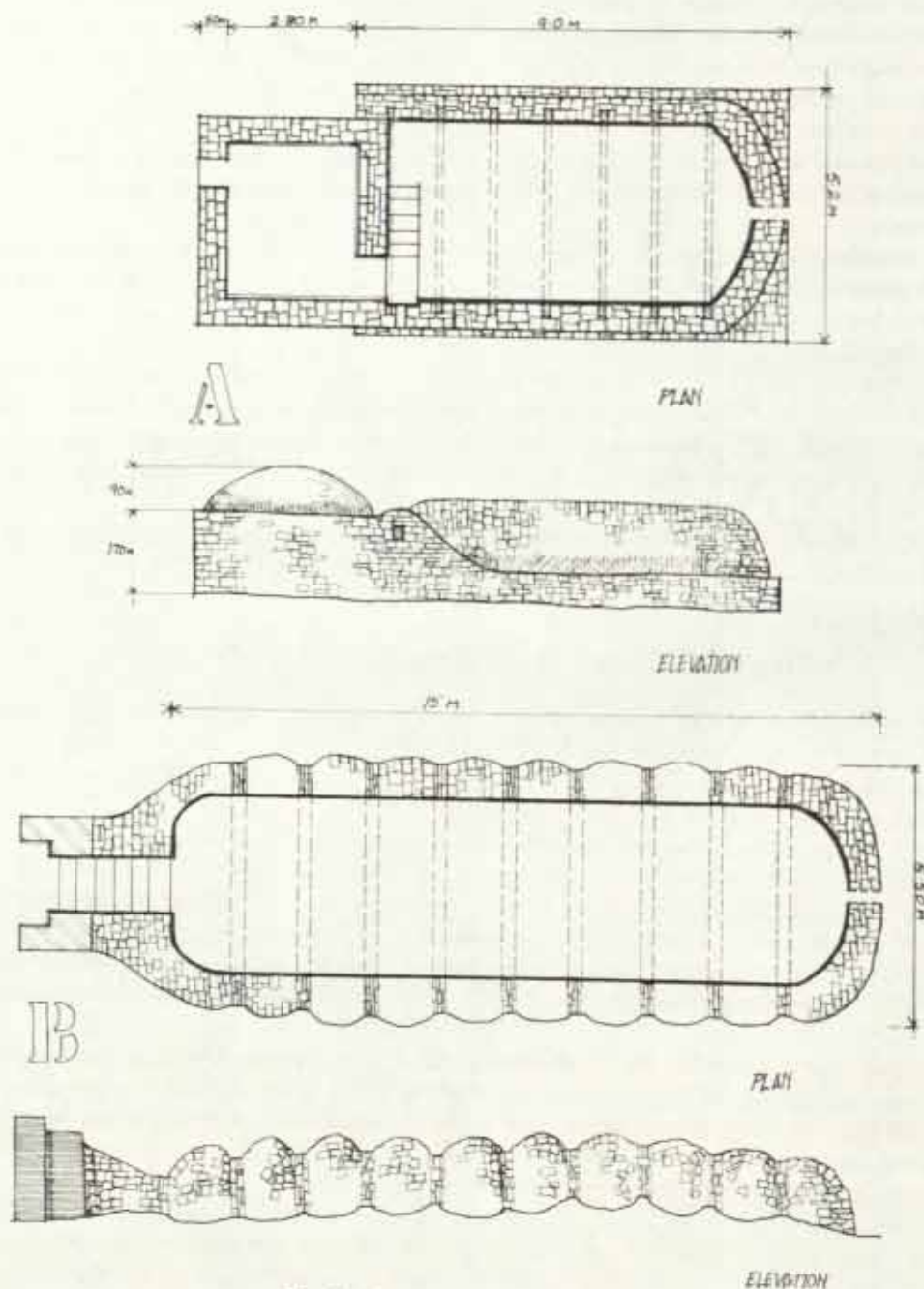


Fig. 6. Desert cisterns fed by sheet wash.
A and B near Muhammadiyyeh.

³¹ *A New Account of the East Indies and Persia*, vol. II, p. 168.

³² Miss Susan Ross was the first to notice this when we were

examining buildings on the Anorak Road 17 km. east of Muhammadiyyeh, 1975. See Fig. 6.

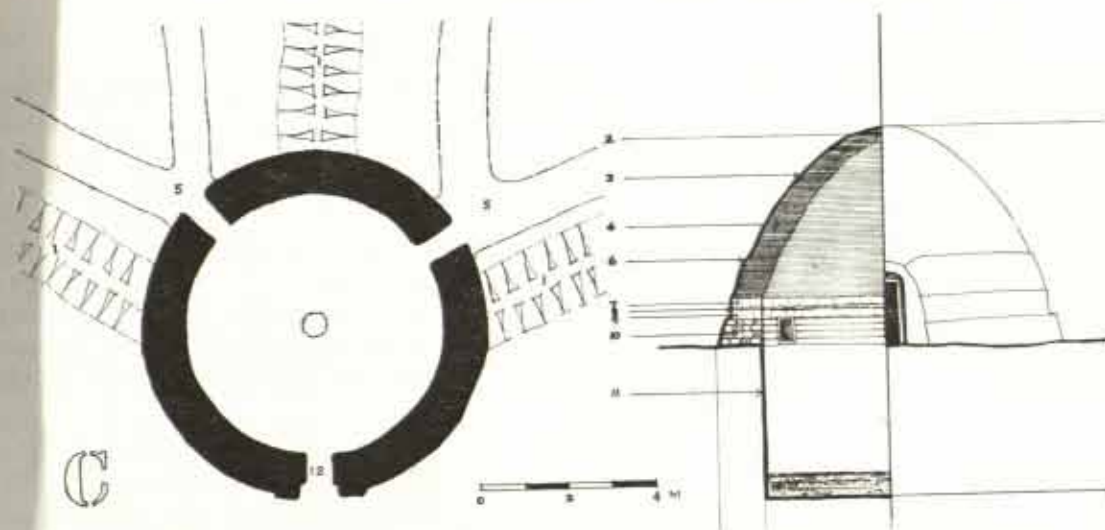


Fig. 6. continued
C near Chamale

- | | |
|---------------------------------|--------------------------------|
| 1, earth bank, c. 1 m. high. | 6, maintenance step. |
| 2, central hole, 30 cm. dia. | 7, pise. |
| 3, external mud plaster finish. | 8, mud brick course. |
| 4, mud brick dome. | 9, stone base. |
| 5, inlet channel. | 10, waterproof plaster lining. |

depending on its shape. Before the internal combustion engine put the caravan and mule out of business, such cisterns seem to have been common along some of the caravan routes. Now they are increasingly rare. But a few villages and small towns may still rely partially on this system. For instance, there are six large cisterns, two of which seem to be new, outside the desert town of Khor; it seems that these were constructed to collect sheet wash. Numerous smaller ones, mostly derelict, were seen along the road Nain-Chupanar-Khor.

The occurrence of numerous cisterns in varying states of repair also mystified Fryer "... These Cisterns or Storehouses for Rain are digged out of the Ground deep into the Earth ... which being once finished, like their *caravan seraws* have no Endowment to maintain them, either to keep them clean, or from falling to Decay: ... on which account it is, that about their great Cities so many of all sorts are found, newly built, superannuated, defiled (which they esteem so, if either Man or Beast have dropped in and been drowned), unfrequented, and full of Nastiness; so pervicaciously Vainglorious, that they will have the Repute of an entire Founder, or none."³³ Clearly, the problems of endowment and maintenance are neither new nor local, but the capital cost of building by traditional methods is comparatively economic in Iran.

However, any *qanat* system is clearly preferable to such an haphazard means of water collection as that from sheet-wash so it is hardly surprising that those cisterns fed by *qanats* are usually bigger and better constructed. One excellent example seen in 1961 had only recently been built (Pl. IIIa).³⁴ Like others in the province of Yazd it is cooled by two wind-catchers or wind-towers (see below), and this functional architectural composition is unexpectedly satisfactory.

The design (Fig. 7) seems typical of a fairly wide area: a deep, circular well, about five metres in diameter, is protected from evaporation and dust by a dome. The simple form of the egg-shaped dome contrasts nicely with the vertical towers which rise above the crown of the dome in order to catch the wind. A vaulted porch is often constructed to shade the upper part of the underground flight of steps which leads down to the well.

³³ Loc. cit.

³⁴ This was near the Zoroastrian cemetery, Yazd.

WIND-CATCHERS (*BĀDGĪR*)

A wind-catcher (*bādgīr*) is a ventilating shaft which projects above the roof of a building and provides it with air-conditioning of a most effective kind. Wind-catchers are among the most spectacular and best-known elements of Iranian architecture, yet it is surprising how little information is available about their design.³⁵ A wealth of local knowledge must exist, but presumably this is chiefly empirical. Little work seems to have been done in the comparison of wind-catchers which cool different types of building, or between those of different regions. Nor does any scientific analysis with the use of wind tunnels seem to have been made.³⁶ Yet the little we have so far achieved suggests that the subject is far more complex than it might appear to be at first sight and that considerable variations exist. The fact that the two wind-catchers of the cistern shown in Pl. IIIa, which appear to be similar to one another, have quite different internal plans at ventilator level (Fig. 7), is an indication of such complexity.

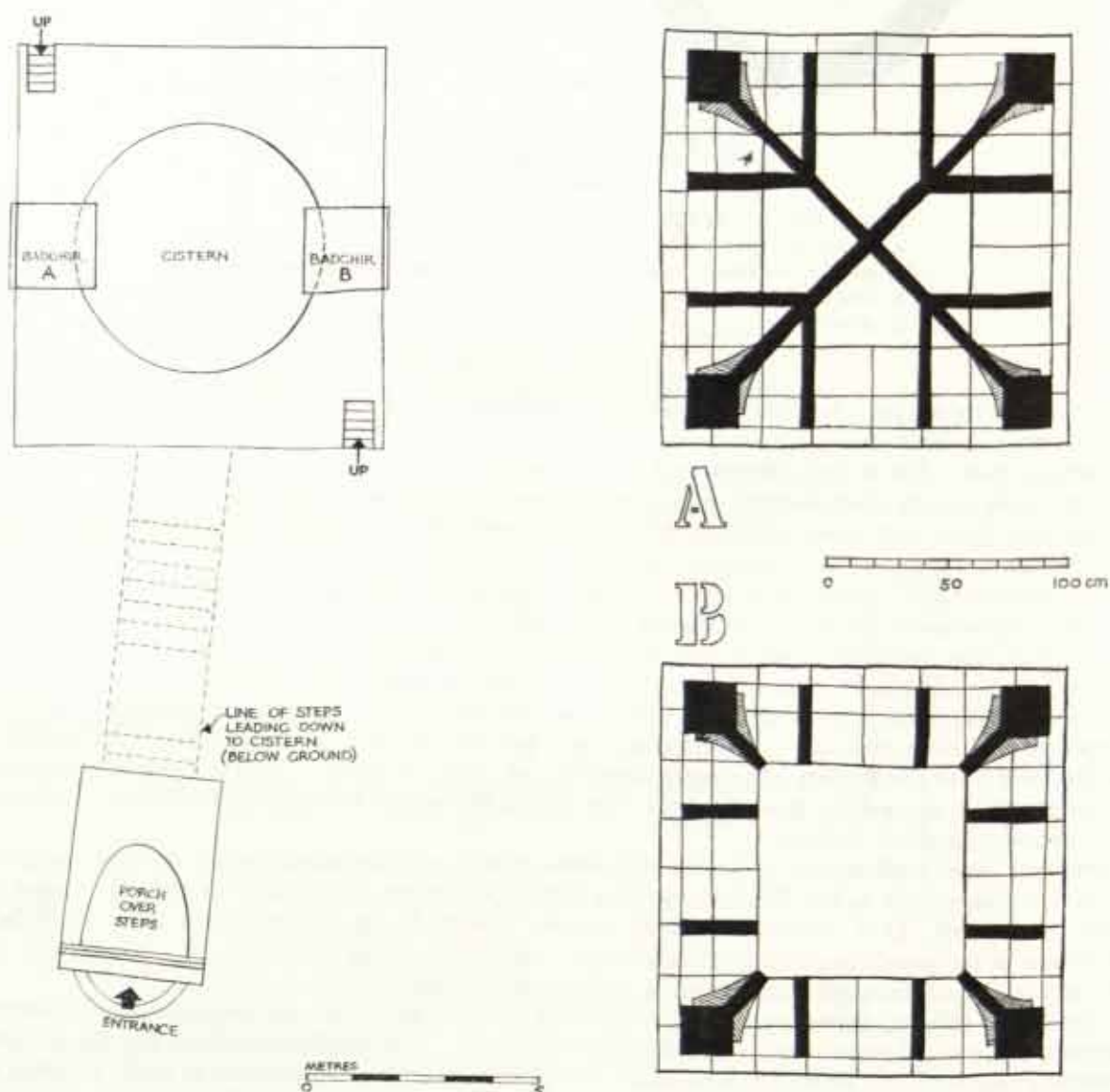


Fig. 7. A cistern cooled by wind-catchers, Muhammadiyyeh. Roof plan and detailed plans of wind-catchers at ventilator level.

³⁵ Mr. Mahmood Tavassoli's *Architecture in the Hot Arid Zone* [in Persian] is a welcome pioneer in this field.

³⁶ Survey work, from which will be made models for testing in wind tunnels, is being carried out by Miss Susan Ross.

Nothing is known of the design at lower level since this cistern, like others, was inaccessible. Similarly, a low, plain looking tower examined in a ruined house³⁷ revealed an extraordinarily intricate interior with a variety of partitions in its short height. This leads us to wonder what a thorough examination of other towers, particularly those attached to cisterns, might reveal.

Most of the wind-towers seen have been in the province of Yazd, but they are used over a wide area, including that bordering the Persian Gulf where Fryer observed them (see below).³⁸ The tower is usually used to cool the better houses by creating a system of air-conditioning in one of the main rooms. This may be in the cellar (the *zīr-e-zamīn*), a common practice in Yazd, or at ground floor level (Chupenah). An example of a *zīr-e-zamīn* was unexpectedly found on the first floor of a ruined landlord's house in a desert oasis near Farāj.

Towers vary greatly, but the ventilator at the top, which may be around two metres high, is usually divided on the module of a mud-brick (20 cm.) by thin mud-brick partitions. It may be further baffled with divisions formed of mud on a framework of light timbers (Fig. 7). In the case of a cistern which, since it is otherwise sealed, must have a minimum of two towers (six have been seen—see Pl. IIIb), a current of air flows down one tower and out of the other, cooling the water by evaporation as it passes over it. It is at this point that fact gives way to speculation since it has not yet been possible to examine the towers thoroughly, the cisterns being inaccessible since they contained water.

First, how is the difference in air pressure, which is necessary to cause a draught, created? It is usually assumed that the wind is "blown down" the shaft. Fryer, who seems to have seen *bādgīrs* on houses but not on cisterns (which is to be expected, since the cisterns he described were filled by rain wash), gives the following description: "... and from their [house] Tops have many Breathing-places to receive the Wind, which are so fixed, that whatever Breezes stir, they shall suck them in, and transmit them to all the Rooms of the House, as they list."³⁹ It also seems possible that a hot desert wind blowing through and across the top of a wind-tower may suck air out (by a Venturi system). In the case of cisterns, it would also be interesting to know how much water is lost by evaporation and whether it condenses on the inner face of the dome in cold weather. In the house, the air is often passed over a pool of water which thus acts as a humidifier.

The height of wind-towers gives cause for speculation. Are they always constructed to a strictly functional height, or does a neighbourly rivalry prevail?⁴⁰ In towns there is presumably a necessity to build clear of the shelter of a neighbouring building—hence the fascinating sky-line in a wind-towered town. Indeed, at times aesthetic considerations or even prestige may be governing factors in the design of towers.

It will be plain from these inadequate notes that there is much more to learn about the design of this widely-acclaimed feature of Iranian architecture.

PIGEON TOWERS

The famous pigeon towers of the Isfahan area were the subject of an earlier article by the present author in *Iran*.⁴¹ The notes which follow cover different ground.

In the oasis of Isfahan itself all the towers seen at that time were circular in plan (the two well-known towers in the Hazār Jarīb, although much more complex, are based on a circle). Each tower was also separate from its neighbour although a large number might occur in a small area. It was not until the Khunsa—Gulpayagan area to the north-west of Isfahan was explored⁴² that we came upon big rectangular towers reminiscent of small forts. Some were sited singly; others were grouped; none seen were built into garden walls. A typical tower measured 12.25 × 4.45 m. at the base and was 7-8 m.

³⁷ In 1971 near Farāj.

³⁸ Mr. Douglas Pickett has photographed a large number of wind-towers on houses in towns and villages bordering the Persian Gulf.

³⁹ Op. cit., vol. III, p. 17.

⁴⁰ The spectacular wind-catchers in the Bagh Dolatabad outside Yazd certainly suggest this. We are indebted to Mr. Parviz

Talaie for showing us his plans for their reconstruction.

⁴¹ "The Pigeon Towers of Isfahan", *Iran* IV (1966), p. 105. See also Colin and Mark Bertram, "Pigeon Towers of Isfahan", *The Geographical Magazine*, XLI, No. 7 (April 1969), pp. 516-22.

⁴² In 1971, with Mrs. P. E. Carlisle.

high. The walls, which were battered at the base, were decorated by a broad plastered band 2-3 m. above the ground. This smooth surface may have been to prevent the entry of reptiles. The top of the walls was crenellated.

It was not possible to enter any tower to make a plan, for the cheering reason that they were in use. However, their plan may be similar to that of the square tower in the ruined village of Jozdan, towards Gavart to the east of Isfahan.⁴³ This consisted of a two-storey outer structure, 10 m. high surrounding a three-storey inner tower. Surprisingly, there was also a large number of small pigeon towers (of the usual circular plan) set close together in the same village.

The most surprising pigeon towers of all are those near the village of Lanjan to the south-west of Isfahan.⁴⁴ The photograph (Pl. IV) shows the astonishing decoration. These towers were also in use, so could not be entered. Nearby a line of towers was built in a long battery—a plan which we had not seen elsewhere. These were painted in a similar way.

The decoration, in cobalt blue, black and red ochre on white, depicts traditional stylized birds and flowers, and a man (the owner?) in a big black hat. We were told that they had been painted about thirty years before. These vigorous and exceptionally attractive designs typify the Persian traditional enjoyment in, and masterly management of, pattern and colour: here bands which are densely filled with elaborate decoration are boldly contrasted with areas of blank wall space.

The only other decoration seen on the Isfahan towers is the indented "spoon" pattern round the top of the towers which seems to be fairly common. But C. J. Wills reported a tower in Gougas (between Kermanshah and Isfahan) "ornamented with a ring of plaster painted with scrolls or figures in red ochre".⁴⁵ He also reported that many towers were in ruins since the demand for early melons (manure collected in the pigeon towers for use in the melon fields was their *raison d'être*) had been greatly reduced when Isfahan ceased to be the capital city.

CONCLUSION

The intermediate technology, as expounded by Dr. E. F. Schumacher, is now seen by many to be an essential ingredient of progress in the latter part of the twentieth century.⁴⁶ This great Iranian tradition is as yet little known in the West and there is much to be learnt both from it and the building techniques which are integral with it.

It is the fate of vernacular buildings throughout the world to be neglected until they are nearly extinct. The Folk Museum and the Museum of Buildings are relatively new ideas in Europe, where they are thought of primarily in terms of conservation and education in history and the arts. In Iran their value could be even greater since these functions could be combined with those of an institute of intermediate technology. Not only is the building tradition itself still alive, but there is much to be gained from a knowledge of a highly developed technology which makes such ingenious use of natural resources without the consumption of additional power. The Persian ice-house with its great shade wall could hardly be described as small, but the technology it represents is certainly beautiful in its simplicity. Water collection and its storage in desert conditions and air-conditioning by means of wind-catchers are living skills which the Iranians might pass on to others. Even the Greek mill may be due for a return to use in less oil-rich areas of the world.

⁴³ Reported and surveyed by Mr. and Mrs. M. J. Halsted in May 1970.

⁴⁴ Reported and surveyed in 1970, with Mr. and Mrs. M. J. Halsted.

⁴⁵ *The Land of the Lion and the Sun (Modern Persia). Being Experiences of Life in Persia from 1866-1881*, London 1891, p. 130.

⁴⁶ Schumacher, *Small is Beautiful*, London 1973, pp. 143-59.

EXCAVATIONS AT BABA JAN

The Architecture of the East Mound, Levels II and III

By Clare Goff

The second instalment of the final report on Baba Jan deals with the architecture of the Fort and Painted Chamber on the East Mound, and with the "squatting levels" which followed them. Many of the discoveries described in the account below were made in our final season, which ran for two months in July and August 1969. I should like to take the opportunity of thanking the people responsible for making it a success. As before the work was sponsored by the University of London, Institute of Archaeology, with the kind permission of Professor Grimes. Our team consisted of Miss Sasha Trone, conservationist and second-in-command, Michael Roaf, senior field assistant, Robert Wells, and Nigel Webster, field assistants, and Maria Stockton Millar, draughtsman. Our thanks are also due to the Iranian Archaeological Service, to our representatives Miss Farkhondeh Etessam and Mr. Islami; and to the Department of Education in Khorramabad, particularly Mr. Mohammed Reza Jazaeri and his family, who, as always, kept open house for our team.

Finally I am deeply indebted to the following people and institutions for their help with equipment and funds: the British Academy; the Birmingham, Bolton and Ashmolean Museums; and Mr. James Bomford, who once more came up with a most welcome £500. I should also like to thank Sir Max Mallowan, the late Sir Mortimer Wheeler and Professor Seton Lloyd for their encouragement and help in obtaining funds, and Mr. David Stronach, Director of the British Institute of Persian Studies, for hospitality and the loan of an Institute Land Rover.

Method of Approach

Although this is the final excavation report it differs from similar accounts in two respects.

As I was about to start work on it, we received yet another unexpected posting—to RAF Akrotiri in Cyprus, at five weeks notice. The political situation was so uncertain that we decided to take out only the minimum amount of luggage, books and papers, and it was obviously impossible to consult all the relevant material in specialist journals before leaving. Rather than hold up publication still further I decided that it would be best to publish what we had found with the minimum of comment, leaving the reader to draw his own conclusions. I apologize to anyone whose recent work on the Iranian Iron Age has been overlooked.

Secondly, much of the work on the East Mound, that should really appear in this report, has already been published in previous numbers of *Iran*. Where this is the case, I have not repeated the information, but referred the reader back to the original description, and anyone coming new to the site is advised to read these reports first.¹ I hope that this method of procedure will not cause confusion.

The layout of the buildings

By the end of the final season we had recovered all but the southern end of the big Level III complex on the East Mound (Figs. 1, 5, 6).² To the west, beneath the summit of the mound, lay the massively constructed "Fort" with walls from 2.0 m. to 2.50 m. thick, and in some places preserved

¹ C. Goff Meade, "Luristan in the First Half of the First Millennium B.C.", *Iran* VI (1968), pp. 105-34; C. Goff, "Excavations at Baba Jan, 1967", *Iran* VII (1969), pp. 115-30; C. Goff, "Excavations at Baba Jan, 1968", *Iran* VIII (1970), pp. 141-56; C. Goff, "Excavations at Baba Jan, the Bronze

Age Occupation", *Iran* XIV (1976), p. 19-40. These articles are hereafter referred to as Goff Meade 1968, Goff 1969, Goff 1970 and Goff 1976.

² For a brief summary of the Baba Jan stratigraphy, see Goff 1970, p. 142.

to nearly four metres high. A square central hall (Room 4) was flanked to east and west and probably to the north as well, by long rectangular rooms, 3, 5 and 6. The hall was entered from the south by an ante-chamber, Room 2, which also gave access to a spiral staircase, Room 1. South of Room 2 was a further range of long narrow chambers, 7, 8 and 9. We did not have time to dig out any of these rooms properly, except for Room 9, "The White Room". They may have been interconnected by a row of doors at their southern ends, and there must also have been some sort of fortified entrance or portico, such as we found in the very similar Manors on the Central Mound, possibly to the south of Room 7.

"The Painted Chamber" was tacked on to the eastern end of the Fort at a slightly different angle. The eastern end had been destroyed by pits but it was probably once symmetrical, with an Eastern Annexe corresponding to that found to the west. A further room, the North Annexe, ran along the back of the Chamber. The Chamber faced on to a large open Courtyard, as did a small workroom, Room 10, constructed between two of the Fort's buttresses. One suspects that on the southern, unexcavated side of the Courtyard there was a further ante-chamber connecting it with the Fort via Room 9.

At the end of Level III, probably sometime towards the end of eighth or beginning of the seventh centuries B.C., the Fort and Painted Chamber were burnt. A thick layer of burnt debris was found all over the Level III floors in every room, except for the White Room, and in the Courtyard which had no roof to collapse. I suspect an attack by the Assyrians.³ No bodies were found so the inhabitants must have had time to escape. At any rate, after the fire, the Courtyard and Painted Chamber, and the eastern end of the Fort were reoccupied, and we have evidence for three or four "squatting levels", which together comprise Phase II. Apart from numerous modifications to the original plan, this phase is also marked by the appearance of a new type of pottery in small quantities. This seems to be similar to that from the Median fortress at Nush-i Jan, and it occurs alongside the older "genre Luristan" wares typical of Phase III.⁴

Rooms 1 and 2. Room 1 has already been fully described elsewhere.⁵ Room 2 may have been an ante-room connecting the main entrance with the stairwell in Room 1 and the central hall. Apart from its three doors, the eastern end of the room was featureless. Its south-eastern corner, excavated in Trench K, was rather puzzling (Pl. Ic). Instead of the usual mud-brick wall to the west, there was a large stone bastion, quite unlike anything else found on the site, with the actual corner and the southern wall of the room apparently robbed out. Subsidiary stone walling (Phase II?) was built up against the outer wall of Room 7. A circle of stones filled with ash, originally termed a hearth, was conceivably a post hole.

I am still uncertain what exactly was happening here and we had no time to investigate further. At the time I thought the bastion was an attempt to strengthen the corner of the building in Level III, perhaps as the foundation for a corner tower, subsequently robbed out by modern villagers looking for building stones. A Level III entrance at this corner seems unlikely since we know from the Manors that the main doorway was usually planned with care on the central axis of the building. We could however, have the entrance to the Fort during the early squatting period, with the bastion an attempt to shore up a breach made in the Level III walls by its attackers. On the Level III plan the corner has been dotted in in its assumed position.

Room 3. Room 3 has also been briefly described elsewhere (Goff 1970, pp. 149-50 and Pl. IV). It was a long rectangular room, approximately 11 x 5 m. with three buttresses down either side. These buttresses were three bricks wide and bonded into the main wall at every other course (Fig. 2: 3).⁶ At the northern end of the room was a fireplace cut into the thickness of the wall with a large hearth in front, exactly like its modern counterparts. The fireplace was A-shaped, the sides corbelled and the top constructed of two whole bricks and two half bricks leaning together to form a point (Fig. 2: 5). On

³ The chronology of the site and its bearing on contemporary historical events will be discussed together with the pottery in the next report. Very roughly, Baba Jan III is ninth-eighth century A.C., Baba Jan II, seventh century, and Baba Jan I sixth century.

⁴ For an interim report on the pottery see Goff 1970, p. 151f. and Fig. 7.

⁵ Goff 1970, pp. 150-1, Fig. 6, and Pl. IIc. Unfortunately, most

of the plans and sections relating to Room 2 were left behind in England, which accounts for the somewhat meagre documentation occurring here.

⁶ Brick sizes obtained from the buttresses suggest that the average brick was 39 cm. square (37.0-39.5 cm.) with half bricks c. 18 cm. wide. All bricks were 14-15 cm. thick and separated by mud mortar courses 3 cm. thick.

either side of the fireplace, and on the western wall between the buttresses, were narrow slots, running back into the thickness of the wall.⁷ The main doorway, at the southern end of the eastern wall, was still preserved intact, though the "arch" at the top had settled and was in too poor a condition to record (Fig. 3: 2). The hole for the hinge post of a wooden door was found on the far side in Room 4.

The floor was covered with fine grey ash, rising up the walls to a depth of 35 cm. It looked like burnt vegetable matter—perhaps rushes or rugs. On top of the ash were a mass of heavy pithos fragments and some very beautiful painted Luristan pottery suggesting that this had once been a main living room.

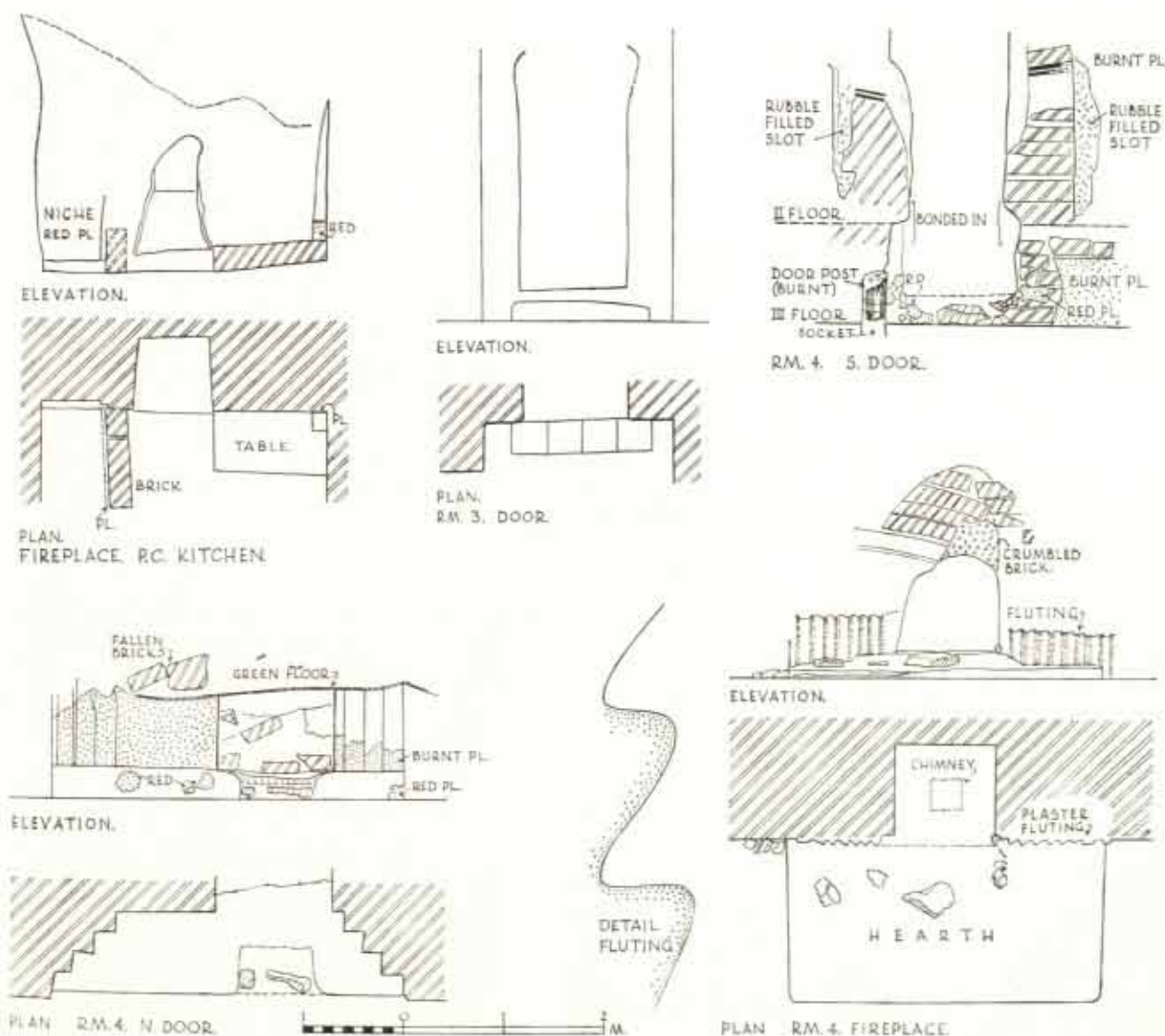


Fig. 3. Architectural details from Level III, Rooms 4 and 20.

⁷ Similar slots were found at Nush-i Jan. D. Stronach, "Tepe Nush-i Jan" in the "Survey of Excavations", *Iran* XIII (1975), Pl. VIIIa. Their purpose is discussed in Goff 1970, p. 149. Their positioning in Room 4 suggests that they occur only in outer walls. This had led us to reconstruct the north wall of Room 5, which also has slots, as an outer wall too. If this is correct, the central portion of the Fort, surrounding

Room 4, was shaped like a cross as in the reconstructions Fig. 5 and 6. There may however have been a further room running off behind Room 6 since a stump of wall was found running off to the north in trench Q1. It could equally well have been a buttress or a tower, and since it lay directly under the main dump very near the edge of the mound, it seemed profitless to investigate further.

The lower parts of the walls had been baked nearly solid in the fire, and were still covered with a single layer of mud and straw plaster 2·5 to 3·5 cm. thick, burnt to a bright orange-brown. Higher up however, the walls were less well preserved and seemed to show traces of frequent replasterings, some of which still bore traces of red paint. These replasterings formed a series of ledges between 3·0 and 3·10 m. above the level of the floor, and the central buttress of the eastern wall appeared to have ended at this level and then been rebuilt slightly further back (Fig. 2: 4, Pl. Ia). To solve this and related constructional problems, in 1969 Michael Roaf cut a narrow trench right through the north wall bisecting the fireplace and the eastern "slot". The two sections (Fig. 2: 1, 2) clearly show the chimney running up in the thickness of the wall, and reveal that the "slot", which had originally run through to the outer face of the wall, had been "corked" by a Luristan tea-pot. Then later, in Phase II, the whole wall had collapsed northwards over the high Phase II floor, blocking both chimney and slot exit. The "replasterings" on the east wall may also have been produced by this wall collapsing in on itself, causing its plaster to concertina. Another alternative is discussed below.

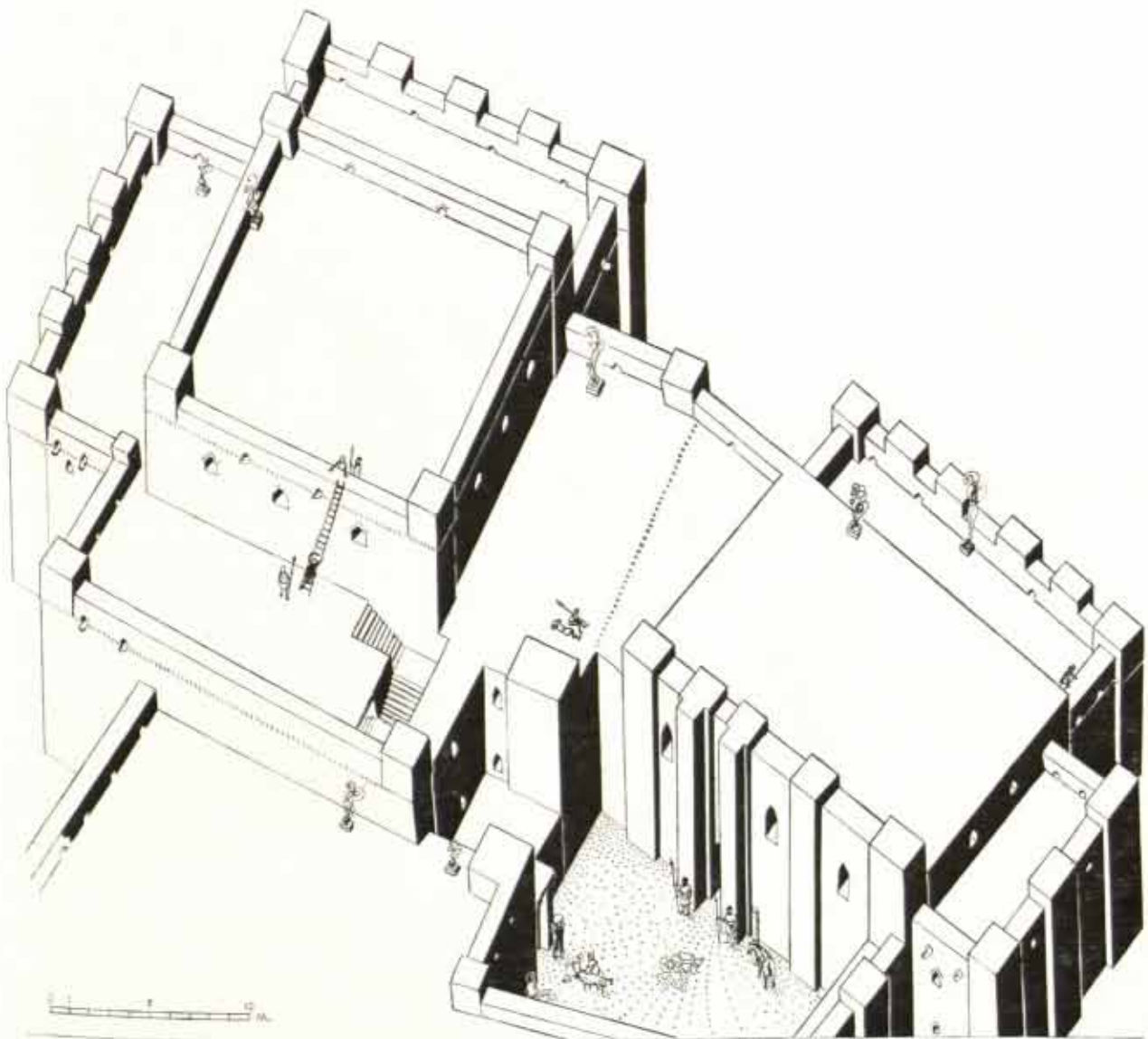


Fig. 5. Isometric reconstruction of the Fort and Painted Chamber, Level III.

Having sorted out the fireplace, Mr. Roaf went on to dig trenches N2 and N3 down behind the outer face of the Room 3 walls to see if they were buttressed. But the walls were so close to the edge of the tepe and so badly eroded, that we had difficulty finding a face, let alone any decorative features and we did not have time to dig down as far as the stone foundations. For the purpose of the reconstruction (Fig. 5) I have assumed that buttresses originally existed, following on from the architectural tradition of the Central Mound Manors.⁸ The alternative of featureless outer walls is sketched out in Fig. 6.

The conflagration at the end of Phase III was represented by a layer of debris, ash, and fallen beams about two metres thick. Above this in section⁹ was a typical grey-green floor or erosion surface,

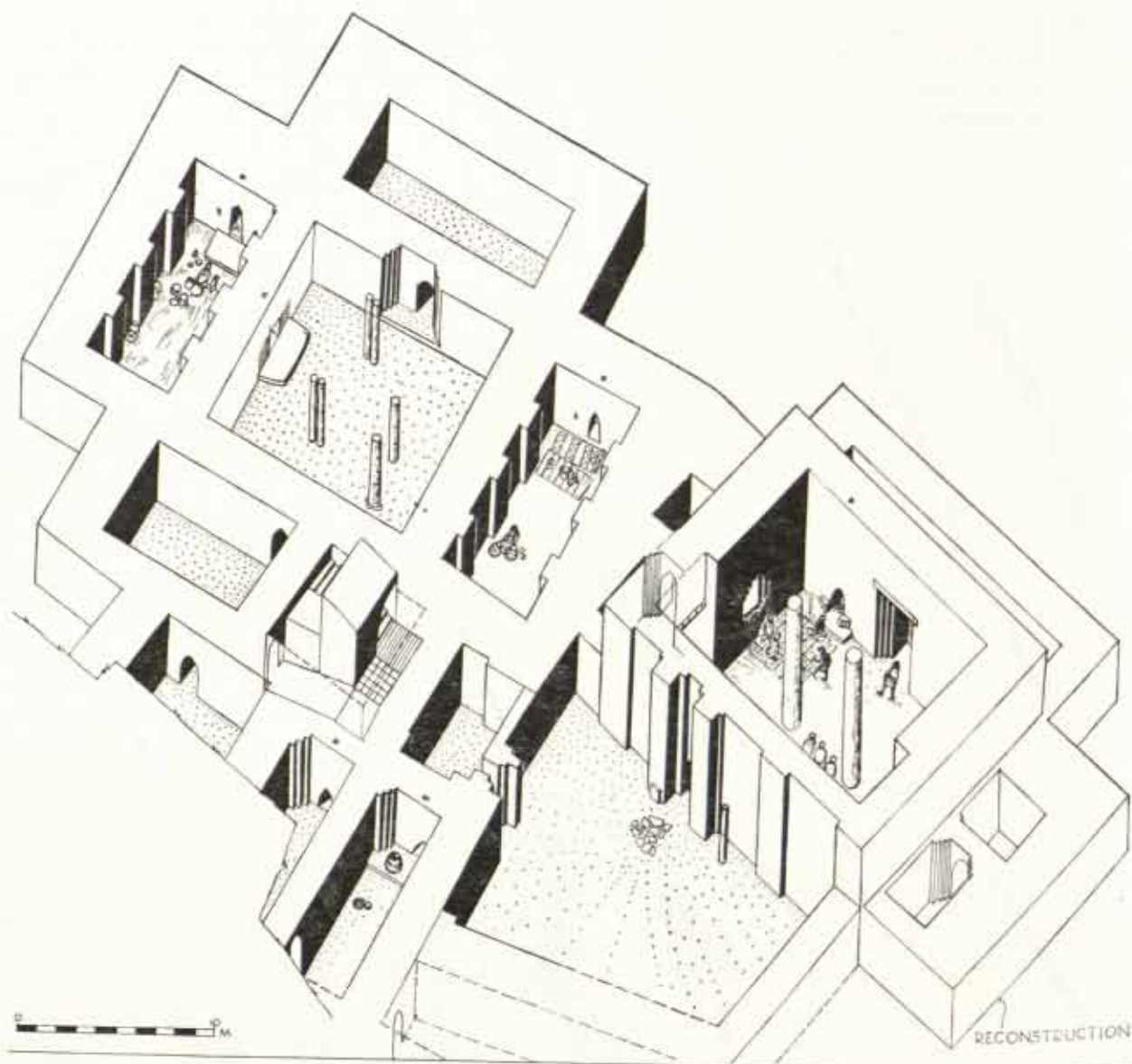


Fig. 6. Isometric reconstruction of interiors of Fort and Painted Chamber, Level III.

⁸ Goff 1969, Figs. 2 and 4. Names like "Manor 1" and "Fort" were given to the buildings to simplify description and for ease of reference. Both Manor 1 and the Fort were built largely on the same lines, presumably for the same purposes. The same is true of other, more fanciful, descriptions used later on, such

as "The Painted Chamber" or "The Groom's Kitchen". With three similar buildings, each with up to a dozen rooms, it is too easy to get lost in a mass of numbers and small letters.

⁹ Goff 1970, p. 148, Fig. 5.

14 cm. thick. At just about this level we also found the remains of a collapsed ceiling with burnt wooden beams lying side by side across the width of the room. Normally at Baba Jan the ceilings are the first things to go in the fire, and the roof timbers are found lying directly above the Level III floor with bricks and burnt plaster from the walls lying on top. Here the procedure has been reversed, and suggests that Room 3 had two storeys. The debris from the first floor collapsed on to the ground floor and the roof collapsed on top of that. The ledges approximately three metres above the floor may therefore represent the original seating for the first floor joists.

Room 3 was probably not reoccupied in Level II. The door would have been blocked by first floor debris, and it would have been impossible to enter.

Room 5. Room 5 was similar in shape and dimensions to Room 3 and laid out in much the same fashion with a fireplace flanked by slots at the northern end (Fig. 2: 7; Pl. II a, b), and a door in the south end of the east wall opening into Room 4. The fireplace was set 30 cm. up from the floor and had no hearth. Instead, tucked away in the north-east corner, between back wall and buttress, was a rectangular platform 0.80×2.00 m. supporting a small, stepped plinth made from the usual square mud bricks (Fig. 2: 6; Pl. IIa-c).¹⁰ Hidden away behind the plinth was a beautifully modelled and painted lower half of a leg, booted, with three anklets. This may have been part of a statue which once stood on the plinth.

The only other feature was a shelf, triangular in section, running the length of the south wall. A second storey, as in Room 3, seems likely but not proven. Again as in Room 3, the floor was covered with painted Luristan pottery and ribbed pithos fragments.

Unlike Room 3, Room 5 had three well defined secondary floor levels belonging to Phase II (Goff 1970, Fig. 5). The lowest, resting directly on the Level III destruction layer, linked up with the white pebble floor of Room 4 described below. The second lowest (Pl. IIIb) had an unevenly paved floor and hearth built against one of the buttresses. The third, just below the final wall collapse, was featureless.

It is not clear what happened to the door between Rooms 4 and 5 during Phase II. The well-defined red-plastered partition wall forming the door jambs stops at the level of the lowest II floor, and then appears again a metre or so higher up. Either, as I suggested in 1970, the arch over the door and the area surrounding it collapsed and the wall was then rebuilt on top of the debris, or as I now suspect, the upper part of the wall remained standing, and a jagged gap was left as a mean of passing between the two rooms. Later, as Room 4 went out of use, the hole was blocked with rubble.

Room 4. Room 4 was a large central hall $11.50-12.0$ m.¹¹ square. Its main features were: four dissimilar doorways, one to each wall; a fireplace with a fluted plaster surround; the remains of three column bases; ash pits; patches of stones along the east wall.

The door in the centre of the north wall (Fig. 3: 4; Pl. IVa, c) was set to one side of a small recess, 3.50 m. across by 0.80 m. deep with decorative, rabbetted edges. The high threshold was worn down to the stone foundations just in front of the door, suggesting that it had been in use for some time. The unworn portion, on the right hand side of the recess, could have been used as a seat. The door faced directly across to the main entrance in Room 2 and was obviously the focal point of the room, but a second decorative focus was provided by the fireplace and hearth on the west wall. It was surrounded by elaborate plaster fluting in the shape of waves (Fig. 3: 5; Pl. IVd). The tops of both doorway and fireplace had been destroyed by the Phase II reoccupation.

The door into Room 2 was originally found in 1968 with its arch preserved, though this had collapsed by the time the final photographs and drawings were done in 1969 (Fig. III: 3, Pl. Va, b).

¹⁰ Unlike the other doorways into Room 5, that from Room 4 appears to have had no door structure. The absence of a chimney in the published section of the fireplace would seem to be an oversight of the draughtsman. It was otherwise constructed in exactly the same way as the chimney in Room 3 with corbelled sides. Brick sizes in the plinth are as follows: $36 \times 37 \times 14$ cm. (top); others about $38-39$ cm. square and 10-

13 cm. thick.

¹¹ The original distance across the room from wall base to wall base was twelve metres, according to checks made with a tape in the field. In the published plan the distance is about half a metre less, and I suspect the surveyor failed to make sufficient allowances for the terrific bulge in the walls (see Fig. 4: 1).

It had the usual high threshold, worn in places to show the stone reinforcements underneath, and the wooden hinge post was still partially preserved as a mass of charcoal *in situ*. About a metre up from the floor, at a level corresponding to the Phase II reoccupation (though this is presumably purely coincidental) the doorway was flanked by two long rubble filled slits, between ten and twenty centimetres wide, running back into the thickness of the wall. The mud bricks lying immediately to each side of the doorway thus form crude pilasters, bonded in to the rest of their structure at their bases and backs only. There is no sign of similar slits in Room 2. At the top of the slits, on either side, are two layers of plaster sandwiched face together. It is possible that these plaster faces were originally separated by a wooden beam that ran across the top of the doorway and was supported by upright posts lodged in the slits—the door, in other words, once had a wooden framework. It is difficult to be more precise since the whole of this wall had bulged out of shape during Phase II.¹²

The doors into Rooms 3 and 5 have been described already. Red painted wall plaster was found up to the level of the Phase II floor on the jambs of the east, north and south doorways. The upper part of the southern wall was covered with a thick layer of straw tempered plaster, burnt black underneath, but covered with a shiny coat of whitewash. Either the original colour scheme comprised white walls with a red dado, or the walls were replastered and whitewashed in Level II. The floor was made of thick burnished plaster, yellowish on top and black underneath. There was very little pottery on it. Presumably the room was kept clean for some formal purpose—as a tribal meeting hall for instance—and domestic clutter was hidden away in the long rooms either side.

The good quality plaster floor, elaborate wall decoration, numerous burnt beams in the III destruction level, and lack of any form of drainage to the outside of the building, indicate that this large hall must originally have been roofed, and in fact we found the footings for three wooden columns. Column I was double shafted. The poles, which must have been tall thin tree trunks 25–30 cm. in diameter, rested on a flat stone placed in position before the floor was plastered. Their diameter can be calculated from the holes they left in the plaster. Column II was similarly constructed from a single pole 45 × 60 cm. wide. The third column base stuck up above the level of the plaster floor so we do not know the dimensions of its shaft. It could have been about 50 × 70 cm. The pit about 75 cm. in diameter in the southern side of the room does not appear to have been a post hole since it was filled with ash and plaster lined. Two other small plaster-lined pits could have held pots. There were patches of stones along the east wall and in the extreme north-east corner. The floor plaster ran over them and though they could have supported additional columns, there is no evidence that they did so. Since three columns alone seem insufficient to hold up such a wide roof, we have assumed a fourth column base somewhere under the central baulk forming the fourth corner of a trapezium. A thick, burnt tree-trunk, 60 cm. wide at its base, found lying on the floor orientated south to north, was probably one of the column shafts.

Room 4 seems to have been immediately reoccupied in Phase II but then to have gone fairly rapidly out of use. In the southern half of the room there is a typical grey-green erosion surface lying over a lower floor of white clay mixed with gravel, resting directly on the III destruction debris. This white gravel floor was extremely irregular with numerous pits and drainage channels, but nothing that looked like a column base or post hole. Presumably after the fire the hall was not reroofed but became a central courtyard. It was also a natural water trap, and as the base of the walls accumulated water they weakened and began to settle and bulge out over the floor (see particularly the section, Fig. 4: 1 and Plate IVb). Eventually the yard was abandoned (and with it Room 2) and began to silt up or was deliberately filled in. There were a series of clear tip lines and bands of different coloured earth and wash running up against the south wall (Fig. 4: 1, strata 6 and 7).¹³ These tip layers were topped by a well defined ash line (stratum 5) and then by the whole of the upper part of the western wall which had

¹² In the published photograph, Pl. Vb, the top of the burning to the right of the doorway represents the position of the Phase II floor. The wall to the left of the doorway had bulged out so badly that a wedge of filling, later removed, was left in

position to prevent a possible collapse.

¹³ These erosion surfaces were originally described as "floors" (Goff 1970, Fig. 5). Now that we have dug out the whole room it is quite clear that they were merely tip lines.

collapsed or been deliberately pushed into the centre of the room (Pl. Ib). There followed more ash—possibly from the same fire—and then the wall foundations from Level I.¹⁴

The collapsed west wall of whitish bricks, packed solidly end to end to a depth of 1.50 m. right across the room, caused considerable problems when it was first discovered in 1967, but has enabled us to reconstruct the probable height and original appearance of the Fort. The existing stump of this wall still stood about 3.70–3.80 m. high before it started to keel over (Fig. 4: 2). The wall collapse extends two-thirds of the way across the room, and must have been at least eight metres long, even allowing for a slight fanning out of the brick courses at the far end (Fig. 4: 3). At this point there are a series of mouse holes above which lies the start of the collapse from the opposite wall at a slightly higher level. Assuming that some erosion took place from the top of the walls before they fell in the total height of the west wall must have been about twelve metres. Since this was the width of Room 4 as well, it seems likely that the builders were aiming for a perfect cube.¹⁵

It is not so easy to determine whether Room 4 was two storeys high or only one, how it was lit, and if the flanking rooms were of similar height or lower? The solution adopted here, albeit with some reservations, is that Room 4 was a single storeyed hall, rising above the surrounding long rooms, and lit by clerestorey lighting.

There is no evidence that the outer walls of Rooms 3 and 5 were anything like as high as the inner ones. The west wall of Room 3 stood only 2.75 metres high when excavated, but was probably rather higher. The east wall of Room 5 stood to a height of 3.25 m. and had a further 2.25 m. of tumble keeling over from it, giving a total minimum height of 5.50 m. (Goff 1970, Fig. 5). Another enormous section of wall collapsed into Room 1 (Goff 1970, Fig. 6, Section A–A). It is not clear which way this wall collapsed, but if the detached section fell from the east wall it must have originally stood at around 8.0 m. or more, if from the west (which seems more likely) 6.54 m. or more.¹⁶ The odd plastered feature further down to the left of the same section could be either the top of one of the walls, or possibly part of the porch which, on analogy with modern Persian buildings, could have shielded the top of the staircase as it emerged onto the roof.

If all the rooms were the same height, and there was no clerestorey, it is difficult to see how Room 4 could have been lit or ventilated. Admittedly we found no windows in the collapsed Room 4 wall, but then we did not clean up the whole surface systematically and small openings could well have been situated right up under the roof and destroyed before the wall fell in.¹⁷ Difficulties of lighting and ventilation as well as lack of any positive evidence in the section again make it unlikely that there were two storeys in Room 4 (but see below, p. 114), but Room 3 had a higher floor and possibly Rooms 5, 6, and 2 as well. The staircase could have led first to this upper storey via Room 2, and then on to the roof. The roof of Room 4 could then have been reached either by a continuation of the staircase, or by ladder as in villages to-day.

For a long time however, I hesitated to accept this interpretation because of the small number, irregular spacing, and apparent flimsiness of the Room 4 column shafts—especially the double columns in Post Hole 1. To the weight of the traditional mud and brushwood superstructure must be added that of the winter snow—quite considerable in this area of Luristan which is c. 1900 m. above sea level. I finally took the problem to Mr. John Garside, the head of the Department of the Environment in

¹⁴ Similar ash layers occur at the top of the Phase II deposit in Rooms 2 and 3. In Room 2 they are also associated with a wall collapse.

¹⁵ The immense height of the wall was first suspected from the cross section published in Goff 1970, Fig. 5. In 1969 we decided to document the wall collapse much more carefully but for various technical reasons—particularly the desire to maintain the north-south section intact—we were unable to get a second cut right across the room. The position of the three sections published in Fig. 4: 1–3, is shown on the section plan, Fig. 9. "J, South Section" shows the west wall breaking off and keeling over onto the layers of tip, and "R, North Section" shows the far end of the wall collapse. The height of

the wall, as shown in "J, North Section", is assumed to be constant the whole way along the side of the room, and this is backed up by our excavations the far side of the wall in Room 3. The wall collapse in the centre of the room is therefore lower than the stump of the wall from which it fell.

¹⁶ The collapsed wall is just over 1 m. thick suggesting the top of the narrower west wall rather than its thick eastern counterpart. It also indicates that walls became thinner in the higher parts of the Fort.

¹⁷ As for instance at Nush-i Jan. Stronach, *Iran XIII*, Pl. VIIIa, and Stronach, "Excavations at Tepe Nush-i Jan, 1967", *Iran VII* (1969), p. 13.

RAF Akrotiri, and an experienced builder. After hours of discussion we eventually came to the conclusion that Room 4 must have been about twelve metres high and overlooked the surrounding roofs, but it was difficult to prove this conclusively since certain vital bits of evidence were missing. The alternative solutions, however, were even less satisfactory than the one proposed.

1. It is possible, for instance, that Room 4 was *lower* than at any rate Room 3 and probably Rooms 1 and 2 as well, forming a sort of inner courtyard at first storey level—a solution I originally postulated for Manor 1.¹⁸ In this case Room 3 would be 12 m. high, Room 4 only 6 or 7 m. Inner courtyards, overlooked on two or more sides by second storey rooms, are fairly common in modern mud brick houses. In all the examples I have seen, however, the upper storey is always lightly constructed, often with an open front and wooden balconies. The section at Baba Jan shows that the wall continued, buttressed and unbroken, to roof level (Pl. 1b; Fig. 4: 1). Mr. Garside also pointed out that if Room 4 was lower than the surrounding rooms, its roof would act as a snow trap, drifts would accumulate in the corners, and increase rather than diminish the pressure on the roof.

2. Weather conditions also make it extremely unlikely that Room 4 was basically unroofed, with the column bases supporting a central canopy in the middle of a courtyard. Balconies are ruled out for the same reason.

3. Room 4 could have been two-storeyed, with the first storey slightly higher than the two-storeyed rooms surrounding it, allowing for small windows at the top of the ground floor rooms. This would mean that the four columns would only have to be about 7–8 m. high. They would however have to support a heavier superstructure—a second storey and more columns to hold up the roof. Besides there is no evidence for a higher storey in the section.

Mr. Garside then pointed out that it was not really possible, as I had hoped, to calculate mathematically whether four posts of the given diameter and height could support the given area of roof, since

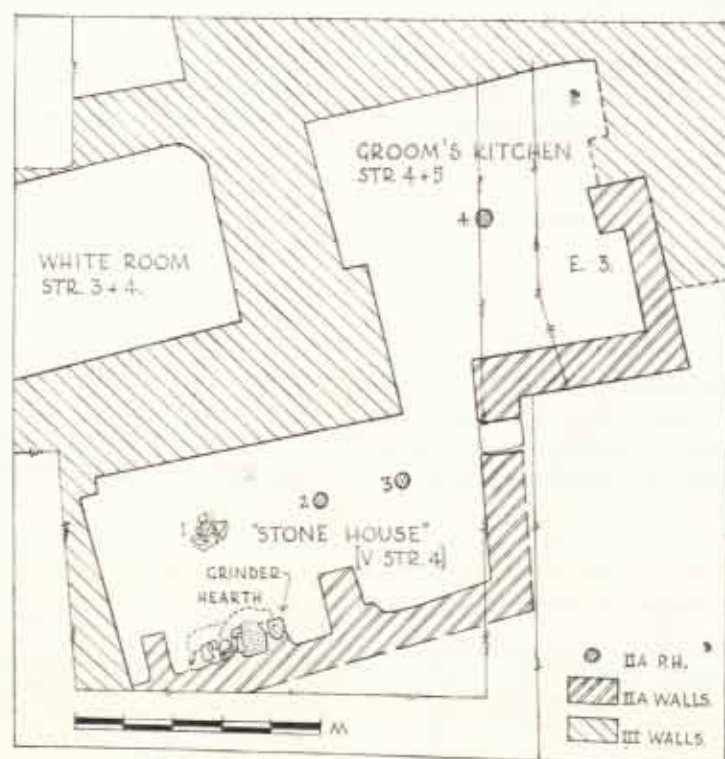


Fig. 7a. Plan of Level IIA.

¹⁸ Goff 1968, p. 115.

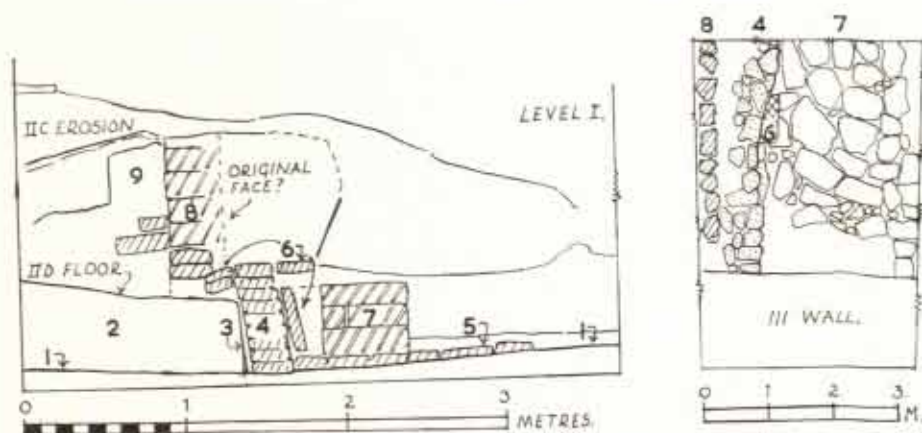


Fig. 7b. Annotated sketch of wall and bench structure in Trench D.

Key. 1. Level III floor; 2. Level III collapse; 3. Cut; 4. Level II stone retaining wall; 5. Contemporary paving; 6. Wall revetment; 7. Bench; 8. Later wall on high stone foundation; 9. Addition to later wall?

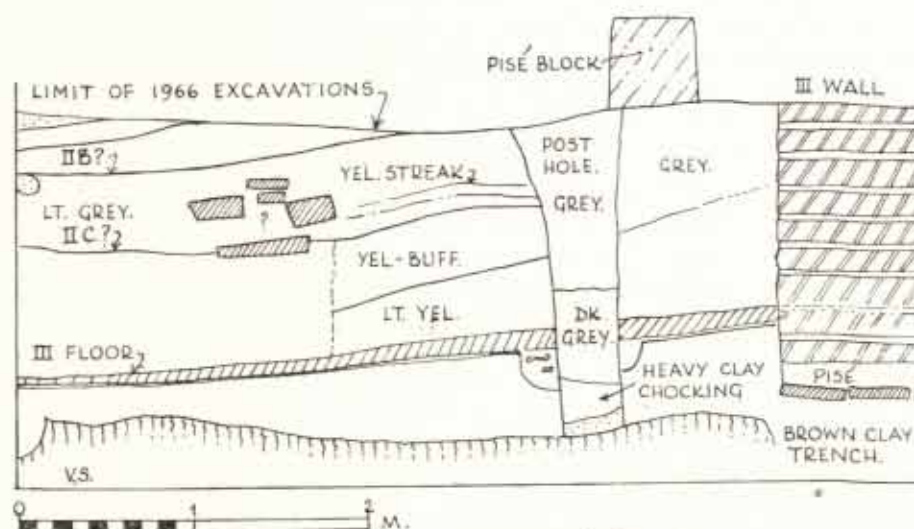


Fig. 7c. Trench A, West Section showing post.

too much depended on the type of wood used.¹⁹ Posts 2 and 3 looked substantial enough, but Post 1, with its double shaft, was puzzling. It suggested that timber of the right thickness and length had not been easy to come by, and the original shaft had had to be reinforced. At least one more post would have to be assumed under the baulk and it would help if the various pits or stone groups could also be made to support columns, or if we had somehow managed to miss a post hole to the north of holes 2 and 3, or south of hole 1. This way, none of the roof beams would need to exceed the five metre span employed in the long rooms 3 and 5, and most would be between 4 m. and 4.50 m.

However, if the Baba Janis could obtain tree trunks 12 m. high for their columns, they could find them for their roof beams as well. If one assumes that the two main beams ran in a north-south direction, the first over column 1 and its assumed pair, the second over columns 2 and 3, the secondary beams between them would then need to be no more than 4.0-4.50 m. The final line of roof supports appears to have been thin poles set close together (see the beams in section, Fig. 4: 1, and the roof plaster fragment Pl. IIIc).

¹⁹ Besides Mr. Garside, I also consulted the delegates of the 1972 Oxford Congress. Both Dr. R. H. Dyson, and Mr. M. Weaver, A.R.I.B.A., thought that the columns were adequate to

support a high roof, but I have since added a couple of metres to its height.

The problem remains, why did Room 4 have so few columns, so irregularly spaced in contrast to the Central Hall in Manor 1 or, for that matter, the halls at Tepe Nush-i Jan and Godin Tepe?²⁰ Again why such slender columns here, and such massive ones in the Painted Chamber? If big timbers were available, why not make use of them? The easiest solution is that we have missed a post hole.²¹ Failing this, let us assume for argument's sake, that timber adequate for roofing a five metre span was plentiful locally in the eighth century B.C. as it still is to-day.²² Anything longer than this, e.g. for column shafts, or primary roof beams, had to be imported from further into the mountains. The diameter and length of the shafts suggest that pine was used, which is not found round Baba Jan. The Painted Chamber had an immensely heavy roof; it was also important ceremonially—both good reasons for importing massive tree-trunks, 90 cm. thick. Even so two columns were considered adequate to support a ceiling 10 × 12 m. in area, made artificially heavier by the addition of more than 176 tiles. Room 4 was higher, but had no tile problem, it was probably less important ceremonially and conceivably built earlier than the Painted Chamber before the local chief had quite such widespread trading contacts. Hence he made do with lighter timber that was easier to import, and used the minimum necessary to support the roof. Manor 1 on the Central Mound had columns only 18 cm. in diameter and the roof was probably lower; hence although more columns would have been needed to roof an equivalent span, it would have been easier to find the right sort of timber locally. Other Iranian sites in the vicinity, such as Godin Tepe and Nush-i Jan, were built slightly later when the Medes were becoming a power in the Central Zagros, and presumably had bigger resources to draw on.

We do not know how the tops of the walls and roof were finished. The roofs may have been flat with slightly overhanging edges like those of modern village houses, but it seems more likely that there was some sort of a parapet behind which the defenders could hide in the event of an attack. There may even have been crenellated battlements of the type indicated by the Assyrian reliefs. In Fig. 5 I have provided the parapets with drainage channels at regular intervals, and they could even have been partially broken down every autumn and renewed in the spring to prevent too great an accumulation of snow on the roofs. Even without battlements (which proved difficult to draw convincingly to the right scale) the Fort looks remarkably similar to many of the Iranian strongholds portrayed on the Assyrian reliefs with parapeted roofs rising up one behind the other to a tower-like citadel in the centre.²³

Before going on to discuss the architectural parallels to the Baba Jan Fort, it remains to describe Rooms 7, 8 and 9.

Rooms 7, 8 and 9. Rooms 7, 8 and 9, were smaller and appear to have been built on a less massive scale than those in the centre of the Fort. The outline of Room 7 was obtained by scraping the surface at the level of the top of the Phase III walls. It was not dug out at all. Room 8 was only taken down as far as the highest Phase II floor. It was probably a living room on the lines of Room 9 since we found the top of a corner decoration, and a square-sectioned ash-filled chimney.

Room 9, "The White Room", was another long rectangular living room, measuring c. 3.75 m. across. We did not reach the far end, though, since doors in the other long rooms tended to be near one corner, the back wall could have been just beyond the south baulk. At the northern end was another

²⁰ M. Roaf and D. Stronach, "Tepe Nush-i Jan, 1970: Second Interim Report", *Iran* XI (1973), Fig. 1 and p. 131. T. Cuyler Young Jr., *Excavations at Godin Tepe: First Progress Report* (Occasional Paper 17, Art and Archaeology, Royal Ontario Museum, 1969), p. 28f. and Fig. 36. T. Cuyler Young Jr. and Louis D. Levine, *Excavations of the Godin Project: Second Progress Report* (Occasional Paper 26, Art and Archaeology, Royal Ontario Museum, 1974), Fig. 37. The wooden shafts of the Nush-i Jan columns measured only 25 cm. across the base (Stronach, *Iran* XIII, p. 187), thus comparing quite favourably with the Baba Jan ones.

²¹ Young, *Excavations at Godin Tepe*, p. 28 and n. 44 describes how his stone post supports were covered by a higher mud plaster floor, leaving the posts projecting from the floor without visible means of support, exactly as in PH. 1 and 2 in Room 4. The resulting holes were almost invisible and could only be found with a nail. The Baba Jan holes in contrast, showed up very

clearly as lighter circles of coarse textured earth in the dark, hard floor. A cross section of PH 2 showed that there was no original lower floor, but the stone was set into virgin soil. Time was running out at the end of the dig and it never occurred to us to take up the whole floor—the only way really to clinch the argument.

²² The excavations at Godin Tepe and Nush-i Jan again bear this out. See Roaf and Stronach, *Iran* XI, p. 132, n. 10, and Young, *Excavations at Godin Tepe*, pp. 28–9.

²³ See the numerous examples published by Yigael Yadin, *The Art of Warfare in Biblical Lands* (1963), particularly pp. 424–5 (Kharkhar and Pazashi) and p. 446 (Hamanu). Surprisingly enough, in view of the other parallels with Nush-i Jan and Godin Tepe, there was absolutely no evidence for arrow slits as in Stronach, *Iran* VII, pp. 13–14; Young and Levine *Excavations of the Godin Project*, Pls. XXIII–XXVII.

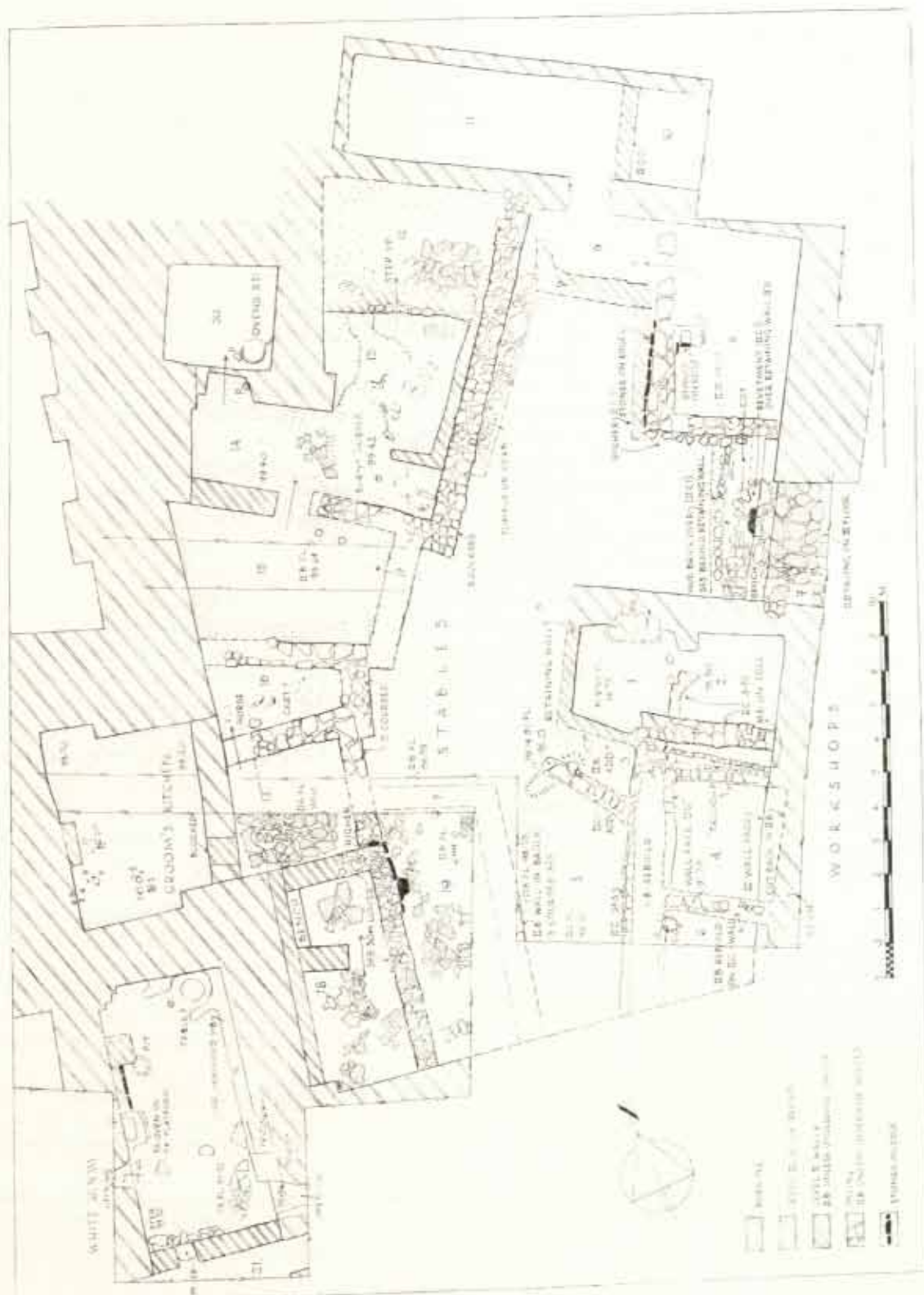


Fig. 8. Plan of "Squatting levels", IIB, C and D.

A-shaped fireplace with a large platform in front in lieu of a hearth (Pl. VIa). There were several pits in the floor and a flat stone half way up the room could have supported a single column. As with rooms 5 and 3 the floor was covered with broken pottery, including a smashed pithos (on the platform) and a beautiful double handled vase decorated with small deer between hatched kites. In the north-west corner was a decorative moulding, and the walls were of white-washed plaster, surprisingly unburnt. There was no burnt debris on the floor either, but the smashed pottery would seem to equate with the usual III destruction level.

Level II. Immediately after the destruction, a wall seems to have been built across the southern end of the room, sealing off its two doors. The stone foundations, here standing six courses high, rested on the Phase III floor. In the corner between the stone foundations and the western wall of the White Room was an L-shaped arrangement of bricks resembling a bench (Pl. VIIc). However, the first of the Level II floors, Stratum 6, is level with the top of the bench (Pl. VIIb), and the threshold of the door through the secondary wall is a good metre higher, lining up with the later floor, Stratum 5 (Pl. VIb, VIIa). It seems that after the III destruction the floor of the White Room was at a lower level than the rest of the reoccupied areas because of the lack of burnt debris. The squatters decided to make good this deficiency by building a wall across the room and then filling it up artificially. The upper part of the fill above Stratum 6 is arranged in suspiciously regular tip lines, and the original white plaster is preserved to the level of the Stratum 5 floors, suggesting a rapid build up of deposit. Stratum 6 would thus seem to be an interim stage in this build up (see Fig. 12: LE, South Section).

Stratum 5 (that illustrated on the main plan of Phase II, Fig. 8) was evidently of long duration. There were two floors, 5a and b, a good 20 cm. thick (Pl. VIIa), and in the later phase, a, several modifications were made to the original plan. In 5b a clay bench was constructed along the east side of the room by cutting back the eastern wall and adding a line of unbonded bricks along its face. At its southern end a raised plaster edge was still preserved, suggesting that it served as a trough or shelf (Pl. VIId). A shorter *pisé* bench along the opposite wall was sandwiched between two low buttresses. The southern end of the trench was stone paved, and there was a stone step in front of the door. In 5a the *pisé* bench went out of use, but the buttresses supported small clay ovens (Pl. VIIe, f). There were also some odd *pisé* structures—tables, pot supports—at the northern end of the trench. The other unusual features were two “windows” which faced each other diagonally across the southern end of the room, roughly at 5b floor level (Pl. VIId, e). They were both filled with rubbish, and the western one was partly lined with stones. It is not certain if they went right through to the neighbouring rooms or merely formed cupboards in the thickness of the wall, and they may even be relics of earlier Phase III structures reused in the upper level. The east wall had been cut into above the fireplace at this level too (Pl. VIa). Stratum 5 was not burnt but there was a lot of charcoal in the fill. Above were the remains of two further floors, the upper one badly cut by Level I pitting.

Comparisons and conclusions

The closest parallel to the Fort is predictably Manor 1 on the Central Mound.²⁴ Both Manor and Fort have a central columned hall—albeit rectangular in one, square in the other—flanked on three sides by long rectangular rooms, and on the fourth by smaller rooms, one of which was a stairwell, lying immediately to the left of the main entrance.

Manor 1 is essentially a modification and partial rebuilding of Manor 2, which appears to have consisted of two long rooms flanking a courtyard, the whole surrounded by towers. To make Manor 1 the courtyard was roofed in with the aid of columns, and the towers were either rebuilt as side rooms or incorporated into the main structure.

The interesting thing about this sequence is that although the Fort and Manor 1 have fairly obvious parallels with other first millennium Iranian buildings, Manor 2, from which they derive, looks much more like the traditional type of Middle Eastern building with rooms built on either side of a courtyard,

²⁴ For the next four paragraphs see Goff 1969, Figs. 2, 3, and 4 and the discussion on pp. 117–22; also Goff-Meade 1968, pp. 112–15.

still found all over Luristan to-day. The large protruding towers are again still found locally surrounding modern fortified houses, and may again go back to a pre-Iranian tradition.²⁵ From Manor 1 onwards they disappear and it is tempting to see in the change of plan a reaction to the Assyrian revival in the late eighth century B.C. A building in the style of Manor 2 is excellent for controlling the surrounding plain, or as a protection against nomads, but would have been highly vulnerable to Assyrian battering rams and burrowing techniques because it had so many exposed corners. Manor 1 and the Fort are far more compact.²⁶

If Manor 2 does draw on Elamite or other non-Iranian architectural traditions (and the lack of any excavated monumental second millennium architecture from Luristan makes this impossible to prove) this is hardly surprising. There are several other non-Iranian elements in the Baba Jan III culture—the pottery motifs and numerous features of the bronze industry itself—and Elamite or Kassite groups still probably occupied the western part of the province.²⁷

The two features of Manor 1 and the Fort that are paralleled in other first millennium Iranian buildings are the columned halls and the assumed clerestorey in Room 4.

The halls at Nush-i Jan and Godin Tepe stand on their own and are not flanked by rooms of similar length to form a residential unit. Closer parallels are provided by the Burned Buildings of Hasanlu,²⁸ though here again the resemblance is not so close as it appears at first sight. The original unit, as revealed by Burned Building II, was the hall together with the antechamber and stairwell, and Dyson argues that "the buildings grew by accretion with storerooms being added as needed". Burned Building III—the edifice most like the Baba Jan halls—is more compact and looks as if it could have been planned as a unit with the exception of the second portico. If, as Young suggests,²⁹ it was built slightly later than Burned Building II it could have evolved from it, and its resemblances to Manor 1 and the Fort be the result of parallel evolution rather than direct cultural influence.

Again, if the flanking rooms of the Burned Buildings, albeit two storeyed, were not as lofty as the central halls, this could have permitted clerestorey lighting of the type we have assumed for Room 4. However if, as Young argues,³⁰ the Burned Buildings were in the same architectural tradition as the Greek and Anatolian megara, there was also a large hole in the roof to get rid of the smoke from the central hearth and admit light and air. This hole would have corresponded to the paved area with soakaway drain found in the centre of all three Burned Buildings. If there were balconies round the side of the room, clerestorey lighting could have been used to illuminate them rather than the centre of the hall.

A paved area with a drain was found on the east side of the hall in Manor 1, together with scattered open hearths, suggesting that this building too could have relied on light-wells rather than clerestorey illumination. In the Fort the stone patches along the east side of the room are fragmentary and not associated with any form of drainage, and central hearths had been abandoned in favour of fireplace and chimney structures in the thickness of the walls, thus solving the smoke problem. The big central hole in the roof, which must have let in all the elements in winter, was no longer needed, and the transition from central to clerestorey lighting was complete.

Clerestorey lighting appears to have been relatively common in later Achaemenid palaces, though often surprisingly difficult to prove. It is best attested at Pasargadae where the central columned hall of

²⁵ A striking parallel to Manor 2 can be seen west of the Burujird Road. A big school house—obviously once a farm—appears to consist of two sets of rooms, one with an upper storey, facing each other across a courtyard. The high outer wall is set with semi-circular towers. I attempted to visit this building in order to study it further, but was mobbed by a crowd of little boys and had to retreat. Single storeyed houses with two rows of rooms facing each other across a courtyard—one side for living, working and cooking, the other for formal entertaining—are found all over Khorramabad and Kuh-i Dasht.

²⁶ On the whole problem of the change in military architecture that took place all over the Middle East after the reign of Solomon, see Yadin, *The Art of Warfare*, p. 323f.

²⁷ The designs most obviously derived from the Bronze Age are

the ubiquitous "kites" and the "Kassite Cross". See Goff Meade 1968, p. 126, n. 53. For the bronzes see E. Porada, "Nomads and Luristan Bronzes", *Dark Ages and Nomads c. 1000BC* (1964), ed. M. J. Mellink, p. 75 f. Sennacherib's account of his second campaign show that the Kassites were still in Luristan at the end of the eighth century—a point to be more fully documented in my next article.

²⁸ R. H. Dyson, "Problems of Protohistoric Iran as seen from Hasanlu", *JNES* XXIV (1965), pp. 198–9 and Figs. 4 and 5. T. C. Young Jr., "Thoughts on the Architecture of Hasanlu IV", *Iranica Antiqua* VI (1966).

²⁹ Young, *ibid.*, p. 55.

³⁰ *Ibid.*, p. 62 f.

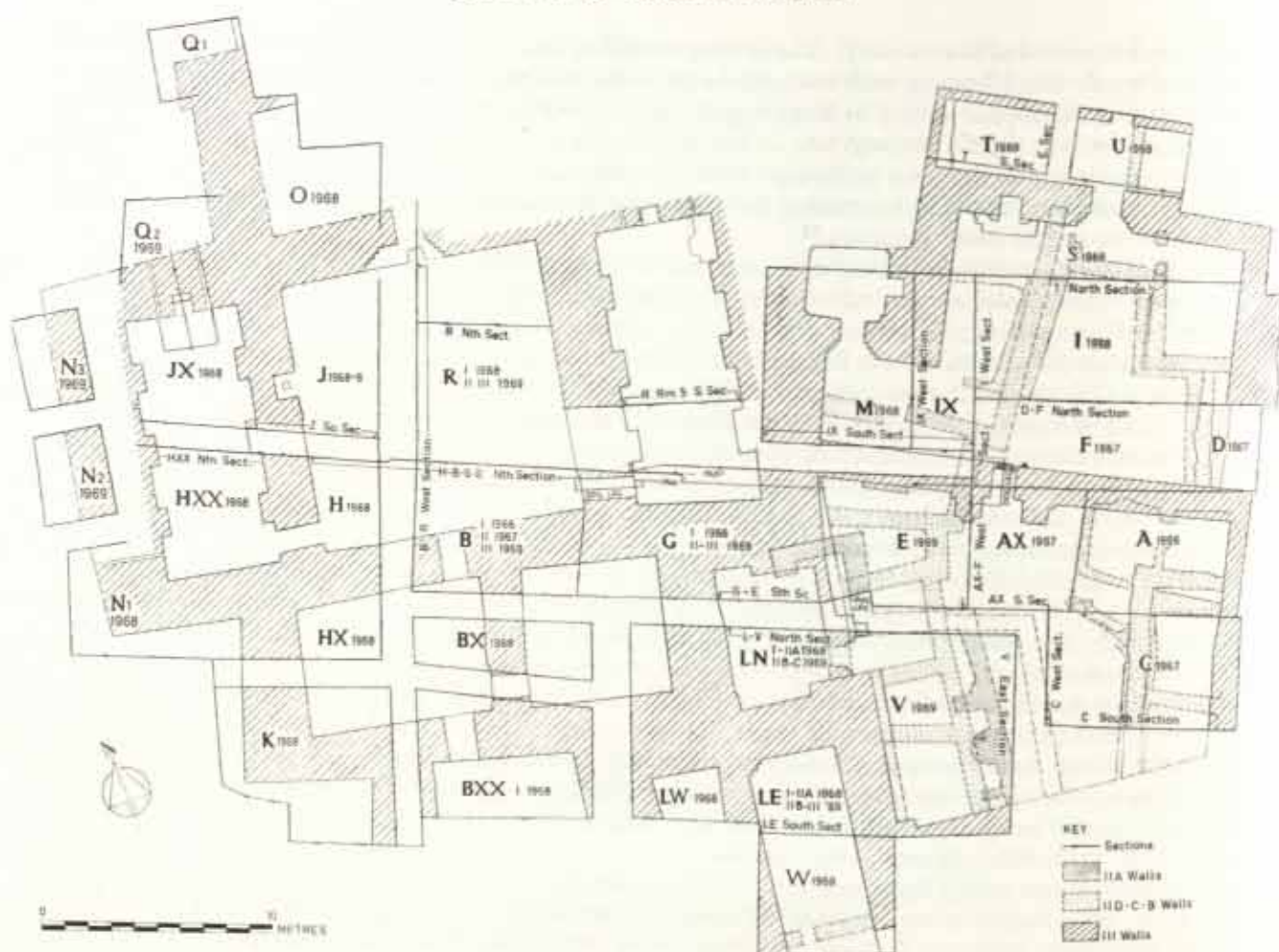


Fig. 9. East Mound, Trench and Section Plan.

"Palace S" seems to have been about three times as high as its surrounding porticos; that of "Palace P" just under twice as high. The open colonnades which replace the long rooms and store rooms of Baba Jan and Hasanlu could have been derived from the Greek *stoa* as Nylander suggests, and would have been made possible by the milder climate of Fars.³¹

There seems to have been no clerestory in the "Apadana" at Persepolis, for the columns of the three flanking porticos are virtually the same height as those of the central hall. Even allowing for the presence of mud brick windows in the upper part of the high walls, opening on to the porticos, the interior must have been somewhat gloomy. Elsewhere Schmidt argues in favour of clerestory lighting for the "Hall of 100 Columns", "Treasury", and "Harem".³² In each case the main columned halls, and their porticos where present, would have been raised up above the surrounding corridors and storerooms. Schmidt's main argument is the one developed above for Room 4 at Baba Jan—how else could these halls have been lit? There is therefore a strong presumption that the clerestory was an integral part of Achaemenid palace architecture, and derived, like the columned hall, from a native Iranian tradition. The sequence of Manors and Fort at Baba Jan throws welcome light on how this tradition developed.

³¹ Estimates for the dimensions of "Palace P" and "Palace S" vary. According to Carl Nylander, *Ionians in Pasargadae* (1970), p. 109, the central columns of "Palace S" were about 13.44 m. high, excluding the capital; those of the porticos, about 5.10 m. In "Palace P" the portico height was about 6.5-7 m. and the central area probably stood 10-11 m. high

with columns of 9.5 m. This last measurement is deduced from the size of their bases. For the *stoa* see *ibid.*, pp. 117-21.

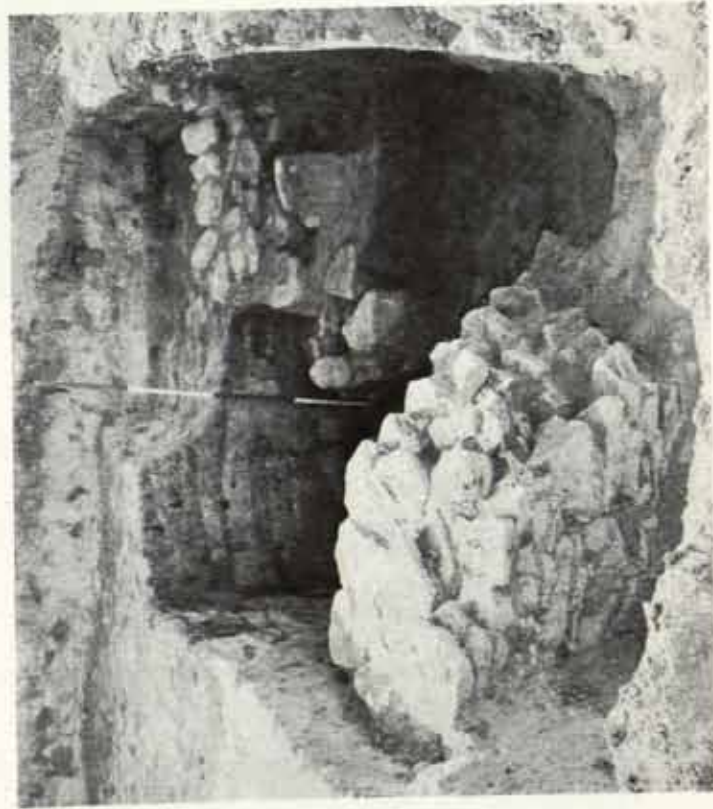
³² Schmidt, *Persepolis I* (O.I.P. LXVIII), p. 80 ("Apadana"); p. 132 ("Hall of 100 Columns"); p. 172 ("Treasury"); and p. 258 ("Harem").



Pl. Ia. East wall of Room 3.



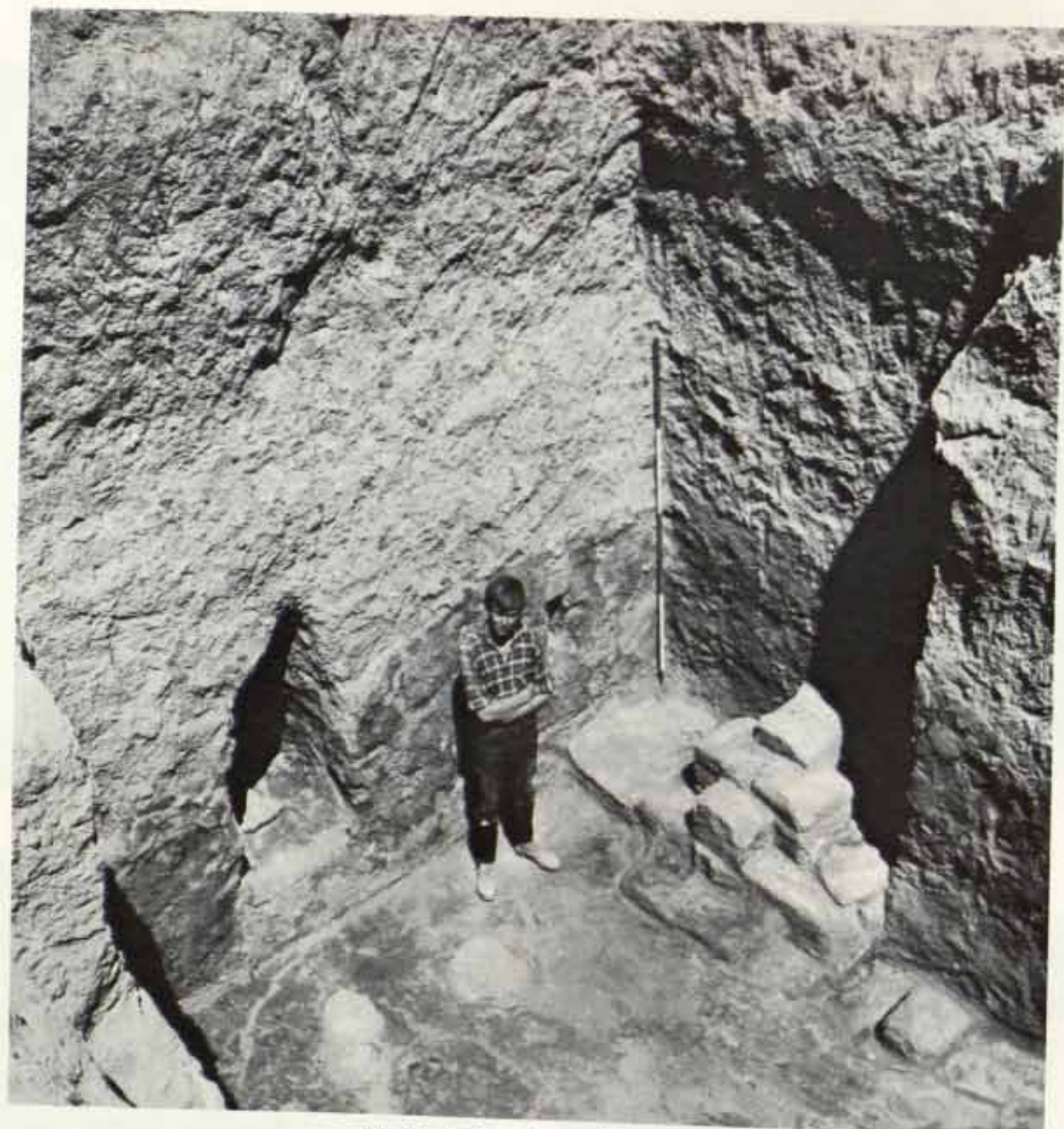
Pl. Ib. Section through fallen wall in Room 4.



Pl. Ic. Corner of Room 2 in Trench K.



Pl. Id. Fireplace and walls in North Annex.



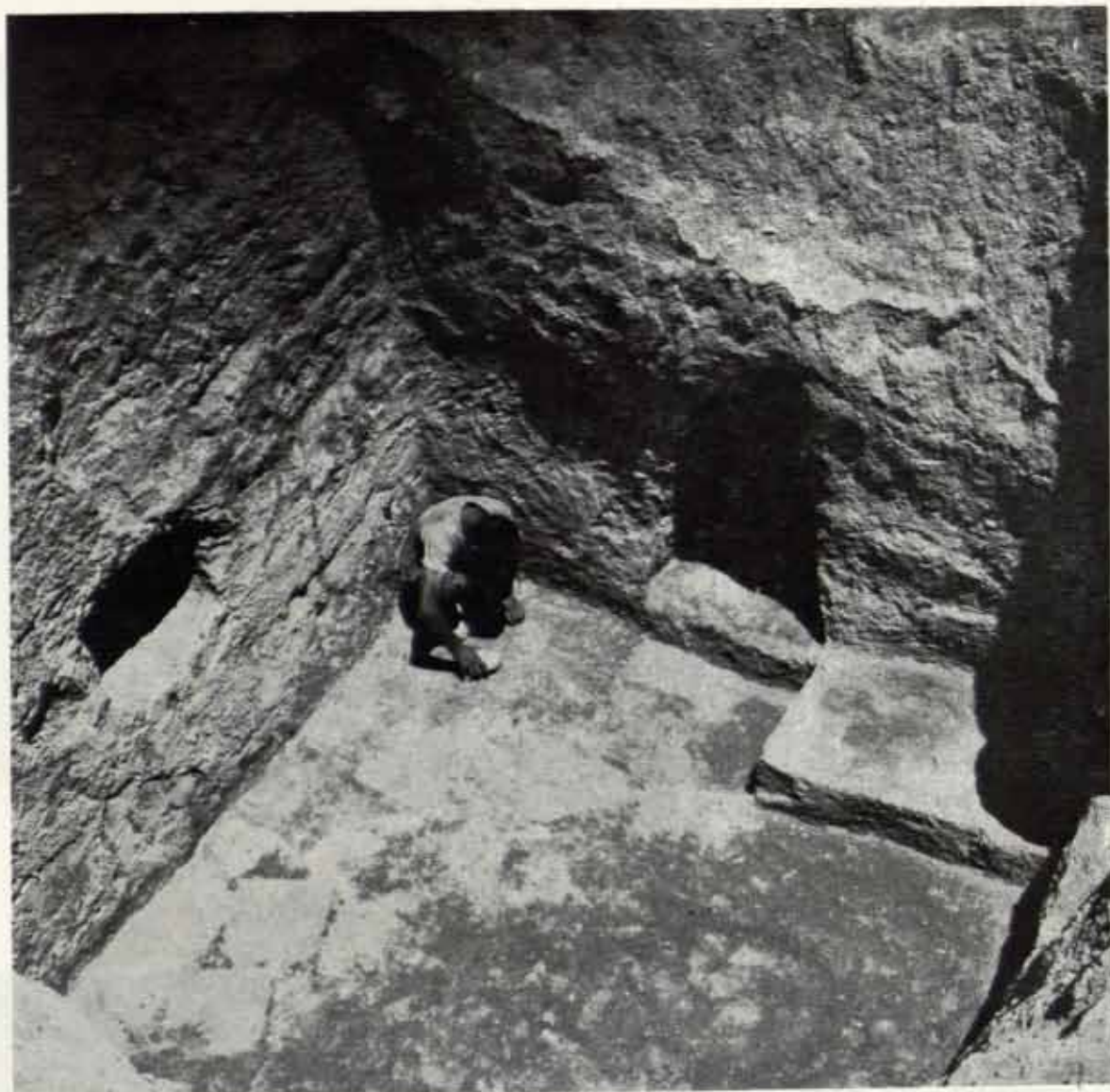
Pl. IIa. North-east corner of Room 5.



Pl. IIb. North wall of Room 5.



Pl. IIc. Podium.



Pl. IIIa. Room 20, north-east corner.



Pl. IIIb. Room 5, Level IIb.



Pl. IIIc. Fallen roof plaster showing beam impressions.



Pl. IVa. Room 4, north door.



Pl. IVc. Room 4, north door, right hand side in process of excavation.



Pl. IVb. Room 4, door into Room 5 showing bulging south wall on right.



Pl. IVd. Room 4, door into Room 5 showing bulging south wall on right.



Pl. Va. Door between Rooms 2 and 4 from Room 2.



Pl. Vb. The same from Room 4.



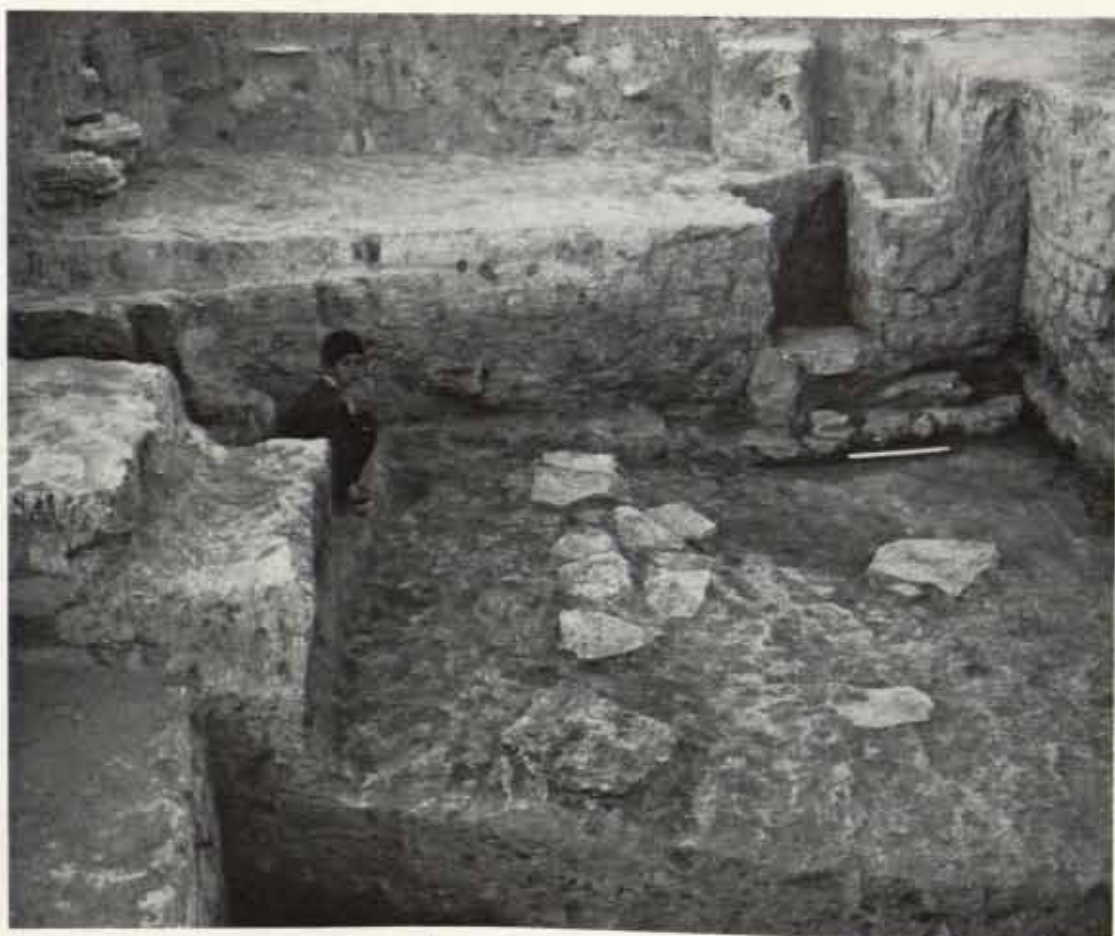
Pl. Vc. Doorway into Painted Chamber (photo, K. Prag).



Pl. Vd. North-west corner of Courtyard: buttress and Level II replastering.



Pl. VIa. North end of White Room, Level III.



Pl. VIb. South end of White Room, Level II, Stratum 5b.



Pl. VIIa. South end: II wall and Stratum 5a and 5b floors.



Pl. VIIb. South end: Stratum 6.



Pl. VIIc. South end: Stratum 7 (Level III) floor and "bench".



Pl. VIId. South-east corner: Stratum 5 "bench" and "window".



Pl. VIIe. South-west corner: Stratum 5 "window" and "oven".



Pl. VIIf. North-west corner: Stratum 5 "bench" with remains of "oven".

Pl. VIII. Architectural details from the Painted Chamber.



Pl. VIIIa. Blind window.



Pl. VIIIb. North doorway.



Pl. VIIIc. Column base.



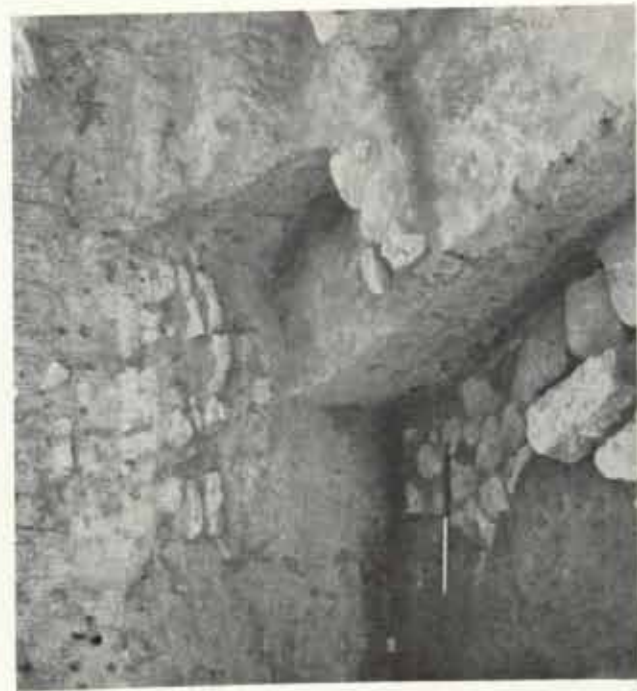
Pl. VIId. Stone foundations below Level III showing construction from east wall.



Pl. IXa. Wall of Room 10 running into baulk.



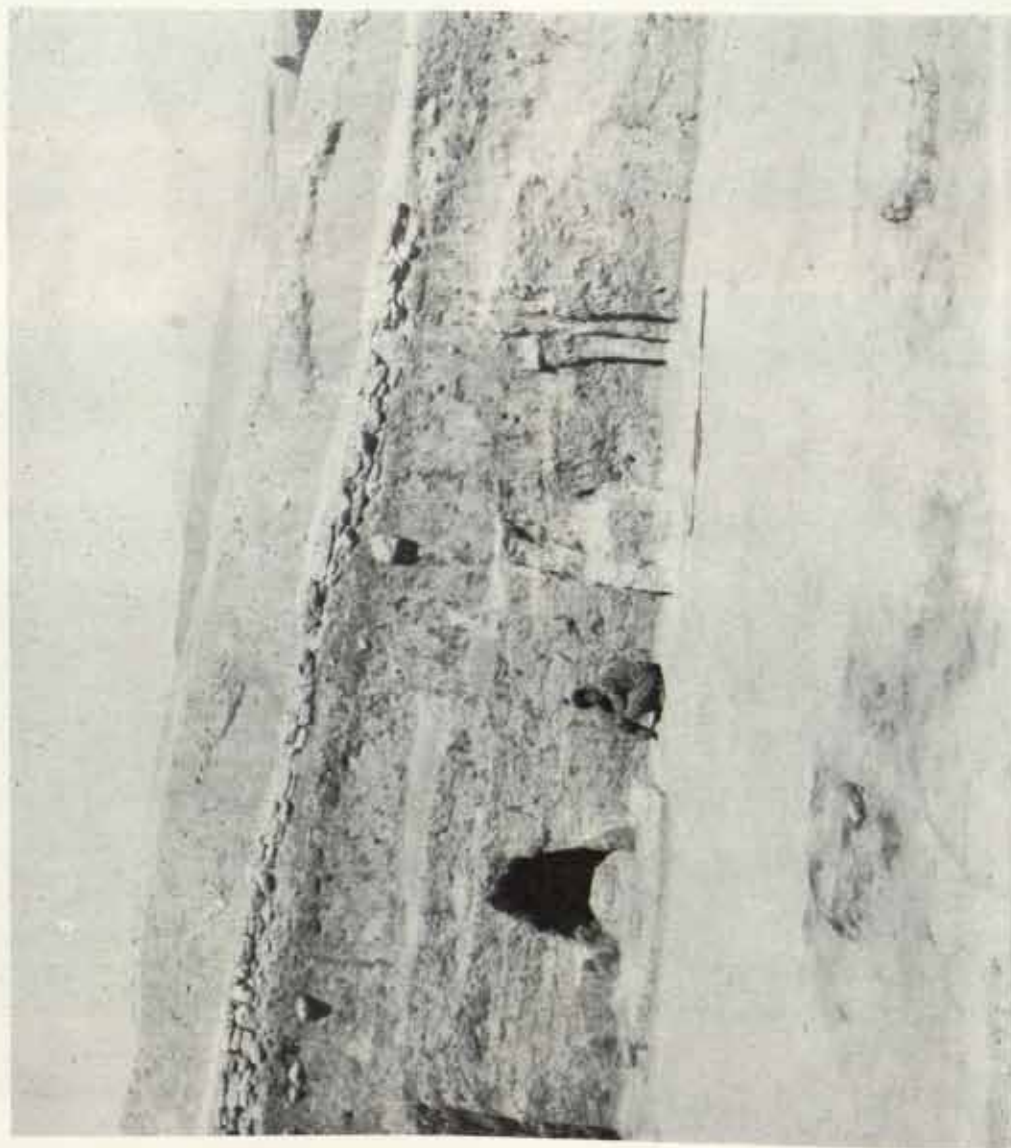
Pl. IXb. Wall of Room 10 with buttressed doorway emerging from baulk; also Hb "manger".



Pl. IXc. South-east corner of Trench V showing IIA wall in section, stump of IIB wall and III paving.



Pl. IXd. South-west corner with "cupboard" and pit.



Pl. Xa. Painted Chamber, north wall.



Pl. Xb. Painted Chamber: Tiles 45-57 emerging below II wall.



Pl. Xc. Painted Chamber: Tile collapse.



Pl. XIa. Trench C looking east: original IIc wall footing.



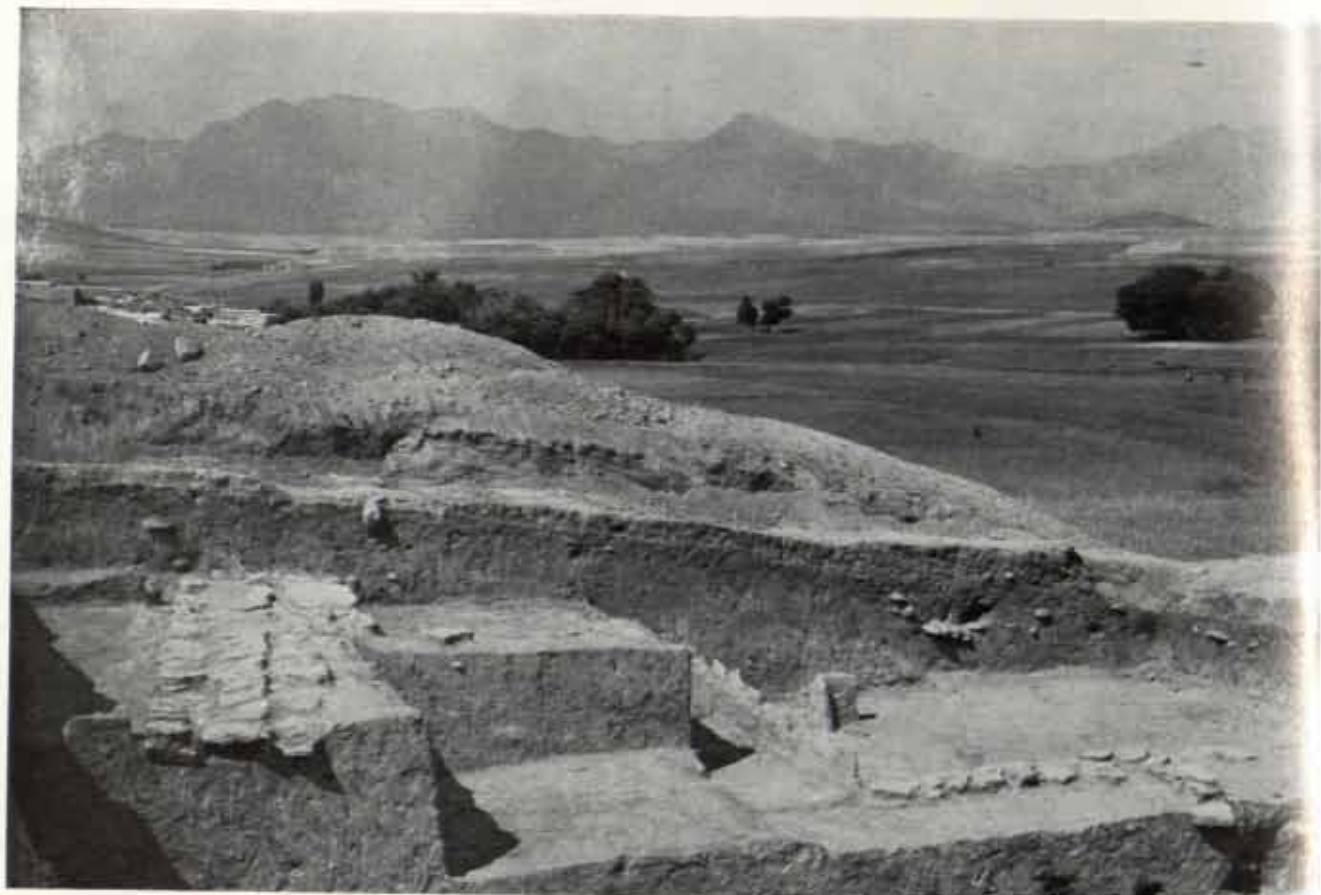
Pl. XIc. Wall between Rooms 5 and 3.



Pl. XIb. The same: Levels IIB-C.



Pl. XIId. Wall between Rooms 6 and 4



Pl. XIIIa. Trench I, Levels IIB-C looking north.



Pl. XIIIb. The same, looking east.



Pl. XIIIa. Trench D, wall and bench structure IIC-D. III stone foundations in front.



Pl. XIIIb. The same with bench cut back to show the face of the IID retaining wall.

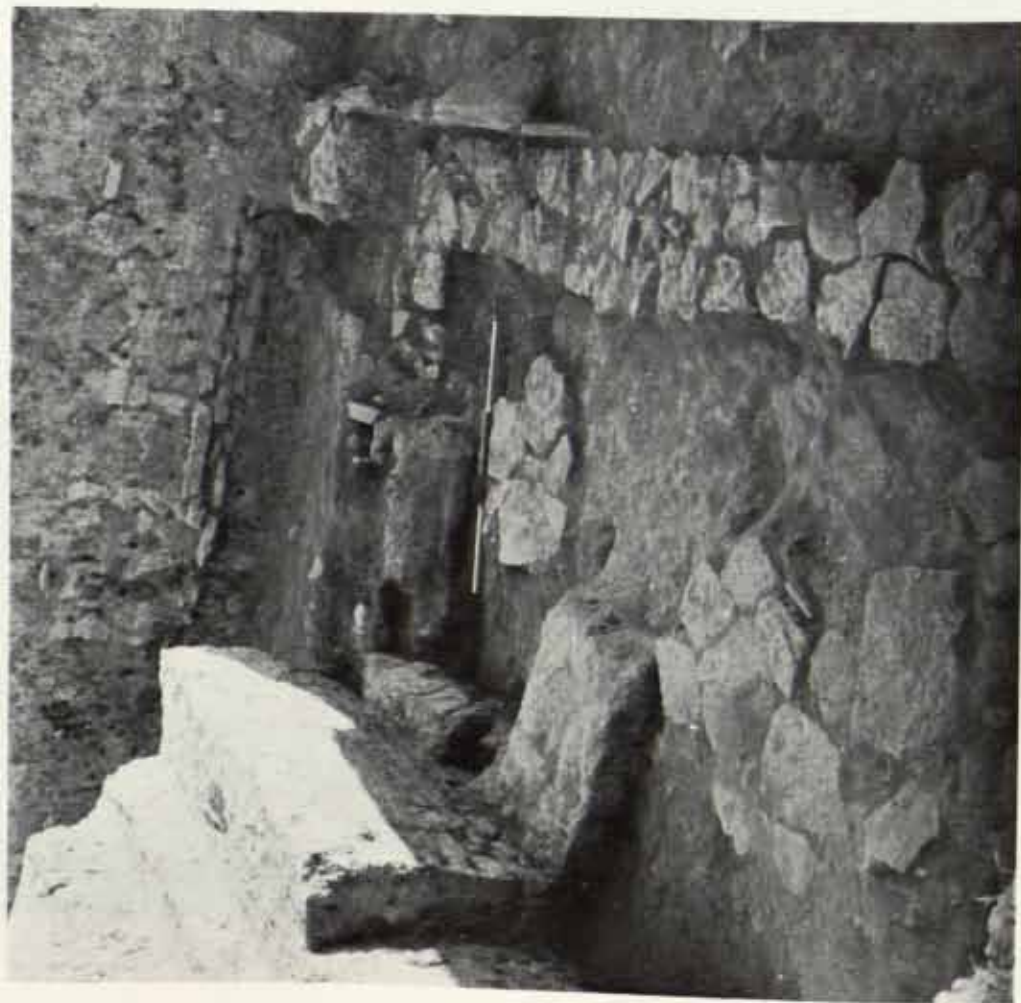


Pl. XIIIc. Trench D, top of IID retaining wall with later wall footing to the right.



Pl. XIId. Trench A, IIC wall footings with "drain".

Pl. XIV. Architectural details from Level II, Rooms 18 and 19.



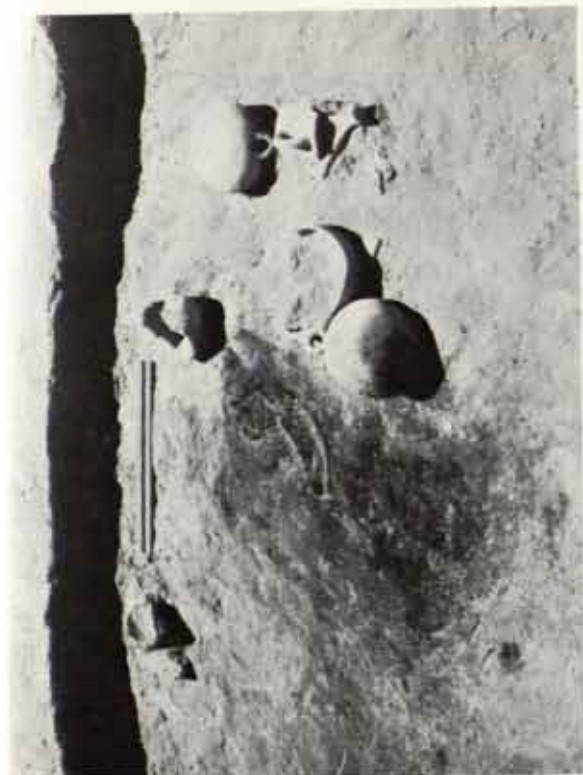
Pl. XIVa. Level IIB, Room 18; terracing up to Room 17 in top right hand corner and IIA wall in section above; IIA posthole in IIB wall behind scale.



Pl. XIVb. The same before the removal of the IIA wall and open on right.



Pl. XVa. Close up of IIB terracing between Rooms 18 and 19.



Pl. XVb. Pots on floor of Grooms Kitchen, Level IIB.



Pl. XVc. Trench V, IIA oven overlapped IIB wall.



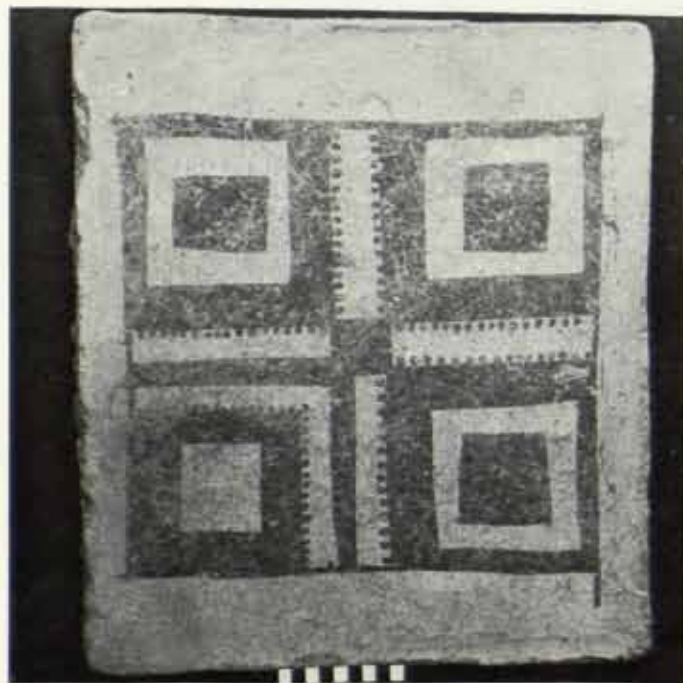
Pl. XVd. Pots on floor of Grooms Kitchen, Level IIB.



a. Standard.



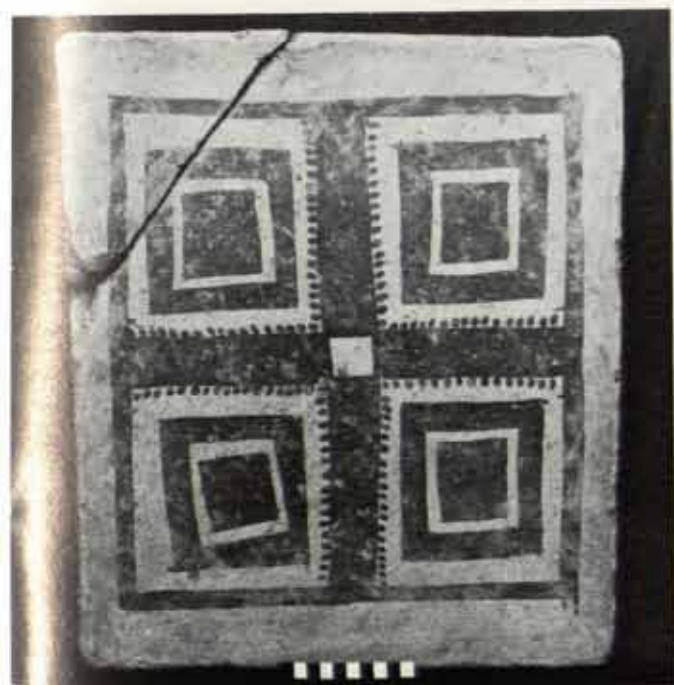
b. Tile 167.



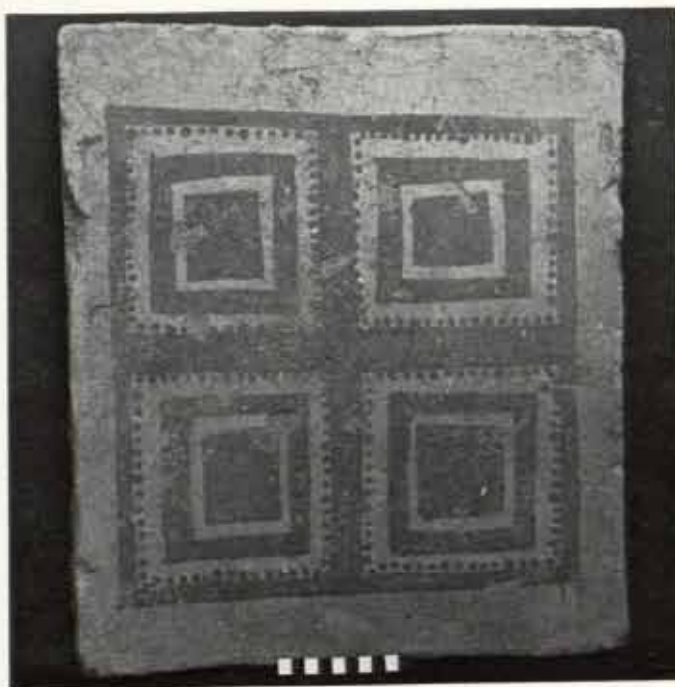
c. Asymmetric Standard.



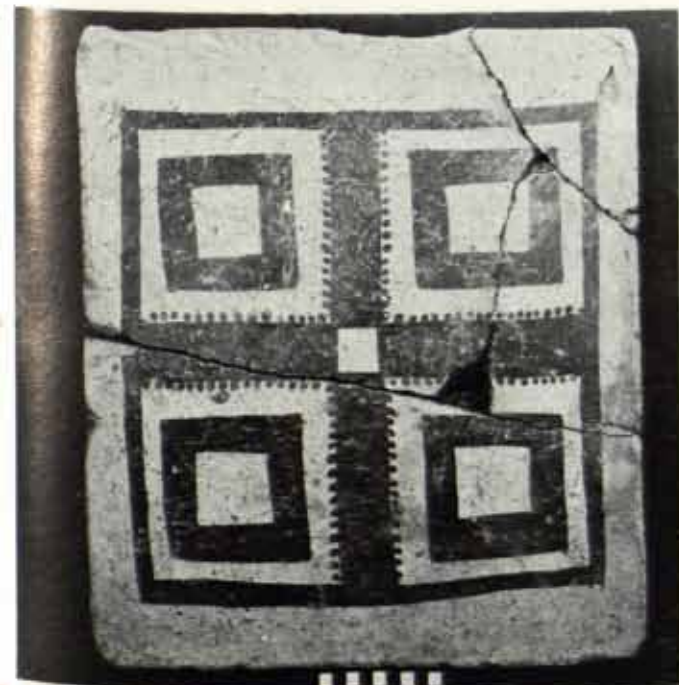
d. Tile 56.



a. Reverse.



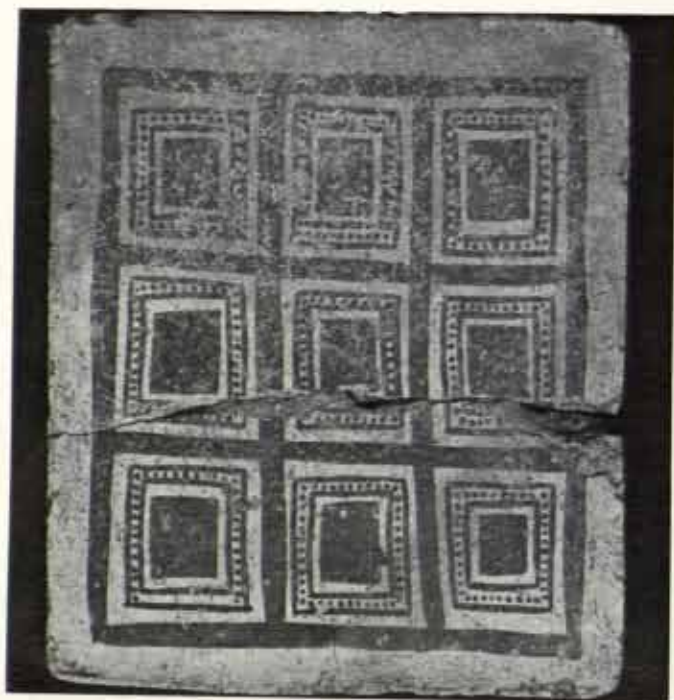
b. Tile 119.



c. Tile 123.



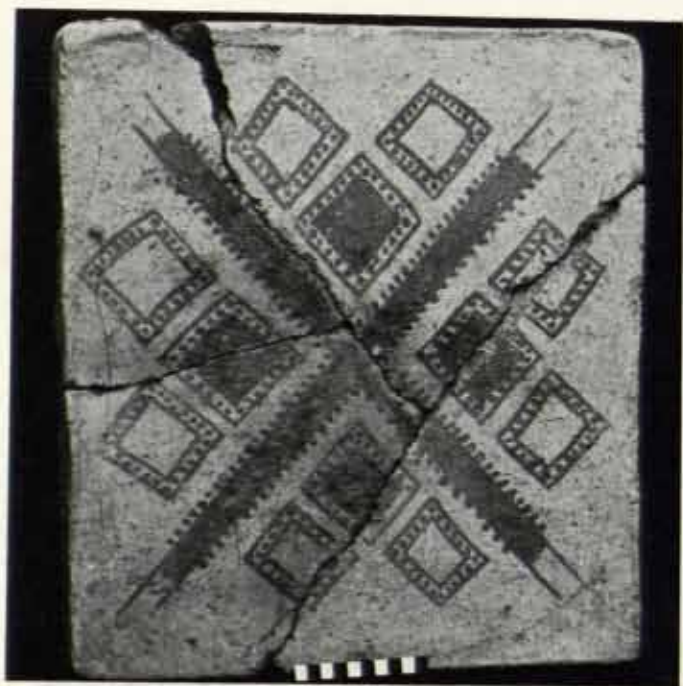
d. Tile 171.



a. Tile 62.



b. Tile 92.



c. Tile 84.



d. Tile 108.



a. Tile 110.



b. Tile 99.



c. Tile 103.



d. Tile 101.

Pl. XX. Burnt horse or donkey skeletons from stables.



Pl. XXa. North-east skeleton from Room 13.



Pl. XXc. South-west skeleton from Room 13.



Pl. XXb. Head of south-west skeleton from Room 13.



Pl. XXd. Horse skull in north-west corner of Trench F (photo, K. Prugl).

The Painted Chamber, Annexes and Courtyard

The Painted Chamber has already been described in detail in earlier reports.³³ Here I propose merely to comment on features that emerged during the final season or were omitted from earlier articles.

Room 20 leading off the West Annexe measured c. 3.0×3.30 m. (Pl. IIIa). It had an elaborately recessed doorway and doorstep one brick thick, but no hole for a hinge post (Goff 1970, Pl. Ic). The corners of the room were ornamented with small, square-sectioned pilasters. In the east wall was another A-shaped fireplace with the usual plastered hole, a hearth offset to the right covered with the remains of some yellow pigment, and traces of a brick ash box protruding from the left which had been virtually destroyed (Fig. 3: 1). The walls were covered with red painted plaster. The elaborate decoration suggests that the room had some formal function—perhaps the chief's private retreat. We found little pottery on the Phase III floor, but in the level above (IID) were the remains of two circular clay bins or ovens, a great deal of burning, and some painted Luristan jars.

The North Annexe in contrast seems to have been a kitchen. Although we only excavated its western end it presumably ran the whole length of the Painted Chamber. Just inside the entrance was a slot 10 cm. deep which presumably held a wooden beam reinforcing the mud brick step, but again there was no post hole. There was a mud-brick bench at the eastern end, a rough semi-paved floor and a fireplace in the back wall—cruder than usual with an ash pit in front and no hearth (Pl. Id). It may have been where the eighth century B.C. equivalent of tea was brewed for visiting dignitaries. The stone foundations for a cross wall in the centre of the room were probably early phase II, while a solid mass of mud brick immediately to the east of this seems to have fallen from the upper part of the walls.

The Painted Chamber. In the final season we took up the floor of the main hall. It had been carefully constructed of square mud bricks with the massive column bases set well below the surface (Pl. VIIIc). The low east wall had a short length of stone foundations protruding from its southern end below floor level (Pl. VIId) suggesting that the Chamber may originally have been planned as a smaller, rectangular unit. Two Bronze Age graves, also found below the floor, have been described elsewhere.³⁴

The original decoration of the Chamber and Annexes could be reconstructed from patches of painted plaster still adhering to the walls. The southern wall had a low line of burnt red plaster running along its base, never more than 6 cm. high and curving in to meet the floor. It had been preserved behind fallen roof debris. The west wall containing the blind window had either two superimposed coats of plaster, the earliest white, the later red, or else a red dado near the floor with whitewash higher up (Pl. VIIIa). In places the red paint looked rather stripy. The interior of the blind window was painted white; the fireplace, and the recessed door in the north wall, red. When we removed the *pisé* seat in front of the door we found the reveals continued behind it, and had had two coats of plaster, white under red (Pl. VIIIb). If the room was originally whitewashed, and then had had a red dado added, the decorative scheme would have been similar to that assumed for Room 4. The red plaster showed signs of having been burnt, indicating that it was in position when the room was fired.

In the West Annexe and Room 20 the scheme is slightly different. At the eastern end of the annexe there is a clear sequence of re-plasterings (Fig. 12: IX, South Section). Here there are three floors corresponding to Level III each with its own associated replastering of mud mixed with straw. The last of these, at least, was whitewashed. A further incomplete replastering, likewise whitewashed, was associated with the lowest of the squatting levels, IID. Finally there are patches of red plaster, 1.84 m. above the floor, continuing over on to the west wall. This plaster lies *over* the earlier white replastering of III and IID and presents a bit of a problem. On the face of it it represents a final replastering associated with the floor 29/21 (IIC?), a somewhat messy stratum described in greater detail below, when one would not expect to find elaborate interior decoration. It seems more likely to be part of a

³³ Goff 1969, p. 126 f. and Goff 1970, pp. 144–50, Pl. Ia, Ib, IIb, IIc. ³⁴ Goff 1976, p. 26 and Fig. 5b.

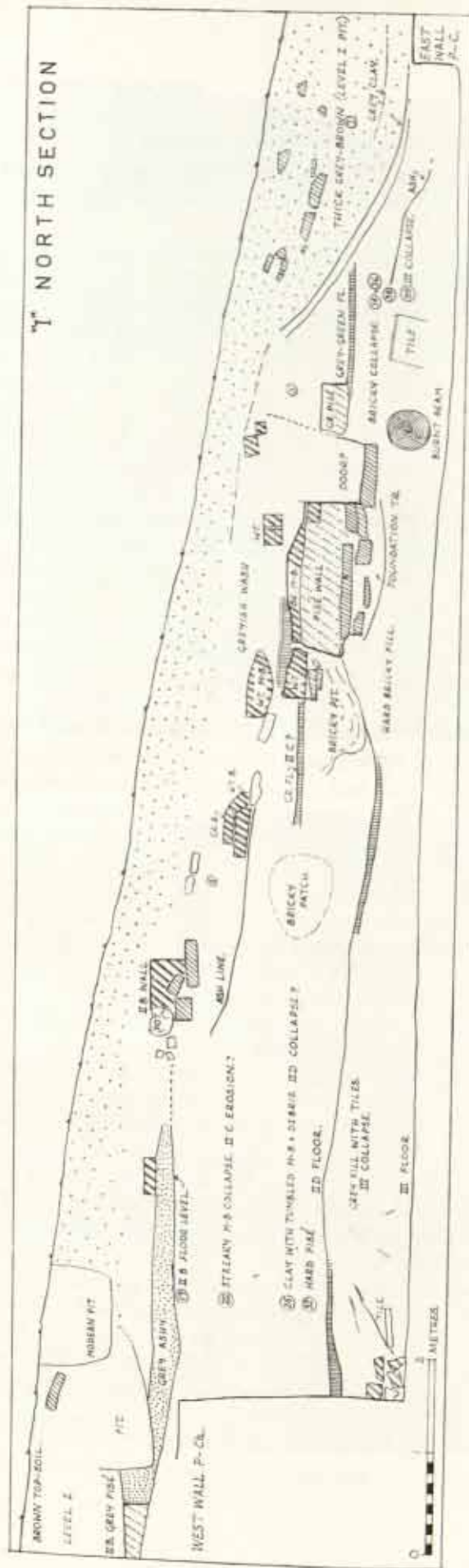
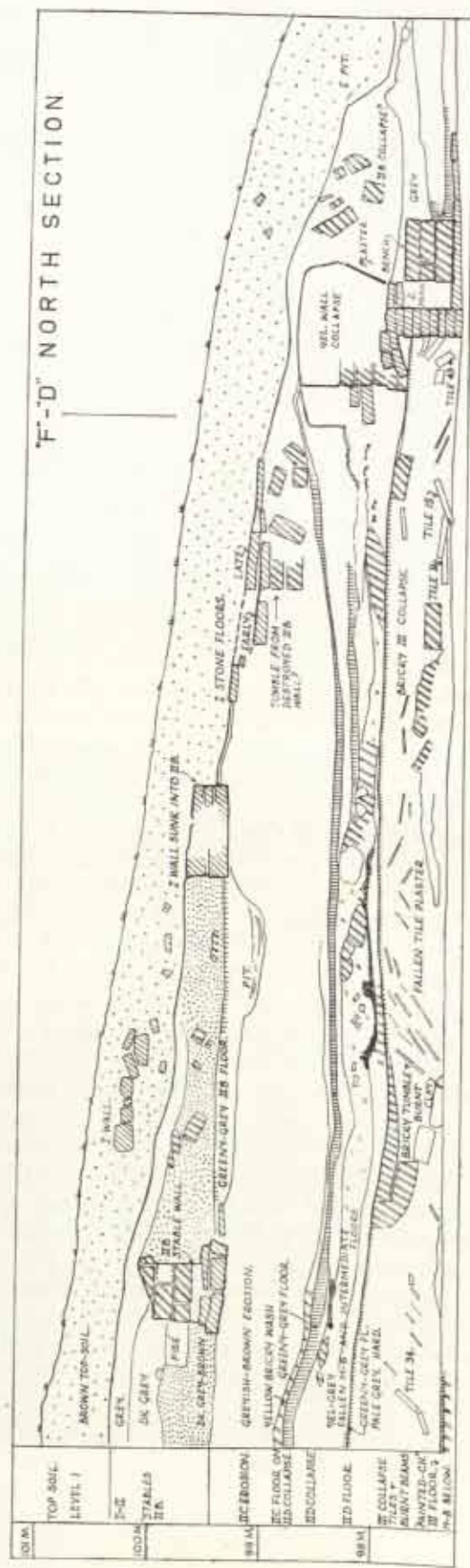


Fig. 10. Sections through Painted Chamber.

red frieze added in III or IID which somehow survived the re-building.³⁵ Room 20 seems to have been all red, or at any rate to have had a red dado, for red plaster was found by the fireplace and on the pilasters.

The Roof and Tiles. The painted tiles have been discussed in great detail in earlier reports.³⁶ To recapitulate briefly: they measured on average $47.0 \times 51.5 \times 6$ cm.; they were made of baked brick with a burnished, slightly concave face ornamented with geometric patterns in red (Fig. 16; Pls. XVI, to XIX). The sides were smooth, the backs rough, often with chunks of clay still adhering to them. Flat pieces of clay, obviously detached from the tiles, were also visible in section. The tiles were found in the Level III destruction debris. They lay jumbled up in three parallel rows on the floor and had obviously fallen there from some higher location (Figs. 10, 15; Pl. Xb, c). The solution that I put forward in 1970 still seems to be the only one that fits all the facts—namely that they were fixed to the ceiling between the main roof trusses and had fallen to the floor when the roof gave way.

According to Mr. Garside, who was kind enough to go over this problem with me too, the main roof beam probably ran from west to east, supported by the massive side walls and the 90 cm. diameter columns. Secondary beams ran from north to south between the central beam and the front and back walls—it is noticeable that the front wall was buttressed to help take the strain (below, p. 125). Tertiary beams filled in the gaps. This way, no beam (except possibly the original primary one) would have to be longer than 5.50 m., and most would fall into the 4.50 to 5.0 m. bracket which, as we have seen from the Fort, appears to be the standard length for a span.

The tiles by themselves would have been insufficient to cover the whole ceiling. We found 176 complete or semi-complete examples, but fragments of several others were found built into the later squatting walls of Level II. Even 200 tiles would only have covered about 39 sq. m. as against 120 sq. m. of total ceiling area. They must have been arranged in panels, cemented into a clay backing probably reinforced with wooden tie beams. The rough rear surface of the tiles would have suggested that they were designed to key into a mud plaster backing, even if we had not found large pieces of clay still adhering to them. According to Mr. Garside, tiled ceilings are still made in this way today, and are quite safe provided the plaster is wet enough when the tiles are placed in position.³⁷

It is interesting to speculate how the panels were arranged. There were sixty-five tiles down the west of the room, fifty-three in the centre, and fifty-eight to the east. Originally perhaps, there were three panels of sixty-five tiles, thirteen tiles long by five wide, making a total of 195 tiles altogether. The long panels could themselves have been subdivided into smaller units, four or five tiles long. In certain areas, the tiles seem to have fallen into groups of nine-ten or thirteen-fourteen, which would allow for a cruciform arrangement, recalling the designs on the tiles themselves—a central tile with arms two or three tiles long.³⁸

The tiles also seem to arrange themselves into groups of designs. For instance, the "St. Andrew's Cross" designs are concentrated in two areas: in front of the back doorway (Nos. 84, 87, 108-11), and in the south-west corner (Nos. 32, 34, 39, 126). The "Cartwheel" tiles are also all found in close proximity (Nos. 98, 99, 101, 103). "Nine Square" tiles sometimes occur in unmatched pairs (e.g. Nos. 62 and 70; 152 and 194; 92 and 93). The "Standard" design tiles presumably formed a background into which the other tiles were arranged as a focus for the individual panels.

³⁵ In Goff 1970, p. 148, I argued that the red plaster must indicate that even at this late stage in Level II the Painted Chamber was being used for ceremonial purposes. I also suggested that the zig-zag IIC walls in Trench I were an attempt to reduce the roof span and remodel the Chamber on the lines of the Nush-i Jan Fire Temple. Now we have the whole plan of Level II in all its phases, random squatting seems far more likely.

³⁶ Goff 1969, pp. 127-8, Fig. 9 and Pl. IVb-f; Goff 1970, pp. 146-7, Pl. IIIa-d.

³⁷ We never thought of weighing a tile on the site, but members

of the team could just manage to carry one at a time. Evidence from Nush-i Jan suggests that efforts were made to keep upper storeys as light as possible (Stronach, *Iran* VII, p. 13). On the other hand the builders at Nush-i Jan were not afraid to use mud brick "beams" to form false vaults over their magazines, *ibid.*, Pl. Vb.

³⁸ e.g. Tiles No. 44-5, 52-9 (10); 46, 66-9, 70-4 (9); 15, 16, 43, 60-2, 64, 65, 70 (9); 154-9, 170-1, 174-6, 160, 168-9 (14); 119-22, 134-9, 141, 172-3 (13); 101-4, 115-7, 132-3 (9); 112-14, 118, 127-31 (9), together with 97-100 equals 13.

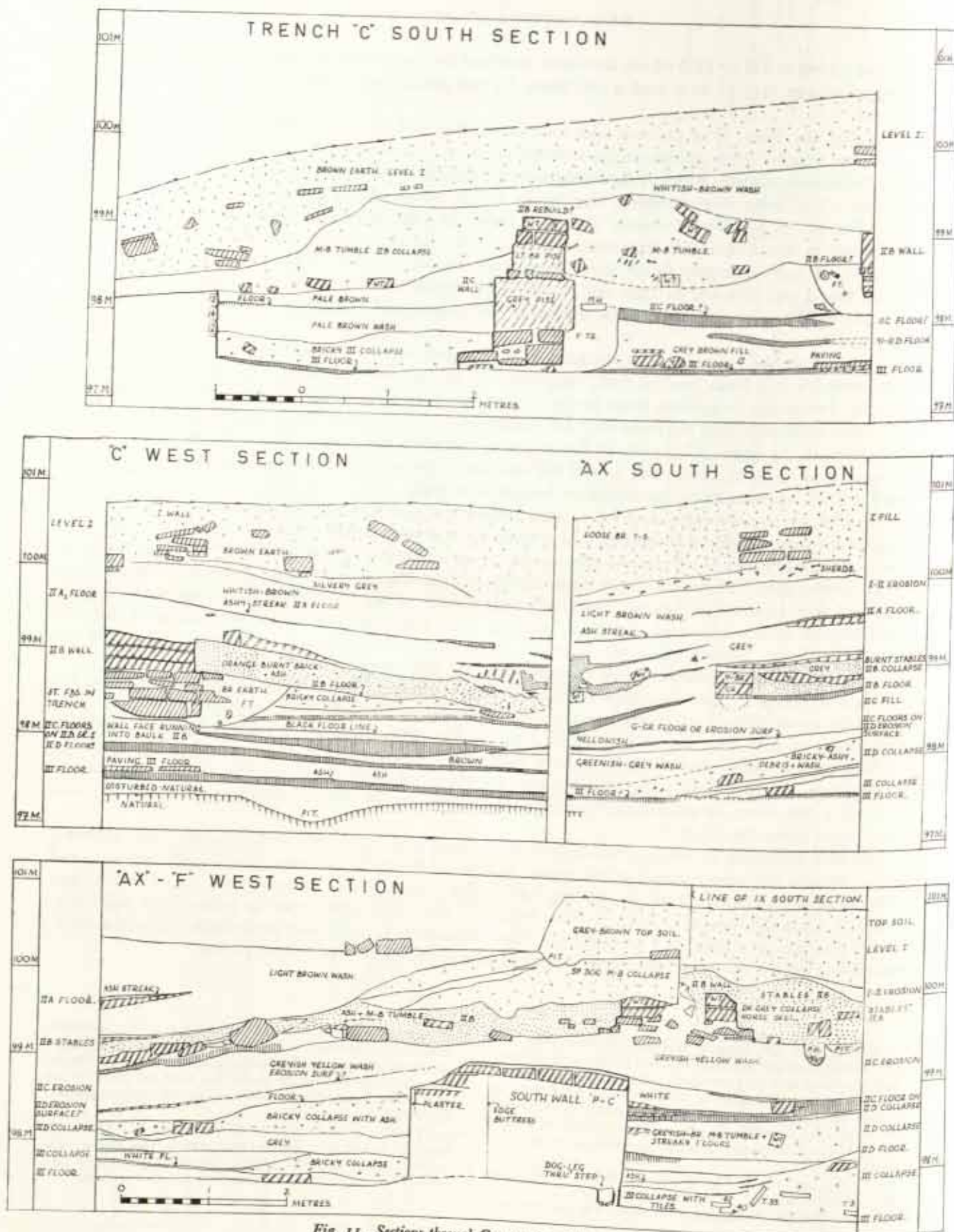


Fig. 11. Sections through Courtyard and Workshops.

For the benefit of those who would like to try their hand at reconstructions, I have provided a numbered plan of the tiles, Fig. 15, which should be used in conjunction with the pictorial plan in Goff 1970, Fig. 4; an abbreviated catalogue of all the tiles with non-Standard designs; and illustrations of all the designs not so far published. A more detailed catalogue is available in the excavation inventory if required.

We have very little to go on when trying to reconstruct the final appearance of the Painted Chamber. We do not have any conveniently collapsed walls to measure, as in Room 4, and although the Fire Temple at Nush-i Jan provides some parallels, the two buildings were obviously not identical. From internal evidence one can perhaps assume that since the front and back walls of the Chamber were less massive than those of the central part of the Fort, the roof must have been lower. It seems unlikely that the central portion of the Chamber had a higher storey, but Room 20 and its assumed counterpart in the East Annexe are far too small to have had high ceilings. A second storey in the East Annexe is also suggested by the great depth of destruction debris in this area, and on analogy with Nush-i Jan.³⁹ Whether the central portion of the Chamber had a clerestorey, as in Fig. 5, or was the same height as the Annexes, is uncertain.

The Function of the Chamber

The Painted Chamber was almost certainly a big secular reception hall. There is nothing in it that corresponds to the fire altar at Nush-i Jan. The "podium" in Room 5 may have been an altar, but looks like a little domestic shrine in the corner of one of the main living rooms, rather than the focus of an area devoted entirely to religion. Possibly at this stage, the Medes (and other Iranian groups?) were still worshipping on high places in the open, as Herodotus suggests. On the evidence of the pottery, the Painted Chamber could have been built rather earlier than the Fire Temple. Though it is dangerous to generalize from two sites, it is possible that a large hall with stepped sides, or annexes, was a standard architectural unit in the Iranian tribal centres of the Central Zagros. The Medes of Nush-i Jan could have taken this hall and then converted it into a fire temple—rather as the early Christians took over the Roman *basilica* as a prototype for their churches. In Fars, as David Stronach has shown, the Persians took over the Urartian temple tower as a prototype for the temples at Pasargadae and Naqsh-e Rostam.⁴⁰ Future excavations at early Iranian sites in other areas will probably reveal different regional solutions to the problem of suddenly having to provide a building specifically for the practice of religion, where formerly none was necessary.

The Courtyard and Room 10. The outer wall of the Painted Chamber with its buttressed doorway had been carefully plastered with mud and straw plaster (Pl. Vc). The post in the hole immediately to the right of the door (PH 1) had surprisingly remained unburnt and could still be traced to a height of 1.75 m. through the Level II D/C deposit which had accumulated around it up to the level of the IID floor.⁴¹ It appears to have had no structural significance and could have been some form of flag staff or even the tethering post for a horse. We cut down the south wall of the Painted Chamber to stone foundation level, and the post holes at 2 were found in the mud brick immediately above where the foundations jiggled out to form a shallow buttress.⁴² This buttress lines up with one of the Chamber columns and probably supported one of the main roof members. It would seem that the original mud-brick wall reinforcement was not considered strong enough to do its job properly and timber reinforcements were added at a later date to shore up the roof—an indication that Level III may have lasted for some time. The corresponding buttress the other side of the doorway was of mud-brick only.⁴³

The west wall of the Courtyard showed layers of replastering corresponding to the original III floors and later squatting levels (Pl. Vd). The stone foundations of the cross-wall in front of Room 10 rested on the lowest Courtyard floor, suggesting that this room, like the Painted Chamber, was an

³⁹ Roaf and Stronach, *Iran XI*, p. 133 f. and Fig. 4.

⁴⁰ D. B. Stronach, "Urartian and Achaemenid Tower Temples", *JNES* XXVI (1967), pp. 278–88.

⁴¹ Trench A, West Section (Fig. 7c) conveniently cut right through the post. Its undisturbed profile suggests that the IID–C–B build up was fairly rapid.

⁴² Goff 1969, p. 127, Fig. 8. The foundations were large stones all roughly similar in size recalling those of Manor 1 on the Central Mound.

⁴³ Pl. Vd. This buttress was originally thought to be a shelf and is so labelled on plan.

addition to the original plan. The wall was much thinner than usual and bulged out badly. The elaborate, buttressed doorway was half hidden by the baulk (Pl. IXa, b). Behind the wall was a bench and the remains of a circular clay oven. The face of the remainder of the west wall was in poor condition and had been added to and cut back in various phases of Level II. The buttress to the left of Room 10 would seem to be early II since it bulged out over an earlier storage pit (Pl. IXb, d). Further on, small cupboards in the thickness of the wall resembled those in the local headman's house (Pl. IXc, d). The discovery of the south-west corner enabled us tentatively to reconstruct the line of the south wall, though the entrance was beyond the limits of our excavation. This side of the yard seems to have been a slaughtering area for we found a rough stone pavement covered with a pile of sheep's jaw bones (Pl. IXc). The east wall was only 1.30 m. high and had again been cut back in Level II.⁴⁴

Level II

The stratigraphy of the squatting levels within the Courtyard and Painted Chamber is complicated and the credit for disentangling it must go largely to Dr. Kay Prag, the senior field assistant in 1967. In my final preliminary report I divided Level II into three phases, A, B and C, reading from the top downwards (Goff 1970, p. 143). To these I have now added a Phase D, originally described as an early C floor, to try and simplify the written descriptions on the sections. Phases D, C and B merge into one another as walls were rebuilt and extra rooms were tacked on in a somewhat haphazard fashion, reminiscent of modern Luri villages. Phase B was burnt and rebuilt on different lines as Phase A. We also have evidence for terracing, again as in modern Luri villages, which are often built on the sides of hills so that the roofs of the lower houses form the courtyards of those above. It is sometimes difficult to tell whether we are dealing with a lower floor level or merely a contemporary terrace.⁴⁵

It has also been difficult to publish our very long sections. I eventually split them up and printed the various parts one below the other. Although I have tried to simplify matters for the reader by using the same reduction throughout, publishing a Section Plan (Fig. 9) and labelling the sub-levels in the margins,⁴⁶ it would have helped if I could have used folding plates or colour—both of course far too expensive.

Summary of the Building Levels

A glance at the plans of Level II (Figs. 7a and 8), will show that the latest structure (IIA) is the so called "Stone House", a small mud-brick building on high stone foundations, tucked into the south-west corner of the Courtyard. Below this lie the "Burnt Stables" (IIB) built up against the eastern wall of the Fort. A domestic extension "The Groom's Kitchen" is a high floor of Room 10. Facing the Stables, running across the eastern end of the Courtyard, are the "Workshops" which were probably started in IIC and added to and rebuilt in IIB (see however the discussion below p. 131). Finally there are some rather badly preserved rooms at the north-eastern end of the Painted Chamber and its annexes, which may be D/C.

Reoccupation within the Painted Chamber, IID-C

1. The Chamber, as we have seen, was built slightly later than the Fort, and had at least two higher floors, corresponding to two replasterings. Then the room was burnt in the general conflagration and roof and tiles collapsed on to the III floor.⁴⁷

⁴⁴ The bricks in this wall were 35 cm. square by 12-13 cm. thick. Other brick sizes from the Painted Chamber are as follows: West Wall of West Alcove: 34.5 × 15 cm., 35.0 × 15.5 cm., 34.5 × 15 cm., 33.5 × 14 cm. Room 20, 34.5 × 36 × ? cm., Painted Chamber, 34 × 15 cm., 36 × 36 × ? cm. (in door), 31.5 × 14 cm. and 34 × 13 cm. (in north wall), 34 × 15.5 × 14 cm. and 33.5 × 17 × 13 cm. (half bricks in blind window). On the other hand, in the Eastern wall of Room 20, brick lengths of 37, 38, 40 and 42 cm. were obtained, comparing much more closely with the 39 cm. square bricks of Room 3. It appears that brick sizes became smaller just as the Painted Chamber was being built.

⁴⁵ The best example of terracing occurs in Level I where the whole of the East Mound from summit to base is occupied by a single building level.

⁴⁶ Each trench was originally dug as a separate entity and the various sub-strata given their own numbers in the site note book. These substrata were then correlated at the end of the season into IIA, B, C, etc. Where the exact position of a feature or floor is uncertain, the original strata numbers have been retained.

⁴⁷ This destruction level can be clearly seen in Fig. 10, D-F North Section, where it is described as III collapse, tiles and burnt beams.

2. The Chamber was refloored. A hard, greeny-grey floor, effectively sealing off the destruction level, can be seen running the whole length of the Chamber and West Annexe. This floor, the lowest in Level II, is now termed IID, but was formerly a lower floor of C.⁴⁸

3. In the West Annexe there is an accumulation of collapsed brown "spotted dog",⁴⁹ and brown and white mud-bricks over 1 m. thick, suggesting a fall from the upper part of the Fort wall. This is Stratum 31 in Fig. 12: IX south and west sections. On top of this is a rather amorphous *pisé* wall associated with another green floor (Strata 21 and 27), both of which disappeared when we tried to trace them further east. They are associated with large patches of red plaster—probably part of an earlier frieze (above p. 121). Above was more destruction debris, Stratum 26. However, further east, in the main hall of the Chamber, the two destruction levels appear to merge in a hotch-potch of fallen building debris and intermediate grey floors, with a well-defined thick greeny-grey floor sealing the top. The lowest part of this level, only really visible in the Annexe, is IID collapse, the upper floors, IIC.⁵⁰

4. The top of the IIC deposit marked the end of the Painted Chamber, for the top of the long southern wall was cut off at this level and the upper surface of the stump was on a level with the highest C floor. This floor then continued as a fairly clearly defined erosion surface across the northern half of the Courtyard until it lost itself in a maze of Workshop floors.⁵¹ This surface had a fairly well-defined slope from north to south.

5. Most of the area originally occupied by the western end of the Painted Chamber and Courtyard was then filled with a greyish-yellow wash of crumbled mud-brick, in places over a metre thick. This could either represent a gradual accumulation of debris from the Fort walls, during a period when this part of the site was open courtyard, or more probably, deliberate infilling to provide a firm and level foundation for the Stables. In section this stratum is described as IIC erosion.⁵²

6. The Stables, which were badly burnt with their occupants *in situ*, form a welcome line of demarcation across the whole of the western end of the Chamber and Courtyard. The dark fill of burnt debris, interspersed with lighter mud-brick walls a brick and a half wide on stone foundations, is quite unmistakable, and forms a recognizable Level IIB. Further east however this nicely defined Level is cut off by terracing from Level I, and we are left with some badly preserved *pisé* walls on stone foundations in trenches D, I and IX.⁵³

7. The clue to the date of these walls is provided by the wall and bench structure, built to the west of Room 7, apparently to make a separate room of the East Annexe (Pl. XIIIa-c). As can be seen in the annotated sketch (Fig. 7b), after the collapse of the roof in Level III (2) the Level III debris was cut back down to the original III floor (3) and a stone retaining wall (4), which included tile fragments, was built with a paved area (5) in front (Pl. XIIIb). The wall then collapsed and was revetted (6) and a bench built in front of it, overlying the paving (7) (Pl. XIIIa). Probably at the same time a mud-brick or *pisé* wall was built on top of the stone retaining wall, and revetting, and a new line of stone foundations (8) added to the west (Pl. XIIIc). Dr. Prag thought that originally this wall may have been built up in two phases (9) though this is not apparent in the final section (Fig. 10, top). Debris from the IID collapse and the IIC erosion surface appear to run up against this wall—though the evidence is confused by the Level I terrace. Wall and bench are accordingly IID-C.

8. The later stone foundations (8) continued for a short distance into Trench I, and then turned west to form a high skirting to lower stone foundations with a *pisé* superstructure forming the south wall

⁴⁸ Fig. 10, top and bottom. In Fig. 11: "AX-F West Section" it runs up against the northern wall of the Chamber, and it can also be seen in the Annexe in Fig. 12, "IX South Section" and "IX West Section".

⁴⁹ The natural soil of the tepe is hard brownish-yellow clay with pale yellowish-white blobs in it. Many of the bricks were made out of this clay and when they disintegrated the characteristic speckled filling of the erosion levels, which we nicknamed "spotted dog", developed. I have retained it on the sections for lack of a better term.

⁵⁰ For details see Fig. 10, "D-F, North Section", which links via Fig. 11: "AX-F, West Section", with Fig. 12: "IX, South

Section".

⁵¹ Fig. 11: "AX-F, West Section", "AX, South Section", "C, West Section".

⁵² Fig. 10: "D-F, North Section"; Fig. 11: "AX-F, West Section".

⁵³ Unfortunately the North Section of Trench I (Fig. 10, bottom) designed to show the position of these walls, was less than helpful. We allowed it to dry out while we lifted the tiles and then had to reconstruct the various strata with the aid of the site note-book. Plate XIIa and b shows the relationship of these walls to the stables.

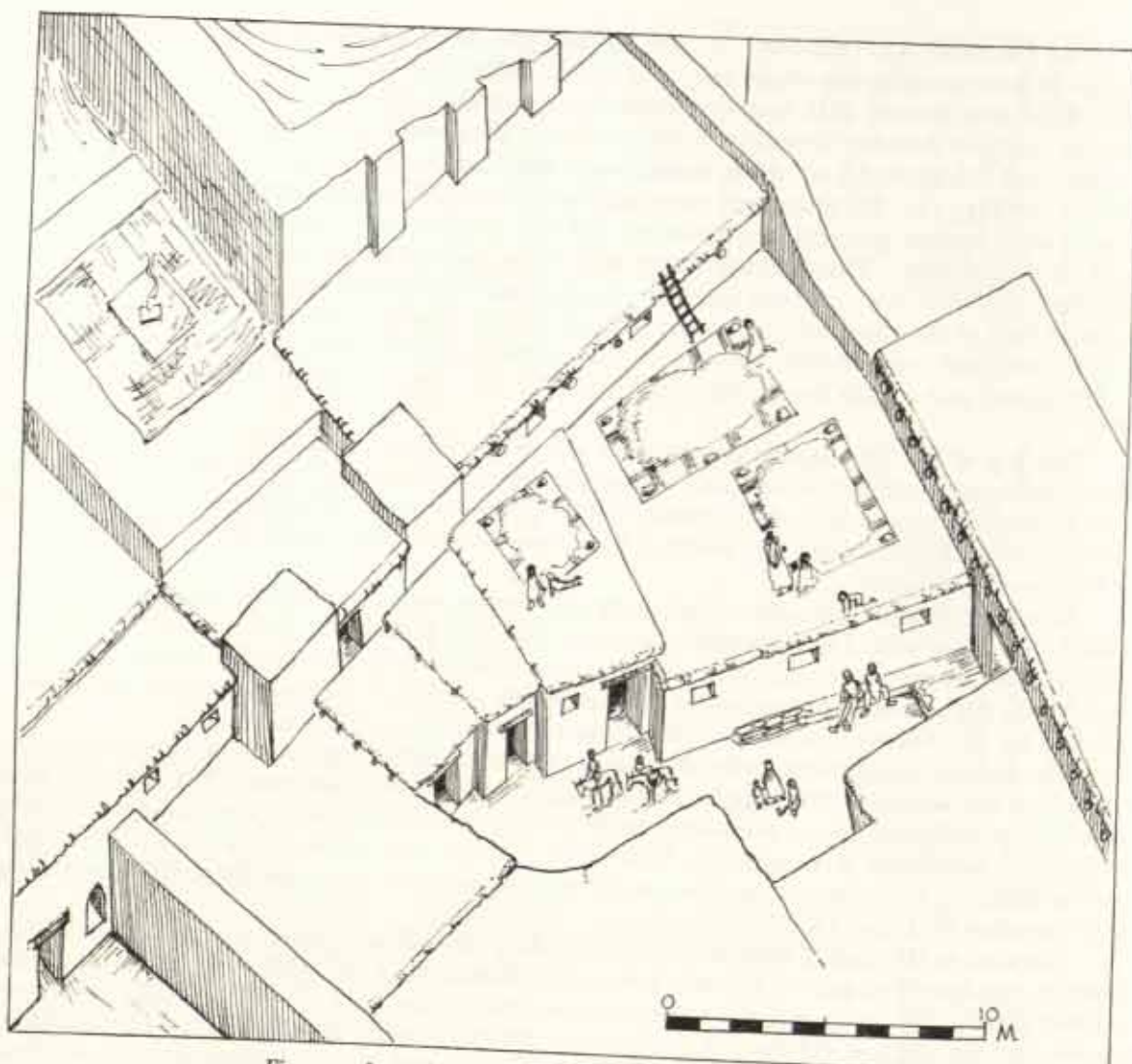
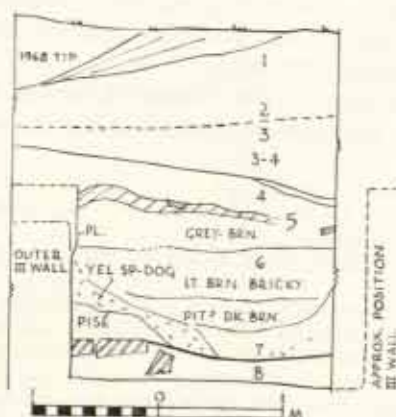


Fig. 14a. Isometric reconstruction of Level IIB just before the fire.

T. EAST SECTION



T. SOUTH SECTION

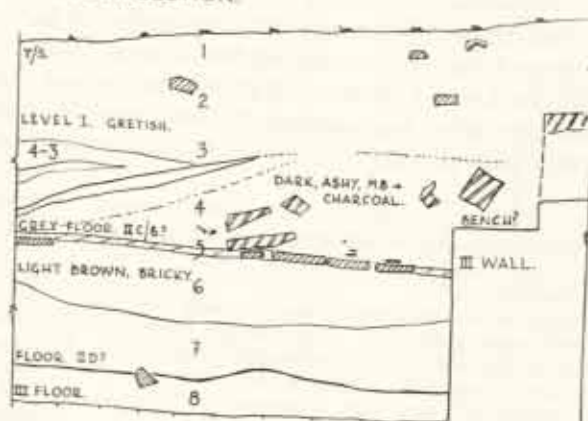


Fig. 14b. Sections through the North Annexe.

of Room 8. The two parallel walls then turned north again and the stone skirting was replaced by a higher mud-brick wall with a border of flat stones set on edge along its eastern face (Pl. XIIa, b). The easiest interpretation would seem to be a lower wall built in IID to form Rooms 7 and 8 in the corner of the Chamber, with reinforcements added in IIC. We may, however, be dealing with terracing. There is no sign of burning in the fill which suggests that they were not a low terrace of the Stables; the use of *pisé* is typical of Level IIC walls elsewhere, and they are on the same level as the clearly marked D and C floors in trench F (Fig. 10, top). However, like the Workshops, they may have been reused in IIB, and the higher, burnt floor levels been destroyed by Level I terracing. This is assumed in the reconstruction, Fig. 14.

Reoccupation within the Courtyard: The Workshops, Levels IID-C-B

The Workshops were built in two phases.

Early (IID-C). A rectangular enclosure with two rooms (6 and 4) of *pisé* on stone foundations was built in the south-east corner of the Courtyard. The stone foundations of the L-shaped wall rested on, or just above, the III floor (Pl. XIa), but were set in a deep foundation trench cut from a higher floor level.⁵⁴ An odd structure running along the north side of Room 4 consisted of a line of stones set into the III floor bordered to the north, and probably to the south as well, by a line of mud-bricks set on edge. It was sunk below the Level II floor so may have been a trough, or even a Level III drain (Pl. XIII d).

Late (IIB). The wall north of Rooms 4 and 6 was rebuilt of *pisé* and mud brick on stone foundations and continued round the corner at a slightly different alignment, and apparently without stone foundations.⁵⁵ The cross wall was also probably rebuilt, though nothing was left but a pile of stones, and a new wall was added to make Room 3 at the end of Room 5.⁵⁶

The walls enclosing Room 1 also appear to be secondary, though they were excavated in 1966 before we realized the full complexity of the stratigraphy, and were not cut by any section. The stone foundations of the wall between Rooms 1 and 2 were at a higher level than those of the original enclosure. The wall to the west of Room 1 had a beautifully plastered face and stone foundations, but we never found a proper face to its back—it may have been a retaining wall like that in Trench D, described above.

Room 5 had a high floor filled with a somewhat ashy deposit, and the contents of both Rooms 3 and 1 had been thoroughly burnt—any corresponding high floors in Rooms 4 and 6 had been destroyed by Level I terracing. The interior of Room 1 was particularly well preserved. The walls were carefully plastered and there were the remains of a wooden door structure leading into Room 2. It contained among other things, a complete set of carpenter's tools, and was nick-named "the Carpenter's Shop"⁵⁷. The rest of the Workshops contained meagre sherd collections.

Dating. The two phases of the Workshops can be dated both from internal evidence, and in relation to the IIB stables further north via the baulk between Trenches C and V.

The most crucial piece of evidence is the wall which appears in section in the south-west corner of Trench C.⁵⁸ It would seem to be contemporary with the Workshop rebuild and the high floor in Room 5. On the other side of the baulk, in Trench V, the eastern wall of the Stone House also runs into the baulk at an angle.⁵⁹ Unless something very odd happened under the baulk, however, the wall in the corner of C cannot possibly be the same wall or even the same level, since its top finishes at the same absolute level at which the IIA wall foundations start, and it would make an impossibly wide wall or narrow room on plan. The wall in the corner of Trench C, must therefore be IIB, and in fact it ties in well with the Stable plan, forming an outer wall to Room 19.⁶⁰

⁵⁴ Fig. 10: "C, South Section"; Goff Meade 1968, Fig. 9.

⁵⁵ Fig. 10: "C, South Section"; Pl. IXb; Goff Meade 1968, Fig. 8. The late phase is cut by the section whereas the earlier phase is well inside Trench A.

⁵⁶ Pl. XIc, d. The 3/5 partition wall should be labelled IIB on plan, and not IIC.

⁵⁷ Goff Meade 1968, p. 119 (Level Va).

⁵⁸ Fig. 11: "C, South Section", C, West Section".

⁵⁹ Fig. 12: "V, East Section", and Pl. VIII f.

⁶⁰ What happened to the northern wall of Room 19 is obscure. A line of stones and mud brick in section (Fig. 13: "L-V, North Section") suggests that it may have been destroyed when the IIA wall was built just above it, or we may be dealing with an open ended shed.

The Workshop rebuild is therefore IIB, contemporary with the Stables, and like the Stables, thoroughly burnt. The original corner structure must then be IIC or D—possibly the former since the original early Workshop floor seems to link with the highest IIC erosion surface (Fig. 11, all sections). The use of *pisé* as opposed to mud-brick in the early phase, also recalls the IID structures in Trenches D and I.

The Stables (Level IIB).

Details of the construction of the Stables are fairly clear from the plans. The builders used the back wall of the Fort, cut back in places, as their main support. The irregular eastern wall was of mud-brick on three courses of stone foundations. The builders seem to have started with Room 18 and then tacked on the other rooms in succession. The foundations of Room 17 are a good 30–40 cm. higher than those of 18, and the junction was protected by a line of stones set on edge against the lower mud-brick wall.⁶¹ Rooms 16 and 15 are higher again, and Rooms 15, 14 and 13 formed the centre of the Stable fire. Presumably they were full of fodder and bedding for the animals which went up like a torch before the beasts could be rescued. Skeletons of burnt horses or donkeys were found in Rooms 16 and 13 (Pl. XXa–d).⁶² Room 16 also contained a circular wooden structure associated with pottery (a tub?), and more burnt wood to the east with patches of metallic stain, perhaps a burnt cart. Paved floors in the other, less badly burnt Rooms 18 and 17 suggest that animals or farming implements may have been stored here too, but were rescued in time. The stables were probably only one storey high with the usual roof of thatch and mud plaster. Various post-holes seem to have served no real structural purpose but could have been tethering posts for the horses. “Benches” and stone cist-like structures in the corners of rooms (e.g. Pl. IXb) may have been mangers.⁶³

Predictably the stables themselves produced little pottery, but behind Room 17, on a higher floor of Room 10 (Stratum 6), was a small living room, again thoroughly burnt, with a large number of pots and other small objects scattered all over the floor (Pl. XVb, d). We nick-named it “The Groom’s Kitchen”. The original door into Room 10 had been blocked with mud-brick on stone foundations, and from the section (Fig. XIII, “E–G, South”) it appears that the east wall, which by now was leaning forward rather drunkenly, was reinforced either by a buttress, or perhaps a ramp or steps leading to a higher doorway.⁶⁴

As discussed earlier, the Workshops, and perhaps Rooms 7 and 8 were also incorporated into this grand design, and if our reading of the stratigraphy is correct, the “Carpenter’s Shop” and the “Groom’s Kitchen” are contemporary. Taken together their contents give us a good idea of the range of domestic articles and pottery typical of Phase II. Oddly enough, the pottery from the Groom’s Kitchen shows a wider variety of styles and influences than that from the Workshop—a warning against drawing sweeping conclusions from too small a sample!

The Stone House (Level IIA)

Level IIA was only found in the south-west corner of the Courtyard, though it may have originally extended right down to the eastern wall. A rectangular living room, approximately 8 × 5 m. was built up against the outer wall of the Fort. A north-west extension led to two higher floors above and within

⁶¹ Pls. XIV and XV illustrate the complexity of the “squatting level” stratigraphy. Pls. XIVb and XVa show the IIB wall running up to its higher terrace with the later IIA wall to the right. In Pl. XIVa the IIA wall has been removed but can be seen in section running over the IIB terrace. Had the baulk been a metre or so further south we should have been in a quandary!

⁶² The bones have been sent for analysis but were in poor condition.

⁶³ The south-east corner of Room 13 was just included in Trench F in 1967. Here Dr. Kay Prag found an excellently preserved horse skull apparently contained in a stone cist (Pl. XXd). We did not know about the Burnt Stables in 1967, and because

some of the pottery looked intrusive Dr. Prag suggested a Level I cist. When we extended the trench in 1968 it seemed obvious that the skull must belong to the stables, but I cannot understand why it should be so much better preserved than the rest of the horse bones in the same stable, or what happened to the rest of the body. It may of course have been destroyed by Level I pitting which produced the intrusive sherds and I have sketched in its possible position on plan.

⁶⁴ Brick sizes of 35 cm. long by 15 cm. deep, with half bricks 15–18 cm. long, were obtained for two of the IIB walls. The dimensions are similar to those in the Painted Chamber suggesting no great cultural break between levels III and II. We had no reliable brick sizes for IIA.

the Groom's Kitchen.⁶⁵ The large room had three post holes in line down the centre, and the Groom's Kitchen, one, which was subsequently replaced. In every case the post had been sunk into a shallow hole and wedged into position with stones—in one case (Pl. XIVa) into the stump of a IIB wall. The remains of an oven, a grindstone, and two low buttresses that probably served as tables, were built up against the inside of the east wall (Pl. XVc, XIVb).

The link up between the Level II strata in the Courtyard and the Fort

In the Fort higher occupation levels occur in Rooms 2, 4, 5, 8 and 9, but we cannot be certain how the various floors link up in different parts of the building, because the sections are cut by massive walls. The following scheme seems most likely.

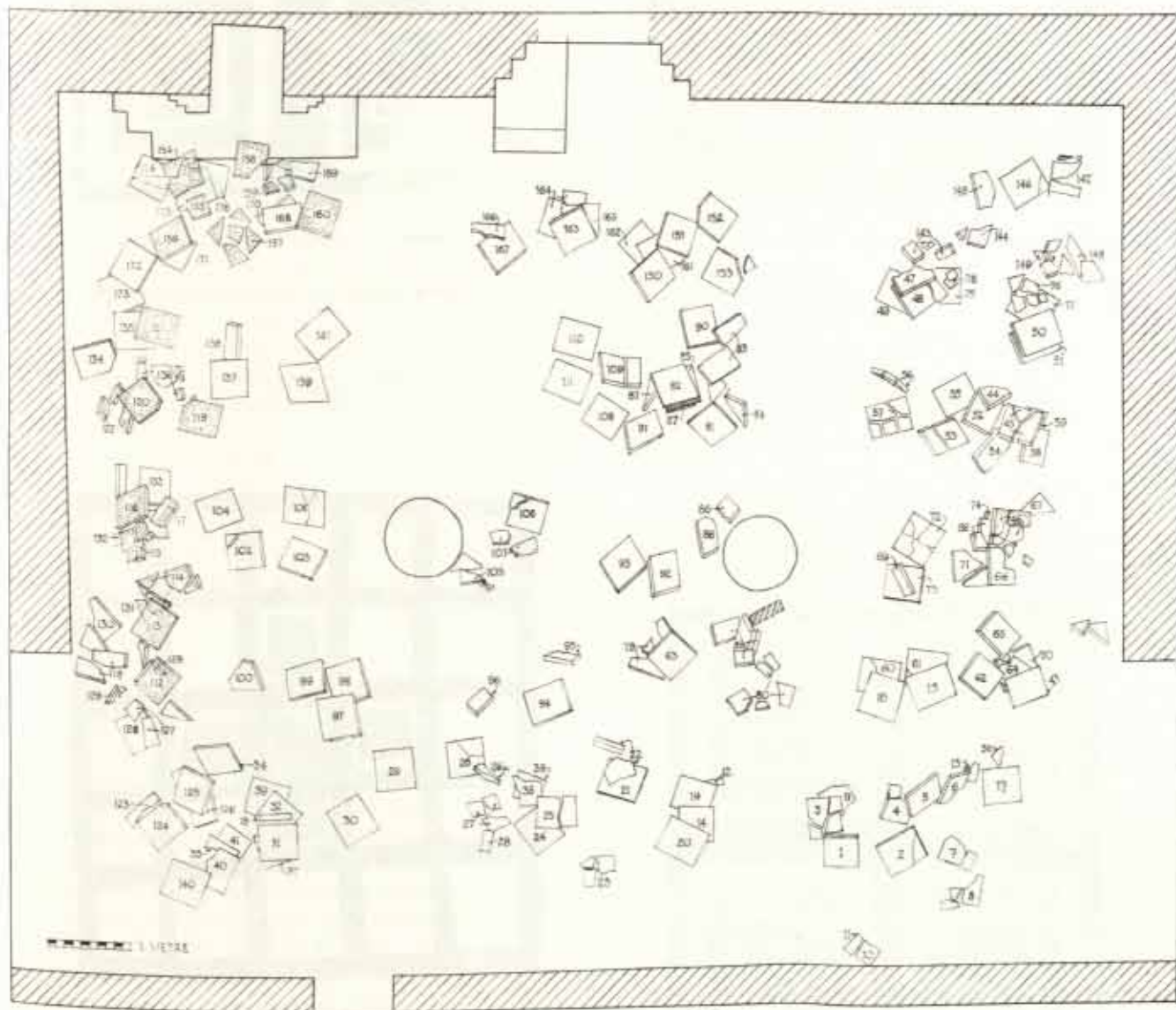
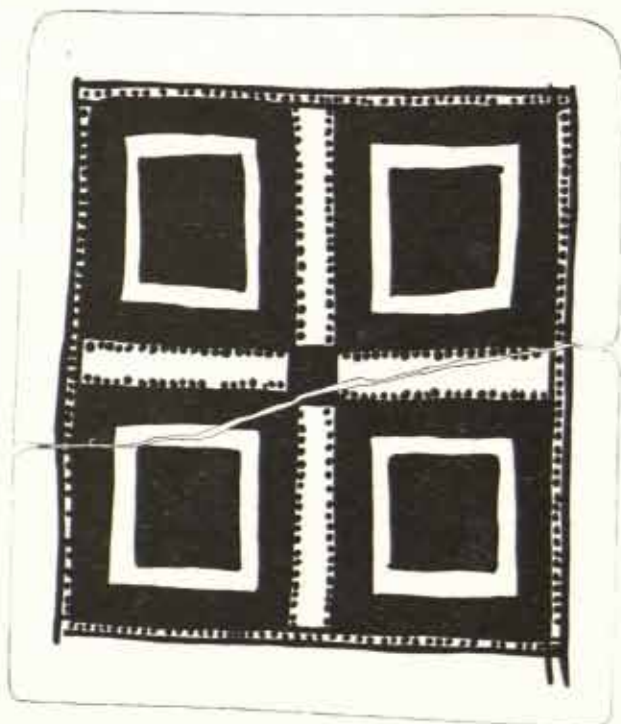


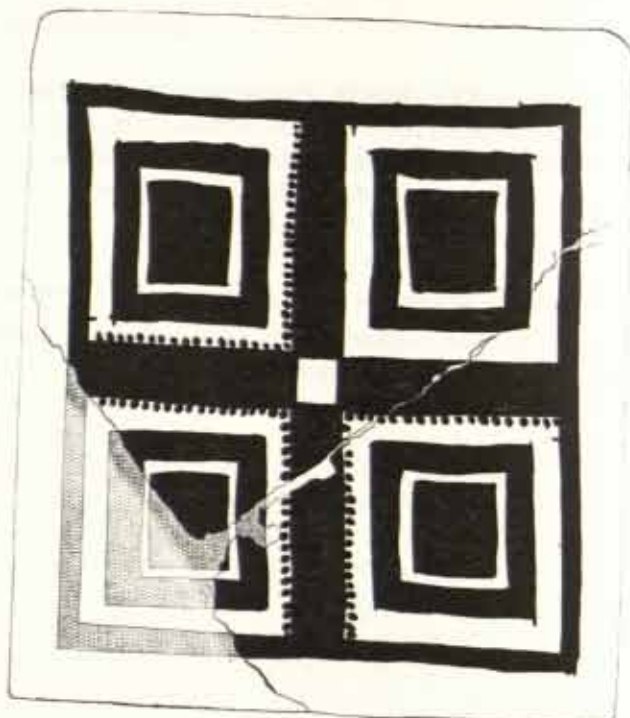
Fig. 15. Plan of Tiles in Painted Chamber.

⁶⁵ See Fig. 13, especially "LV, North Section" which shows the two floors above the Groom's Kitchen (Strata 4 and 5) and then the north wall of the Stone House with its door in section (Stratum 4). Beyond the limits of the "Stone House" the

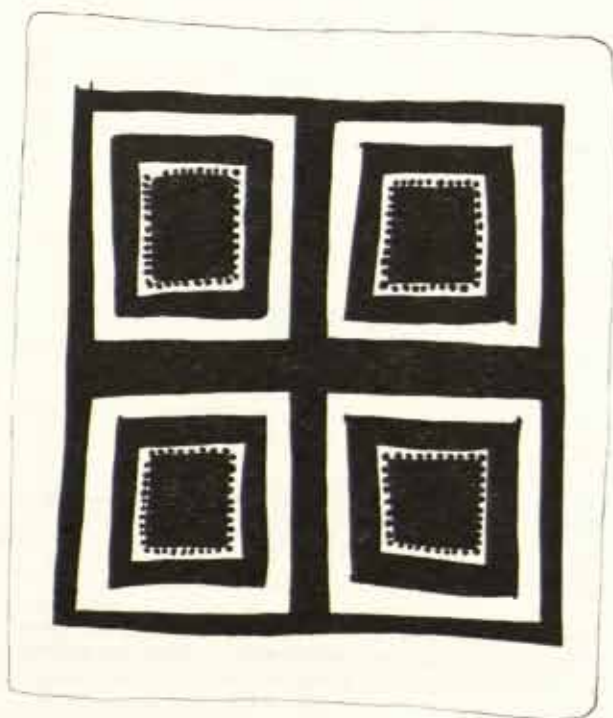
floor peters out into an ashy streak ultimately cut off by Level 1. It seems likely however that Level IIA covered the whole of the courtyard areas as did IIB and IIC.



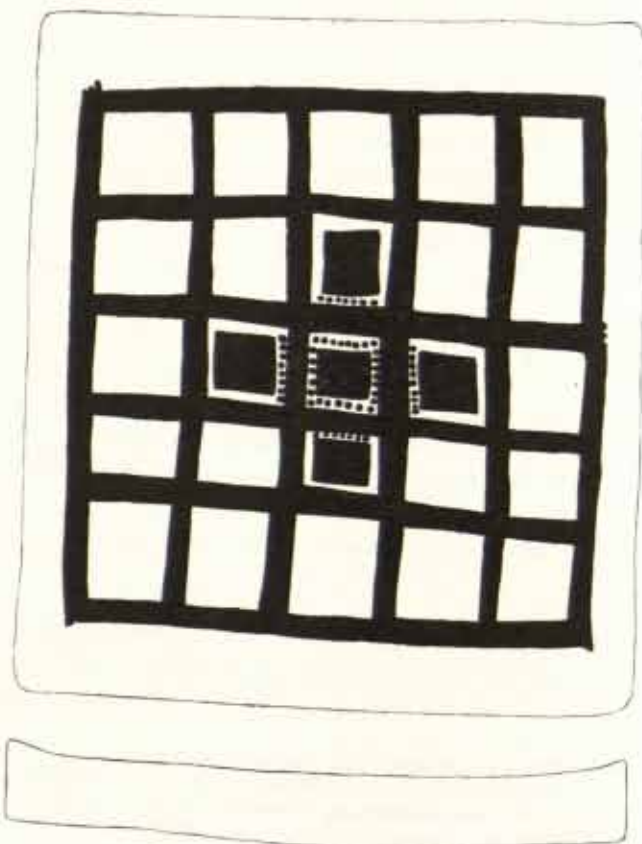
1. Tile 53.



2. Tile 9.



3. Tile 121.



4. Tile 52.

Fig. 16. Tiles from Painted Chamber.

The white pebble floor in Room 4 is linked with the lowest Level II floors in Rooms 5 and 2 via its doorways. All three floors rest directly on Level III rubble, and are therefore IID, probably continuing for sometime into IIC.

The next highest floor in Room 5 cuts into the eastern Fort wall, is covered by a layer of ash, and is on the same level as the Stable floor the other side of the wall—which also cuts into the wall and is covered by burning. This floor must therefore be IIB and the floor above it, IIA (Goff, 1970: Fig. 5).

The White Room lies close to the south-west corner of the Courtyard where the main secondary occupations were IIB and IIA. Floor 6 is probably IID and the main occupation strata 5b and 5a probably correspond to the lengthy period of the IIC-B build up. Traces of burning in the fill above the 5a floor suggest links with the Stable fire. Strata 4 and 3 must then be the lower and higher IIA floors respectively.

The collapse of the Fort walls

If we have interpreted the levels correctly, the eastern wall to Room 5 collapsed during or after Level IIA (Goff, 1970: Fig. 5). Further west, where the rooms were not reoccupied after IID/C, the situation is not so clear. The walls in Rooms 1, 3 and 4 all seem to have collapsed on top of ash streaks, though in 4 there seems to be a bit of erosion deposit between ash and wall. Assuming that the ash came from the Stable fire at the end of IIB, this gives a date just before, in, or after IIA for the final destruction. The lowest ash streak in Room 4 continued over the top of the south wall (Fig. 4: 1) and across a thick layer of mud-brick tumble resting on the IID/C floor in Room 2. This suggests a pre-IIB date for the Room 2 wall collapse.

It is possible that we are dealing with yet another attack from outside, and that the walls of Rooms 1, 3 and 4 were knocked down by the same raiders who set fire to the stables. Rooms 2 and 5 do not fit into this picture however, and it seems more likely that as the walls became unsafe they either fell, or were deliberately pushed, into the unoccupied Fort rooms, to prevent accidents. The process may have been completed by the occupants of Level I who wanted a flat base for their own settlement.

The History of Level II

It remains to try and look at the history of Level II, not in terms of archaeological stratigraphy, but from the point of view of the people who were living at Baba Jan in that period.

After the fire they returned to their shattered home to find the roofs down, but the walls more or less intact. They did not bother to roof the central hall of the Fort (Room 4) and they abandoned Room 3 whose door was blocked with debris. The other long rooms, like 5, 7 and 8, were still inhabitable, and they may have shored up the wall of Room 2 where it had been breached by the invaders, and turned it into their new entrance. The staircase had also been burnt, but this did not matter, as the upper storeys had gone as well, and they could always reach the roof by ladder.

The roof and the elaborate tile decoration of the Painted Chamber had also been destroyed beyond recovery, and the uncertain political situation with the Assyrians threatening invasion, and bands of Scythian and Cimmerian tribesmen roaming the countryside, did not encourage monumental rebuilding. To counter some of these threats the inhabitants strengthened their ties with the Medes, living in untouched fortresses like Nush-i Jan, behind a further range of mountains to the east. It also seems likely that now, if not earlier in Phase III, the villagers who had lived round the older Manors on the Central Mound, abandoned their homes, and started to squat in the Courtyard and Chamber Annexes. As more room was needed a series of workshops and booths sprang up across the eastern end of the Chamber and the Courtyard, reusing the old Level III perimeter wall. At a slightly later date, a row of stables was added across the western end of the Courtyard. This area had been full of debris from periodic falls of mud brick from the top of the Fort walls. Rather than shovel the whole lot away, the inhabitants levelled it up, and then rebuilt the Workshops at this new higher level. By this time too, the walls in the central part of the Fort were becoming distinctly unsafe. The courtyard, that had been Room 4, was beginning to silt up and become a repository for rubbish, including a dead horse. The main Fort and Chamber rooms still in use were now 8, 9, 10, the North Annexe, and Room 5 if it still had its roof.

What happened next is an open question. The Assyrians or some other marauding tribe may have invaded again, and set fire to the settlement. A fire could equally well have started accidentally in the straw from the stables and spread down to the east end of the Courtyard via the stacks of wood in the Carpenter's Shop. At any rate the inhabitants were able to escape and return at once for there was no change in the pottery and the settlement was immediately rebuilt on the same lines as the old one. As the walls in the abandoned sectors of the Fort became unsafe (as several had in the second fire) they were deliberately pushed into the unoccupied rooms, until eventually the whole structure became too unsafe for comfort and was abandoned. The next phase, Level I, must have followed almost immediately, but it is represented by a complete change in the architecture and a new form of pottery.

APPENDIX

*Tile Designs**Standard design*

The design is confined to a large central square filling most of the tile, with a plain border round the edge. The square is divided into quadrants by a white cross with a small red square in the centre. In each quadrant is a red square, enclosing a white square with a solid red block in the centre. The edges of the white cross are lined with dots (Pl. XVIa, also Goff 1969, Pl. IVd). The vast majority of the tiles discovered were of this type. Variations consist of adding extra rows of dots, or, in one case, reversing the colours in one quadrant.

Standard variants

Tile 45. BJ/68/105. L. 48.0 cm., W. 41.5 cm., Th. 5.8 cm. Complete, reconstructed from six fragments. Dotted border around main design, as in *Tile 53*.

Tile 53. BJ/68/113. L. 47.1 cm., W. 41.3 cm., Th. 6.5 cm. Complete in two fragments. Red on cream. Dotted border around main design. Fig. 16: 1.

Tile 167. BJ/68/227. L. 46.7 cm., W. 41.2 cm., Th. 5.1 cm. Almost complete, reconstructed from six fragments. Red on cream. Red blocks in opposite corners surrounded by borders of dots. Pl. XVIb.

Tile ? L. 45.5 cm., W. 40.5 cm. Red on cream. Colours reversed in one quadrant. Pl. XVIc. This tile was originally registered as "Standard" before being cleaned and by an oversight its new status was not noted in the register.

Reverse design

The design is confined to a large central square with a plain border round the edge. The central square has thick red borders and is divided into quadrants by a red cross with a small white square in the centre. The sides of the cross are edged with red dots. In each quadrant is a white square, enclosing a red square, enclosing a solid red block. (Pl. XVIIa, also Goff 1969, Pl. IVc). There are twelve tiles of this type, Nos. 9, 15, 16, 17, 28, 30, 65, 86, 95, 131, 149, 165. Variations consist of: (a) omitting the central red blocks in the four quadrants (Nos. 26a, 117, 123, 162); (b) omitting the white square in the cross centre and adding or omitting squares and rows of dots in the corners.

Reverse Variants

Tile 9. BJ/67/159. L. 47.0 cm., W. 41.0 cm., Th. 6.5 cm. Reconstructed from two fragments. Intact except for one corner. Grey-buff with cream slip and red paint. Dots missing from one corner. Fig. 16: 2.

Tile 26A. BJ/67/173. L. ? W. 40.5 cm., Th. 6.0 cm. About one third of one end preserved. Red on creamy brown clay. Squares hollow as in *Tile 123*. May be part of BJ/68/177.

Tile 44. BJ/68/104. One quarter only. Red on cream. Dots all round outer squares as in *Tile 119*.

Tile 117. BJ/68/177. L. ? W. 40.9 cm., Th. 5.1 cm. Half tile only. Red paint on cream slip. Hollow corner squares with no solid red blocks as in *Tile 123*.

Tile 119. BJ/68/179. L. 47.5 cm., W. 41.4 cm., Th. 6.1 cm. Intact. Red paint on cream slip. No central square and dots all round outside of corner squares. Pl. XVIIb.

Tile 121. BJ/68/181. L. 47.0 cm., W. 40.8 cm., Th. 6.0 cm. Intact. Red paint on cream slip. No central square and dots all round inner red blocks. Fig. 16: 3.

Tile 123. BJ/68/183. L. 47.1 cm., W. 41.1 cm., Th. 5.1 cm. Complete, reconstructed from four fragments. Red paint on cream slip. Hollow corner squares with no solid red blocks. Pl. XVIIc.

Tile 138. BJ/68/198. L. 42.2 cm., W. 4.1 cm., Th. 7.2 cm. Intact. Red paint on cream slip. No central square and dots all round outer corner squares, as in *Tile 119*. The resemblance between the two tiles is so close that they were obviously painted by the same hand.

Tile 162. BJ/68/222. L. 47.3 cm., W. 41.9 cm., Th. 6.0 cm. Complete, reconstructed from five fragments. Red paint on cream slip. Hollow corner squares with no solid red blocks as in Tile 123.

Tile 171. BJ/68/231. L. 46.8 cm., W. 41.5 cm., Th. 6.0 cm. Intact. Red paint on cream slip. No central square, red dots surrounding outer corner squares and one of corner blocks only. Pl. XVIIId.

Four square chequers design

The design is confined to a large central square divided into quadrants by a white cross with a small central red square, as in the Standard design. The solid red block in each quadrant is replaced by a chequerboard of sixteen red and white squares, with a dotted border. There are only three tiles of this type, all in a poor state of preservation, and no variants.

Tile 19. BJ/67/166. L. 46.5 cm., W. 41.2 cm., Th. 5.5 cm. One corner missing. Reconstructed from nine fragments. Red paint on buff. Surface eroded and design missing in one corner. Illustrated in Goff 1969, Fig. 9: 3.

Tile 56. BJ/68/116. L. 46.9 cm., W. 41.3 cm., Th. 5.5 cm. Almost complete, reconstructed from ten fragments. Red paint on cream slip. Pl. XVIIId.

Tile 196. BJ/68/136. L. 47.5 cm., W. 41.4 cm., Th. 6.5 cm. Almost complete, reconstructed from six fragments. Surface eroded and only one corner clear.

Nine square designs

The design is confined to a large central square filling most of the tile, with a plain border round the edge. The central square has a thick red border, and is divided into nine smaller squares by four thick, red lines. Within each of the small squares so formed is a smaller, concentric square with a dotted border. The centres of these smaller squares are either left plain ("hollow"), filled in with red paint ("solid"), or with a chequerboard of red and white squares ("chequers"). Sometimes both solid and hollow squares occur on the same tile (no. 12) and there are also variations in the dotted borders.

BJ/67/142. Fragment of Nine square chequers from Trench F, stratum I/II. Illustrated in Goff 1969, Fig. 9: 2.

BJ/67/159. Fragment of Nine square chequers from Painted Chamber fill, possibly part of same tile.

BJ/68/17. Fragment of Nine square chequers from Trench E, Level IIC/D. Possibly part of same tile.

Tile 12. BJ/67/160. L. 47.2 cm., W. 41.5 cm., Th. 6.0 cm. Intact, but for small chip off one corner. Cream slip, red paint, one corner faded. Five solid squares and four hollow. Illustrated in Goff 1969, Fig. 9: 1.

Tile 43. BJ/67/188 together with BJ/67/150 found in Stratum IID. Complete, reconstructed from five fragments. Red on cream. Squares solid. Illustrated in Goff 1969. Pl. IVb.

BJ/68/42. Fragment of chequers from E III.

BJ/68/50-53, 57. Fragments of Nine square solid from E III-IID and IX IIC wall.

Tile 62. BJ/68/122. L. 47.6 cm., W. 41.6 cm., Th. 6.8 cm. Complete, reconstructed from two fragments. Paint ranges from red to black in one corner. Squares solid with detached borders. Dots from part of one border missing. Pl. XVIIIa.

Tile 70. BJ/68/130. L. 46.8 cm., W. 41.7 cm., Th. 6.4 cm. Complete, reconstructed from two fragments. Red on cream. Chequers. Illustrated in Goff 1970, Pl. IIIc.

Tile 92. BJ/68/152. L. 47.3 cm., W. 41.4 cm., Th. 6.0 cm. Complete, reconstructed from six fragments. Red on cream. Squares solid with attached borders. Pl. XVIIIb.

Tile 152. BJ/68/212. L. 47.0 cm., W. 41.4 cm., Th. 6.8 cm. Complete, reconstructed from nine fragments. Red on cream. Paint faded over half design. Chequers as Tile 70.

Tile 164. BJ/68/224. L. 47.2 cm., W. 41.2 cm., Th. 5.9 cm. Complete, reconstructed from eight fragments. Squares hollow as Tile 93.

Twenty-five square design

Tile 52. BJ/68/112. L. 47.8 cm., W. 42.2 cm., Th. 5.7 cm. Almost complete, reconstructed from four fragments. Red on cream. Design confined to a large central square filling most of the tile, with a plain border round the edge. This central square has a thick red border and is divided into twenty-five smaller squares by a grid of red bands. The five squares forming a cross in the centre contain smaller, solid square blocks. The central block has a dotted border, and the inner border of each of the four surrounding blocks is dotted as well. Fig. 16: 4.

St. Andrew's cross designs

Tiles of this type are painted rather less carefully than those with patterns based on a square. The artist seems to have had plenty of imagination but little patience. A red or black broad diagonal cross edged with lines of dots divides the tile into four triangular quarters. Inside each of these quarters are three squares with dotted borders. The centres of the squares are sometimes filled in ("solid"), sometimes left plain ("hollow"), both treatments often occurring on the same tile. There is no definite border round the design and the paint sometimes reaches the edge of the tile. The *Unique St. Andrew's cross* (Tile 109) is in contrast painted with extreme care, and may have formed the focal point for the whole tile ensemble, for it was found near the centre of the room.

Tile 32. BJ/67/178. L. 46.2 cm., W. 41.1 cm., Th. 6.2 cm. Complete, one corner mended. Red on cream. Four central squares and one other filled in. One hollow square lacks dotted border. Illustrated in Goff 1969, Pl. IVa.

Tile 34. BJ/67/184. L. 45.0 cm., W. 42.0 cm., Th. 5.8 cm. Complete, reconstructed from ten fragments. Paint varies from red to dark blackish-brown on cream slip. Four central squares only filled in. Illustrated in Goff 1969, Fig. 9: 4.

Tile 39. BJ/67/180. L. 46.0 cm., W. 41.2 cm., Th. 6.0 cm. Red on cream slip, fired dark pink in one corner. All squares filled except for one central square which has a solid border. Illustrated in Goff 1969, Pl. IVf.

Tile 84. BJ/68/144. L. 46.8 cm., W. 42.2 cm., Th. 6.8 cm. Reconstructed from four fragments. Red on cream. Four central squares filled in. Pl. XVIIIc.

Tile 87. BJ/68/147. L. 46.3 cm., W. 41.9 cm., Th. 6.3 cm. Incomplete, reconstructed from eleven fragments. All squares filled in.

Tile 108. BJ/68/168. L. 46.6 cm., W. 41.2 cm., Th. 6.1 cm. Complete. Red on cream. Four central squares and two more in one quarter filled in. Pl. XVIIIId.

Tile 109. BJ/68/169. L. 47.2 cm., W. 41.9 cm., Th. 5.9 cm. Almost complete, reconstructed from three fragments. Unique design based on St. Andrew's cross of two intersecting bands striped red and white with a red cross in the centre. In each quarter are three contiguous hollow squares with dotted borders. The borders continue up alongside the arms of the central cross. Illustrated in Goff 1970, Pl. IIIa.

Tile 110. BJ/68/170. L. 47.3 cm., W. 41.1 cm., Th. 6.3 cm. Complete, reconstructed from three fragments. Red on cream. All squares filled. Pl. XIXa.

Tile 111. BJ/68/171. L. 47.0 cm., W. 40.7 cm., Th. 6.5 cm. Complete, reconstructed from three fragments. Red on cream to pink slip. All squares filled in as in Tile 110.

Tile 126. BJ/68/186. L. 47.7 cm., W. 42.1 cm., Th. 6.3 cm. Reconstructed from numerous fragments. Black paint on buff slip. All squares filled in as in Tile 110.

Cartwheel designs

A large spoked wheel, surrounded by one or more dotted borders, is painted in the centre of the tile. In addition to the four described we have found fragments of a fifth, like no. 103, in an unstratified context on the East Mound (BJ/68/18 and 49). This suggests that there were originally five tiles arranged in a group, possibly in the shape of a cross.

Tile 98. BJ/68/158. L. 47.0 cm., W. 41.4 cm., Th. 6.2 cm. Intact, in mint condition. Red paint on buff slip. Wheel outlined in solid red with fifteen spokes, lying inside a larger concentric circle composed of a "dotted band". Illustrated in Goff 1970, Pl. IIIb.

Tile 99. BJ/68/159. L. 46.9 cm., W. 41.0 cm., Th. 6.1 cm. Complete in two fragments. Red on cream. Wheel with seventeen spokes, outlined in solid red, lying inside a larger concentric circle composed of a dotted band, with its outer border thickened. Pl. XIXb.

Tile 101. BJ/68/161. L. 47.2 cm., W. 41.1 cm., Th. 6.4 cm. Complete, reconstructed from nine fragments. Wheel with eight spokes, outlined in solid red and surrounded by a dotted border, lying inside a larger concentric circle composed of a second dotted band. Pl. XIXd.

Tile 103. BJ/68/163. L. 47.2 cm., W. 42.1 cm., Th. 6.6 cm. Reconstructed from seven fragments. Wheel with fifteen spokes, otherwise like Tile 99. Pl. XIXc.

SHORTER NOTICES

A NOTE ON PRE-ACHAEMENID BRONZE STANDARD-TOPS FROM WESTERN IRAN

By P. R. S. Moorey

Small groups of bronze objects among the incoherent flow from clandestine excavations in western Iran may occasionally be drawn together to open cultural perspectives obscured when they are only seen in isolation. It is a poor substitute for proper archaeological study of material from controlled excavations; but these random finds now constitute, and for the foreseeable future may be expected to constitute, by far the greater part of our evidence for the work of pre-Achaemenid bronze-smiths in western Iran. They demand some kind of academic stewardship, even if in the long run only one substantial argument emerges from every ten insubstantial ones suggested by their casual revelation over the years through sales¹ and exhibition catalogues. It is to be hoped that even the most arid kind of typological classification, if rigorously applied, will be useful in the future for rapid cross-reference to evidence from controlled excavations once it appears. If this classification may even now be made to yield broader hypotheses for testing against well-excavated evidence it may act additionally as a stimulus for further field research in specific areas. Now that certain primary points have been made clear, through a combination of typological study and controlled excavation, about the metalwork distributed under the commercial designations "Amlash" and "Luristan", to name but the most common, it is time to call attention to another cultural element increasingly apparent from casually dispersed metalwork attributed to north-western Iran, sometimes specifically linked to Ardebil as a distribution centre.² There is a complementary story to be told through pottery; but in this particular case certain strongly developed local ceramic characteristics obscure the long distance interconnections more readily indicated by the metalwork,³ whilst material from controlled excavations is in this respect more common.

In 1934, soon after the first wave of "Luristan Bronzes" reached western Europe, Hancar wrote a paper succinctly titled "Kaukasus-Luristan".⁴ The case for any direct link was even then hard to sustain; in retrospect it seems to have been viable only because of inadequate evidence from the intervening regions of north-western Iran. Now that this is more readily available there are no grounds for postulating a penetration of central western Iran from Caucasia in the later second millennium comparable to the cultural diffusion over a millennium earlier, now generally referred to as the "Yanik Tepe Culture" after Burney's pioneer researches.⁵ There may have been a trickle trade from metal manufacturing centres in Transcaucasia down into Luristan in the Early Iron Age; but there is very little evidence even for that. It is in north-western Iran, in northern Azerbaijan, that Transcaucasian cultural influences were felt at this time and are increasingly implied by bronze artefacts circulating through the antiquities market from this area. The following note seeks to demonstrate that as much

¹ I am well aware that such objects are regularly sold, merely to satisfy customers, as being "Luristan" or "Amlash", or some other currently fashionable commercial designation; also that objects may be smuggled across the Turkish and Russian frontiers for easier sale in Iran; but I am satisfied that in the last fifteen years sufficient material has been found in Iranian Azerbaijan to sustain the main purport of this note. See also the sadly relevant comments of F. Rainey, "Do Archaeological Methods Promote Looting?", *Journal of Field Archaeology* 3 (1976), pp. 112-3.

² C. Burney and D. M. Lang, *The Peoples of the Hills* (London, 1971), pp. 102 ff.; for discussion of the ceramic evidence; also *ibid.*, pp. 116 ff. for arguments in favour of a north-west passage for the entry of Iranian-speaking peoples; for the more generally accepted north-east passage see T. Cuyler Young, *Jour., Iran* V (1967), pp. 11-34.

³ F. Hancar, *ESA IX* (1934), pp. 42 ff.

⁴ C. Burney, *Iraq*, XXIII (1961), pp. 138-53; XXIV (1962), pp. 134-52; XXVI (1964), pp. 54-61.

information as possible should be salvaged from them, since they may come to have some relevance to the vexed question of a possible western route of penetration by Iranian-speaking peoples at the end of the local Bronze Age.

The standard-top illustrated in Pl. Ia and Fig. 1 was acquired by the Ashmolean Museum, Oxford in 1974 through the Bomford Trust Fund.⁵ It consists of a circular hollow loop with a border of six open loops, framing at the top what seems originally to have been a small spherical cage with a rattle in it. The central opening is filled by an openwork oval, ribbed cage with four projecting bars to secure it to the main outer hoop. The central cage is broken on one side and no longer contains a rattle. The main hoop is cast with a running open pattern of linear curves on one face, z-shaped apertures in the other. It is also broken towards the top on one face and no trace of the original rattle survives. A systematic attempt has clearly been made by the finders to remove the spherical balls of bronze probably set into these cavities. A rectangular socket is rivetted to the central lower portion of the hoop and into it, again secured by a rivet, is set a square-sectioned tang.

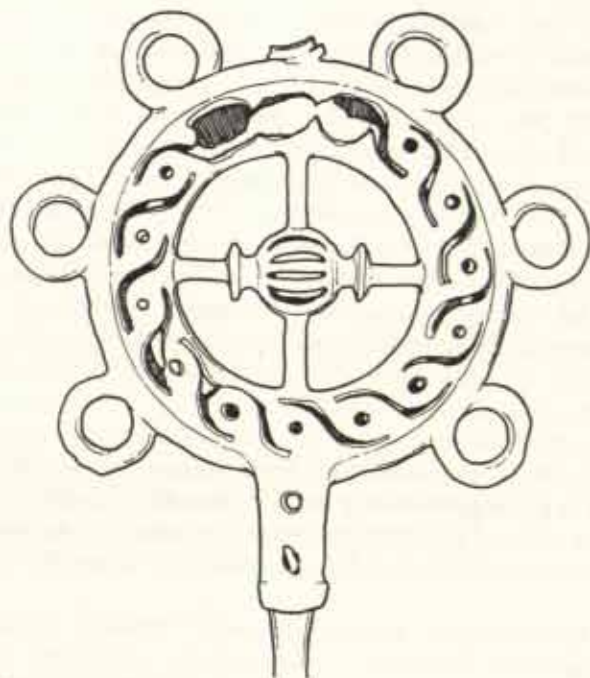


Fig. 1. Bronze Rattling Standard-top: Ashmolean Museum, Oxford, 1974. 358.

This is not the first such standard-top to be published from western Iran. Those previously published are more elaborate, but recognizably of the same family. They do not have the central fitting surviving in the Oxford example. They are briefly:

1. *Schimmel Collection, New York*—a single piece (Fig. 3). Six rings on the perimeter: recumbent, hollow ram with body cutouts couchant on the top; 18.3 cm. high; 11.3 diameter of outer ring. A. Farkas in "Animal Style" *Art from East to West* (Asia Society, 1970), no. 23, frontispiece, pp. 54ff; O. Muscarella (Ed.), *Ancient Art: the Norbert Schimmel Collection* (Mainz, 1974, no. 137, colour plate).
2. One, *Anon. Private Collection*; one, *Hamburg: Museum für Kunst und Gewerbe*.—a pair (Fig. 2). Hollow couchant ram at top with body cutouts threatened from behind (i.e. spectator's right) by a lion standing with forelegs on the ring perimeter, rear legs on one of four perimeter loops; a hollow bird perched in front of the ram; about 18 cm. high; *Trésors de l'Ancien Iran* (Geneva, 1966), no. 540, fig. 35. Said to be from northern Iran.

⁵ *Christie's Sale*, July 11th 1974, no. 365 (unillustrated); Ashmolean: 1974.358; 14 cm. diameter of hoop (excluding

rings); 18 cm. length of tang.

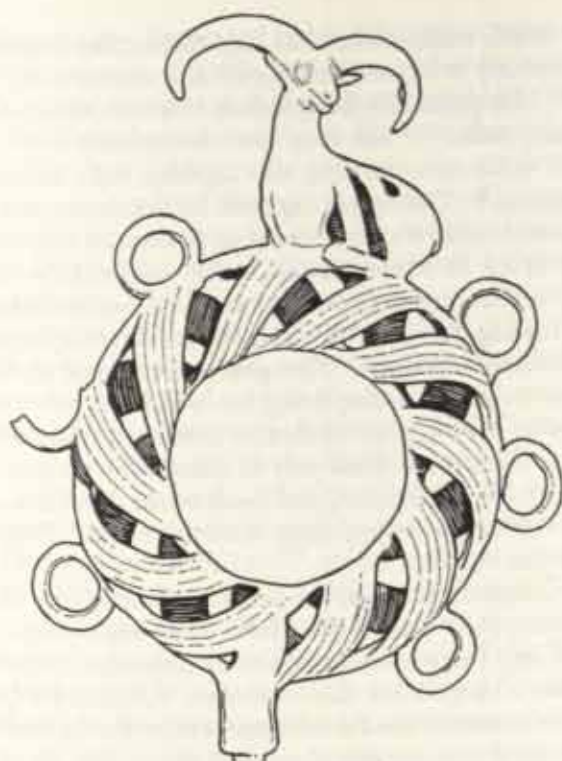


Fig. 2. *Bronze Rattling Standard-top*: After Trésors de l'ancien Iran (Geneva, 1966), no. 540, pl. 35.



Fig. 3. *Bronze Rattling Standard-top*: After O. Muscarella (Ed.), Ancient Art: The Norbert Schimmell Collection (Mainz, 1974), no. 137 (plate).

The distinctive openwork casting of the rams recalls a bronze mouflon acquired by the Louvre in 1898 from a dealer who gave it no provenance⁶ (Pl. Ic). In this case the animal stands on a platform, its body hollow-cast with regular vertical slits in the rib cage and a spherical metal rattle inside it. Rostovtzeff⁷ in a widely ranging article on Asiatic animal art described it as "Syro-Cappadocian Art"; Bossert placed it in the Hittite New Kingdom; Rutten concurred.⁸ Although it may indeed have been found in eastern Turkey, or sold to the dealer in this region, its cultural affinities are neither Hittite nor Neo-Hittite but rather Late Bronze Age/Early Iron Age Transcaucasian. There is as yet no certain evidence for an indigenous style of hollow animal sculpture in metal in Iran; but rattles in variously cast open-work cages are known there, from Luristan northwards, in the Early Iron Age. In Luristan and south Kurdistan⁹ they were primarily bells designed to hang as pendants; but in the north, at cemeteries like that of Kaluraz in Gilan, there is evidence for rattles or jingles with zoomorphic decoration set on vertical stems.¹⁰ They are on a much smaller scale than these rattling standard-tops, for which there is no exact parallel in the published west Iranian metal repertory. Before considering their special cultural affinities two published pairs of functionally similar objects from this area require comment, as each pair has its own distinct cultural affiliations.

The best known were acquired separately in Iran in the last decade of the nineteenth century, one said specifically to be from Hamadan. This is now in the Royal Ontario Museum, Toronto ("Sarre's Standard"), the other in the Louvre (Pl Ib). They have recently been discussed by Calmeyer and convincingly dated on iconographical grounds to the Old Babylonian Period.¹¹ They have

⁶ Information kindly supplied by Dr. Pierre Amiet.

⁷ *Revue des Arts Asiatiques* I (3) (1924), p. 15, pl. III.4.

⁸ Th. Bossert, *Altanatolien* (Berlin, 1942), no. 317, plate; M. Rutten, *Encyclopédie Photographique de l'Art de Mésopotamie* (Paris, 1935), pl. 292 A,B.

⁹ Cf. particularly; G. Contenau & R. Ghirshman, *Fouilles du Tepe Giyan*, pl. VI.2, pl. 37.10; Zalu Ab Cemetery: A.

Godard, *Gazette des Beaux Arts* LXXV (2) (1933), p. 138, fig. 18.

¹⁰ P. R. S. Moorey, *Ancient Persian Bronzes in the Adam Collection* (London, 1974), nos. 74-5.

¹¹ P. Calmeyer, *Datierbare Bronzen aus Luristan und Kirmanshah* (Berlin, 1969), Group 25.

the appearance of cult objects. Neo-Assyrian palace reliefs make clear that any distinction between war and ritual standards is largely irrelevant, since exactly comparable objects are shown static in shrines and in combat fixed to the front of chariots.¹² The primarily Babylonian iconography of this pair may be partially explained from scenes on cylinder seals. It has long been recognized that the best parallel to their decoration is a seal in the Newell collection showing two fighting bulls below a guilloche framing a human wheel of four revolving figures.¹³ The revolving men at the centre of the standard-tops hold vases from which water flows into the circular frame; meant to be seen as a flowing stream with the ducks cast on its perimeter swimming in it. In Mesopotamia "the vase with flowing streams" was held either by female deities or by nude, bearded male heroes, as on those two standard-tops. It is they who also appear with "the God of Flowing Streams" on the finest Old Babylonian seal yet published from Susa.¹⁴ It is inscribed for a devotee of Nergal. The god is juxtaposed to two men, without horns of divinity, both armed, one about to strike a crouching foe wearing boots with turned-up toecaps. The second millennium rock relief at Kurangun¹⁵ indicates that the "God with Flowing Streams" ranked conspicuously in the Elamite Pantheon. This pair of standard-tops belong to a time when Elamite culture fell strongly under Babylonian influence, and both exerted influences, only yet dimly perceived through the meagre archaeological evidence, deep into the central Zagros region where the standard-tops were probably found in the 1890's.

A provincial, rather than a metropolitan, Elamite workshop is again the probable source of a pair of bronze standard-tops now in the Metropolitan Museum, New York¹⁶ (Pl. IIa). The shape is similar to all the objects considered here; but whatever fitted into the central aperture of these two (slots to retain it are cast into the main hoop) is lost and they have a tang rather than a socket. As Mrs. Harper has pointed out, the central man has some broad affinity to statuettes of worshippers from the Inshushinak Deposit at Susa;¹⁷ but his kilt and boots with up-turned toes are not paralleled there. His gesture of obeisance suggests that these were originally cult standard-tops. The plinth on which he stands terminates in a snake's head: a *leitmotif* of Elamite religion and art.¹⁸ There is some scattered evidence to suggest that boots with up-turned toes were worn in the second millennium B.C. among Elam's northern neighbours in the mountain valleys of Luristan. They appear there worn by figures painted on local pottery.¹⁹ The seated mouflon on these two standard-tops, threatened from behind by hunting dogs, is a motif used in the distinctively stylized "Luristan Bronzes" of Iron Age II-III B, though not exactly as rendered here. An attribution to a craftsman working in a provincial "Middle Elamite Style" in a Zagros workshop late in the Bronze Age or in Iron Age I (sometime in the second half of the second millennium B.C.), is for the moment little more than the most viable possibility.

With these two pairs of second millennium standard-tops from western Iran clearly in mind it is easier to indicate more exactly how the open-cast standard-tops with rattles considered first represent a fresh cultural influence. The basic form, suggesting close functional identity, is very similar, but little else is. The openwork style of casting and the introduction of rattles may not be paralleled in south-west Asia at this time. Resort must be made to Transcaucasia for comparable objects, to the assembly of archaeological cultures now generally grouped as the "Central Transcaucasian Culture".²⁰ The relevant evidence is not to be found at one site but at a variety among which the cemetery at Lchashen, Lake Sevan, has in recent years provided the focus. Here, in the excavator's groups 3 and 4, were found massive bronze standard-tops designed to be strapped at the junction of a cart draught-pole and yoke. They are cast in the round as animals and chariots set on rods with anchor-shaped fittings at the base.²¹ Bronze bells and bird pendants associated with them, as also the hilts and sheaths of daggers, are

¹² B. Hrouda, *Die Kulturgeschichte des assyrischen Flachbildes* (Bonn, 1965), pl. 30.4-5, 52.4.

¹³ von der Osten, *Ancient Oriental Seals . . . Mr. Edward T. Newell* (Chicago, 1934), pl. XXIV.345.

¹⁴ P. Amiet, *MDP XLIII* (1972), no. 1769, pl. 162.

¹⁵ P. Amiet, *Elam* (Auvers-sur-Oise, 1966), figs. 294-5.

¹⁶ P. Harper, *Bulletin of the Metropolitan Museum of Art* (April 1960), pp. 254 ff; fig. 17; nos. 57.13.1-2; 29.8 cm. high; 12.1 cm. wide; attributed to Azerbaijan.

¹⁷ P. Amiet, *Elam*, figs. 316, 318-9, 231.

¹⁸ W. Hinz, *Revised Cambridge Ancient History I* (2) (1971), pp. 674-5.

¹⁹ P. Amiet, *La Revue du Louvre* 24(3) (1974), pp. 193-6, fig. 2-3.

²⁰ T. Sulimirski, *Prehistoric Russia* (London, 1970) pp. 367 ff.; C. Burney and D. M. Lang, *op. cit.*, pp. 104 ff.

²¹ A. Mnatsakanyan, *I.L.N.*, April 15, 1967, pp. 28-9; A. A. Martirosian, *Armenia in the Bronze and Early Iron Ages* (Erevan, 1964) (in Russian), pl. VIII ff.

distinctively decorated with triangular openwork patterns. Similar objects are known from the important site of Artik, and from earlier excavations at Kvemo-Sasireti, Redkin Lager and Samtavro.²² In almost every case they are associated with the distinctive "Amazon axes", Deshayes Type "M",²³ which have been found far to the west through Iranian Azerbaijan and into Gilan. The same cultural context has yielded wide bronze belts made of thin sheet metal usually incised with hunt or battle scenes and animal friezes. A number of comparable belts have reached western collections in recent years as from cemeteries in north-western Iran.²⁴

One further object reported as from a site in north-western Iran may have a place in the history of standards. This is a solid cast bronze statuette of a mouflon standing 15.3 cm. high on a base measuring 6.2 by 2.4 cm., now in Hamburg²⁵ (Pl. IIb). What little evidence there is for such an animal style in Early Iron I-II in this region suggests that it belongs broadly to this period, as was suggested when it was first published, not to the Sasanian period as has been the more recent suggestion. Both its form and its style are more reminiscent of Transcaucasian animal standard-tops than of anything yet certainly attributed to the Sasanian period.

This is, certainly, all rather incoherent evidence upon which to base any but the most preliminary assessment, yet still it reveals the long shadow cast by the extended and widely ranging "Central Transcaucasian culture" in the extreme north-west of Iran. The chronology of this culture is much debated, but in general terms it runs a parallel course to Early Iron I and II as defined for Hasanlu (c. 1350-800 B.C.). It is only in the last two centuries of this span that iron forms a conspicuous element in metal production. The metalwork of the Talish cemeteries and of Marlik at this time has a distinct character of its own in which no strong Transcaucasian element may be detected. It appears that in the centuries preceding the Urartian penetration of Azerbaijan there may have been at least a trickle trade in Transcaucasian bronze objects primarily into an area due south of the Araxes river and not much beyond Ardebil to south or east. Whether the rattling standards discussed here were imports, or were made in Azerbaijan under direct Transcaucasian influence, such salvage operations as this note may only leave an open question.

Their legacy is not without interest. The Transcaucasian rattles, pole-ends and bells were the ancestors of such trappings among the South Russian Scythians. They were widespread in the area of the river Kuban to the Carpathian Basin as early as the sixth century B.C. soon after the Scythians withdrew from the Near East through Caucasia to the Black Sea region.²⁶ But in this, as in much else, the royal Achaemenids adopted a mainstream Near Eastern tradition rather than the equipment which would have been familiar both to the Medes and to the Persians through close association with their Scytho-Cimmerian confederates in the seventh century B.C. The Achaemenid royal standard, unrepresented in contemporary Persian art, is described in Greek texts.²⁷ In the *Cyropaedia* (VII.1.4) Xenophon portrays Cyrus the Great at the head of his troops about to do battle with Croesus, "Now his ensign was a golden eagle with outspread wings mounted upon a long shaft. And this continues even unto this day (time of Artaxerxes II) as the ensign of the Persian king". Such was the royal standard described by Philostratus in an imaginary picture of Themistocles before Artaxerxes I (*Imagines: Themistocles* II: 31); such that borne before Artaxerxes II at Cunaxa (*Anabasis* 1.10.12). Q. Curtius Rufus (III.iii.16), in writing of the yoke on the chariot of Darius III, says "and on it rose two golden images a cubit high of the king's ancestors, one of Ninus, the other of Belus. Between them they had consecrated a golden eagle, represented with outstretched wings". Was it really an eagle the Greeks saw or, as is now more immediately assumed, the anthropomorphic winged disk as represented at Behistun? No surviving contemporary Achaemenid illustration is available to support the Greek

²² C. F. A. Schaeffer, *Stratigraphie Comparée et Chronologie de l'Asie Occidentale* (Oxford, 1948), pp. 504 ff.

²³ J. Deshayes, *Les outils de Bronze de l'Indus au Danube* (Paris, 1960), I, pp. 216 ff.

²⁴ R. D. Barnett and J. Curtis, *BMQ XXXVII* (1973), p. 123, pl. LIIa; Ashmolean: 1969.502 (unpublished).

²⁵ H. Hoffmann, *Jahrbuch der Hamburger Kunstsammlungen* 18 (1973), pp. 222-3 (plate) as "Sasanian"; *Trésors de l'ancien Iran* (Geneva, 1966), no. 540 bis, with dating accepted here.

²⁶ K. Bakay, *Scythian Rattles in the Carpathian Basin and their Eastern Connections*. (Budapest, 1971).

²⁷ T. Dunbabin, *Classical Review* (1946), p. 10; C. Bonner, *Classical Review* (1947), pp. 9 ff.; on the "Alexander Mosaic" in Naples what might be the Persian royal standard is too damaged for description. I am uncertain about the 'royal standard' at Persepolis: A. B. Tilia, *Studies and Restorations at Persepolis* (Rome, 1972), p. 190, fig. 3, right.

identification; only later when Hellenization had anyway penetrated deep into Persian imagery do the coins of Persis show an eagle perched on a standard.²⁸ It is also likely that when Themistocles as "satrap" of Magnesia in the first half of the fifth century B.C., put a displayed eagle on the reverse of his coins it was Greek rather than Persian imagery which inspired him.²⁹

ACKNOWLEDGEMENTS

I am most grateful to Dr. Pierre Amiet of the Louvre, Dr. V. Crawford and Mrs. Prudence O. Harper of the Metropolitan Museum of Art, New York, to Dr. Herbert Hoffmann, and to Dr. Axel van Saldern of the Museum für Kunst und Gewerbe in Hamburg, for supplying me with photographs and for giving permission for their publication here.

A PERSEPOLIS RELIEF IN THE FITZWILLIAM MUSEUM, CAMBRIDGE

By Richard Nicholls and Michael Roaf*

Shortly after the discovery of the North Stairs of the Central Building (Tripylon) in 1931 it was observed that the style of its relief sculpture is markedly different to that of the reliefs of Darius and Xerxes at Persepolis. These differences have been ignored in the last forty years and yet they are an important clue to the understanding of the stylistic development of Achaemenid sculpture. In the following pages we wish to draw attention to a little known relief in the Fitzwilliam Museum which came from the North Stairs of the Central Building and to discuss the style and date of the reliefs on the North Stairs.

*The relief in the Fitzwilliam Museum*³⁰ (Pls. IIIa and IIIc)

Only a few fragments of the North Stairs have been removed from Persepolis.³¹ The largest of these has been in the Fitzwilliam Museum, Cambridge, since 1927. Until 1960, however, extensive restorations in a hard dark-tinted plaster mimicking the original limestone had rendered the appearance of the whole highly suspect and had obliterated many significant details around the edge. These "restorations" have now been removed and the relief appears as shown in Pl. IIIa. The right and top edges and the bottom left corner of the block are broken. At the bottom right corner there appears to have been a stone patch, and the left edge is the vertical edge of the original block.

* The original version of this article was written in 1960 by R. V. Nicholls and has been revised and expanded in 1976 by M. D. Roaf who would like to express his thanks to the Iranian Archaeological Service for their assistance when he was studying at Persepolis, to the many scholars who have generously shared their knowledge of Achaemenid art with him, and to Georgina Herrmann for much assistance in the writing of this article.

²⁸ A. U. Pope, *Survey*, IV, pl. 126 E.F.G.H.: with and without eagle.

²⁹ A. K. Podlecki, *The Life of Themistocles* (Montreal, 1975), pp. 169-70, pl. 3a; I am most grateful to Dr. Colin Kraay and Dr. Susan Sherwin-White for discussion of this point.

³⁰ Reproduced by permission of the Syndics of the Fitzwilliam Museum. Inv. E.43.1927. Presented to the Museum in 1927 by Dr. J. Pierpont Morgan, formerly in the collection of A. G. B. Russell. Maximum preserved dimensions: height 0.714 m., width 0.429 m., thickness 0.12 m. Bibliography: *Cat. Sotheby 30th May 1927*, p. 11 no. 60 and pl. 7; Royal Academy of Arts, *Cat. International Exhibition of Persian Art, 1931*, (2nd ed.), p. 5 no. 2 or (3rd ed.), p. 7 no. 2.

This piece does not appear in the list of reliefs from Persepolis in western museums published by R. D. Barnett,

"Persepolis", *Iraq* 19 (1957), pp. 60-4 and by L. Vanden Berghe, *Archéologie de l'Iran ancien* (Leiden, 1959), pp. 153-4.

³¹ The only major missing portions of the North Stairs are the south half of the east side and most of the south side of the east balcony.

Two fragments from the North Stairs are in western collections:

1. Musée du Louvre, Paris. AO17278 (acquired 1933). Dimensions 22 x 8 cm. Original position: Central Building North Stairs, NE flight north side, nos. 28 and 29. It shows the head of a Median noble and part of the beard of the following figure (note the sculptor's mark). *Encyclopédie Photographique de l'Art, L'Art de la Mésopotamie ancienne au Musée du Louvre 2* (Paris, 1935), pl. B on p. 43. Information kindly given by Pierre Amiet.

[continued on next page]

The relief shows two "Median nobles" advancing to the spectator's right. Above can be seen the remains of a rosette border and at the bottom is a flat narrow band on which the nobles appear to walk. These figures are generally called "Median nobles" but there is no definite evidence that they were in fact Medes. We know that Persians habitually wore the "Median" dress of tunic and trousers and the Persian Aspathines is shown on the tomb of Darius in "Median" dress.³² Ali Sami has suggested that the nobles on the Central Building also included military officers and conjectured that the building was the Royal Military Office.³³ Dr. Shahpur Shahbazi has suggested that the "Persian and Median nobles" on the Apadana were the civil and military governors of the provinces of the Persian empire.³⁴ Neither of these suggestions is sufficiently convincing to warrant replacing the convenient phrase "Median noble" by some more exact expression.

In front of the first figure on the Fitzwilliam relief the tip of the bow-case of the preceding noble can be seen.³⁵

The first figure is complete but some of the details of his face are damaged. He is wearing Median dress, round hat with tail, knee-length long-sleeved close-fitting tunic, and tight trousers; but his shoes fastened with laces were not indicated. His head is turned to look back and his right hand reaches up to touch the beard of the following figure; his torso is frontal and his legs face to the right with his left or further foot in front. Next to the upright fringe of the noble's hair is the mark Y which was left by the sculptor responsible for the carving (Pl. IIIc). The treatment of the hair is typical: it is bunched in curls at the back. The upper part of his long full beard is curled and the lower part consists of straight hair as is characteristic of the nobles at Persepolis (see Pls. Va and b). On his chest is a necklace made of a wide flat band which presumably represents an original of gold or silver. His left arm hangs down in front of his body and his left hand holds a "ceremonial flower". These flowers are commonly held by the nobles on the North Stairs of the Central Building and on the north and east sides of the Apadana. Their exact nature is uncertain but they were made in a variety of shapes, spherical, tulip-shaped, lily- or lotus-shaped, or like a bundle of stalks. Those carried by the king and the prince also have side buds. An example of one of these flowers made of bronze has been published by G. Walser.³⁶ Similar flowers were carried by the king on the Assyrian reliefs and it is possible that they were a type of pomander. The belt of the first noble on the Fitzwilliam relief is tied in the middle by a reef knot. From a strap fastened to the belt at the front by a boss or button hangs his short sword or *akinakes*, the type of sword used by the horse-riding peoples of the Persian empire.³⁷ Its chape is fastened round his right leg by a thin strap which stopped it swinging (a similar device to that used by the gunmen of the American West).

The second figure is dressed in a similar manner to the first, though he has no necklace, flower or sword. His legs advance to the spectator's right, again with the left or further foot in front. His head and torso are both in profile facing to the right. His right arm hangs vertically at his side while his left arm is bent at the elbow and his hand rests on the shoulder of the figure in front. Partly obscured on the far side of his body hangs a bow-case. In front of the fringe of this figure too is the sculptor's mark Y.

³² On "Median" dress see for example M. Roaf, "The subject peoples on the base of the statue of Darius", *Cahiers de la Délégation Archéologique Française en Iran* 4 (1974), pp. 99-103 (hereafter "Subject peoples"). See also n. 34.

³³ A. Sami, *Persepolis (Takht-i Jamshid)*, (Shiraz, 6th ed., 1970), p. 44.

³⁴ A. Sh. Shahbazi, "Costume and Nationality: Remarks on the usage of the 'Median' and 'Persian' costumes of the Achaemenid period", paper presented to the 7th International Congress of Iranian Art and Archaeology, Munich, 1976.

³⁵ For an example in sheet bronze see P. R. S. Moorey, "Iranian troops at Deve Huyuk in Syria in the earlier fifth century B.C.", *Levant* 7 (1975): fig. 3.8 on p. 112.

³⁶ G. Walser, "Des cadeaux pour le Grand Roi" in *Trésors de l'ancien Iran—Musée Rath, Genève, 8 juin-25 septembre 1966*, pl. on p. 43, catalogue no. 663.

³⁷ Moorey, *Levant* 7, pp. 113-14 and figs. 1.7, 3.6 and 3.7; B. Goldman, "Achaemenian chapes", *Ars Orientalis* 2 (1957), pp. 43-54.

continued from previous page

2. In the Private Collections of H.M. the King of Sweden. Mentioned in A. B. Tilia, *Studies and Restorations at Persepolis and other sites of Fars* (IsMEO, Rome, 1972), p. 60 (hereafter Tilia, *Studies*). I am grateful to Mrs. Tilia for drawing my attention to this piece.

The two fragments published in C. Wilkinson, "The Achaemenian remains at Qasr-i Abu Nasr", *JNES* 24 (1965), figs. 14 and 15 have been replaced at Persepolis. See E. F. Schmidt, *Persepolis 1* (Chicago, 1953), pl. 68 B. They belong to Central Building North Stairs, NW flight south side lower part nos. 13 and 14.

The original position of the fragment

The only reliefs at Persepolis which show rows of consecutive Median nobles are those on the North Stairs of the Central Building. On the Apadana Median nobles alternate with Persian nobles. Rosettes are carved above Median nobles only on the southern wall of the North Stairs. Since the nobles on the Fitzwilliam fragment are walking to the right this piece must originally have come from the south side of the east balcony halfway up the North Stairs of the Central Building (Fig. 4).

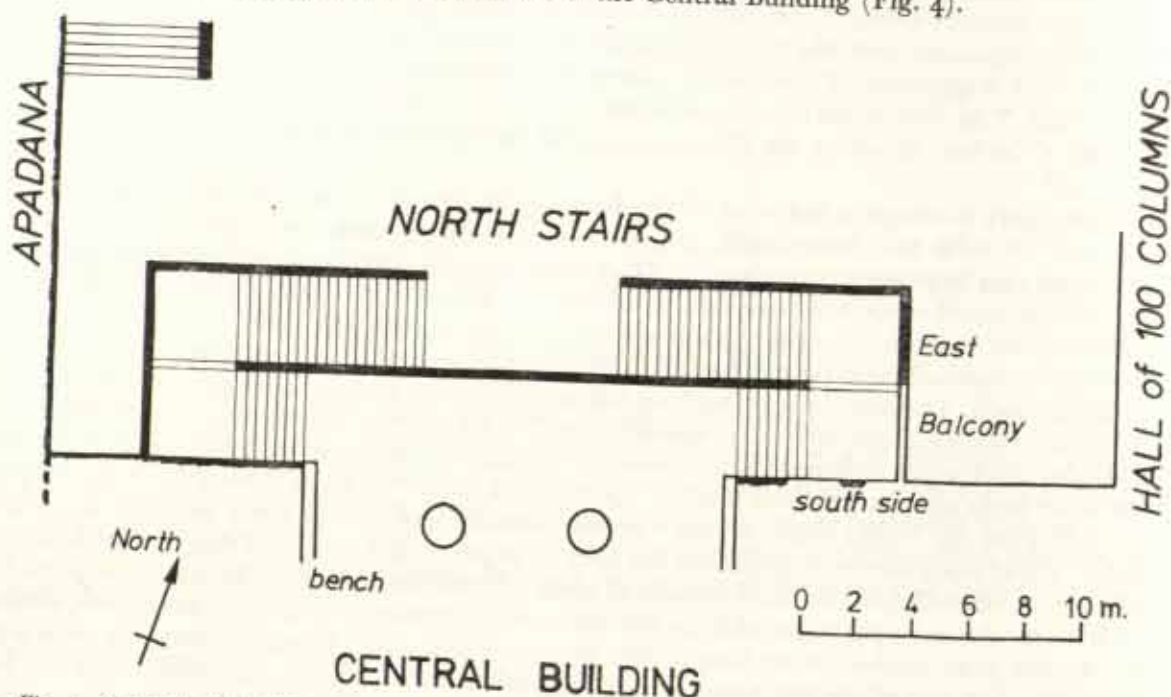


Fig. 4. Plan of the North Stairs of the Central Building. Scale 1:250. (after Schmidt, *Persepolis* 1, figs. 51 and 53 E).

Most of this section of the east balcony is now missing. Just one block remains at the site. This shows three Median nobles, one of which as on the Fitzwilliam relief bears the sculptor's mark Y (Pl. IIIb). On the corresponding relief on the south wall of the west balcony there are twelve Median nobles walking towards the left and so we may assume that originally on the east balcony too there were twelve figures. Unfortunately the reliefs on the east and west sides of the North Stairs do not correspond in all details and there is more variation between them than can be accounted for by reflection (i.e. substituting left for right) and by reversal (i.e. showing the figures from the other side). It is not therefore possible to determine the exact positions of the Fitzwilliam fragment and the block at Persepolis along the south side of the east balcony by comparison with the reliefs on the west balcony.

The date of the North Stairs of the Central Building

For a long time it was unanimously agreed that the Central Building together with its North and South Stairs was built during the latter part of the reign of Darius I after his son Xerxes had been appointed crown prince.³⁸ The evidence for such a date is solely the identification of the king and prince on the east door of the main hall as Darius and Xerxes. That these figures must be King Darius and Prince Xerxes has now been disputed, and it seems more likely that the king represented is Xerxes or Artaxerxes I.³⁹ Furthermore it is possible that the main hall, the North Stairs and the South Stairs

³⁸ For example Schmidt, *Persepolis* 1, pp. 116, 168-9; Tilia, *Studies*, pp. 201-4; A. Farkas, *Achaemenid Sculpture* (Leiden, 1974), pp. 51-4; "Subject peoples", pp. 90-1.

³⁹ H. von Gall, "Die Kopfbedeckung des Persischen Ornats",

AMI NF7 (1974), p. 151; P. Calmeyer "Die Osttür des Tripylon in Persepolis", paper presented to the 7th International Congress of Iranian Art and Archaeology, Munich, 1976. Personal communication from A. Sh. Shahbazi.

were not built at the same time and that the North Stairs were a later addition to the Central Building. A comparison of the style of the sculpture on the North Stairs with that of more securely dated reliefs at Persepolis also indicates a later date for the North Stairs. The evidence for these assertions is presented in more detail below.

Technical observations: The Central Building was built after the Apadana, which was started by Darius and completed by Xerxes. This is proved by an examination of the junction of the Central Building and the east wall of the Apadana; for the east wall of the Apadana continues behind the northern stone wall of the Central Building (Fig. 4).

The North Stairs are not an integral part of the Central Building. They are made of grey stone while the portico is made of black stone. Moreover the workmanship is different; the bench of the portico is highly polished, while the stairs are left with the marks of the toothed tools still clearly visible. If we are correct in thinking that the North Stairs were a later addition, investigations in the pavement of baked brick fragments laid down by Herzfeld's workmen in front of the north portico might reveal the original design of the northern entrance to the Central Building.

On both the main hall and the North Stairs of the Central Building the clamp cuttings are of the late narrow rectangular form rather than the earlier dovetail shape. Similarly they both have marks of toothed tools visible on them. These features show that they were not the earliest structures to be built at Persepolis but do not help in the exact determination of the date.

*Sculptor's Marks:*⁴⁰ We noted the presence of the sculptor's mark Y on the Fitzwilliam fragment. Sculptors' marks are common on the reliefs of the Apadana and the North and South Stairs of the Central Building. The mark Y is the commonest mark on the North Stairs but five other marks also occur there. These marks refer to the team of workmen involved in carving a particular section of the reliefs;⁴¹ the size of the teams and the extent of the sections carved by each team varied from building to building. Each mark was probably that of an individual sculptor within the team, presumably the leader or master-craftsman, as is the case with the present day Iranian mason's mark "a special sign he [the mason] has chosen at the end of his apprenticeship that he uses for the rest of his life".⁴² This does not imply that two sculptors at different periods would not have had the same mark; but it would be most unlikely that the same mark would have been used by two different craftsmen, or teams of craftsmen, at Persepolis at the same time.

The distribution and frequency of sculptors' marks on the reliefs at Persepolis are summarized in Fig. 5. Six different marks are found on the North Stairs and only two of these are found amongst the six marks on the Apadana reliefs. Amongst the numerous masons' marks on the column bases of the Treasury, which was one of the first buildings to be built on the terrace, are four of the Apadana marks but only one of those on the North Stairs.⁴³ This suggests that many of the sculptors of the Apadana reliefs had already worked in the Treasury and that few of the sculptors of the North Stairs had worked on the Apadana or the Treasury. This too would suggest that the carving of the North Stairs took place after that of the Apadana façades.

Stylistic considerations: Even a superficial examination of these reliefs and those of the Apadana reveals marked differences in style, which, in all probability, are to be attributed to a difference in the date of carving. This conclusion was already reached by Cleta M. Olmstead in 1936, though it seems to have been ignored by subsequent critics.⁴⁴ Mistakenly, however, she concluded that the Apadana reliefs were carved *after* those on the north stairs of the Central Building and she described the "development" of the Apadana reliefs in the following way:⁴⁵

⁴⁰ Sculptors' marks and the style of the Persepolis reliefs will be considered in greater detail in M. D. Roaf's doctoral thesis for Oxford University entitled "Sculptures and sculptors at Persepolis".

⁴¹ M. Roaf, "A mathematical analysis of the styles of the Persepolis reliefs", in *Art in Society* (ed. J. V. S. Megaw and C. M. B. Greenhalgh). (Forthcoming 1977.)

⁴² H. E. Wulff, *The traditional crafts of Persia* (M.I.T. Press, 1966), p. 128.

⁴³ Schmidt, *Persepolis* I, figs. 71A-G, 72A, pp. 161, 168, 171. Carl Nylander is making a detailed study of the masons'

marks at Persepolis; C. Nylander, "Masons' marks in Persepolis—a progress report", in *Proceedings of the 2nd Symposium on Archaeological Research in Iran October 29th–November 1st 1973* (F. Bagherzadeh ed.) (Tehran, 1974), pp. 216–222.

⁴⁴ C. M. Olmstead, "Studies in the Stylistic Development of Persian Achaemenid Art", (Master's Thesis, Chicago, 1936). Some of her conclusions were repeated in A. T. Olmstead, *History of the Persian Empire* (Chicago, 1948, Phoenix Books, 1959) (hereafter Olmstead, *History*).

⁴⁵ Olmstead, *History*, p. 277.

			8	⋈	Σ	Δ	*	Y	Λ	~	1	+	4
APADANA	N side	W wing	10										
		E wing	2		14	8	9	13					
	E side	N wing	18	2									
		S wing	4		8		13	5					
CENTRAL BUILDING	N stairs	3					121	68	11	2	2		
	S stairs	4											4
XERXES PALACE	E stairs	3											
	W stairs	3											
TREASURY	Xerxes tablets	1					1						1?
	Phase 1	1	4	1									
	Phase 2	4	2	23	1								
	Phase 3	12	7	6	3								

Fig. 5. Frequency of sculptors' marks on reliefs, stone tablets, and column bases at Persepolis. Dubious marks and marks only occurring once have been omitted.

Compared to the reliefs of the staircases of Darius' triple gateway [the Central Building], there is a definite artistic advance, even on the earlier and cruder north front of the Apadana. The robust humor [of the north stairs] has almost completely disappeared and with it the strange alternation of tall, medium, and squat figures [Pl. IVc]. The attempt to represent climbing figures has been abandoned; the thighs are no longer of different lengths, figures do not overlap, nor does one seem to step on the toes of another. Grouping is more systematic and more subtle, details of anatomy are more accurate, the drapery is more skilfully handled, and the general effect is more pleasing.

Despite these acute observations, her assumption that the North Stairs were earlier than the Central Building is untenable. What she thought was simple, primitive and archaic is in fact crude, degenerate and late.

The closest similarities to the sculpture of the Central Building North Stairs are to be found on the replacement panels in the centres of the Apadana friezes.⁴⁶ On the outside of both are alternate Persian and Median soldiers, with human-headed sphinxes above and in the centre an uninscribed panel. The parapets of both have files of Persian soldiers and although the parapet of the east side of the Apadana panels were contemporary. Notice especially the flat low shape of the North Stairs and the replacement curls, the outline of the lips and moustache, and the size and position of the eye (Pl. IVa and b).

⁴⁶ See Schmidt, *Persepolis 1*, pls. 22, 63-5. In fact E. E. Herzfeld, *Iran in the Ancient East* (London, 1941), pl. LXXV, labels soldiers on the Apadana central panels as coming from the

Central Building and vice versa. On the replacement see Tilia, *Studies*, pp. 175-208.

Our main concern so far has been to establish that the North Stairs were carved later than the Apadana reliefs which are dated by inscriptions to the reign of Xerxes; but now we must consider when the North Stairs were added to the Central Building. The inscription panels were left blank and no foundation tablets have been found; and so the date must be based on the style of the reliefs alone.

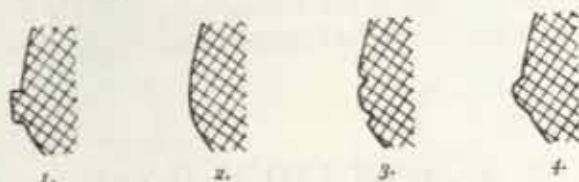


Fig. 6. Details of the cross-sections of eyebrows on the reliefs at Persepolis.
1—on reliefs of Artaxerxes III; 2, 3, 4—on reliefs of earlier rulers.

The latest reliefs on the Persepolis terrace are those of Artaxerxes III on the facade of Palace H (moved from Palace G), on the west stairs of Darius Palace, on the North Tomb at Persepolis and on the Unfinished Tomb. These are easily identifiable by their stocky proportions, by their flat unmodelled carving, by their clumsiness and above all by the raised rectangular cross-section of the eyebrow. This feature is found without exception on all the reliefs of Artaxerxes III at Persepolis and is not found on the reliefs of any earlier king (Pl. Vd and Fig. 6). These characteristics do not appear on the North Stairs and so we may assume that the North Stairs were earlier than the reign of Artaxerxes III.

We must therefore consider the relation of the North Stairs to the relief sculpture of Artaxerxes I. The only securely dated reliefs of this king are those of the destroyed palace started by Xerxes and completed by Artaxerxes I, which was built on the site of Palace H.⁴⁷ The fragments of these reliefs have recently been collected and studied by Ann Britt Tilia who writes:⁴⁸

Apart from the innovation in the composition, we can notice a certain change of style, if we compare the figures of the later façade to those on the somewhat earlier Apadana façade. The design as well as the modelling of the forms is generally softer, not so hard and almost metallic as on the Apadana façade. The position of the figures and the rendering of their movements is sometimes more varied and more natural and their bearing less rigid.

These changes are just those that C. M. Olmstead noted occurred on the North Stairs but not on the Apadana. Further similarities between the Palace of Artaxerxes I and the North Stairs are the clumsiness of the postures of the figures, the stockiness of the proportions, the lack of subtlety in the modelling, and the lack of finish. For example, on both sets of reliefs the moustache and hair of the lower lips were not normally carved, and the spirals of the curls of hair and beard were shown with only one line instead of two (Pl. Va and c). The minor differences between the two sets of reliefs might be explained by the different types of stone: the facade of the Palace of Artaxerxes I was carved out of the fine, black Majdabad stone while the North Stairs were carved from the coarser grey local stone.

Conclusion

In recent years many of the traditional theories about Persepolis have been examined and re-evaluated. These new studies have changed our opinions about the function and chronology of the site.⁴⁹ The most spectacular discovery has been the demonstration by Mr. and Mrs. Tilia that the Treasury reliefs showing the king in audience originally stood in the centre of the Apadana facades.⁵⁰ This immediately solved many of the problems connected with these reliefs, but raised

of the tombs, too, is different to that of the staircase reliefs and so we will not discuss them in this context.

⁴⁷ Tilia, *Studies*, p. 307.

⁴⁸ For example, Tilia, *Studies*; C. Nylander, "Al-Beruni and Persepolis", *Acta Iranica* 1 (Bibliothèque Pahlavi, Leiden, 1974) pp. 137-50; F. Krefter, *Persepolis Rekonstruktionen* (Berlin, 1971); etc. See also references cited in n. 39.

⁴⁹ Tilia, *Studies*, 175-208.

⁵⁰ Tilia, *Studies*, pp. 241-392; see also "Subject Peoples", p. 88. The Hall of 100 Columns is also often dated to the beginning of the reign of Artaxerxes I on the evidence of a stone tablet found out of position in or near the ruins of this building. The tablet is a duplicate of A³Pa on the facade of the Palace of Artaxerxes I. The style of the reliefs from the Hall of 100 Columns is not greatly dissimilar to that of the Central Building and the Palace of Artaxerxes I, though it is difficult to compare staircase reliefs with doorway reliefs. The style

the questions of when and why the replacement was carried out. The similarity of the reliefs on the central panels, on the North Stairs of the Central Building, and on the facade of the Palace of Artaxerxes I suggests that this change was ordered by Artaxerxes I.⁵¹ Artaxerxes I came to the throne in a period of intrigue and disorder. His father Xerxes was murdered and he himself killed Xerxes' eldest son Darius before he gained control of the Persian empire.⁵² It is possible that Artaxerxes I ordered the alterations to the Apadana and to the Central Building as a result of this dynastic conflict.⁵³

A DIRHAM OF MUḤAMMAD b. ILYĀS OF KIRMĀN

By A. H. Morton

The coin discussed below was an isolated piece acquired from a pavement vendor in the Tehran bazaar in 1974. As a historical document it has more to offer than just the name of a ruler new to numismatics and its legends are, in part, quite out of the ordinary. No coinage of Muḥammad b. Ilyās has been recorded before, although he ruled the Kirmān region for thirty years or so and is reported to have been prodigiously rich. His history and that of his family are the subject of a recent study by Professor C. E. Bosworth (who notes the absence of coinage) and here we need only go into matters on which the coin has a direct bearing.⁵⁴ Suffice it to say, by way of introduction, that Abu 'Alī Muḥammad b. Ilyās b. Ilyasa' was of Sogdian origin and first appears as an amir in Samanid service. He first reached Kirmān in about 320/932 and left it for the last time, on account of ill health and disputes with his sons, not long before 357/968. His death is variously stated to have occurred in 356/967 or 357/968. Quite soon after his departure, his son Ilyasa' was driven out of the province by the Buyid ruler 'Aḍud al-Daula. Later attempts by members of the family to regain it all ended in failure.

The coin itself (Pl. VIa) is well-struck and, for the most part, in good condition, though partly covered with a dark brown patina. Traces of an attachment, presumably a ring, are visible on its edge, so placed that the obverse would have hung upright. At some stage it must have been used as an ornament. The legends are in bold, plain Kufic. Other details are as follows:

Kirmān, A. H. 334. Al-Muṭī' lillāh and Muḥammad b. Ilyās. AR, 16 mm., 3.98 gr.

Obv.

bil-qudra
lā ilāh illā Allāh
Muḥammad rasūl Allāh
al-Muṭī' lillāh
wal-tamkīn

Rev.

bil-'izz
yu'tamidu 'alā rabb al-nās
dhu 'l-wafā wal-bās
Muḥammad ibn Ilyās
wal-ta'yīd

Inner margin: *Bismillah ḡuriba*
hādhā al-dirham bi-Kirmān sanata
arba' wa thalāthīn wa
thalāthamī'a.

Margin: Qur'ān, IX, 33.

Outer margin: Qur'ān, XXX, 3-4.

⁵¹ For a contrary view see A. Farkas, *Achaemenid Sculpture*, pp. 53-4, 70-1, 117-8. Dr. Farkas considers that both the replacement panels and the North Stairs of the Central Building were carved during the reign of Darius, but she does notice the similarity between the central panels and the North Stairs of the Central Building.

⁵² Olmstead, *History*, pp. 289-90 and Shabbazi, *A.M.I.* 10 (1977).

⁵³ This neat historical explanation cannot be used to prove that

these reliefs date from early in the reign of Artaxerxes I. We have too little knowledge of the relations between Artaxerxes and his family and of the stylistic developments within Artaxerxes' reign. Even the identities of the king and prince on the Treasury reliefs are disputed.

⁵⁴ "The Banū Ilyās of Kirmān", *Iran and Islam, in memory of the late Vladimir Minorsky*, ed. C. E. Bosworth (Edinburgh 1971), pp. 107-24.



Pl. Ia: Bronze standard-top, front and back; Ashmolean Museum 1974.358, before cleaning. (Photo.: Ashmolean Museum).



Pl. Ib. Bronze standard-top; acquired in Teheran in 1893; Louvre AO 2397. (Photo.: Musées Nationaux).



Plate Ic. Bronze mouflon with hollow ribcage and rattle; Louvre AO 2758. (Photo.: Musées Nationaux).

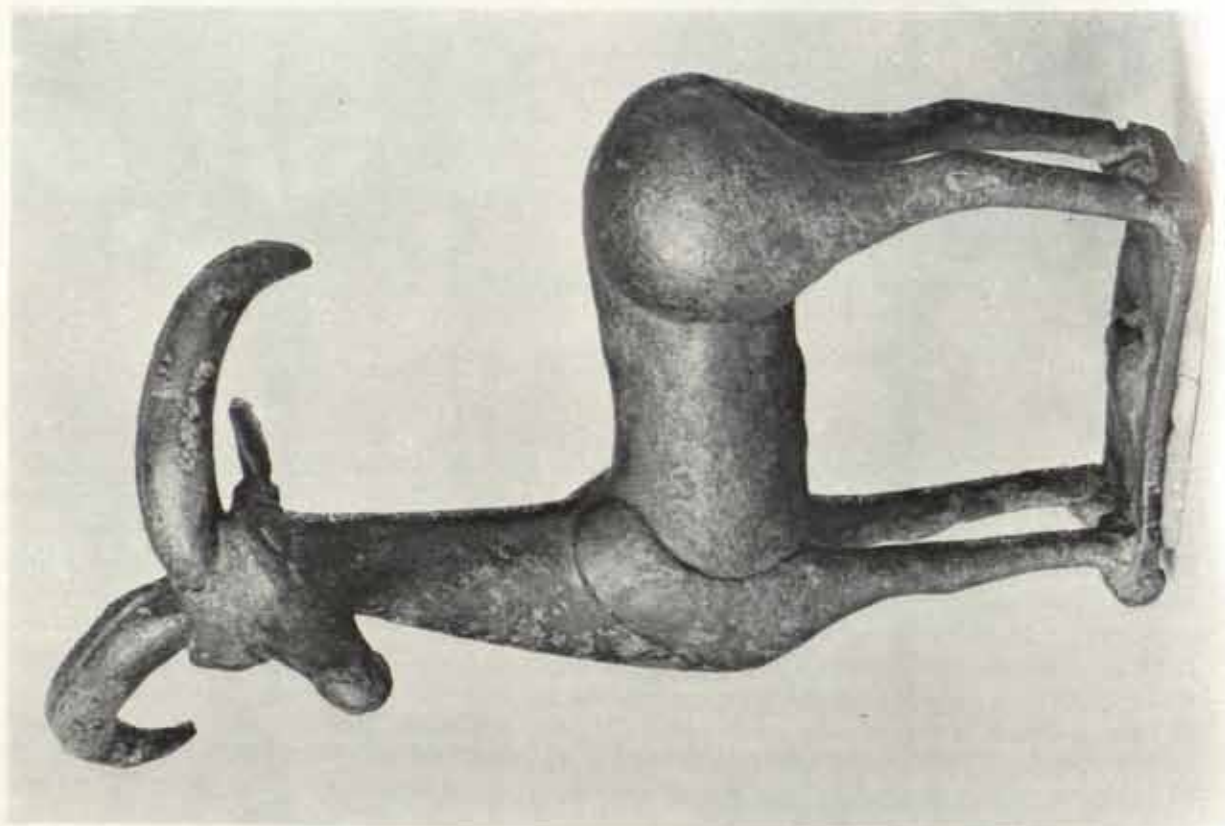


Fig. 110. Bronze sculpture of a standing animal, possibly a deer or goat, with large, curved horns. (Photo. by Museum für Kunst und Gewerbe).



Pl. IIa. Bronze standard-top. Metropolitan Museum, New York. (Photo. by Dick Fund). (Photo. by M.M.A., New York.)



Pl. IIIa. The relief in the Fitzwilliam Museum.



Pl. IIIb. The block still in situ on the south side of the east balcony of the North Stairs of the Central Building.



Pl. IIIc. Detail of the heads on the relief in the Fitzwilliam Museum showing sculptors' marks.



Pl. IVa. Head of a Persian soldier on the parapet of the North Stairs of the Central Building.



Pl. IVb. Head of a Persian soldier on the unfinished parapet of the placement panels of the east side of the Apadana.



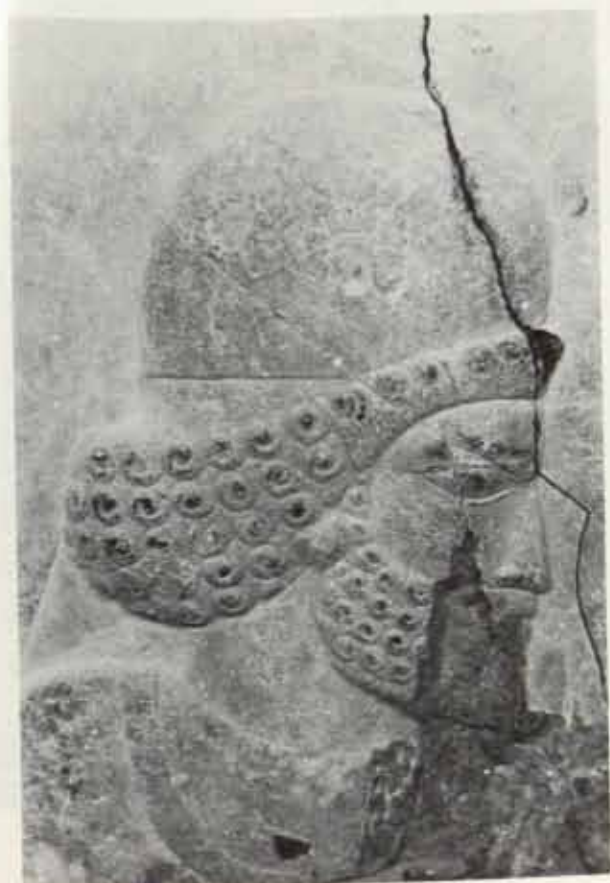
Pl. IVc. Giants and dwarfs climbing the north east flight of the North Stairs of the Central Building.



Pl. Va. Head of a Median noble from the south side of the west balcony of the North Stairs of the Central Building.



Pl. Vb. Head of a Median noble from the east side of the Apadana.



Pl. Vc. Head of a Median usher from the Palace of Artaxerxes I.



Pl. Vd. Head of a Median usher from the West Stairs of Darius Palace which were added by Artaxerxes III.



Pl. Va. A dirham of Muḥammad b. Ilyās of Kirmān.



Pl. VIb. Candlestick B/1/1.



Pl. VIc. Candlestick B/3/2.



Pl. VIIa. Inkwell; high tin bronze inlaid with silver; ht. 10.1 cm., diam. 8.6 cm. Victoria and Albert Museum, 1435-1902.



Pl. VIIb. Candlestick B/2/1.



Pl. VIIc. Stem bowl A/2/3.



Pl. VIIIb. Jug; bronze inlaid with silver; ht. 13.0 cm., diam. 13.5 cm. Kerr collection.



Pl. VIIIc. Bowl; high iron bronze inlaid with silver; ht. 4.9 cm., diam. 13.4 cm. Kerr collection.

The marginal legends and the three middle lines of the obverse are perfectly conventional for the period. The top and bottom lines on both sides form invocations, each pair being read together: "By the power and the might" and "By the glory and the authority", referring of course to attributes of God. If the full original import of the invocations may perhaps escape us, there are parallels. Similar, if less severe-sounding, invocations are found placed in the outer margins of contemporary coins of 'Alī b. Būya: "bil-naṣr wal-zaḥar wal-yumn wal-sa'āda."⁵⁵ 'Alī b. Būya's invocations, in turn, are found earlier on coins of the rebel Aḥmad b. 'Abdallāh al-Khujistānī dated 267 and 268 where they are arranged in pairs and placed in precisely the same way as those on Muḥammad b. Ilyās's coin.⁵⁶

The three middle lines of the reverse legend are most unusual. They may be translated "There trusts in the Lord of the people Muḥammad b. Ilyās, possessor of trustworthiness and force".⁵⁷ One exceptional feature is that the three lines rhyme; the legend is in *ṣaj'*, rhymed prose. Only one numismatic parallel from pre-Mongol times comes to mind, the inscription that appeared on the coinage of the Caliph al-Qāhir in 322/934: *lā ilāh illā allāh/lillāh al-Qāhir billāh/al-muntaqim min a'dā/allāh li-dīn allāh*.⁵⁸ Strictly speaking, of course, al-Qāhir's inscription is not *ṣaj'* because, by the rules of Arabic prosody, repetition is not rhyme; but the effect is much the same. However, if the use of *ṣaj'* (except, obviously, in the form of quotations from the Qur'ān) is otherwise unknown on the coinage of the period, our example is not completely isolated, for *ṣaj'* does occur in an official context in the inscription of 'Aḍud al-Daula at Persepolis.⁵⁹

The legend on the coin is also unusual in another respect. In the Islamic East it was in the 4th/10th century and had been for a long time the almost invariable practice for the rulers who appear on a coin to be referred to by a bald statement of their names, their titles or both. On certain series, most notably the copper coinage of the Samanids and other Transoxianan dynasties, the ruler's name is often incorporated in a formula, the most common one consisting of the words *mimmā amara bihi* ("By order of") followed by the name.⁶⁰ This and other similar formulae also occur on gold and silver coins of some of the petty Shī'ī rulers of the Caspian littoral.⁶¹ They had been common, mainly on copper coinage, in the 2nd/8th century. However, these simple validating formulae would appear to be a far cry from Muḥammad b. Ilyās's confession of faith. Such a confession of faith incorporating the ruler's name does seem to be unique on pre-Mongol coinage. Phrases of similar meaning do occasionally occur on coins, but they are in less prominent positions, usually in the margins, and lack the ruler's name. The series of so-called "multiple dirhams" struck in the neighbourhood of the Afghan silver mines in the 4th/10th century provides a number of examples such as *ḥasbī rabbī* ("My Lord suffices me"), *yu'taṣimu billāh* ("There cleaves to God . . .") and *yathiqu billāh* ("There trusts in God . . .").⁶² Confessions of faith are commonly found in certain other contexts. Seal inscriptions often take the form of a confession of faith and so does the *'alāma*, the short pious phrase used as a signature by rulers and officials.⁶³ It would not be surprising if further investigation showed connections between these various usages, which would be expected to derive to a great extent from common origins in state protocol. After the Mongol invasion there are a number of periods when seals, coins and documents share similar features. However, in the case of Muḥammad b. Ilyās we lack evidence to pursue the matter further.

⁵⁵ "By victory, triumph, good fortune and happiness". For examples, see S. Lane Poole, *Catalogue of Oriental Coins in the British Museum*, II (London 1876), pp. 195-7.

⁵⁶ E. von Zambaur, *Die Münzprägungen des Islams* (Wiesbaden 1968), s.vv. Nisābūr, Harāt; Ulla S. Linder-Welin, "Ein grosser Fund arabischer Münzen aus Stora Vellinge, Gotland", *Nordisk Numismatik Arsskrift* (1941), p. 113.

⁵⁷ The combination of arrogance and submission is jarring; one would prefer the second line of Arabic to refer to God, but that would require *dhī* for *dhū*.

⁵⁸ "There is no god but God. For God. Al-Qāhir billāh, taker of vengeance upon the enemies of God for the religion of God". See George C. Miles, *Rare Islamic Coins* (New York 1950), pp. 101-2.

⁵⁹ Eric F. Schmidt, *Persepolis I* (Chicago 1953), p. 223 n.

⁶⁰ For numerous examples, see S. Lane Poole, op. cit., II.

⁶¹ S. M. Stern, "The coins of Āmul", *Numismatic Chronicle* (1967), pp. 217, 219, 239, 271-3; Miles, "The coinage of the Bāwandids of Tabaristān", *Iran and Islam*, pp. 445-50.

⁶² Michael Mitchener, *The multiple dirhams of mediaeval Afghanistan* (London 1973), pp. 50-1.

⁶³ *Yathiqu billāh* appeared in the inscription of one of the seals of the Caliph al-Qāhir (Miskawih, *Tajārib al-Umam*, ed. H. F. Amedroz (Cairo 1914-16), I, 126). For examples of seals see Adolf Grohmann, "Ein Beitrag zur arabischen Sphragistik", *Archaeologia Orientalia in Memoriam Ernst Herzfeld*, ed. Miles (Locust Valley N.Y. 1952), pp. 134-8; for the *'alāma*, Stern, *Fātimid decrees* (London, 1964), pp. 123-65.

It may be that Muḥammad b. Ilyās's inscription was inspired by political circumstances, as is often the case with unusual legends; the inscription of al-Qāhir, quoted above, celebrated the Caliph's overthrow and execution of a powerful group of enemies.⁶⁴ It is easy enough to imagine a situation where a declaration of trust in God would be appropriate but, unfortunately, we have virtually no idea what Muḥammad b. Ilyās was doing in the year 334/945-6 or for a decade before and after that date.

The obverse does, on the other hand, supply some clear historical information. Muḥammad b. Ilyās acknowledged the suzerainty of the Caliph al-Muṭṭi'. Al-Muṭṭi' was made Caliph in the middle of 334 (21 Jumādā II/29 January 946) by the Buyid Mu'izz al-Daula shortly after the latter had occupied Baghdad. The coin therefore must be dated to the second half of the year. The days when the Abbasid Caliphs could seriously claim to rule Kirmān had not long passed, but the establishment of the Buyids in Fārs and central Persia and the weakness of the Caliphate itself had put Kirmān out of their reach. Muḥammad b. Ilyās's submission to the puppet al-Muṭṭi' must have been purely nominal.

The absence of the name of any other overlord on the coin shows that Muḥammad b. Ilyās did not regard himself as subordinate to either of the neighbouring powers, the Buyids to the west or the Samanids to the north-east. Literary evidence about his status is confused and contradictory. The geographer Maqdisī and the chronicler 'Utbī both say that he ruled Kirmān on behalf of the Samanids.⁶⁵ Maqdisī is nearly contemporary, but the few lines he gives to the history of Kirmān are full of such gross errors that his testimony may not be of any great weight. Probably both he and 'Utbī were misled by Muḥammad b. Ilyās's undeniable connections with the Samanids and their territories.

The 19th century *Tārīkh-i Kirmān*, giving the *Ḥabīb al-Siyar* of Khwāndamīr as its source, provides an account of how Muḥammad b. Ilyās is supposed to have submitted to the Buyids. Mu'izz al-Daula was campaigning against him in Kirmān. Each day he fought the opposing army bravely and each evening he sent them supplies. A messenger was sent to ask for the explanation of this odd behaviour. Muḥammad b. Ilyās replied that although his opponents were indeed enemies who had to be fought, they were also guests in Kirmān and had to be looked after. Mu'izz al-Daula was overcome with shame and they made peace, Muḥammad b. Ilyās agreeing to acknowledge in the *khufba* the senior of the three Buyid brothers, 'Imād al-Daula.⁶⁶ The cheerful chivalry of this episode is in sharp contrast to the grim details of the contemporary Miskawaih's only account of a campaign in Kirmān by Mu'izz al-Daula, the campaign of 324/936, in which Muḥammad b. Ilyās was twice put to flight and Mu'izz al-Daula, embroiled with the Qufṣ of southern Kirmān, was severely wounded, left for dead on the battlefield and fell into the hands of his enemies for a while.⁶⁷ It seems impossible that the story refers to another campaign by Mu'izz al-Daula which Miskawaih failed to mention. The campaign of 324 was instigated by 'Imād al-Daula shortly after he had established himself in Fārs, in an attempt to see his brother also provided for. The campaign was not a great success, and eventually Mu'izz al-Daula was recalled. In 326/938 he was sent to Khūzistān and thereafter he remained in the west. Bosworth noted the problem and suggested that the story may really refer to a later campaign, ignored of course by Miskawaih, by 'Aḍud al-Daula.⁶⁸ However, it smacks of moralizing literature and we need not hesitate to reject it altogether. A story of a similar kind in the *Siyāsāt-nāma* makes Muḥammad b. Ilyās a contemporary of Maḥmūd of Ghazna.⁶⁹ In any case, the final detail of the story, Muḥammad b. Ilyās's submission to 'Imād al-Daula, must be a later embellishment. It is missing from the story as it appears in the *Ḥabīb al-Siyar*, and also in the 8th/14th century *Tārīkh-i Guzīda* which Khwāndamīr mentions as his source.⁷⁰

Since the explicit statements about Muḥammad b. Ilyās's status are at best dubious, it is worth

⁶⁴ Harold Bowen, *The life and times of 'Alī ibn 'Isā the "Good Vizier"*, (Cambridge 1928), p. 332, quoting al-Dhahabī's *Tārīkh al-Islām* (B.M. or 48*, f. 132a).

⁶⁵ Maqdisī, *Aḥsan al-taqāsīm*, ed. de Goeje (Leiden 1906), p. 460; 'Utbī, *Al-tārīkh al-yamīnī* (Cairo 1286), II, p. 116.

⁶⁶ Ahmad 'Alī Khān Wazīrī Kirmānī, *Tārīkh-i Kirmān*, ed. M.-I. Bāstānī Pārizī (Tehran 1961), pp. 62-3.

⁶⁷ Miskawaih, I, pp. 352-6.

⁶⁸ *Art. cit.*, pp. 112-13.

⁶⁹ Nizām al-Mulk, *Siyar al-mulūk*, ed. H. Darke (Tehran 1340), pp. 80-8; cf. p. 60 for another unhistorical appearance of Muḥammad b. Ilyās.

⁷⁰ *Ḥabīb al-siyar*, II (Tehran 1333), p. 425; Hamdallāh Mustawfī, *Tārīkh-i guzīda*, facsimile edn. E. G. Browne (Leiden and London 1910), p. 418; ed. 'Abd al-Husain Nawā'ī (Tehran 1339), p. 412.

seeing what can be inferred from his actions as recorded in the more reliable sources, principally Miskawaih and Ibn al-Athīr. The first thing we know of him is that he was put in prison by the Samanid ruler Naṣr b. Aḥmad. Released on the intercession of the vizier Abu 'l-Faḍl Muḥammad b. 'Ubaidallāh Bal'ami, he was sent to Jurjān, where in 317/929 he joined in the rebellion of Naṣr b. Aḥmad's brothers. When the rebellion was finally put down in 320/932, he managed to establish himself in Kirmān. In 322/934 he was driven out of the province by a Samanid army under Mākān b. Kākī. By 324/936 he had returned and was being besieged in Sirjān by another Samanid army, this time led by Ibrāhīm b. Sīmjur, when Mu'izz al-Daula began his invasion. Besieged and besiegers fled. Muḥammad b. Ilyās later returned, probably not long after Mu'izz al-Daula's withdrawal, though the coin provides the next firm date. In 348/959 the Caliph al-Muṭi' sent him a banner and a diploma, in itself recognition that he was independent. The Caliph's action would have had to be approved by Mu'izz al-Daula, by then effective ruler of Baghdad, and in fact the envoy who brought the insignia to Kirmān also negotiated a marriage, which proved unfruitful, between Muḥammad b. Ilyās's daughter and Mu'izz al-Daula's son, 'Izz al-Daula Bakhtiyār. Clearly, at this stage, Mu'izz al-Daula did not object to the independence of Kirmān. Finally, the accounts of the quarrels which preceded Muḥammad b. Ilyās's final departure from Kirmān treat the matter as a family affair. Only after Muḥammad b. Ilyās had left did 'Aḍud al-Daula intervene.⁷¹ The record, such as it is, agrees with the evidence of the coin and we may conclude that in Kirmān Muḥammad b. Ilyās pursued a policy of independence.

It remains to discuss the mint. The early geographers make it plain that in the first few centuries of Islam there was no city of Kirmān. In the 7th/13th century Bardsīr, which by then had long been the capital, became known by the name of the province; it is thus the modern city of Kirmān.⁷² When the mint of Kirmān appears on early Islamic coinage, the name is that of the province. The naming of mints after provinces was quite common: Fārs, Sijistān and other provinces are named on coins in the same way. The case of Kirmān is slightly unusual because no city mints are known for the province until as late as the 4th/10th century; possibly this is because there was little minting done. From the time of the Umayyad coinage reform until the end of the 2nd century of the Hijra, the mint is known to have been active for a number of short and seemingly well-defined periods. The third century is a blank and only three pieces, all Abbasid, appear to have been recorded previously from the 4th/10th century.⁷³ Muḥammad b. Ilyās's coin stands at the very end of the series. It is the last to bear the name Kirmān until after the Mongol invasion, by which time Kirmān meant a city as much as a province. It was not that minting ceased, but in the intervening period the coins of the province bore the names of cities. In the decade of the 360s, Buyid coinage was struck at Bardsīr, Bamm, Jiruft and Sirjān. This was presumably the result of reorganization by 'Aḍud al-Daula, for the four cities are the centres of major subdivisions of the province. Of the five districts into which, according to Maqdisī, Kirmān was divided, only Narmāshīr is not known to have had a mint. The operation of the same four mints is also attested, if only sporadically at present, under the later Buyids and the Saljuqs of Kirmān.⁷⁴ Where Muḥammad b. Ilyās had his mint is not quite certain, but Bardsīr

⁷¹ Miskawaih I, pp. 277, 286-7, 350, 352-6, II, pp. 176, 240, 249-53; Ibn al-Athīr (Beirut 1965-7), VIII, pp. 211, 278-9, 304, 323-6, 527, 577, 580, 585; 'Utbī, II, pp. 116-9; on the marriage alliance, see al-'Uyūn wa'l-hadā'iq fī akhbār al-ḥaḍā'iq, IV, ed. Nabīla 'Abd al-Mun'im Dā'ūd (Baghdad 1972-3), part 2, p. 213.

⁷² E.I.⁷, art. "Kirmān" (J. H. Kramers).

⁷³ References are given in Zambaur's *Die Münzprägungen*. The pieces of A.H. 311 were published by H. Nützel, *Katalog der orientalischen Münzen, Königliche Museen zu Berlin* (Berlin 1898), nos. 1710-11; the later coin was only described in the catalogue of the sale of the Gagarin collection.

⁷⁴ Besides *Die Münzprägungen* see, for a Saljuq coin of Bamm, N. M. Lowick, "Seljuq coins", *Numismatic Chronicle* (1970), pp. 250-1. Two ghost references to earlier Buyid coinage in Kirmān need to be laid. The coin of 'Aḍud al-Daula in the Ashmolean Museum, to which Bosworth (*art. cit.* pp. 120-1,

n. 5) refers, proves on examination to be minted at Arrajān and dated 349/960, although the previous owner's label attributes it to Bardsīr and 348/959. Zambaur (*op. cit.*) lists Buyid minting at Sirjān in 346/957. The reference given in his tables is an article by Otto Blau, "Nachlese orientalische Münzen", *Numismatische Zeitschrift* (1874-5), pp. 1-21 (1876), pp. 45-76. No coins of Sirjān are mentioned in the article, but there are (p. 20) two pieces of the year 346/957 in the names of Rukn al-Daula and 'Aḍud al-Daula attributed, with considerable reservations, to the mint of Sirjān. Presumably they are the source of Zambaur's reference to Sirjān coinage. The attribution to Sirjān could be a simple error in copying, but might be an intentional correction, for of course the coins cannot be of Sirjān. However, on both of them the mint name lacks the definite article which precedes Sirjān in Arabic, so they cannot be of Sirjān either.

is much the most likely place. Maqdisi tells us that he moved the capital from Sirjān to Bardsīr, presumably, as has been suggested, to put a greater distance between himself and the Buyids. Bardsīr was certainly Muḥammad b. Ilyās's base at the time of the great family dispute, and the local historian of the late Saljuq period, Afḍal al-Dīn Kirmānī, describes the fortifications and buildings he had constructed there.⁷⁵ However, we do not know when the move was made and, to add to the uncertainty, Miskawaih at one point speaks of Jiruft as the chief city (*qaṣaba*) of Kirmān.⁷⁶

ORIGINALITY IN BRONZE— A thirteenth century Persian school of metalworkers*

By J. W. Allan

One of the most interesting aspects of object types and object forms, in whatever material, is the way they act as indicators of influences at work in society in general. In early Islamic Iran, for example, metal forms show strongly the influence of the classical world on Islamic culture. Thus, from the Graeco-Roman inheritance in general come the forms used for dishes, buckets, certain types of oil lamp, polycandela, chairs and many jewellery styles. More specific regional influences from the classical world are also discernible: objects associated with cosmetics, apart from mirrors, are almost all based on Mediterranean, particularly Egyptian, fashions; the origin of the bucket style is associated with the classical culture of the Egypto-Syrian lands; other object types may be traced to the classical legacy as it was worked out in Mesopotamia—aquamaniles, certain types of ovoid-bodied, round-mouthed ewers,⁷⁷ lampstands, and possibly zoomorphic types of incense-burner and incense-holder.⁷⁸ Classical culture also played a significant if indirect role through other pre-Islamic cultures. Thus pre-Islamic Sasanian influence, with all its classical overtones, is visible in ovoid-bodied and spherical-bodied bottles, in an ovoid-bodied, tubular-spouted group of ewers,⁷⁹ and in forks and spoons; likewise, dish incense-burners reflect Partho-Sasanian fashions, and pre-Islamic Soghdian influence is to be seen in a group of ovoid-bodied, flat-spouted ewers⁸⁰ and in the handles used for particular lamp forms.

Object forms are also of great importance as indicators of the relationships between different crafts within a single culture. Thus in early Islamic Iran bronze boxes were largely based on ivory or wooden prototypes, pen-cases often copied wooden styles, cauldrons and certain square-bodied incense-burners were derived from stone objects, and mortars sprang from a stone tradition. From glass came domical-

* This article is based on a small section of the author's Oxford D.Phil. thesis, *The metalworking industry in Iran in the early Islamic period* (January 1976). Included in it were typologies of objects, with related discussions, and the summary catalogue of stem bowls, candlesticks and stands at the end of the present article is drawn from the appropriate typologies in the thesis. The author would like to express his sincere thanks to Mrs. Pat Clarke for the drawings of the object types. He is also grateful to the British Museum, the Freer Gallery of Art, the Victoria and Albert Museum, and Mr. Edmund de Unger for permission to publish the relevant photographs in pl. VIII b and c. Authorities cited in the footnotes and catalogue entries are given in full the first time and by name and publication date only thereafter.

⁷⁵ *Iqd al-'ulā*, ed. A.-M. 'Āmiri Nā'ini (Tehran 1311), pp. 66-8.

⁷⁶ Miskawaih, I, p. 353.

⁷⁷ A pear-shaped, low-footed form, e.g. British Museum 1959.10-23.1, R. Pinder-Wilson, "An Islamic ewer in Sasanian style", in Pope, *A Survey of Persian Art*, XIV (1967), pp. 3061-3; a pear-shaped, high-footed form e.g. a ewer in the Metropolitan Museum of Art, R. Ettinghausen, "Six thousand years of Persian art", *Art Islamica* VII (1940), figs. 17, 19, p. 115; a bulbous form e.g. Hermitage Museum SA 12745, B. I. Marshak, "Bronzoviy kuvshin iz Samarkanda", *Srednyaya Aziya i Iran* (Leningrad, 1972), figs. 1-2, p. 61; a high-shouldered, squat form, e.g. Metropolitan Museum of Art

38.40.240, Marshak 1972 fig. 9; a high-shouldered, tall form, e.g. one in the Metropolitan Museum of Art, Pope, *Survey*, VI (1939), pl. 1293.

⁷⁸ For incense-holders see the author's review article of G. Fehervári, "Islamic Metalwork of the eighth to fifteenth century in the Keir collection", *Oriental Art*, N.S. XXII, no. 3 (Autumn 1976).

⁷⁹ E.g. three in the Hermitage Museum, I. Orbeli and C. Trever, *Orfèverie sasanide* (Moscow-Leningrad, 1935), pls. 70-2.

⁸⁰ E.g. ewers in Herat, the Hermitage Museum, the Louvre, and the Museum für Islamische Kunst in Berlin-Dahlem, Marshak 1972 fig. 12 (1-4).

bodied bottle forms, a spherical-bodied group of ewers,⁸¹ and perhaps also hanging lamps. The influence of ceramic design on metal-workers is a more thorny problem, and will be discussed in due course. Of the influence of metal forms on ceramic styles, however, there is no doubt.

If these two visions of objects in their relationships to earlier cultures and to other contemporary crafts are set side-by-side, an important additional aspect of the objects is thrown into relief. For objects which do not fit into either category, and which are therefore objects which have something special to say, whether in terms of shape, function or overall style, become immediately apparent, and qualities of originality and special creativity come sharply into focus. A survey of early Islamic metalwork from Iran using these criteria pinpoints a number of moments when the influence of the past or of contemporary rivals was less important than a striking creative instinct among the bronze workers of the day. This was the situation, for example, in eastern Iran in the tenth-eleventh centuries, e.g. in the incense-burner industry. Here traditional forms were modified and developed as one might expect, but, more striking, vase, aquamanile and ewer shapes were borrowed complete and then adapted to this new function, while the potentialities of three-dimensional animal and bird forms were realized in a most convincing and eye-catching manner.⁸²

Even more original were the bronze-workers who form the subject of this article, a group of craftsmen working in north-western Iran in the thirteenth century, who produced what are arguably some of the finest forms known from early Islamic times. The discussion of the products of this school must begin where the writer's attention was first caught, in a study of certain groups of stem bowls. During the twelfth and thirteenth centuries in Iran at least ten different forms of stem bowl were manufactured by bronze workers (Fig. 7 and catalogue). Some were made of high tin bronze,⁸³ others of an alloy with a low tin content. Among the high tin bronze group are two styles of stem bowl (A/1 and A/2) of particular interest. Both groups were discussed in some detail by Rice,⁸⁴ who pointed out that these two styles, although outwardly rather similar, are based on a totally different method of manufacture, and in addition have particular differentiating features. Taking A/1 first, this style consists of an almost hemispherical bowl with a plain edge curving slightly inwards from the vertical, resting on a short, splayed foot. The bowl and foot are cast in one piece, but without any base to the bowl. A circular base plate is soldered in afterwards. Three of the stem bowls in this group (A/1/1, 3 and 4) may be attributed on decorative grounds to Khurāsān in the late twelfth or early thirteenth century.⁸⁵ Too little is known of A/1/5 to attribute it with certainty; the attribution of A/1/2 will be mentioned below.

If one seeks a source for this style among early Islamic Persian artifacts, it is evident that there is no extant and obvious precursor for the style as a whole. There are, however, objects which offer limited parallels to particular aspects of the form or to particular aspects of the method of manufacture or decoration. Taking the method of manufacture first, the most obvious way to cast a stem bowl is to make it in two pieces—the bowl (complete) and the foot—and then solder the two together. Had the stem bowls in question been based on a cast bowl form, then this would surely have been the method used for their construction. Their unusual method of manufacture therefore suggests that they are based on a bowl form made by some other technique and that they were manufactured in a workshop

Elmer Atomic Absorption Spectrophotometer. The elements sought were Cu, Zn, Pb, Sn, Sb, Fe, Ni, Ag, Co, and the readings (percentages by weight) were as follows: Cu 78.4, Zn 0.01, Pb 0.03, Sn 20.2, Sb 0.031, Fe 0.91, Ni 0.075, Ag 0.081, Co 0.025. Wherever else in this article the term "high tin bronze" has been used, it is based on external appearances only, and further analyses may modify the picture considerably. For high tin bronze, see A. S. Melikian-Chirvani, "The white bronzes of early Islamic Iran", *Metropolitan Museum Journal*, IX (1974), pp. 123-51.

⁸⁴ D. S. Rice, *The Wade Cup in the Cleveland Museum of Art* (Paris, 1955), pp. 12-16.

⁸⁵ R. Ettinghausen, "The 'Wade Cup' in the Cleveland Museum of Art, its origin and decorations", *Ars Orientalis* II (1957), pp. 327-66 offers a detailed study of the likely date and provenance of the Wade Cup.

⁸¹ E.g. the pieces in New York, Damascus and Berlin-Dahlem published by M. A. F. al-'Ush, "A bronze ewer with a high spout in the Metropolitan Museum of Art and analogous pieces", in *Islamic art in the Metropolitan Museum of Art*, ed. R. Ettinghausen (New York, 1972), pp. 187-98. So too the ewers like the so-called Marwān ewer, of more westerly origin.

⁸² Some of these forms are illustrated in J. W. Allan, "Silver: the key to bronze in early Islamic Iran", *Kunst des Orients* XII (1977), figs. 6-12.

⁸³ Only one of the stem bowls in group A has to my knowledge been analysed, sc. the British Museum piece A/2/3. The analysis was undertaken by Dr. Michael Hughes of the British Museum Research Laboratory, to whom I am indebted for permission to use the results of his work. A 10 mg. sample was cut from the vessel with a scalpel, and was quantitatively analysed by atomic absorption using a model 306 Perkin-



Fig. 7. Stem bowl, candlestick and stand forms (see Summary Catalogue).

not previously involved in casting bowls. A survey of the extant pre-twelfth century hemispherical bronze bowls of Iran indicates that there were probably two distinct traditions in the east and north-east of the country. In Ghaznavid Sīstān in the eleventh century, craftsmen were forging high tin bronze pieces of hemispherical shape;⁸⁶ in Transoxiana craftsmen were casting objects of a similar type.⁸⁷ It is tempting therefore to attribute stem bowls of group A/1 to a tradition based on the Sīstān workshop, and to see it perhaps as a twelfth century development brought about by craftsmen now closely acquainted with Khurāsān metalworking schools of the period. Evidence to support this suggestion is found in the decoration of the objects, for all the stem bowls have plain rims like those of the

⁸⁶ E.g. those in the Metropolitan Museum of Art and in the Kabul Museum published by Ettinghausen 1957 figs. 13, 10 and 14.

⁸⁷ E.g. those in Ettinghausen's collection, in Tehran and in the Kevorkian collection published by Ettinghausen 1957 figs.

15-17, 22, H, and n. 20. See also A. A. Ivanov, "O proizvodstve bronzovikh izdeliy v Maverannakhre v domongol'skoe vremya", *Kratkie soobshcheniya instituta arkheologii Akademii Nauk SSR* CXXII (1970), pp. 101-5, where they are attributed to Transoxiana.

Ghaznavid forged bowls, and the pattern on the Wade Cup, consisting of an interlacing system of bands forming a six-pointed star, is directly paralleled by designs on two of the forged bowls. This is not to say that all the decorative designs and motifs on these stem bowls are particular to this special tradition, for like all objects they bear a mixture of decorative influences; but the interlacing bands are otherwise virtually unknown in Khurāsānī decoration and therefore require some sort of explanation.

Another possible source of the curious method used for manufacturing these stem bowls is a group of silver handled cups current in Iran c. 1100 A.D. but probably used from much earlier times.⁸⁸ Such cups have a rounded body and vertical foot, but are made with the base plate at the bottom of the foot—not at the logical place at the joint of the body and foot. In view of the connection between silver and bronze working, particularly at this period,⁸⁹ it is conceivable that the method used for casting the stem bowls followed the cup style, but with the base plate inserted in the more logical position, and that the stem bowls are the bronze heirs to the precious metal wine bowl tradition. For the present such a suggestion is impossible to prove. There does, however, seem to be ample reason for suggesting that the stem bowls arose out of already existing traditions, whatever the actual details of such an origin may be.

A close look at the second group of high tin bronze stem bowls indicates that this style is different from the first in almost every way, despite a superficial likeness. The bowl shape may be similar to that of the first, but it has a rim, which is sometimes decorated along the edge. The stem is much taller and, with its splayed top and bottom, and annular knop, contrasts strongly with the stem of the first. The technique of manufacture too is quite distinct, for these stem bowls are cast in one single piece. It is in fact the stem shape which pin-points their quite different origin. For this symmetrical stem with flaring top and bottom and annular knop is nothing less than a copy of a type of stand on which hemispherical or round-bottomed bowls would have been placed. In other words, the stem bowl form as a whole is an amalgamation of two objects—a bowl and a pot-stand—which have been cast as one to give the final product. It is true that no independent metal stand of this form seems to have survived from early Islamic Iran, but that does not disprove the theory, for the form was common in the Mamlūk period in Egypt and Syria⁹⁰ and there is every reason to see it, like so many Mamlūk forms, as originally imported from further east.

Thus it becomes apparent that high tin bronze casters took two current object forms and combined them to produce an entirely new style of stem bowl. Since such originality and creativity is unusual, it is important to discover who these craftsmen were, information which the decoration alone can give us. Certain decorative features suggest a Khurāsānī origin—the inscriptions on the rims and the interlace patterns on the inside of 2, for example, but the bodies of 2 and 3 bear rosettes and strap-work designs which are quite uncharacteristic of Khurāsān. They in fact occur on certain candlesticks identified as north-west Persian products of the post-Mongol period (Pl. VIc).⁹¹ The stylized *naskhi* inscription and rhomb-shaped leaves on 2 are also characteristic of the latter metalworking school. A precise chronology of these candlesticks, or an exact dating for individual examples, has never been worked out, and indeed is scarcely feasible at the present time, but another group of stem bowls, in this case of ordinary bronze, offers a valuable check on the probable period of production of the high tin bronze stem bowls under discussion. For the form of group B/1 stem bowls (Fig. 7) is almost certainly based on that of A/2, even though it has lost the original's symmetry of stem, has a rather shallower bowl shape, and in at least one case is cast in two pieces instead of one. It is also related to A/2 on decorative grounds, with rim inscriptions and rosettes and interlace patterns similar to those on the latter group. However, there is a rather stronger link with north Mesopotamian styles than in the high

⁸⁸ E.g. Museum für Islamische Kunst, Berlin-Dahlem, I 582, Pope 1939 pl. 1353B; Mayer Memorial Institute, Jerusalem, ex-Harari collection, Pope 1939, pl. 1351A. Similar features are found in stem bowl A/6/1 (see below) and in another cruder bronze footed bowl in the Victoria and Albert Museum no. 1366-1904 (unpublished).

⁸⁹ Allan, *Kunst des Orients* XII.

⁹⁰ E.g. one in Los Angeles County Museum, *Islamic art: the Nasli M. Heeramanek collection*, ed. P. Pal (Los Angeles,

1973), no. 306, which may indeed be Persian, and one in the Museum of Islamic Art, Cairo, G. Wiet, *Catalogue général du Musée Arabe du Caire, Objets en cuivre* (Cairo, 1932), pl. 74.

⁹¹ Also D. S. Rice, "The seasons and labors of the month in Islamic Art", *Ars Orientalis* (1954), pp. 1-40. In the Victoria and Albert Museum exhibition of Persian metalwork in 1976, Melikian-Chirvani suggested that these candlesticks were Anatolian, but did not give the detailed reasoning behind this attribution.

tin bronze group, for example in the breaking of the inscriptions by roundels or swastika hexagons, in the overall pattern made by the roundels, band and rosettes on the body of 1, and the background body pattern on 2, all of which can be paralleled in the British Museum incense-burner dated 641/1243-4 of North Mesopotamian origin.⁹² What is more, the same bowl shape occurs, without a stem, inscribed with the name and titles of Maḥmūd ibn Sanjar Shāh, Atābek of the Jazīra 605-39/1208-41,⁹³ suggesting that the workshop in question was somewhere in northern Mesopotamia and was producing these objects in the second quarter of the thirteenth century. A similar dating is therefore likely for the high tin bronze stem bowls, though their production centre was almost certainly further north-east, sc. in north-west Iran.

Two other points may be made at this point about the school of metalworkers responsible for the second group of high tin bronze stem bowls. First, it should be noted that one of the first group of stem bowls is an example of their work (A/1/2), bearing as it does a design characteristic of their products. It is therefore evident that they were well aware of the already popular form of stem bowls, and that their own creations were deliberately-devised alternatives to that style, with all the confidence in their own artistic ability that that implies. Second, in view of the method of manufacture and the form used, it is surely likely that these men came from a tradition which encompassed both the casting, as opposed to the forging of bowls, and the use of stands. Stands were known throughout eastern and north-eastern Iran as well as Transoxiana (Fig. 7), but cast high tin bronze bowls of similar form (including thickened rim) were particularly made in Transoxiana. One is therefore tempted to suggest that the north-west Persian school of metalworkers under discussion were in origin a group of Transoxianan craftsmen who migrated westwards in the years prior to the Mongol invasions, taking their casting traditions and exceptional skills and artistic talents with them.

Were these stem bowls the only claim to fame of this school of craftsmen, this article would hardly be justified. The fact is, however, that these craftsmen were equally imaginative and successful in other spheres of their activities. To see this, one has simply to turn to the candlesticks, already mentioned in passing, associated with the same school. In a recent article, the author suggested that the twelfth and early thirteenth century beaten bronze candlestick form current in north-western Iran (candlestick A) was based upon a silver form no longer extant but probably widely used in the eleventh century.⁹⁴ The beaten bronze style, with its superb repoussé birds and lions, is at present the only base metal candlestick form known from pre-Mongol Iran. Different in alloy, in shape, and in decoration, is the large group of candlesticks published by D. S. Rice and attributed by him to the north-west Persian school in the second half of the thirteenth and the fourteenth centuries.⁹⁵ Cast from an alloy with the appearance of high tin bronze, with decoration in some cases closely allied to that on the north-west Persian stem bowls, it is evident that some of these candlesticks were produced in the same workshops at the same time as the stem bowls, but that others are evidently later. An example of the former is a piece with decoration virtually identical to that on stem bowl A/2/2.⁹⁶ Another is in the British Museum (Pl. VIc). Closely related to these candlesticks are two others (C/1 and D/1 Pls. VIb and VIIb), which Melikian-Chirvani has discussed in some detail and which are attributable on stylistic grounds to this same high tin bronze workshop in the second quarter of the thirteenth century.

Against the background of the north-eastern beaten candlesticks these forms are unexpected to say the least. Bearing in mind the creativity which lies behind the stem bowl form, however, there is an important explanation to be offered for their shapes, an explanation which utilizes the idea of re-using different shapes to make a new form of complete object. For the body of C/1 is surely based on a cylindrical style of bowl-stand (Fig. 7, stand A/1) to which has then been added a vertical foot or base and a sunken shoulder, the latter being suggested by the centre of such a stand. Equally, the body of type D is based on the octagonal bronze stands of the period (Fig. 7, stand B/1), which not only have

⁹² D. Barrett, *Islamic metalwork in the British Museum* (London, 1949), pl. 15c.

⁹³ F. Sarre, *Sammlung F. Sarre. Erzeugnisse islamischer Kunst*, Teil 1, *Metall* (Berlin, 1906), no. 19, pl. 6.

⁹⁴ Allan loc. cit.

⁹⁵ Rice 1954. Candlestick B/1, of beaten bronze, will not be discussed below, but is another example of the work of the metalworking school in question, and is probably a copy of the D/1 form.

⁹⁶ Rice 1954, pl. 7d.

eight flat and inward-sloping sides, but also a cusped rim with sharp points, re-emphasized in the candlestick form by the use of bosses. Furthermore, the octagonal stand style, in which the central hole does not appear as an empty chasm as it does in the cylindrical form, is reflected in the candlestick's shoulder form which is less sunken than in C. In both cases the sockets are miniature copies of the body forms. Style E is evidently a refinement of C, and was destined to be the most popular style. This is no surprise. Its simplified form, its fine proportions, its smooth curves and decorated surfaces, give it a strength and a balance which is unmatched by any other Islamic candlestick type and which may be acclaimed as being as near to perfection of form as is humanly possible.

Once the eye becomes accustomed to this originality and to this feeling for form, old objects take on new life, and objects previously lumped together with similar pieces jump out of the page as further examples of the work of this school. The most striking example is perhaps the Victoria and Albert inkwell decorated with merlons and rosettes (Pl. VIIa).⁹⁷ Although this looks at first glance like a typical Khurāsānī inkwell, it has a personality, a strength of character, a forcefulness of form which, combined with the decoration, testify to its north-west Persian origin. Artistically it is far superior to any earlier north-eastern product of its type. Another object from this school which deserves mention is a small, almost hemispherical high tin bronze bowl in the Keir collection (Pl. VIIIc).⁹⁸ Here the form is positively different from bowl forms used in the north-east and, to my mind, is far more memorable than most of the latter.

Occasionally, however, creativity and originality got out of hand. A telling example is a bronze jug in the Keir collection (Pl. VIIIb).⁹⁹ The proportions of this vessel are extraordinary: the wide mouth and wide shoulder give the impression of being the foot and lower body of a ewer form, reversed, and are in any case totally out of keeping with the narrow stem and slightly flaring foot. The lack of successors and the fact that only one example seems to have survived is ample evidence of the unsuitability of such a form, but it shows with great clarity the creative ethos of the north-west Persian workshop from which it came, and is a memorable if unattractive subject.

Having then established the originality of this north-west Persian school of metalworkers and identified some of their products, it is worth briefly returning to the stem bowls. If one offers a brief attribution for each of the pieces catalogued but not already discussed, the following picture emerges. In group A/3, A/3/1 is in the name of a Khurāsānī official, A/3/2 was found at Ghazna, and all three bear inscriptions typical of the late twelfth or early thirteenth century. A/4/1 bears a pseudo-inscription and leaf forms which point to a thirteenth century date and a probable north-western as opposed to north-eastern origin. A/5/1 has been discussed in detail by Rice,¹⁰⁰ who attributed the piece to Mosul but admitted that the fact that it was a cast piece was a problem, since no cast Mosul objects are otherwise known. My own inclination is to ascribe the casting to the north-western school discussed above and to suggest that it may have been decorated elsewhere. A/6/1 is a late twelfth or early thirteenth century piece and presumably Khurāsānī. B/2/1 has decoration which points to a north-west Persian origin in the first half of the thirteenth century; B/2/2 is undecorated. Both are of a shape common in twelfth and early thirteenth century ceramics. B/3/1 and B/4/1 are north-eastern or eastern pieces of the late twelfth and thirteenth centuries, again on decorative grounds. Taking therefore the stem bowls *in toto*, one is immediately struck by the fact that they are all post-1100 A.D. What is more, considering their relatively short period of production, there is a remarkable diversity of form. These two points demand an explanation.

Rice, in his discussion of A/5/1, suggested that this object was based on a ceramic prototype, and most of the other forms under discussion can be paralleled in surviving ceramic objects from the period in question. Given the points raised above, a dependency of metal forms on pottery forms at this period could bring important conclusions in its wake. One might for example be able to postulate an interaction between the twelfth century Khurāsānī metalworking industry and the contemporary Jibālī

⁹⁷ A. S. Melikian-Chirvani, *Le bronze iranien* (Paris, 1973), pp. 22-3; the domical top to the lid is not original.

⁹⁸ G. Fehérvári, *Islamic metalwork of the eighth to the fifteenth century in the Keir collection* (London, 1976), no. 142 pl. 48a.

⁹⁹ Fehérvári 1976 no. 64 pl. 19d.

¹⁰⁰ Rice, "Studies in Islamic Metalwork. III", *BSOAS* XV, no. 2 (1953), pp. 232-8.

ceramics industry, with the latter making such an impact on migrating craftsmen prior to the Mongol invasions that the metalworkers were compelled to manufacture bowl forms of Jibālī taste in bronze. Such dependency would also have important conclusions for the originality of the north-western school of metalworkers under discussion. For in an age when the industry was being flooded with new forms from the ceramic world, their particular brand of originality would be rather less spectacular, since the whole emphasis would have been in this direction.

In order to be sure whether this is the case or not, it is necessary to consider in more detail the forms of the other stem bowl groups. Visually, groups A/3, B/3 and B/4 are debased forms of A/1, and are in that sense no more than variations on a theme. Since A/1 is almost certainly of a metal origin, as has been shown above, ceramic forms¹⁰¹ of any of these groups must therefore be derivative. A similar argument may be put forward for A/4 although the connection with the other groups is less obvious. A/6 is rather different, and ceramic forms¹⁰² might again be considered the source of the style. However, a very important aspect of this stem bowl is its construction, for it is made like the silver footed bowls mentioned above, with its base plate at the bottom of the foot rather than at the logical place where the foot joins the body. To cast an object with this characteristic, if one is copying a ceramic bowl (in which the foot would have been added to the previously completed bowl), is unthinkable, and this piece must surely therefore follow a metal tradition.¹⁰³ There remain groups A/5 and B/2. Here it is important to note that these two groups are related in shape, and that the B/2 examples were unknown to Rice. A/5/1 is therefore not a unique piece in the sense that it was when he published it. Equally unknown to Rice were two small unpublished bronze cups excavated at Rayy.¹⁰⁴ Although footless, they have flaring profiles like the B/2 group and suggest that this form was a relatively common metal drinking cup style. Bearing in mind the metal origins of the other stem bowl forms, it thus seems most likely that A/5 and B/2 are metallic in origin as well, not ceramic. It is therefore clear that none of the stem bowls discussed seem to owe their form to ceramic prototypes.

From this conclusion follow two others. In the first place, this fact, combined with the fact that all the stem bowls are datable to after 1100 A.D., points yet again to the transfer of craftsmen from working in precious to base metal due to the contemporary silver shortage.¹⁰⁵ Secondly, it is evident that in stem bowls at least, far from there being a movement away from earlier forms and a widespread adoption of new styles (for example from a ceramic source), developments in general followed a logical course based on inherited metal objects. This conclusion emphasizes all the more the originality of the north-western school, who, in the face of such logical traditionalism among their contemporaries, had the courage and imagination to use old forms in completely new ways, and in doing so created some of the most satisfying and pleasing objects of the mediaeval Islamic world.

SUMMARY CATALOGUE¹⁰⁶

Stem bowls

A. high tin bronze 1. with rounded body and everted foot

1. Cleveland Museum of Art (The Wade Cup); Rice 1955, Ettinghausen 1957; ht. 10.5 cm., diam. 16.5 cm.
2. Metropolitan Museum of Art 91.1.543; Rice 1955 pl. 14c.
3. British Museum 1950. 7-25.1 (Vaso Vescovali); Rice 1955 pls. 16, 17a, 18a; ht. 21.5 cm., diam. 18.0 cm.
4. Victoria and Albert Museum 572-78; Melikian-Chirvani 1973 pp. 26-7; ht. 10.5 cm., diam. 18.0 cm.
5. ex Herzfeld collection; Ettinghausen 1957 fig. 1.

¹⁰¹ E.g. Pope 1939 pls. 769B, 707A and B.

¹⁰² E.g. E. Atıl, *Ceramics from the World of Islam* (Washington, 1973), nos. 29, 35.

¹⁰³ Melikian-Chirvani 1973 p. 29 suggested that this shape was of metallic origin on the basis of a Samanid tin cup in the Kabul Museum. Unfortunately, the latter piece remains unpublished.

¹⁰⁴ Philadelphia University Museum nos. RG 7722 (ht. 1.7 cms.,

diam. 4.4 cms.) and I₂-591 (ht. 1.3 cms., diam. 4.9 cms.). Both are badly corroded but neither appear to be decorated.

¹⁰⁵ Allan, loc. cit.

¹⁰⁶ The Summary Catalogue is designed as a quick reference system for objects of a particular type. It consists of the location of the object, its origin (if known), the most accessible published description or photograph of the object, and its dimensions (if known).

A. high tin bronze. 2. with rounded body and tall knopped stem

1. Museo di Capodimonte, Naples, 112114; Rice 1955 pl. 12; ht. 13.3 cm., diam. 17.4 cm.
2. Museo Nazionale, Florence; Rice 1955 pl. 13; ht. 12.0 cm., diam. 16.8 cm. (pl. VIIa).
3. British Museum 1969. 9-24.1; unpublished; ht. 9.6 cm., diam. 18.0 cm. (pl. VIIc).

A. high tin bronze. 3. with shallow rounded body and everted foot

1. Landau collection; Rice 1955 pl. 14b, G. Wiet, "Deux objets d'art retrouvés", in *Arabic and Islamic studies in honor of Hamilton A. R. Gibb*, ed. G. Makdisi (Leiden, 1965), pp. 655-9 and pl. 1.
2. Ghazna Museum; Melikian-Chirvani 1973 p. 28 (bottom).
3. Keir collection; Fehérvári 1976 no. 63 pl. 19a; ht. 10.3 cm., diam. 18.0 cm.

A. high tin bronze 4. with inward-curving body and flaring foot

1. Museo di Capodimonte 112117/1144; U. Scerrato, *Arte Islamica a Napoli* (Naples, 1967), no. 3 fig. 4; ht. 7.6 cm., diam. 11.3 cm.

A. high tin bronze 5. with flaring body and vertical foot

1. Museo Civico, Bologna; Rice 1953 pp. 232-8 and pls. 3-8; ht. 10.5 cm., diam. 20.9 cm.

A. high tin bronze 6. with shallow rounded body and vertical foot

1. Victoria and Albert Museum 634-72; Melikian-Chirvani 1973 pp. 28-9; ht. 8.9 cm., diam. 19.3 cm.

B. bronze 1. with tall knopped stem

1. Walters Art Gallery, Baltimore; Rice 1955 pl. 14d; ht. 12.5 cm., diam. 17.0 cm.
2. Victoria and Albert Museum 543-1911; Melikian-Chirvani 1973 p. 59; ht. 13.5 cm., diam. 17.3 cm.

B. bronze 2. with flaring body and low foot

1. Musée du Louvre 3622; unpublished; ht. 8.9 cm., diam. 19.2 cm.
2. Keir collection; Fehérvári 1976 no. 65 pl. 19c; ht. 9.4 cm., diam. 19.9 cm.

B. bronze 3. with rounded body and everted foot, cast

1. Ashmolean Museum, Oxford, 1971.39; unpublished; ht. 10.6 cm., diam. 16.5 cm.

B. bronze 4. with rounded body and everted foot, beaten

1. Kabul Museum 52.8.64; F. Mortimer Rice and B. Rowland, *Art in Afghanistan* (London, 1971), pl. 194; ht. 12.0 cm.

Candlesticks

A. bronze 1. beaten, with truncated conical body

1. Musée du Louvre 6315; *Arts de l'Islam des origines à 1700 dans les collections publiques françaises*, Orangerie des Tuileries, 22 juin 30 août 1971 (Paris 1971), no. 131.
2. Museum of Islamic Art, Cairo; Pope 1939 pl. 1321; ht. 40.0 cm.
3. Freer Gallery of Art, Washington, 51.17; unpublished; ht. 53.0 cm., diam. 60.0 cm.
4. ex Bobrinski collection; F. Sarre and F. R. Martin, *Die Ausstellung von Meisterwerke muhammedanischer Kunst in München* (Munich, 1912), pl. 144 no. 3044; ht. 21.0 cm., diam. 33.5 cm.
5. Victoria and Albert Museum 247-1902; unpublished; ht. 21.7 cm., diam. 32.0 cm.
6. David collection, Copenhagen, 27/1971; A. Leth, *The David collection. Islamic Art* (Copenhagen, 1975), p. 71; ht. 33.0 cm.

A. bronze 2. beaten, octagonal with concave sides

1. Victoria and Albert Museum 1438-1902; unpublished; ht. 18.5 cm., diam. 23.0 cm.

B. high tin bronze 1. cast, round with concave sides and projecting shoulder

1. Victoria and Albert Museum 775-1892; Melikian-Chirvani 1973 pp. 48-51; ht. 19.5 cm., diam. 19.0 cm. (pl. VIb).

B. high tin bronze 2. cast, octagonal, with concave sides

1. Freer Gallery of Art, Washington, 54.128; Melikian-Chirvani 1973 p. 51 (pl. VIIb).

B. high tin bronze 3. cast, round, with concave sides¹⁰⁷

1. Türk ve İslam Eserleri Müzesi, İstanbul, 2556; Rice 1954 pl. 7d.
2. British Museum 1955. 2-14.1; unpublished; ht. 20.7 cm., diam. 19.4 cm. (pl. VIc).

Stands

A. Cylindrical

1. Qandahār Museum; from Qandahār; U. Scerrato, "Oggetti metallici di età islamica in Afghanistan", *Annali dell'Istituto Universitario Orientale di Napoli*, N.S. IX (1959), p. 101, no. 2, figs. 6-7; ht. 10.0 cm., diam. 18.5 cm.
2. ex Martin collection; F. R. Martin, *Kupferarbeiten aus dem Orient* (Stockholm, 1902), pl. 32.

B. Octagonal

1. Victoria and Albert Museum 1436-1902; Pope 1939 pl. 1286; ht. 15.1 cm., diam. 25.6 cm.
2. Victoria and Albert Museum 1439-1902; unpublished; ht. 14.5 cm., diam. 23.6 cm.
3. ex d'Allemagne collection; H. R. d'Allemagne, *Du Khorassan au pays des Backhtiaris* (Paris, 1911), II, p. 64 top.
4. Samarkand Museum; G. A. Pugachenkova and L. I. Rempel, *Istoriya Iskusstva Uzbekistana* (Moscow, 1965), fig. 242.
5. ex-Bobinski collection; Sarre and Martin 1912 pl. 152 no. 3031; ht. 15.0 cm., diam. 27.0 cm.

IRAN—THE HOMELAND OF ORIGINAL TRUSS STRUCTURES

By M. Farshad* and D. Isfahanian†

It is commonly stated that trusses were first built in the sixteenth century.¹⁰⁸ The first step as recorded in the literature was not, from the mechanical point of view, an actual truss structure. Fig. 8 shows the sixteenth century truss as conceived by Palladio (1518-80 A.D.). It appears that the history of truss structures has not been studied in an appropriate depth, and that recent archaeological findings have not been investigated from this point of view. In this paper, historical evidence is presented which exemplifies the use of truss structures in ancient Persia. Following technical and archaeological reasoning, a thesis is then set forth which claims that trusses were used centuries before the common engineering citations.

Features of Truss Structures: A plane or a space truss is a structural component which is used to carry the loads in an economical and efficient fashion. The basic geometrical features of a truss is that it is formed by members attached to one another in such a fashion that the resulting structure is an assembly of triangulated forms. The truss structure thus formed carries the applied forces in a mechanical manner which is more economical than a corresponding solid beam. A truss is lighter than other structural components and requires less consumption of structural material. From the mechanical and engineering point of view the mechanical efficiency of truss lies in the fact that the material used for the construction of truss, is put further away from the centreline causing a higher strength and

* Associate Professor, School of Engineering, Pahlavi University, Shiraz.

† Associate Professor, Department of History, University of Isfahan, Isfahan.

¹⁰⁷ For numerous others in this group, most of them outside the period under discussion in this article, see Rice 1954 p. 14.

¹⁰⁸ F. K. Finch, *The Story of Engineering* (N.Y., 1960).

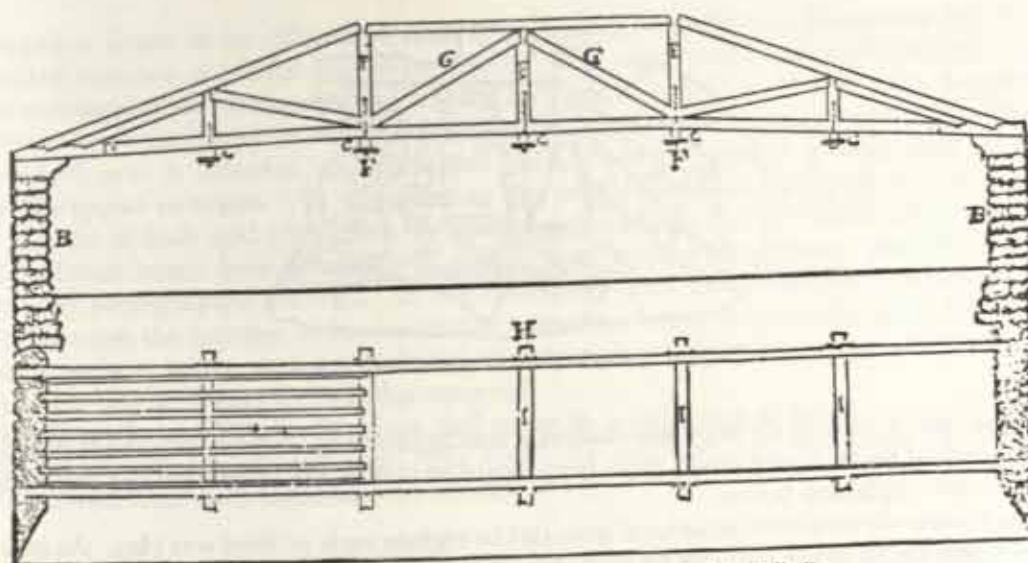


Fig. 8. Sixteenth century truss structure as conceived by Palladio.

rigidity to be achieved. The members in a truss structure carry the loads mainly by the axial load mechanism and a very slight bending stress is developed in truss members; this is another indication of its efficiency as compared with beams in which the load is carried by a bending mechanism.¹⁰⁹

Grain Threshing and Storage in Ancient Iran: The agricultural activities of the ancient Middle Eastern cultures (Persia and Mesopotamia in the third millennium B.C.) consisted of preparation of land, cultivation, planting, irrigation, gathering of crops, processing and storage. The historical evidence reveals that the threshing of grain was achieved with the help of sledges drawn on the grain crop. Moreover, it was common knowledge in ancient times that grain must be stored in silos kept away from water and the moist environment. From the geographical point of view, regions like Susa were constantly exposed to ground water flow, as well as atmospheric moisture. Any solution to the proper storage of grains in this region would have required its protection in silos.

Origins of Truss Structures: With the foregoing as the background material we shall now suggest that some forms of truss structures were used in Iran since around the third millennium B.C. The evidence is in the form of a seal found at Susa which is shown in Fig. 9.¹¹⁰ Using the ladder as a scale suggests that the seal records cylindrical silos with domed roofs, for from the mechanical and agricultural point of view the construction of large silos on a moving sledge is not justified.

Depicted in Fig. 9 and the focal point of argument is the truss structure which forms the foundation of the silos. This truss form is explicitly and deliberately created by the artist as an imitation of the then existing real truss form. Comparison of this record and its truss structure with other artistic records of ancient cultures shows that no other interpretation can be attributed to this figure. From the geometrical point of view this type of truss has been sketched in a precise and correct triangulated form, a form which is mechanically essential to the rigidity of truss. The lines forming the sketch of this truss cannot possibly be interpreted by a random drawing on the part of the artist. Details such as the connection of members at joints and that the base member is longer than the top member has been recorded. This two dimensional truss form which serves as the elevation of a space truss structure is, from the engineering point of view, a clear indication of "mechanical intuition" by its prototype builders.

Another point which supports this thesis comes from the need which gave rise to the invention of this form. If the seal of Fig. 9 is interpreted to be the representation of an elevated storehouse then the

¹⁰⁹ M. Farshad, *Structural Forms* (in Persian), Pahlavi University Press, Shiraz, Iran 1974. ¹¹⁰ *Survey I*, p. 291, Fig. 70d.



Fig. 9. Seal impression from Susa, see Survey I, p. 291.

vital functional use of truss as elevated foundation is totally justifiable. Accepting the latter interpretation, two functional needs which could have been instrumental in the invention and construction of a truss structure are explained below.

The only commonly available structural material in regions such as Susa was clay. As noted above, the successful storage of grain requires its protection from excessive moisture, heat, and water. A silo built on an elevated platform (above the ground water level) would serve as a protective agent against flowing water. Clay (due to its permeability) would be unsuitable for elevated foundations. With stone and wood scarce the farmer was forced to the solution of a hollow wooden structure. The hollow foundation below the silos would also satisfy the need for protection against the atmospheric moisture. The air draught under and around the silos would decrease the dampness and hence prolong the storage time. There are two silos on the seal which would result in an increase in the external surfaces and a greater air flow causing damp air to be removed.

The construction of a truss structure in Iran in the third millennium B.C. was not obviously based on previous theoretical calculations on the part of its builder. However, the resulting structure and its functionality in sustaining the applied loads, which were quite considerable, is evidence of the inventiveness and technical intuition of the ancient engineers of Susa. The fact that the truss was built in its perfect and developed rigid form is a clear indication that the builders had an experimental as well as analytical knowledge of the principles of statics, the theoretical foundation of which was laid centuries later. Referring again to the seal and comparing the scales we observe that the size of the truss structure was considerable.

The lack of other historical evidence and truss structures in this region can possibly be attributed to the fact that the structure, being totally functional, was not preserved in tombs and that the wood structure collapsed and disintegrated.

SOME UNPUBLISHED INDUS BEADS FROM IRAN

By Dilip K. Chakrabarti* and Parveen Moghadam

The finds of Indus civilization material in Iran are still strictly limited: five etched carnelian beads in Hissar III C,¹¹¹ one etched carnelian bead in Shah Tepe IIA-I,¹¹² an unspecified number of

* The first author's study of the Iranian material and sites was made possible by the award of a Fellowship from the British Institute of Persian Studies. While in Iran, he, like many others before him depended considerably on Mr. David Stronach's guidance and counsel. Dr. F. Bagherzadeh, Director of the Iranian Centre for Archaeological Research, allowed him access to the Tehran Museum collections and Mr. G. A. Shamlou of the Museum offered him ready assistance.

¹¹¹ E. F. Schmidt, "Tepe Hissar Excavations 1931". *The Museum Journal* 23 (1933), p. 438.

¹¹² A. J. Arne, *Excavations at Shah Tepe, Iran* (Stockholm 1945), Pl. LXXVI, 615.

etched carnelian beads in an Akkadian context at Kalleh Nisar,¹¹³ two Indus-inspired seals,¹¹⁴ and an unspecified number of etched carnelian beads¹¹⁵ in a presumably Akkadian context at Susa and one Indus rectangular seal-impression on a sherd in Tepe Yahya IVA.¹¹⁶ One may mention in addition the remarkable similarity in construction between an Akkadian structure at Susa and the Indus "granaries",¹¹⁷ and a cylinder seal in Hissar IIIB,¹¹⁸ which depicts a bull, once considered as "vaguely Harappan in origin".¹¹⁹ Considering the geographical contiguity of the Indus civilization and Iran this list of finds and parallels is by no means imposing. It is in this context that the present unpublished Indus beads from a number of sites in Iran assume significance, though they cannot be placed in their stratigraphic contexts. In the context of Iran they collectively reveal a new Indus bead-type, increase the number of known etched carnelian beads, suggest the possibility of an Indus contact with an area where no such contact was previously suggested, and—most important of all—point out a new site with decidedly Indus material.

The beads are in the Tehran Museum and occur in a collection of beads strung by the Museum authorities into a number of necklaces. The beads do not have any individual museum number; only the necklaces bear such identification marks.

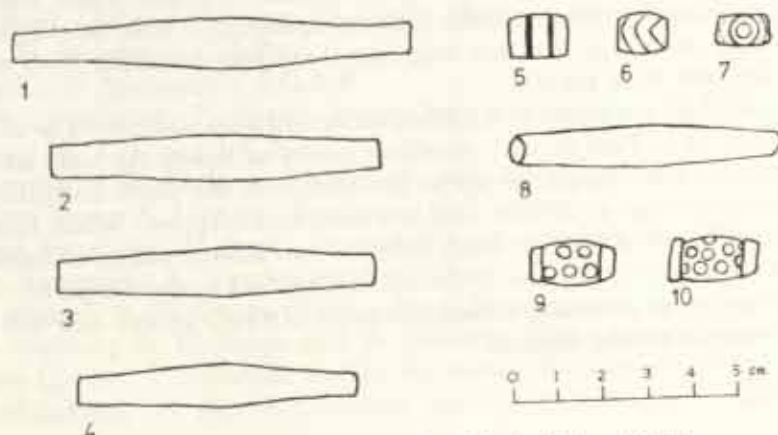


Fig. 10. Some unpublished Indus beads in the Tehran Museum.

- (1) Site: Jalalabad near Persepolis (necklace no. Tehran Museum 26040). Material: carnelian. Type: long barrel-cylinder. Apart from this specimen which is complete, the necklace contains four fragments of this type.
- (2) Site: Jalalabad (Tehran Museum 26036). Carnelian, long barrel-cylinder.
- (3) Site: Susa (Tehran Museum 11726). Carnelian, long barrel-cylinder.
- (4) Site: Jalalabad (Tehran Museum 26036). Carnelian, long barrel-cylinder.
- (5) Site: Jalalabad (Tehran Museum 26036). Etched carnelian, white on red.
- (6) Site: Jalalabad (Tehran Museum 26037). Etched carnelian, black on red.
- (7) Site: Jalalabad (Tehran Museum 26041). Etched carnelian, white on red.
- (8) Site: Marlik (the necklace in which this bead occurs does not bear any museum identification number, but there is no doubt about its being from Marlik). Carnelian, long barrel-cylinder.
- (9) Site: Marlik (Tehran Museum 25457). Etched carnelian, edged with gold. White on red.
- (10) Site: Marlik (Tehran Museum 25457). Etched carnelian, edged with gold. White on red.

¹¹³ L. Vanden Berghe, "Excavations in Luristan, Kalleh Nisar", *Bulletin of the Asia Institute of Pahlavi University, Shiraz*, 1973, p. 28.

¹¹⁴ *M.D.P.* II (1900), p. 129; P. Amiet, *Glyptique Susienne* (Paris 1972), Pl. 153, no. 1643. A detailed survey of these and other Indus and Indus-inspired seals from west Asia has been made in Dilip K. Chakrabarti, "Seals as an Evidence of Indus-West Asia Interrelations", to be published in the Professor Niharranjan Ray Felicitation Volume (Calcutta).

¹¹⁵ *M.D.P.* (1943), fig. 84, no. 7. Dr. Pierre Miroshedji informs us that there are about fifty etched carnelian beads in the Louvre collection from Susa. We are indebted to him for this information.

¹¹⁶ *Iran X* (1972), p. 92, Pl. IIb.

¹¹⁷ *M.D.P.* XLVI, p. 77, fig. 5, Plan 2, Pls. 11-12, also fig. 6.

¹¹⁸ E. F. Schmidt, *Excavations at Tepe Hissar* (Philadelphia, 1937), p. 199, fig. 118.

¹¹⁹ *Antiquity* 17 (1943), p. 181.

The Indus character of these beads is not in doubt. The occurrence of the etched carnelian beads outside the Indus context as an evidence of the Indus contact has already been studied by E. C. L. During-Caspers.¹²⁰ The beads reported here belong to her types I and III—the white-on-red and black-on-red varieties respectively. She assumed that “the trade in these beads did not follow the arduous route overland from Baluchistan, through Fars. . . .”¹²¹ The finds from Jalalabad in Fars refute this assumption.

Like the etched carnelian beads the long barrel-cylinder carnelian beads also are a distinct Indus bead-type.¹²² They have not been previously reported from Iran. The find-spots of the present beads at Jalalabad, Susa and Marlik would suggest that they were once traded extensively. It would be worthwhile to look for these beads in the other unpublished Iranian (and also Mesopotamian) collections. The occurrence of one long barrel-cylinder and two etched carnelian beads in the Marlik collection is somewhat problematic because Marlik is dated in the last part of the second millennium and the early part of the first millennium B.C.¹²³ and is thus too late to have any direct Indus connection. The most obvious explanation is that they were curiosities handed down from an earlier period. This is also suggested by the fact that the etched carnelian beads at Marlik are edged with gold, a feature which is not found elsewhere. It is also possible that the Indus civilization had some contact with the area north of the Elburz, the area where Marlik is situated, though it must be admitted that there is no firm proof of this. In the context of Susa the long barrel-cylinder carnelian bead adds one more type to the known Indus artifacts from the site.

The beads from Jalalabad are a part of a surface collection from this site. The site is near Persepolis and is shown as number 32 in Paul Gotch's excellent survey of Bakun A5 ware sites in the Persepolis plain.¹²⁴ Since Bakun A5 ware continues up to the middle of the third millennium B.C. and later, this evidence of an Indus contact at the site need not come as a surprise. What, however, is important is the geographical location of the site in Fars, between two known points of Indus contact in south Iran, namely Tepe Yahya and Susa. This is the first site in Fars to show a positive evidence of Indus contact and may well repay an excavation from this point of view. In any case this is the first Iranian site to reveal Indus material on the surface.

¹²⁰ E. C. L. During-Caspers, “Etched carnelian beads”, *Bulletin of the London Institute of Archaeology* 1971, pp. 83–98.

¹²¹ *Ibid.*, p. 92.

¹²² J. Marshall (ed.), *Mohenjodaro and the Indus Civilization* (London, 1931), p. 511, Pl. CXLV, 24–32, Pl. CLI; E. Mackay,

Chanhudaro Excavations (New Haven, 1943), Pl. LXXXI, 25–9.

¹²³ E. O. Negahban, *A Preliminary Report on Marlik Excavation* (Tehran 1964), p. 36.

¹²⁴ P. Gotch, “Bakun A5 pottery”, *Bulletin of the Asia Institute of Pahlavi University, Shiraz*, 1971, fig. 1.

SURVEY OF EXCAVATIONS IN IRAN — 1976

The principal excavations and surveys carried out in 1976 are listed below.¹ Sites marked with an asterisk are also reported in greater detail.

Excavations

- | | |
|--------|---|
| Spring | <ul style="list-style-type: none"> *Jowi; G. Dollfus; Centre National de la Recherche Scientifique Susa; J. Perrot; Délégation Archéologique Française en Iran Chogha Mish; H. Kantor; Oriental Institute, University of Chicago and U.C.L.A. Dasht-e Gol; H. Wright; I.C.A.R. Haft Tepe and Abu Fandowa; E. O. Negahban; University of Tehran Jurjan; M. Y. Kiani; I.C.A.R. |
| Summer | <ul style="list-style-type: none"> *Firuzabad, Qal'eh-i Dukhtar; D. Huff; Sazeman-i Hefazat-i Athar-i Bastani Izeh; H. Wright; I.C.A.R. Ziwiye; N. Motamedi; I.C.A.R. Qal'eh-i Yazdigird; E. Keall; Royal Ontario Museum Bisitun; M. Rahbar; I.C.A.R. *Ghubayra; A. D. H. Bivar; University of London *Kordlar Tepe; A. Lippert; Innsbruck University *Takht-i Sulaiman; D. Huff; Deutsches Archaeologisches Institut |
| Autumn | <ul style="list-style-type: none"> Jam-e Zimueh; L. Vanden Berghe; Ghent University Tepe Hissar; R. H. Dyson; University of Pennsylvania *Tal-e Malyan; R. H. Dyson and W. Sumner; University of Pennsylvania *Shahr-i Qumis; J. Hansman and D. Stronach; National Geographical Society Shahr-i Sokhta; M. Piperno; Istituto Italiano per il Medio ed Estremo Oriente |

Surveys

- | | |
|--------|---|
| Spring | Khuzistan; S. Ganjavi; I.C.A.R. |
| Summer | <ul style="list-style-type: none"> Halimejan; Sh. Fukai; Tokyo University Hashtgerd (Tehran); Y. Kosari; I.C.A.R. Azerbaijan; M. Salvini; Istituto per gli Studi Micenei ed Egeo-Anatolici Atrek Valley; A. Invernizzi; Turin University Eshkevar; M. Musavi; I.C.A.R. Azerbaijan; A. Petronelli (architectural survey); I.C.A.R. Taq-i Bustan; Sh. Fukai (photogrammetric survey); Tokyo University Gorgan region; H. Shiomi; Hiroshima University |

Tepe Djowi (Pl. I)

Faisant suite aux recherches menées à Djaffarabad et dans les couches profondes de Suse depuis 1969 sur le processus de formation des premières agglomérations urbaines en Susiane (Khuzistan), une campagne de fouille a été conduite du 15 novembre 1975 au 2 janvier 1976 sur le tépé Djowi. Les travaux étaient subventionnés par le Centre national de la Recherche scientifique (Centre de recherche archéologique, Unité de recherche n° 19).²

¹ The Editors thank the Iranian Centre for Archaeological Research for kindly providing this information.

² Ont participé aux travaux sur le terrain Melles Djaffar Mohamadi, représentant du Centre iranien de recherches

archéologiques, Diana Patch, assistante archéologue (Washington University, St Louis, Missouri E.U.), MM. Pierre Lécuyer, architecte DESA en charge des relevés et des plans,

[continued on next page]

Situé à 10 km au nord de Suse, à 250 m de la rivière Chaour sur sa rive orientale, le tépé Djowi long de 180 m, large de 100 m est formé de deux buttes—l'une orientée sud-ouest nord-est est longue de 150 m, large de 90 m, son sommet s'élève à 10 m au dessus de la plaine environnante; le seconde, au nord, longue de 70 m et large de 40 m n'a que 3 m de haut.

Djowi avait été exploré par R. de Mecquenem en 1934-35: deux sondages y avaient été pratiqués alors mais "aucun reste de construction n'avait été observé ni aucun niveau archéologique distinct reconnu avec certitude".² Cependant l'analyse des poteries de Susiane par L. Le Breton³ et les collectes de surface semblaient montrer d'une part une occupation se situant sur le même horizon que celui de Djaffarabad, période I ou lui étant légèrement postérieure, d'autre part une occupation contemporaine de la période II de Djaffarabad.

L'objectif de la fouille de cette année était:

—d'observer la séquence stratigraphique du tépé et plus particulièrement celle des couches profondes.

—si possible, par quelques sondages, de repérer les limites de l'établissement.

Pour réaliser cet objectif l'opération de contrôle stratigraphique a été effectuée en DE6-9, c'est à dire autour du sondage 2 de R. de Mecquenem. La tranchée de 1935 a été vidée des terres de remblayage; les parois, très irrégulières nettoyées faisant apparaître une succession de couches qui furent numérotées du haut vers le bas 1 à 17. Le sol naturel a été atteint. De chaque côté du sondage et en retrait de 1,50 m à 2 m par rapport aux anciennes parois des sections ont alors été établies. Dans ce secteur la surface fouillée représente 60 m².

Deux tranchées de 5 x 1,50 m ont été ouvertes au nord et au sud du tépé; la présence dans la seconde à 0,20 m sur la surface du sol actuel d'une surface de briques a rendu nécessaire l'extension du sondage pour en retrouver les limites.

Stratigraphiquement aucune interruption dans l'occupation du tépé n'a été constatée. L'articulation majeure de la stratigraphie se situe avec la couche 12: un assemblage différent de celui des couches 17 à 13 apparaît alors, de même que disparaissent certains caractères de l'architecture des niveaux sous-jacents.

Lors de la première phase (couches 17 à 13) le plan des pièces d'habitation est rectangulaire. Leur longueur dépasse souvent 4 mètres. Les murs sont construits en briques crues, sans fondation et ne sont épais que d'une seule brique. Les sols sont généralement dallés de briques. Plusieurs pièces possédaient des foyers: la majorité d'entre eux étaient construits sur des radiers de galets.

Dans la tranchée sud une aire dallée a été dégagée sur 4,60 m du nord au sud et 5,80 m d'est en ouest mais à l'est comme à l'ouest les briques continuent au delà de la limite de fouille. La proximité de la surface ne permet pas de dire qu'elle était son épaisseur: par endroit 2 assises, rarement 3, le plus souvent une seule ont été dégagées. Au sud cette aire est limitée par un "kâguel" épais de 15 à 18 cm de couleur verte et brune formée par 8 couches d'enduit de 2 cm en moyenne d'épaisseur. Cette ligne de "kâguel" suivie d'est en ouest sur 2,60 m de long fait un retour d'1,60 m vers le sud.

La faible surface fouillée, le fait que la majorité des murs aient été coupés par la tranchée R. de Mecquenem, ne permettent pas de connaître quelle était l'organisation de l'agglomération. Mais lorsque l'établissement est créé, sa superficie comme l'ont montré les sondages couvre entre un hectare et un hectare et demi.

Certaines formes céramiques recueillies dans les couches 17 à 13 de Djowi sont identiques à celles des niveaux 6 à 4 de Djaffarabad: grands bassins ovales avec ou sans échancrure au bord, bols à carène basse et à base concave en poterie commune. L'usage d'inciser une marque sur les pots à carène à base concave se retrouve aussi bien à Djaffarabad 6-4 que dans les couches 17-13 de Djowi.

² Le Breton, 1947: 147.

³ Le Breton, 1957.

continued from previous page

Alain Dagand, restaurateur; M. Mir Abedin Kaboli a représenté le C.I.R.A. les derniers jours de la fouille. MM. Alain Lecaille (ITA CNRS, Laboratoire de géomag-

nétisme de Saint Maur) a prélevé des échantillons sur les structures brûlées. M. Jean Trichet (M.C. Orléans—La Source) pédologue a pris des échantillons de sols.

Plus souvent des types présents à Djaffarabad 6-4 se retrouvent dans les couches 17-13 de Djowi mais sont marqués par une évolution: la carène des grands pots en céramique commune se situe à Djowi beaucoup plus près de la base et a souvent tendance à disparaître, remplacée parfois par une simple rainure; les pieds de coupe nombreux à Djowi ne sont jamais fenestrés et rarement galbés, ornés de motifs en réserve comme ils l'étaient dans les niveaux profonds de Djaffarabad. La technique même du décor "en réserve" change: celui-ci est à Djowi souvent obtenu par simple grattage de la surface peinte.

Des formes inconnues à Djaffarabad 6-4 "tortoise vases", coupes carénées à décor interne et externe font leur apparition mais elles sont souvent décorées de motifs anciens ou d'une association de motifs traditionnels et nouveaux tels que les hachures entrecroisées très serrées, tracées au pinceau fin.

Aucune différence n'est notable entre le matériel lithique, les objets en bitume, les fusaioles ou les objets de parure recueillis dans les couches profondes de Djaffarabad de ceux trouvés dans les couches 17-13 de Djowi.

La deuxième phase permet de regrouper les couches 12 à 5. C'est dans les couches 12 et 10 qu'ont été mis au jour les principaux vestiges d'habitation.

Dans la *couche 12*, les restes d'au moins cinq pièces ont été dégagés. Tous les murs à l'exception de l'un d'entre eux contre lequel s'appuie un mur sont épais de 20 à 22 cm, c'est à dire toujours la largeur d'une brique. Les sols sont revêtus de torchis parfois recouverts d'une natte mais ne sont pas dallés de briques. Deux fours ont été dégagés. Dans une des unités d'habitation a été mise au jour une petite plate-forme de 60 x 60 cm près de laquelle ont été recueillis les restes d'un grand bassin profond (ht 0,95 m, diamètre 0,70 m) et d'une grosse jarre. Sur le sol de la pièce contigüe se trouvait un bassin ovale peu profond, sorte de pétrin.

Dans la *couche 10* sont pris les vestiges de deux unités d'habitation distinctes l'une de l'autre. Dans un espace qui n'était vraisemblablement pas couvert ont été dégagées deux zones de foyers.

Deux *sépultures* ont été reconnues creusées à partir de la couche 8: près des crânes étaient déposés des gobelets coniques en poterie très fine ("egg-shell").

A partir de la couche 12 disparaissent la poterie commune enduite de bitume à l'intérieur caractéristique de couches profondes tant à Djaffarabad qu'à Djowi et la poterie peinte à décor noir avec motifs en réserve ou à décor très dense.

En revanche de nouvelles catégories font leur apparition: ce sont celles connues dans les niveaux 3m-n de Djaffarabad (Phase Choga Mish).

Parmi les restes de l'assemblage on note une plus grande variété de qualité du silex employé que dans les couches inférieures. Les hoes sur galets sont de très grandes dimensions: leur longueur comprise entre 15 et 21 cm, leur largeur entre 13 et 15 cm alors que dans les couches profondes leur largeur ne dépassait guère 10 à 12 cm. De même la morphologie des fusaioles change: elles sont en forme de cônes évidés (diamètre 5 à 7 cm) plus ou moins hauts et portent un décor peint. C'est seulement dans les couches 6 à 4 qu'apparaissent les petites fusaioles biconvexes à bord parfois denticulé qui seront caractéristiques lors de la phase Suse (Djaffarabad 3d-1; Suse 27-25).

Quand peut-on situer l'occupation de térépé Djowi?

Djowi 17-13 appartient à la même phase culturelle que celle des niveaux profonds (6-4) de Djaffarabad (Phase Djaffarabad).

Certains caractères de l'architecture de même que l'outillage en os, celui en pierre, les fusaioles et les objets de parure (labrets, anneaux en bitume parfois incrustés de matière blanche) sont semblables à ceux recueillis dans les couches profondes.

Bien que des techniques, des formes, des décors de poterie se maintiennent, la céramique recueillie dans les couches 17-13 témoigne d'une évolution par rapport à celle récoltée dans les niveaux 6 à 4 de Djaffarabad.

Il semble donc que l'établissement se soit créé à Djowi quand Djaffarabad après avoir connu un déclin (au niveau 4 la superficie de l'établissement de Djaffarabad s'était beaucoup réduite) est abandonné. Les 2 sites ne sont distants que de 3 km.

Cette première occupation se situerait sur le même horizon chronologique que celui de Choga Mish (Middle Susiana 1),⁵ que tépé Sabz (phase Khazineh)⁶ et en Mésopotamie que Hajji Mohammad près de Warka,⁷ Eridu XIV–XII⁸ et Ras al Amiya.⁹

Des changements notables apparaissent dans la culture matérielle à partir de la couche 12. Djowi 12–4 se situerait sur l'horizon de Djaffarabad 3m–n, de Choga Mish (Middle Susiana 3), de tépé Sabz (phase Mehme), de Eridu (XII–VIII).

Il semble que Djowi soit ensuite tout à fait abandonné. Aucun vestige postérieur (contemporain de Djaffarabad 3d à l ou Suse 27–25) n'a été retrouvé ni sur tépé lui-même ni dans les champs alentours où ils auraient pu être entraînés par un lessivage des terres.

GENEVÈVE DOLLFUS

Qal'a-ye Dukhtar, Firuzabad

Auf der sasanidischen Festung Qal'a-ye Dukhtar bei Firuzabad wurden im Herbst 1975 und im Frühjahr 1976 im Auftrage des Iranian Centre for Archaeological Research und der National Organization for the Restoration of Historical Monuments archäologische Untersuchungen als Vorarbeiten für die geplanten Restaurierungen durchgeführt. Die Ausgrabungen konzentrierten sich auf den in der Festung liegenden Palast und auf einige für Materiallagerung bestimmte Flächen auf dem Festungsplateau.

Der Haupteingang zum Palast wurde in einem vorspringenden Bauteil an der Südwestecke, nicht in der Gebäudeachse sondern rechtwinklig dazu, freigelegt. Dem knapp 2 m breiten Tor gegenüber liegt auf der Rückseite des Hofes A eine wahrscheinlich zum Aufenthalt der Wächtergarde dienende, ehemals gewölbte Halle mit gemauerten und verputzten Sitzen und estradenartigen Wandbänken (Raum 2); neben dieser Halle führen gipsverputzte Stufen in den quadratischen Treppenturm (1), der die gesamte Palastanlage erschliesst.

Im mittleren Palastteil um Hof B wurden in den umgebenden Sälen (18 und 13) gleiche bzw. ähnliche Estraden wie in Raum 2, sowie Öfen (Raum 11) aufgedeckt. In der künstlich aufgeschütteten Hofterrasse kamen Substruktionen aus Lehmziegeln und Bruchstein-Trockenmauerwerk z.T. mit gemauerten Wölbungen zutage. Im Hof waren während einer späten Benutzungsperiode grosse Vorratsgefäße aus Keramik aufgestellt.

Im oberen Teil des Palastes wurden Teile des Iwans, des Kuppelsaales und der Seitenräume untersucht. Über dem ursprünglichen Gipsfussboden des Kuppelsaales sind bei späteren Umbauten z.T. freistehende, z.T. gegen die Rückwand gesetzte podienartige Einbauten aus Mauerwerk mit Gipsverputz errichtet worden.

Die Untersuchung von 2 Arealen ausserhalb des Palastes brachte Beispiele der das gesamte Festungsplateau bedeckenden Bebauung mit einfachen Wohn- und Vorratsquartieren zutage. Ungefähr rechteckige Räume mit Wänden oder Wandsockeln aus Bruchstein-Trockenmauerwerk sind zu Baugruppen mit Höfen zusammengefasst. Die Räume haben Lehmfußböden, niedrige und breite Wandbänke und dürften mit flachen Holz-Lehmdächern gedeckt gewesen sein. Sie enthielten Fragmente von irdenen Kochgefäßen, Steinmörsern, Glas und anderen Gebrauchsgegenständen; in den Höfen und Nebenkammern fanden sich wieder Reste grosser Vorratsgefäße.

Unter den wenigen bei den Untersuchungen zutage geförderten Fundobjekten befinden sich mehrere Münzen. In die Frühzeit des Palastes gehört eine Silbermünze, deren Avers einem Typ der Frataraprägungen entspricht. Wie diese in der Lehmstampfung des Hofes B liegend wurde eine gut erhaltene Drachme Shapurs II gefunden. Eine intensive Benutzung der Festung in spätsasanidischer Zeit, möglicherweise auch noch zu Beginn der arabischen Herrschaft, bezeugen mehrere Fragmente von Kupfermünzen des spätsasanidischen Typs, die z.T. im Palast, hauptsächlich jedoch auf dem Burgplateau in der Nähe der Festungsmauer gefunden wurden.

DIETRICH HUFF

⁵ Communication personnelle de Dr. H. Kantor.

⁶ Hole, 1969: 359.

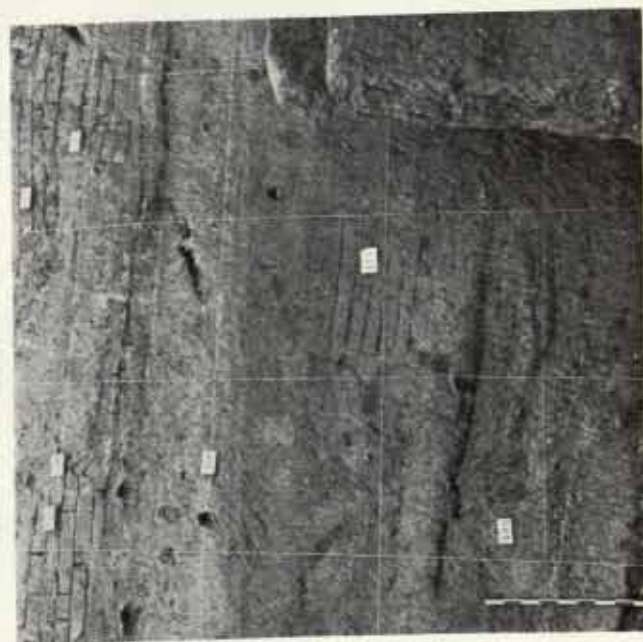
⁷ Ziegler, 1953.

⁸ Oates, 1960.

⁹ Stronach, 1961.



Ia



Ic



Ib



Id



Pl. IIa. Ghubayra: excavation on Citadel west slope. The transverse mud-brick-wall may represent a 10th century phase of construction.



Pl. IIb. Ghubayra: incised Pahlavi inscription, probably a personal name, on rim of red clay storage jar from Pit AAA.



Pl. IIc. Kordlar Tepe: foreground, entrance hall Z from the north; background, gate in the enclosure wall.

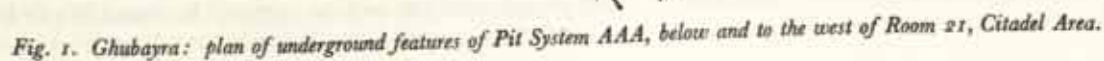


Pl. IId. Kordlar Tepe: painted vessel from Room Z, Level IV.



Pl. IIe. Kordlar Tepe: covers from hearth, Hall B, Level IV.

The fourth season of excavations at the Islamic site of Ghubayra, near Kirman, took place between July 10th and August 21st 1976. Clearance was undertaken at several points on the Citadel, and elsewhere four test trenches were dug, but the main effort was concentrated in three areas. The first was the underground tunnel system (System AAA), discovered beneath Room 21—near the crest of the "Palace" area—which had been excavated in 1974. In a cavity at the north-west of Room 21 an unengraved conoid sealstone of Sasanian type had attracted attention. The recess was therefore investigated, and was revealed as a spherical pit some 2 m. in depth. Near its bottom was found a miniature adze-head in white stone, the unsharpened edge of which suggested that its use had been ritual. Nearby lay a spherical glass scent-bottle, a fragmentary faceted scent-bottle, and sherds of heavy red pottery, one of which was found (after washing) to bear an incised Pahlavi inscription (Pl. IIb). The single word appears to be a personal name. The pit led into a horizontal east-west gallery (Gallery 1), joining, at the east, Pit ZZ excavated in 1974; and on the west, a new chamber (Chamber 1), only



partly explored during the present season. Below Gallery 1, to the south, lay a vertical shaft of rectangular section (Shaft 1) closed 2 m. below the gallery-floor by heavy horizontal capstones (Fig. 1). A second, narrower, elliptical shaft (Shaft 2) descended parallel, and communicated with Shaft 1 above the capstones, before entering it below. That Shaft 2 was a treasure-seekers' pit became evident when at the bottom were revealed sections of palm-leaf rope—one knotted to form the handle of a bucket—a fragment of an iron spade, and a complete slip-painted lamp of "Samanid" fabric (9th–10th century A.D.). From the bottom of the re-united shafts a further gallery (Gallery 2) ran southwards for at least 20 m., revealing also branches to east and west. The complexity of these underground passages, additional to those already known, make it clear that the tunnels of Ghubayra are a type of feature previously unrecorded in Iranian archaeology, and requiring detailed interpretation.

The second area of special interest lay along the western scarp of the citadel, in squares F2 and F3, between the 1971 step-trench and the upstanding north-west tower. On its lower slope, a cutting floored with reutilized baked bricks, lacking datable materials, is interpreted from parallels elsewhere on the site as a wash-house, probably thatched or tented, and used by nomads during the Safavid period. On the crest, foundations of an unusually substantial mud-brick wall (Pl. IIa) apparently represents an early phase of the citadel. On its north side lay the fallen remains of a barrel-vault of mud-brick. Scattered down the slope from this point lay a strikingly homogeneous group of slip-painted vessels, five bowls with chordwise or marginal pseudepigraphic decoration in brown on yellow slip, and a flask with epigraphic and avian decoration in cream on chocolate. Associated, and no doubt nearly contemporary, was a bowl with scalloped rim and incised decoration, of the fabric christened at this site "electric *sgraffiato*". Known also at Sirjan (J. W. Allan, "Incised wares of Iran and Anatolia", *Keramos* LXIV, 1974, pl. 4), this ware should represent an early stage of the transition to *sgraffiato* from plain slip-painted technique, datable towards 1050 A.D. At the very bottom of the slope, in a small soak-pit, emerged the last piece belonging to this group: a glass flask with Sasanianizing decoration of roundels containing groups of three fishes.

The third area to receive special attention was the deep shaft 00, descending beneath square H2c. An access cut from Room 20 improved ventilation, and enabled the shaft to be followed, descending southward beneath the so-called "Porcupine Cave". It contained many stamped brick-fragments with portions of the Kufic inscription found elsewhere. In square K98b, Room 23 was exposed. It contained ashes, indicating the former presence of a furnace. Traces of nomad occupation were provided with a closing date by the find near the entrance step of an autonomous copper coin of Kirman from the period of Shah Isma'il (907/1502 to 930/1524). Test trenches at the Kishmishkhāneh, the suspected mosque site, and a possible kiln site close to the river north of the latter all showed limited settlement deposit. The first appears likely to represent a corral, or an area for storage of goods rather than for habitation.

A. D. H. BIVAR

Kordlar-Tepe (Pl. IIc–e)

The fourth season of the excavations at Kordlar Tepe took place from the end of June until the beginning of September 1976. Investigations of the Iron Age settlements in the north-eastern part of the Tepe was continued. The area excavated so far is large enough to provide a reliable insight into the groundplan of the manor-house of the Iron Age citadel. The older levels IV and III of this site have to a large extent been recovered, while no further important structures from period II are yet known.

During period IV an extensive building, which covered an area of about 20 sq. m., was erected on a small elevation of the mound. The walls were constructed of flat, square mud-bricks (c. 39 × 39 cm.) on a base of hewn and faced stones of remarkable size. The walls are about 1.5 m. thick. The inner walls of the rooms B, L and Z were coated with a thick plaster of light-yellow colour. In room D the coating was dark-red.

The building had an unusual plan. In the middle there was a square hall, nearly 8 m. long. In the east and west we found small chambers. The chambers at the corners of the building projected in the form of towers (A, L, F). Small passages can be presumed in the northern wall of room L, as well as in the western wall of room F. The main entrance of the manor-house, however, was in the L-shaped room to the south-east (Fig. 2). This room was situated in a corner of the building and projected some distance outwards. Thus the whole complex had projections on all sides. On the inner side of the small courtyard, which is situated between the rooms A and Z, we found a broad bench made of mud-bricks (C).

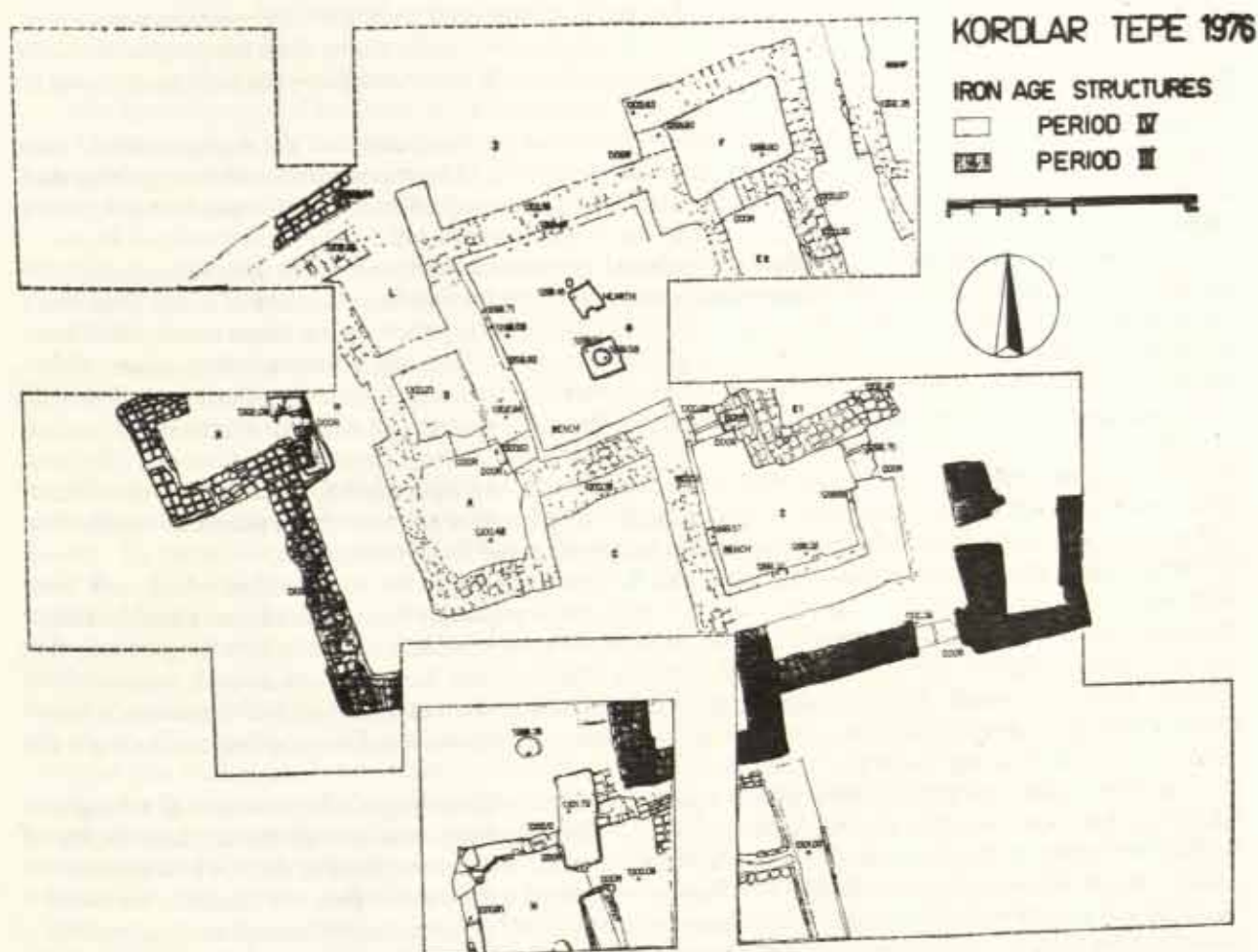


Fig. 2. Kordlar Tepe, Levels III and IV.

The main entrance in the north-eastern corner of room Z was lined with a red polished limestone slab. Benches of stamped mud were built against the eastern, southern and western walls, having a width of merely 25 cm. and an average height of 50 cm. The walls were slightly curved above the benches, perhaps in order to sit more comfortably. It is not quite certain, however, whether the benches were used for sitting, rather than for pottery and other objects. But we could not find anything on the benches themselves. Near the middle of the southern and western bench there were U-shaped depressions, each of which was 80 cm. wide and reached down almost to the floor. These could possibly have been used for placing the side-columns of the ceiling. Close to the niche in the southern bench a small rounded shelf with a shallow hollow projected out of the bench. Just in front of it there was an oval-shaped basin in the stamped floor (about 1×0.70 m.).

In the south-west corner of room Z a square alcove in the wall was uncovered. It had a length of 50 cm. and a depth of 40 cm. In the upper part of the alcove the springs of a broken arch could be traced. The interior was plastered yellow.

Next to the depression in the western bench the outstretched skeleton of an adult male, whose bones were disturbed, was discovered on the floor. This disarray might have been caused by beasts. The skull showed traces of burning. It seems certain, that this man was killed and burnt by falling parts of the wall during the violent fire, which destroyed the building.

All along the northern wall and in the south-western corner of the entrance hall fragments of big storage vessels with rather narrow bottoms were found. Probably these vessels, which have a height of not more than 1 m., were not originally set directly onto the floor, but held by wooden supporters. The vessels were usually decorated with solid ribs. In some parts of the room little heaps of carbonized grain were collected. This grain has not yet been examined. It may have been part of the contents of the storage pottery.

The fine, rather elaborate pottery can be regarded as an indication of the comparatively rich finds of this room. Typical is the grey and black slipped ware. Here some pedestal-base goblets and cups as well as two spherical-shaped, ribbed vessels with short-beaked spouts and small handles, and a wide bowl with a hollow, cone-shaped, pierced foot can be mentioned.

There are also narrow red-burnished, cylindrical ring-stands with two rows of window-holes. Of particular interest is another small ring-stand, the ornament of which is composed of a red cross work pattern on a white ground. The ring-stand has three feet and on the outside three crude solid ram-heads are applied. A sack-shaped vessel with a height of 20 cm. also has a painted decoration. It has ornamental figures in a dark red colour on a beige ground—five stag-figures in a geometrical design. The bodies of the animals are triangular in shape. Between the figures there is a criss-cross pattern (Pl. II d).

On the floor of the entrance room twelve arrowheads and one spear-head of bronze were scattered. The spear is about 25 cm. long with an edged bolt. Also found were two cheek-pieces of snaffle bits, differing in size and cut out of antlers, as well as single pieces of bone-ornaments.

From room Z one entered into the inner hall B through a door, the threshold of which was lined with two grey limestone slabs. The eastern part of this room has not been cleared completely. Hence the exact outline of the eastern wall is not yet known. In spite of this, it can be taken for granted, that the benches of stamped mud on the other three sides also continue here, as parts of such a bench have already been uncovered. In the middle of the northern and in the northern third of the western bench there were again deep niches, in which column-beams might have stood supporting accordingly the roof or the ceiling along the wall.

Near the middle of the southern part a square platform with a length of 130 cm. and a height of about 45 cm. was set onto the hard-pressed floor. The platform was composed of three layers of bricks, while the surface was smoothly plastered with mud. In the centre of it there was a cylindrical shaft—60 cm. wide and 35 cm. deep. The bottom was lined with a stone slab. In the hole we found a reddish soil mixed with white ash. With some certainty this platform can be regarded as a base for a rather thick column-beam, which might have been removed after destruction of the building. No traces of charcoal were found in this hole.

Close to this podium a hearth basin was uncovered, which was only 12 cm. deep and had two tongue-like extensions to one side. In the ashes of the hearth two broken, strangely shaped covers of baked clay were found. They differ slightly in size being about 20 cm. high. They have an oval-formed bottom, a disc-like fluted headpart and a handle on the back, which resembles an animal's tail. The fact, that these objects were found in situ in the hearth, may prove their function either as guards for the glowing embers or as small baking ovens (Pl. II e). There was a small, but deep hole at the northern edge of the hearth (posthole?).

Scattered all over Hall B several parts of human skeletons were found, the bones of which were sometimes charred. During the excavation it was possible to distinguish at least six individuals, three children aged between 10 and 14, one male about 30 years old and one female aged 40. It is possible that these people could not find their way out of the building during the fire and thus perished inside.

The finds in the central room include a lot of rough ceramics and cooking pottery. But there were also several fine bowls, small dishes and cups. Near the benches four grinding stones and two spindle-whorls of clay lay on the floor. Only one middle-sized storage-vessel and two bronze arrowheads have been found so far. The quality of the objects and the groundplan of the building as a whole indicate that the central hall and the L-shaped entrance-room had different functions. The former could have been mainly a working and living place, in which grain was ground and baked and in which the cooking was done. The entrance room, however, can be regarded as both the storage and reception room. Elaborate finds within other parts of the building have only been discovered until now in room A.

The small rooms adjacent to the central hall in the west and east as well as room F in the north-east were approachable by low and narrow doors. On the upper corners of one of these doors four holes for the lintel beams on each side could be traced. In the debris-filling of this door there were still remains of straw-mats and of mud-plastering, which originally covered the lintel beams.

Whether the central hall was roofed completely or had only a balcony in the southern part, which was supported by a big column, cannot be decided until the whole interior is excavated. It is certain, however, that there existed some sort of ceiling, as all over the floor were found burnt fragments of rather thin beams, the maximum diameter of which was 17 cm. Some of these timbers were squared. It could be observed, that the beams sometimes lay across each other. Therefore a roof or ceiling here must have consisted of a framework of beams. Upon these beams the remains of burnt, white-ashed reed-mats and pieces of mud-plaster were found, thus giving a hint of the type of construction.

Similar observations concerning the nature of the ceiling could be made in the entrance room Z. Additionally, the position of the finds above and below the debris of the collapsed ceiling here proves the existence of at least one upper storey. The same seems to hold true for room F in the north-eastern corner of the building. In the court-yard J just west of room F many stones were found, which had probably fallen from an upper part of this tower-room.

The burnt debris of period IV filled the rooms Z and B up to a height of more than 1 m. In the side-chambers, which in phase IV had several different floor levels, the height of the debris was much lower. In the subsequent period III this rubble was not removed but only levelled. As a base for the new floor a thin layer of yellow, homogenous clay was put on it. The walls of period IV were then repaired and re-erected. The door areas, which had been badly destroyed by the fire at the end of the first building period, showed distinct signs of repair. A special novelty of building phase III consisted of an enclosure wall, the course of which is fairly clear in the west and south. It was a brick-wall on a base of stamped clay blocks and had a width of 1.30 m. (size of bricks: $40/41 \times 40/41$ or $40/41 \times 35$ cm.). This wall was built rather close to the manor-house in a parallel distance to 2 to 3 m. The level of this wall is almost everywhere half a metre higher than the level of the period IV structures. In the south and west small rooms projecting outwards in the form of bastions were excavated. In the south-eastern part of the enclosure-wall there was a gate, which led to the entrance of the mansion. It was repaired twice and finally narrowed (Fig. 2). Immediately east of it, adjacent to the inner side of the surrounding wall a small chamber was uncovered. This room is paved with bricks.

Among the objects from period III the fragment of an alabaster vase might be noted. It was found in the north-eastern part of room B. Further on, in the entrance room Z, a wheel made of clay (diameter—11 cm.) and, outdoors, a curved bronze eyelet pin were collected. There is no evidence of change in types and treating of pottery in period III. A tendency, however, towards stronger profiled vessels and a preference for biconical forms can be observed.

ANDREAS LIPPERT

Tal-e Malyan (Anshan)

The University Museum, University of Pennsylvania, excavations at Malyan continued for the fourth season from late August through November, 1976.¹⁰ Excavations were conducted in twelve operations covering all major periods of occupation known at the site.

¹⁰ Also sponsored by the National Science Foundation (Grant Nos. SOC 75-01483 and BNS 76-06455), the Metropolitan Museum of Art, The National Geographic Society, The Ohio

State University, The University of Michigan, and The University of California at Los Angeles.

The Banesh Period (c. 3000 B.C.). The excavation of Building Level V in the ABC operation was enlarged revealing a 10-room structure. A small test below Building Level V encountered sterile soil for about 50 cm.; at that point, a group of stones, a few flints, and barley grains were encountered. The significance of this find is not clear and it is not yet certain that we have reached virgin soil.

The exposure of Building Level III in the TUV operation was expanded to reveal an interesting building complex including an exceptional round structure which appears to have been burned. Among the finds from TUV were Proto-Elamite tablets with both signs and numerals, seals, sealings, bullae, a lead bowl, and other metal objects. The considerable evidence of local metal industry found in this level included slag encrusted fragments of smelting furnace wall or crucibles and chunks of copper/bronze slag.

The Kaftari Period (c. 2000 B.C.). Five new operations provided data on the Kaftari period including our first significant examples of Kaftari buildings (in operations H5, FX106, and GGX98). These buildings feature substantial walls, evidence of white and red wall paint, door sockets, and hearths. The buildings showed evidence of complex reconstruction and repair suggesting a considerable period of occupation. Small bricks similar to bricks from some Banesh levels were found in a Kaftari building in operation GGX98. It is possible that the Banesh-Kaftari transition will be found in the lower levels of this operation. Operation F26 consisted of a hard, almost sterile Kaftari deposit over a Banesh deposit. The transition, explored only in a small test, appeared to be quite abrupt. The other Kaftari operation, BY8, was briefly excavated to explore the nature of the city wall and will be expanded in a future season.

Small finds of the Kaftari period included metal tools and ornaments, a sizeable collection of flint tools and debitage, figurines, bone and ground stone tools, as well as a fine group of sealings, several with cuneiform texts.

The Middle-Elamite/Qale Period (second millennium B.C.). The continued horizontal clearance of the large building in the EDD operation revealed a surprisingly complex history of architectural alteration and later re-use in parts of the building. Excavation in operation EE45 completed the plan of the rectangular court and surrounding corridor. Excavation in operation FF41 added to the plan a long narrow room with several phases of occupation. Excavation in operation EE39 provided unexpected new evidence. The wall which presumably defines the south-east side of the building is broken in EE39 by at least three openings separated by two square mud brick pillars. It is not yet clear how this "portico" relates to the rest of the building. Above the tops of this wall and pillars, but below the domestic complex excavated here in 1972, were several surfaces associated with a large hearth and three pottery kilns. The discovery of Susiana-related Middle-Elamite plain ceramics in these strata, together with clear evidence that Qale style ceramics were fired in the kilns completely alters our understanding of the ceramic assemblage at Malyan during the second millennium B.C. It was already known, and re-confirmed this season, that Qale ware forms the major component of the fill between the two earliest occupation floors of the EDD buildings. Now it is apparent that the Qale style was contemporary with the Middle-Elamite plain ware for the duration of the occupation in the building. Furthermore, our notion that Qale ware was contemporary with a late phase of the Kaftari style, originally based on survey data and a small sounding excavated in 1971 (T.T.-D.), is supported by the presence of Qale in context with Kaftari in the three uppermost levels of operation H5. Thus we see a gradual transition from the Kaftari to the Qale style which then continued in use along with a plain ware which may have been introduced from Susiana.

Small finds from the EDD operation included Elamite administrative texts chiefly recording issues and receipts of grain, flour, hides, and other commodities. There were also a seal, sealings, frit knobs, tile fragments, quantities of bitumen, hematite, and flint.

A group of five Qale period kilns were found during the investigation of a magnetic anomaly close to the EDD area (operation BB33). These kilns, together with the kilns found in EE39, suggest that this part of the mound was an industrial quarter during the second millennium B.C.

A disturbed Sasanian (?) deposit was encountered in operation A63. Operation Z46 was briefly excavated to investigate an arrangement of large stones near the centre of the site. The function of these stones, similar to those in the city wall foundation, was not determined. A coin, probably from a disturbed burial, suggests a pre-Parthian date for the stone alignment.

A Sasanian burial with two iron daggers, a coin, copper/bronze belt buckle, and an oval silver bowl was found in the TUV operation.

Special palaeozoological, palaeobotanical, mineralogical, and ceramic studies were conducted during the season.

W. M. SUMNER

Shahr-i Qumis

Following the excavations carried out in 1971, the third season at Shahr-i Qumis lasted for five weeks from late September to the end of October, 1976. The work was sponsored by the National Geographic Society with further help being received from the British Museum, the Corpus Inscriptionum Iranicarum and the British Institute of Persian Studies.

Excavations were resumed at four of the upstanding, widely separated Parthian buildings, V, VI, VII and XII, which mark the centre and southern parts of the site. The mud-brick walls and vaulted rooms of Building XII, for example, were found to have been encapsulated in a conical-shaped mound composed of tightly packed *chineh*. Here the original architectural plan has only begun to emerge and still another season will be required to complete the excavation of what appears to be an unusually compact, ceremonial structure.

At Building VII, where mixed deposits of human and animal bones were found in several of the ground-floor rooms in 1971, we were again reminded of the secondary, funerary function which many of the main monuments at Shahr-i Qumis came to serve before the Parthian city was abandoned. In particular, this year's work revealed, outside and just above the lintel of the only entrance, a horse skull and a human skull interred side by side in the protective *chineh* revetment that was erected round the original building.

At Site VI, an extensive fortified residence of mid-Parthian date, the final stages of the present excavation yielded the second Parthian Pahlavi *ostrakon* so far found at Shahr-i Qumis. At the time of writing the contents of the inscription are under study.

The main efforts of the 1976 expedition were concentrated on Building V, arguably the best preserved of all the early structures at Shahr-i Qumis. Like Buildings IV and VII it has a roughly square plan with a protruding bastion at the mid-point of each external wall. In all other respects, however, it is a unique structure.

An elevated terrace, at least 3 m. high and 4 m. deep, marks the entrance facade, while a narrow, sinuous corridor climbs from the terrace to the still higher level of room 1, near the heart of the building. Room 1, a vaulted chamber over 8 m. in length, served in effect as the "entrance hall" and from it a visitor could turn to any one of five separate doorways. Two of these led to vaulted corridors, two to adjacent rooms, and one other to a ramp—and the rooms of the upper floor. Remarkably enough, almost all the remaining excavated rooms, on both the main floor and the upper floor, appear to have been used for storage purposes. Many contain two or more large storage bins, usually built into a permanent platform, one contained an amphora of a type known from Parthian sites in Mesopotamia, and several more yielded clay *bullae* although not, unfortunately, any trace of the merchandise that once accompanied these impressed clay objects.

Apart from the architectural value of Building V, with its partly intact roof vaults, stepped staircase vaults and well preserved doorways, it is of no small interest for the extensive collection of pottery that its storerooms have produced. This material is now in the last stages of preparation for publication and should provide a useful index to the main Parthian pottery forms of north-eastern Iran.

DAVID STRONACH

Takht-i Suleiman

Die Ausgrabungen auf dem Takht-i Suleiman im Jahre 1976 dauerten vom 6.7. bis zum 30.8; anschliessend wurden Sicherungs- und Reinigungsarbeiten durchgeführt. Ziel der Untersuchungen war es, mit dem Zusammenschluss isolierter Grabungsflächen zu grösseren Arealen zu beginnen,

in den Vorjahren angefangene Sondagen abzuschliessen und noch anstehende Fragen zur Topographie des Platzes zu klären. Es wurde an folgenden Punkten gearbeitet:

1. Nordtor, NT₂.
2. Gebäude OG.
3. Fläche XA-XF zwischen den alten Schnitten N, Q, OS.
4. T 8 am südlichen Abschnitt der Ringmauer.

NT₂: Der ca. 4×9 m grosse und 5,5 m hohe, einst tonnengewölbte Raum liegt östlich neben dem sasanidischen Toriwan, mit dem er durch eine schmale, niedrige Tür verbunden war. Er dürfte als Unterkunftsraum evtl. für eine Wächtergarde gedient haben. Sein Fussbodenniveau, unter dem sich Reste der älteren Toranlage fanden, blieb bis in seldschukische Zeit in Gebrauch. Die darüberliegende 5 m hohe Schuttschicht, meist Gewölbeversturz und nachgerutschte Erdmassen, zeigte nur drei Benutzungshorizonte, wahrscheinlich von Stallungen. In einer dem späten 13. oder 14. Jh. angehörenden Versturzschrift lagen zwei sasanidische Tonbullenfragmente und ein frühislamischer Siegelstein.

2. OG. Das bis in Gewölbehöhe verschüttete sasanidische Gebäude liegt ausserhalb des ummauerten inneren Tempelbezirkes dicht am nordöstlichen Abschnitt der äusseren Ringmauer. Infolge seiner auffälligen Mauertechnik ist das Gebäude zeitlich mit dem Komplex PU-PS-PX gleichzusetzen, das in die Endphase des zoroastrischen Heiligtums gehört. Bisher war ein aus drei kleinen, weitgehend intakten Räumen bestehender Gebäudeblock bekannt. Die Grabung auf dessen Süd- und Westseite ergab zwei weitere grössere Räume, deren Gesamtausdehnung noch nicht erfasst ist, und deren Anordnung auf einen grösseren Gebäudekomplex schliessen lässt. Anders als bei den bisher untersuchten Kammern, deren guter Erhaltungszustand die Benutzung auf dem Niveau der sasanidischen Gipsfussböden bis in il-khanidische Zeit gestattet hat, waren die Gewölbe der grösseren Räume im 13. Jh. bereits eingestürzt. In der Schuttfüllung fanden sich die Reste eines eisenbeschlagenen Holzkästchens mit Arbeitsgerät und Werkstücken eines Glasur- und Feinmetallhandwerkers des 13./14. Jh. n. Chr. Der Gewölbeversturz überdeckte eine seldschukische Benutzungsschicht mit einem in den sasanidischen Gipsfussboden eingelassenen Keramikbrennofen.

3. XA-XF: Grabungen über dem Zugang vom Nordtor zum grossen Feuertempel, dem östlichen Bereich des Feuertempels im Hof M und am östlichen Abschnitt der inneren Umfassungsmauer hatten ausgedehnte Bauanlagen, vor allem der spätsasanidischen und il-khanidischen Zeit zutage gebracht. Um den siedlungsmässigen Zusammenhang dieser Zone zu klären, wurde mit einer grossflächigen Untersuchung des zwischen den alten Grabungen liegenden Areals begonnen. Es wurde eine z.T. sehr dichte Bebauung aus il-khanidischer Zeit freigelegt, die während ihrer langjährigen Benutzung mehrfach verändert worden ist. Es handelt sich um einfache, jedoch sorgfältig ausgeführte Wohnkomplexe mit kleinen Höfen und Räumen, die ein einheitliches System von Eingangsanlagen, Stampflehmböden mit Gipsüberzug, Öfen und Wandnischen aufweisen. Konstruktive Merkmale verbinden die Wohnanlagen mit einer offenbar als Ladenzeile oder Bazar geplanten Bebauung des späten 13. oder 14. Jhs. am Zuweg zum ehemaligen Feuertempel.

T 8: Hinter dem südwestlichen Abschnitt der äusseren Ringmauer bei Bastion 8 liegt ein grosser, isolierter Ruinenhügel. Eine Bresche in der Ringmauer an dieser Stelle legte die Vermutung eines originalen oder in islamischer Zeit angelegten Tores oder einer Pforte nahe. Die Ausgrabung der obersten Siedlungsschicht brachte ein grosses, aus Repräsentations bzw. Wohnbereich und Wirtschaftsbereich bestehendes Gehöft zutage. Der auf höherem Niveau angelegte Wohnteil zeigt den für die il-khanidische Zeit typischen Grundriss mit Zentralraum, vier Iwanen und vier Eckräumen. Der Wirtschaftsteil besteht aus drei grösseren Räumen bzw. Hallen mit Öfen, Wirtschaftsbänken und einer Treppe zum Dach oder zu Obergeschossräumen, sowie Gesindequartieren. Münzfunde, Werkstücke und die aussergewöhnlich spärliche Keramik datieren das Gehöft ins späte 13. oder frühe 14. Jh. n. Chr.

Denkmalspflegerische Arbeiten: Neben den Ausgrabungen wurden wiederum Konsolidierungen und Restaurierungen durchgeführt. Die Mittel hierfür stellte hauptsächlich die Nationale Iranische Organisation zur Erhaltung Historischer Monumente zur Verfügung. Nach Bereitstellung einer Putzmeistermaschine wurde mit Mörtelinjektionen in durch Wassereinwirkung aus gewaschene Mauer-

partien des Korridors KO₃ begonnen. Durch Mauerausflickungen und Reparaturen an Gewölben und Bögen wurde die Bausubstanz des Komplexes PC-PQ sowie KO₂ gesichert. Die Mauerkrone des grossen Feuertempels und der östlich anschliessenden Gebäude, sowie der gesamte Südabschnitt der Ringmauer wurden durch eine Abdeckung von Lehm-Häcksel-Kalk-Gemisch gegen Witterungseinwirkung geschützt. Ebenso wurde das Gehöft bei T8, an dessen Wänden grosse Teile des Gipsverputzes erhalten waren, durch Schutzmauern und Abdeckungen gesichert.

DIETRICH HUFF

Vermessungen und Survey urartäischer Plätze in Azerbaidjan 1976

Im Sommer 1976 (April und Juni/Juli) wurden vom Deutschen Archäologischen Institut, Abteilung Teheran, sechs urartäische Plätze vermessen; es handelt sich um folgende Orte:

(1). Livar, 19 km. nordwestlich von Marand auf einem in der Ebene ragenden vom Gebirgszug isolierten Bergrücken. Die Gesamtanlage unterteilt sich in die Oberburg von etwa rechteckiger Grundform und äusseren Abmessungen von 120 × 122 m, in die an die Oberburg angesetzte Südterrasse von 95 m Länge und 35 m Breite, in die am Hang unterhalb von Oberburg und Südterrasse sich hinziehende, ummauerte Oberstadt von 400 m Länge und maximal 200 m Breite und in die nicht befestigte

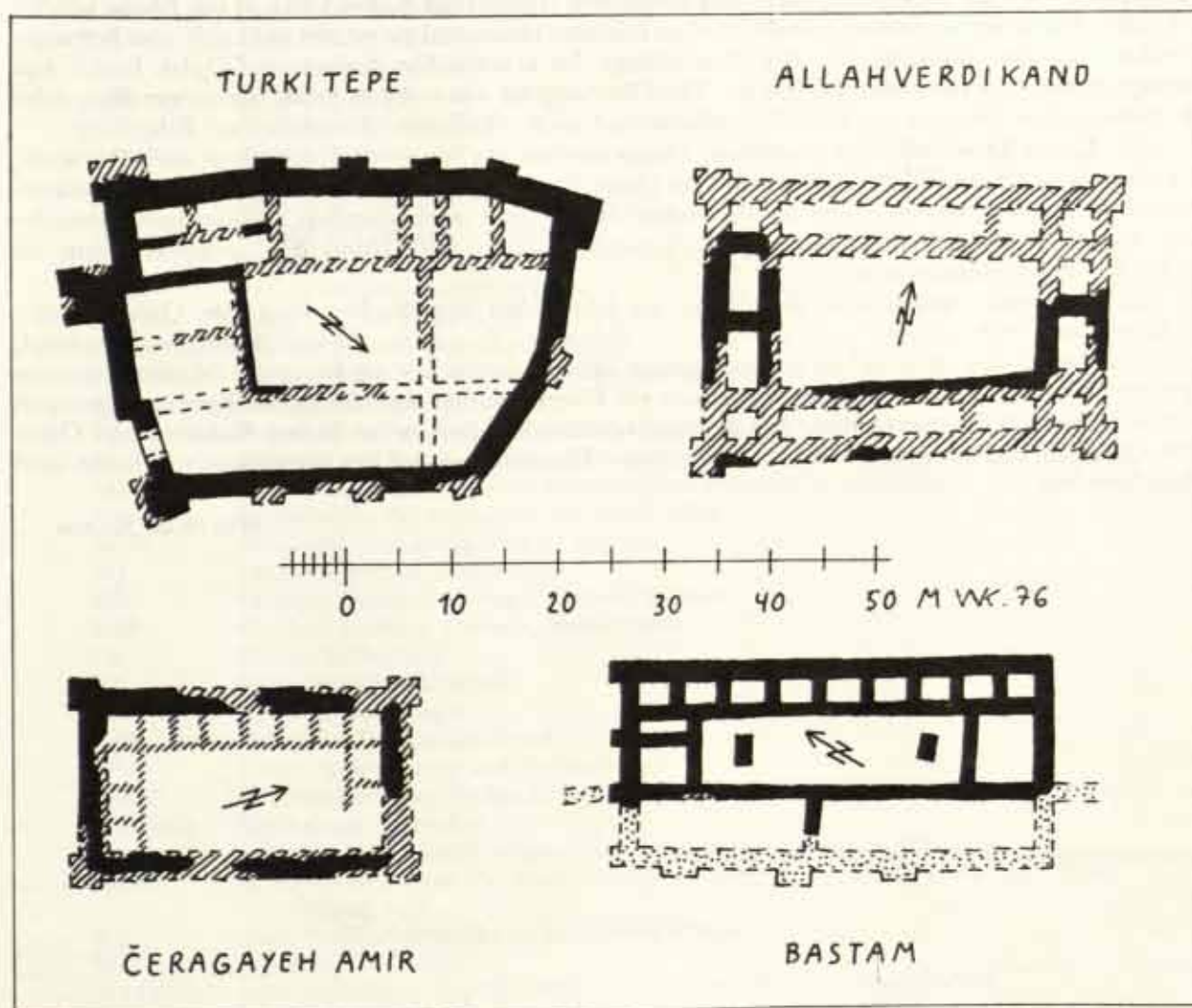


Fig. 3.

Unterstadt von rund 350×230 m Grösse. Die Gesamtanlage ist im 8. Jh. v. Chr. entstanden und durch Brand zerstört. Der Burgberg von Livar erhebt sich 120 m über der Ebene.

(2). Die Burg von Allahverdikand, 20 km östlich von Bastam aus dem 7. Jh. v. Chr., inmitten einer ausgedehnten urartäischen Bewässerungsanlage, die durch einen Kanal gespeist wurde, der im Schutz der urartäischen Festung Bastam vom Aq Chay abging.

Die Burg von Allahverdikand folgt in abgerundetem Mauerverlauf den Geländeverhältnissen. Sie ist 134×152 m gross und erhebt sich 40 m über der Ebene. Den Gipfel des Burghügels von Allahverdikand nimmt ein urartäisches Gebäude vom Typ des Hofhauses ein, wie es aus Čeragaiyeh Amir, nördlich von Marand, und aus Bastam bekannt ist (Fig. 3). Das Gebäude in Allahverdikand hat Aussenmasse von 40×26 m.

(3). Die Siedlung Turki Tepe aus dem 7. Jh. v. Chr., 7 km südwestlich von Siah Chechmeh, bedeckt eine Fläche von 500 m Länge und 180 m Breite einer 43 m über die Ebene ragenden Felsrippe. Auf der höchsten Stelle sind die Mauern einer kleinen Dorfburg von 50×35 m sichtbar, die im Mittelalter durch Anlage von Halbrundtürmen in ihrem urartäischen Architekturbestand gestört worden ist. Die urartäische Burg legt sich mit ihren Räumen um einen Mittelhof, entspricht also ebenfalls dem Hofhaustyp (Fig. 3). Die Siedlung ist der urartäischen Siedlung von Bastam vergleichbar.

(4). Qaleh Ismail Aga, 23 km westlich Rezaiyeh, ist der urartäische Hauptort der Ebene von Rezaiyeh im 8. und 7. Jahrh. v. Chr. Auf einem den Austritt des Rauze Chay in die Ebene beherrschenden Felsen mit zwei unterschiedlich hohen Gipfeln (120 m und 70 m) erstreckt sich eine befestigte Siedlung mit zwei Burganlagen. Die Gesamtlänge der urartäischen Anlagen auf Qaleh Ismail Aga beträgt 538 m, die Gesamtbreite 300 m. Die Oberburg ist 140×125 m gross, die untere Burg oder Terrassenanlage 100×90 m. Zwei Toranlagen sind noch erkennbar. Ebenfalls zwei Felsgräber.

(5). Qaleh Tasablah, eine urartäische Strassenstation am Wege von Ushnaviyeh nach Rezaiyeh, 1 km nordwestlich der Felsinschrift des Menua (Ain-e Rum), 54 km südlich Rezaiyeh, hat eine Gesamtausdehnung von 73×52 m. Inmitten der Anlage ist der Plan eines zentralen, rechteckigen Gebäudes von 24×16 m Grösse erkennbar. Qaleh Tasablah dürfte auf Grund der Architekturform im 8. Jh. v. Chr. entstanden sein.

(6). Qalatgah: 410 m über der Quelle zu Füssen der urartäischen Burg von Qalatgah (9.-7. Jh. v. Chr.) liegt auf dem Gipfel eines weithin sichtbaren Berges, der die urartäische Burg überragt, ein Gipfelkastell von 25,50 auf 22 m Aussengrösse mit vier je 2 m vor die Front der Mauern vorspringenden Ecktürmen. Das Kastell ist zum Schutz vor Überraschungsangriffen auf die Burg von Qalatgah errichtet und hat Sichtverbindung mit anderen urartäischen Burgen im Süden, Südosten und Osten von Qalatgah, gab somit auch die Möglichkeit der Übertragung und des Empfanges von Licht- und Rauchzeichen.

WOLFRAM KLEISS

ABBREVIATIONS

AASOR	Annual of American Schools of Oriental Research
AfO	Archiv für Orientforschung
AJA	American Journal of Archaeology
AJSL	American Journal of Semitic Languages and Literatures
AJ	Antiquaries' Journal
AK	Antike Kunst
AMI	Archaeologische Mitteilungen aus Iran
ANET	Pritchard, Ancient Near Eastern Texts
AOr	Archiv Orientálny
Arch Anz	Archäologischer Anzeiger
AS	Anatolian Studies
BA Besch	Bulletin van de Vereeniging . . . de Antieke Beschaving, Hague
BASOR	Bulletin of American Schools of Oriental Research
Belleten	Türk Tarih Kurumu: Belleten
BGA	Bibliotheca Geographorum Arabicorum
Bib Or	Bibliotheca Orientalis
BMMA	Bulletin of the Metropolitan Museum of Art
BSA	Annual of the British School at Athens
BSOAS	Bulletin of the School of Oriental and African Studies
CAH	Cambridge Ancient History
CIA	Corpus Inscriptionum Arabicorum
EI	Encyclopaedia of Islam
ESA	Eurasia Septentrionalis Antiqua
ILN	Illustrated London News
Iranica	Iranica Antiqua
JA	Journal Asiatique
JAOS	Journal of American Oriental Society
JEA	Journal of Egyptian Archaeology
JHS	Journal of Hellenic Studies
JNES	Journal of Near Eastern Studies
JRAI	Journal of the Royal Anthropological Institute
JRAS	Journal of the Royal Asiatic Society
JRCAS	Journal of the Royal Central Asian Society
KF	Kleinasiatische Forschungen
LAAA	Annals of Archaeology and Anthropology, Liverpool
MAOG	Mitteilungen der altorientalischen Gesellschaft
MDAFA	Mémoires de la Délégation Archéologique française en Afghanistan
MDOG	Mitteilungen der deutschen Orientgesellschaft
MDP	Mémoires de la Délégation en Perse
MJ	Museum Journal, Philadelphia
OIC	Oriental Institute, Chicago, Communications
OIP	Oriental Institute, Chicago, Publications
OS	Orientalia Suecana
PZ	Prähistorische Zeitschrift
RA	Revue d'Assyriologie
REI	Revue des Études Islamiques
SAA	Soviet Anthropology and Archaeology
SAOC	Oriental Institute, Studies in Ancient Oriental Civilisation
Sov Arkh	Sovietskaya Arkheologiya
SS	Schmidt, H., Heinrich Schliemanns Sammlung trojanischer Altertümer
Survey	A Survey of Persian Art from Prehistoric Times to the Present, ed. A. U. Pope, Oxford, 1938
TT	Türk Tarih, Arkeologiya ve Etnografya Dergisi
WO	Die Welt des Orients
WVDOG	Wissenschaftliche Veröffentlichungen der Deutschen Orientgesellschaft
ZA	Zeitschrift für Assyriologie
ZDMG	Zeitschrift der Deutschen Morgenländischen Gesellschaft



EXCAVATIONS AT SIRAF

The British Institute of Persian Studies intends to publish in 17 separate fascicules the final reports on their excavations at Siraf, directed by Dr. David Whitehouse. The series will be edited by Dr. James Allan, and the titles of the various volumes are listed below. Fascicules 3 and 13, on *The Friday Mosque* and *The Glass*, are planned to appear in 1978.

1. INTRODUCTION.
2. THE SASANIAN PERIOD.
3. THE FRIDAY MOSQUE.
4. DOMESTIC ARCHITECTURE.
5. COMMERCIAL AND INDUSTRIAL BUILDINGS.
6. MILITARY ARCHITECTURE AND MINOR SITES.
7. THE MEDIEVAL CEMETERIES.
8. THE DECLINE OF SIRAF.
9. SASANIAN AND ISLAMIC UNGLAZED POTTERY I.
10. SASANIAN AND ISLAMIC UNGLAZED POTTERY II.
11. SASANIAN AND ISLAMIC GLAZED POTTERY.
12. CHINESE AND SOUTH-EAST ASIAN CERAMICS.
13. THE GLASS.
14. METAL OBJECTS.
15. COINS, EPIGRAPHY AND STUCCO.
16. SMALL OBJECTS OF STONE.
17. MISCELLANEA.

Pasargadae

A Report on the Excavations conducted
by the British Institute of Persian Studies

David Stronach

This work offers the first full description of the capital of Cyrus the Great, who founded the Achaemenian empire 2,500 years ago. Each major monument, including the tomb of Cyrus, the palaces, the royal gardens and citadel is considered in turn, and the author interweaves an account of his excavations with a more general inquiry into the sudden birth of Achaemenian art and architecture during the reign of Cyrus.

312 pp 7 folding illustrations 193 plates 124 text figures £25

Oxford University Press





Central Archaeological Library,
NEW DELHI.

63282

Call No. 901.05/ Ira

Author— —

Title— Iran, Journal of the
British Institute of Persian Studies

Borrower No.

Date of Issue

Date of Return

"A book that is shut is but a block"

CENTRAL ARCHAEOLOGICAL LIBRARY
GOVT. OF INDIA
Department of Archaeology
NEW DELHI

Please help us to keep the book
clean and moving.