LOCKY AND KEY IN ANCIENT MESOPOTAMIA

Ancient Mesopotamian sealing practice has received considerable attention in recent years[1], and it is hardly surprising to find that this in turn has spawned several articles dealing with early locking mechanisms. A reading of two recent studies[2] prompted the present reflections on the problem of lock and key in ancient Mesopotamia.

Both E. Leichty and J.A. Scurlock wrestle valiantly with the Sumerian and Akkadian phraseology of locking, each trying to assign the various *termini technici* mentioned in cuneiform sources to one or another part of the locking system they believe to have been common in Mesopotamia. The results are completely different, as they must be, given the fact that each believes a different sort of locking mechanism was prevalent in the region. But if the results of Leichty's and Scurlock's investigations differ, their approaches are similar in that both assume ancient Mesopotamian locking to have been technically very simple. For Leichty, the physical model for the terminological identifications put forward is the allegedly «indisputable evidence for what was probably the most common method of securing doors in ancient Mesopotamia» advanced by R. Zettler[3]. Zettler and Leichty, basing themselves on evidence derived from clay sealings found at Nippur, suppose a simple latch attached to the inside of a door and fastened to a knob on the side of an adjacent wall to have been the most widespread technique for keeping doors shut. Scurlock, on the other hand, following the late R. Ghirshman's reconstruction of the lock on the «prote royale» at Tchoga Zanbil[4], prefers the concept of a cross-bar, fastened with a pin or peg, to block the opening of a door or gate.

[1] See most recently R.L. ZETTLER, «Sealtings as Artifacts of Institutional Administration of Ancient Mesopotamia», *JCS* 39/2 (1987): 197-198, with earlier bibliography.

[2] E. LEICHTY, «Omens from Doorknobs», *JCS* 39/2 (1987): 190-196, and *J.A. Scurlock*, «How to Lock a Gate: A New Interpretation of CT 40 12», *Or* 57 (1988): 421-433. Although I do not share the opinions of either scholar regarding the nature of ancient Mesopotamian locking systems, I hasten to express my gratitude to them both for tackling this difficult problem and for inspiring me to do likewise. Sincere tanks go to Aage Westenholz and Sylvie Lackenbacher for reading and commenting on an earlier draft of this article. Needless to say, their agreement with all that is suggested here is not therebody implied.

[3] *JCS* 39/2 (1987): 190-196, and Figs. 3-4.

[4] R. GHIRSHMANN, *Tchoga Zanbil (Dur-Untash)* I, MDP 39, Paris 1966, pp. 73-76.

It should be noted that neither Zettler, Leichty, nor Schurlock has a single reference to any of the specialist literature on early, primitive and pre-modern locks. Leichty dismisses entirely the notion that anything more mechanically complicated than the latch was used in ancient Mesopotamia. Critical of the CAD and AHw definitions of *namzaqu* as «key», he writes, «To the best of my knowledge, key operated locks were not introduced into che ancient world until Classical times»[5]. A glance at the specialist literature on locking, however, would have revealed that this is hardly a view shared by lock historians. The entry in the 1975 edition of the *Encyclopaedia Britannica*, after defining a lock, baldly declares, «The lock originated in the Near East; the oldest known example was found in the ruins of the palace of Khorsabad»[6], and while this statement cannot, as we shall show, be taken at face value, more attention is due to both the archaeological and cuneiform evidence of locking mechanisms in the ancient. Near East has hitherto been paid.

Two early accounts of excavations in Assyria record the discovery of a key and a lock. Writing of his second expedition to Koyunjik of 1850, A.H. Layard noted the recovery of a copper (or presumably bronze) key, «in the same shape as the Egyptian»[7] key illustrated in Wilkinson's *Ancient Egyptians*[8]. Shortly thereafter, during his excavcations at Khorsabad, P.E. Botta found what J. Bonomi in 1857 described as the gate of passage chamber X between two courtyards that «was fastened by a huge wooden lock, like those still used in the East... and by a bar which moved into a square hole in the wall»[9]. The locking mechanism alluded to by Layard and Bonomi is that known in the parlance of locking as the Egyptian lock. This is described in the *Encyclopedia Britannica* as follows: «It consists of a large wooden bolt, which secures the door, through which is pierced a slow with several holes in its upper surface., An essembly attached contains several wooden pins positioned to drop into these holes and grip the bolt. The key is a large wooden bar, something like a toothbrush in shape; instead of bristles it has upright pegs that match the holes and the pins. Inserted in the large keyhole below the vertical pins it is simply lifted, raising the pins clear and allowing the bolt, with the key in it, to be slid back»[10]. Bonomi, struck by the fact that

[5] *JCS* 39/191.

[6] «Lock», *The New Encyclopædia Britannica* 11 (1975): 10.

[7] A.H. Layard, *Discoveries in the Ruins of Nineveh and Babylon*, London 1853, p. 596 and n.*.

[8] Sir Gardner Wilkinson, *The Manners and Customs of the Ancient Egyptians*, London 1847, p. 112, Fig. 103.

[9] J. Bonomi, *Nineveh and its Palaces*, London 1856, pp. 170-171

[10] «Lock», *The New Encyclopædia Britannica* 11 (1975): 10.

19th century Cairene merchants carried their long, peggered keys (called *muftah*) slugn over their shoulders, also suggested that the well-known reference in Isaiah, xxxii, 22, «And the key of the house of David will I lay upon his shoulder», referred to precisely that type of key used to open an Egyptian lock, and pointed out that the word for key in Biblical Hebrewand modern vernacular Arabic were identical.

Pitt-Rivers, in his seminal study of primitive locks and keys published in 1883 cited Bonomi's observations, while noting that the antiquity of the Egyptian lock in Egypt itself did not appear to antedate the Roman period[11]. Uncritical readers of Pitt-Rivers' treatise, however, such as Vincent J.M. Eras' in his 1957 catalogue of the collection of Lips' Safe and Lock Manufacturing Company in Dordrecht[12], have misconstrued the information given there regarding the Khorsabad find, attributing far greater antiquity to it than is warranted, and from Eras the unfounded statement entered the *Encyclopaedia Britannica* to the effect that the Khorsabad lock was «possibly 4,000 years old».

Nevertheless, although the archaeological evidence for early locks remains slight, the lexical field has been so well-surveyed by Meissner, Salonen, Leichty and Scurlock that, in combination with a judicious use of specialist lock literature, it is possible to suggest identifications for some of the troublesome terms that occur in cuneiform sources. I would not wish to suggest that the locking mechanisms reconstructed by Ghirshman and Scurlock, or Zettler and Leichty, were not in use in ancient Mesopotamia, merely that they were not the only ones used[13], and that the literature on traditional and ancient locks, particularly the so-called Egyptian lock, offers much of relevance to the study of Mesopotamian locks and keys.

The Egyptian lock has been studied extensively, both in its supposed

[11] Lt.-Gen.Pitt-Rivers, *On the Development and Distribution of Primitive Locks and Keys*, London 1883, p. 10. My sincere thanks to P.R.S. Moorey (Ashmolean Museum, Oxford) for sending me a copy of this work, which was unobtainable in Copenhagen.

[12] V.J.M. Eras, *Locks and Keys throughout the Ages*, Dordrecht 1957, p. 21.

[13] It may not be inappropriate to note in passing that the reconstruction of the Nippur system may have to be modified in light of a second type of Egyptian locking mechanism incorporating a cord or rope which was often sealed. See D. Krencker and H. Schäfer, «Eine neue Art altägyptischer Riegelschlösser», *ZÄS* 43 (1906): 60-65; O. Koenigsberger, *Die Konstruktion der Ägyptischen Tür*, ÄF 2, 1936, p. 60 and Abb. 74; and E. Graefe, «Die Versiegelung der Naostür», *MDAIK* 27/2 (1971): 147-155. Cf. Kuhlmann, «Schloss», 661, who writes, «die Zugschnur konnte zur Kontrolle durch Wächter außen versiegelt werden». It is also possible that the simple system advocated for the palace of Mary by D. Beyer, «Scellements de Portes du Palais de Mari», M.A.R.I. 4 1985): 375-384, should be modified in light of the Egyptian evidence.

Egyptian place of origin[14], and in Greece, where it was known as the «lakonian» or «balanos» loock[15]. Undoubtedly the most concerted effort to identify the Egyptian lock in ancient Mesopotamia was that made early in this century by the German ethnologist F. von Luschan. In an article published in 1916 von Luschan tried to show «daß Schlösser mit Fallriegeln in Ägypten und in Babylonien ganz allgemein verbreitet waren»[16], an idea that was immediately embraced by no less an authority than Bruno Meissner[17]. Where von Luschan went astray was in following Eduard Hahn's suggestion that a series of cylinder seals believed to depict the god Šamaš showed him holding they key of an Egyptian lock before the gate of heaven[18]. The identification of the object held by Šamaš as a key was nevertheless accepted by many scholars, including R. Koldewey[19] and O. Weber[20], until B. Landsgerger[21] and Th. Dombart[22] showed convincingly that the key was in fact a saw.

[14] See generally, K. Kuhlmann, «Schloss», *Lexikon der Ägyptologie* V (1984): 658-661. For a good survey of locks in ancient Egypt, see W.M. Flinders Petrie, *Tools and Weapons*, London 1917, 59-60, Pl. LXXV. For one of the earliest discussions of the topic see Wilkinson, *The Manners and Customs of the Ancient Egyptians*, p. 112.

[15] H. Diels, «Antike Türen and Schlösser», in *Antike Technik*, sieben *Vorträge von Hermann Diels*, 2nd ed., Leipzig and Berlin 1920, pp. 52-55. Diels noted, p. 52, that in *Women at the Thesmophoria* 421, Aristophanes has the women express their annoyance at the introduction of secret keys with three teeth, an obvious reference to the introduction of the Egyptian lock. According to Pliny NH VII 198, Theodoros of Samos «discovered» the balalos system, a tradition which Diels explained by noting the technological sophistication of Samos and the frequency of its relations with Egypt, from whence, he felt, the technology of the Egyptian lock must have been borrowed. On the lock in ancient Greece generally, from Homeric times through the Hellenistic period, see also F. Ebert, *Fachausdrücke des griechischen Bauhandwerks I. Der Tempel*, Inaugural-Diss, Würzburg 1910, pp. 57-58; A. Neuburger, *Die Technik des Altertums*, Leipzig 1919, pp. 338-340; and F.M. Feldhaus, *Die Technik der Vorzeit, der geschichtlichen Zeit und der Naturvölker*, Munich 1965, col. 967.

[16] F. von Luschan, «Über Schlösser mit Fallriegeln», *Zeitschrift für Ethnologie* 48 (1916): 424, cf. «Primitive Türen und Türverschlüsse», *MVAG* 22 (1917): 365, Abb. 9.

[17] *Babylonien und Assyrien* I, Heidelberg 1920, p. 247 and Abb. 115-116.

[18] ZfE 48:422. As von Luschan noted, p. 425, the same idea was suggested independently by H. Prinz. According to Dombart (cf. n. 23). Prinz first suggested that te object held by Šamaš was a key in his Habilitationsschrift, *Astralsymbole im altbabylonischen Kulturkreise*, Breslau 1910, p. 28. A revised and more accessible account can be found in *Altorientalische Symbolik*, Berlin 1915, p. 82, where an illustration is given of a wooden lock of Egyptian type then in use on a door in the house of the German Assur expedition.

[19] R. Koldewey, «Der babylonische Turm nach der Tontafel des Anubelschunu», *MDOG* 59 (1918): 11-12.

[20] O. Weber, *Altorientalische Siegelbilder*, *AO*17/18 (1920): 99, 102.

[21] B. Landsberger, «Die Säge des Sonnengottes», *OLZ* 15 (1912): 149-151.

[22] «Das babylonische Sönnentor und die 'Säge' des Šamaš», *JSOR* 12 (1928): 1-24, esp. 15.

Nevertheless, Dombart did not dispute the existence of the Egyptian lock in ancient Mesopotamia, referring to Layard's discovery ant Nineveh, noted above.

Mysteriously, this entire field of discussion has been ignored in those recent studies of locking cited above, yet it seems to me that the specific form of the Egyptian lock and the key which opened it provide the most plausible model for identifying the consistently recurring constellation of terms associated with locking which formed the focus of both Leichty's and Scurlock's recent articles. In the following treatment of this problem, I have not attempted to offer a translation of every word in the lexical field under discussion, but rather to focus on those terms which consistently recur together, viz. *aškuttu, šigaru, sikkuru, sikkatu, namzaqu, uppu*, and *mušelu.* The difficulty of identifying these parts correctly lies, to begin with, in the choice of the correct lock system as a model, and thereafter in finding identifications which, in association with all of the other relevant terms, make mechanical sense. In contrast to Leichty and Scurlock, I propose to use the Egyptian lock as a model for the identification of the most important terms (Fig. A). It seems that a different locking system lies behind a second constelation of terms including *ʾandūḫu, ḫargullu, pingu* and *sanḫu*, but these will not be dealt with here.

The essential elements of the Mesopotamian lock in question were the bolt; the assembly, or lock proper, the pins; and the key. The pins were

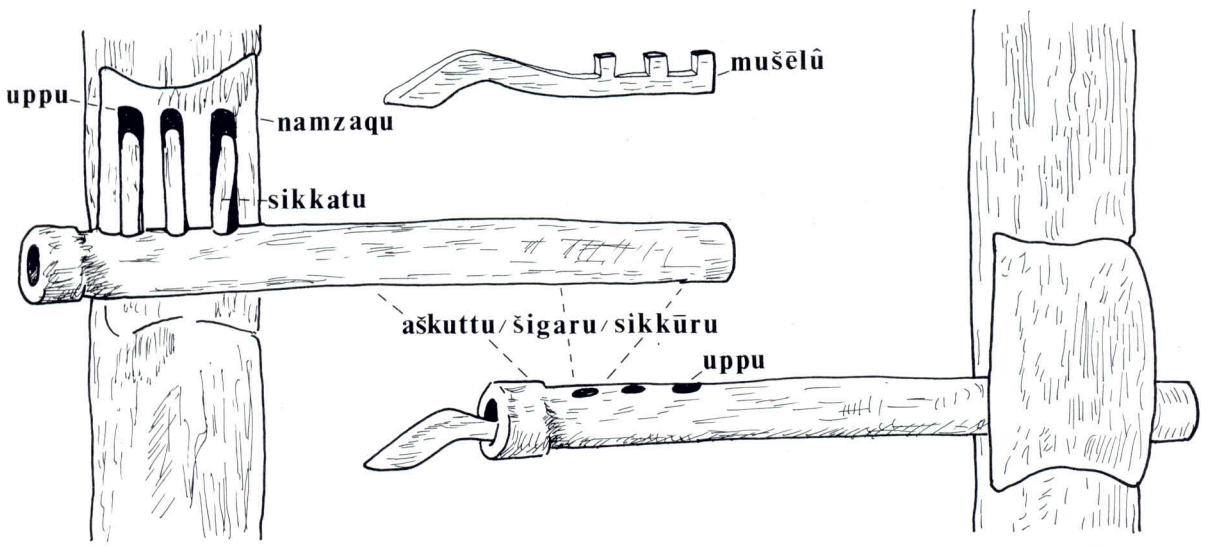

Fig. A - Lock system in Ancient Mesopotamia.

lodged in hollows within the assembly, down from which they dropped, passing through holes in the bolt which kept the door from opening. To open the door, a toothed key was inserted into the hollow bolt, and lifted so as to push the pins up into the lock assembly, thereby allowing the bolt to be removed. After considering the body of text references indexed in the dictionaries, I propose that the terms *aškuttu, šigaru*, and *sikkuru* were synonyms denoting the bolt. It contexts where the function of a lock is described, these words almost never occur together. One exception is in Sargon II's list of booty from his eighth campaign, where both *aškuttu* and *sikkuru* are listed, but this could easily reflect the scribe's use of synonyms in his enumeration of the booty. The part of the lock itself, or assembly, that was mounted on the door or gate, I identify as *namzaqu* The pins in the assembly which were responsible for holding the bolt and thus keeping the door closed can be identified by the term *sikkatu*. There were housed in a series of holes, called *uppu*, in the assembly, and fell through another series of holes, also called *uppu*, in the bolt. As the pins were lifted to unlock a door or gate, we find that the key which performed this action was given the literal name of «lifter», or *mušelu*.

The following table illustrates the use of the relevant terms for the parts of the Mesopotamian version of the Egyptian lock in a selection of text. The fact that the terms for the parts of a lock are listed under wooden objects in the lexical series Hh[23] surely reflects the fact that these locks were originally and perhaps normally made of wood, even if many of the literary texts attest to the use of both base and precious metals for different parts of the lock. Texts mentioning only one or two parts of the lock are not included here, for the essential aim is to present those contexts which most faithfully reflect the complete function of the lock.

TEXT REF.	BOLT *aškuttu/šigaru/sikkuru*		ASSEMBLY *namzaqu*	PIN *sikkatu*	HOLE *uppu*	KEY *mušelu*
Šamaš Hymn (BWL 136:138)	*		*	*	*	
CT 40 12:21	*		*	*		
CT 40 12:10	*		*	*	*	
4R 17:5f		*	*	*		
TCL 3 372-5 (Sargonid)	*			* *	*	
KAR 7:5			*		*	*

[23] Hh V 276-299a in MSL 6 28ff.

In light of the identifications proposed above, we can re-examine some of those well-known passages in Mesopotamian literature concerning locks on which Leichty and Scurlock have commented.

CT 40 12:7-15, according to my interpretation, is concerned with the problem of the pins (*sikkatu*) in the lock (*namzaqu*) of the Ištar temple getting stuck repeatedly, and not being properly positioned above the holes (*uppu*) of the bolt (*aškuttu*). Given the nature of the Egyptian lock, this sort of difficulty is easily imaginable. We can modify the CAD's translation (E 133) of line 10 as follows: «if the pin (*sikkatu*) of the lock (*namzaqu*) of the temple of Istar is lifted and lies on top of the hole (*uppu*) of the bolt (*aškuttu*)», i.e. if the pin of the lock is lifted (with a key) and lies above the hole in the bolt.

4 R 17:5ff, in which the unlocking of the heavens is described, can be understood, following the definitions proposed here, in the following terms: «when you lift the pin (*sikkatu*) of the lock (*namqaqu*) from the bolt (*šigaru*) of the pure heavens».

A number of references to the bolt (*sikkuru* = GIŠ.SAG.KUL) show that it was a sizeable object measuring up to one meter in length (YOS 4 256 i 5, iii 44), that could be cast of copper or bronze and take the form of an animal, such as a dragon (PBS 9 20:2 [= OSP II 29:2]), or a human hand (TCL 3 373); that a tunic could be hung from it (Syria 18 246:23, Ugaritica 5 83:9); and further that a snake could coil itself around it (KAR 386:57). As Scurlock has noted, when manipulated the *sikkuru* is described as being «driven home», which I take to mean inserted into the assembly in the locking position, or «released», i.e. removed from the assembly[24]. All of these characteristics are consistent with the definition of *sikkuru* as «bolt».

The lock assembly (*namzaqu*) might be chosen by swallows to nest in (CT 41 2, K.676:4). Leichty has identified the *namqaqu* as a latch-hook, while Scurlock believes it to have been a bar or bolt. Neither possibility seems to me very conducive to nesting. That this could occur is only imaginable if the *namzaqu* had a protected niche into which the birds could fly and in which they could remains. If the bolt (*sikkuru*) was kept out of the lock (*namzaqu*) for a period of time, the interior spaces (*uppu*) of the assembly would have provided and ideal nesting place for swallows. The only reference which is somewhat obscure is one in which it is said that a woman will bring the *namzaqu* «out» (YOS 10 36 iv 2). As my colleague A. Westenholz pointed out to me, however, this could occur if a person or family were moving i.e. leaving a house altogether, and took the lock (and probably door) with them when they left (as is common in the Near East today where wooden doors

[24] Or 57:424.

are often salvaged from abandoned mudbrick houses).

The pins, or *sikkatu*, in the lock assembly, were called by a generic term which could be used to describe a wide variety of wooden or metal pegs, sticks, or dowels not specifically associated with locking. Scurlock has noted, «our text [CT 40 12] informs us that the *sikkatu* was supposed to fit into the *aššku̯ttu̯'s uppu*»[25], in other words, that the pin (*sikkatu*) was supposed to fit into hole (*uppu*) in the bolt (*aškuttu*).

In TCL 3 376, the *sikkuru, sikkatu*, and two *namzaqu's* are called collectively *markasbābī*, or «fastening of the doors».

As A.D. Kilmer showed in the Finkelstein memorial volume[26], *uppu* refers to sockets or cavities, and this is what we suggest were the holes, hollows, or sockets into which the lock pins fit, both in the bolt and in the lock assembly.

Finally, the term for key, *mušelu* is a literal description — viz. «lifter»[27], «that which makes [x] go up»[28], «der Herauftholer»[30] (22) — of the function of a key in a Egyptian lock, which is to push the pegs (*sikkatu*) of the lock (*namzaqu* up into their holes (*uppu*) so that the bolt (*aškuttu/šigaru/sikkuru*) can slide out. As Scurlock himself wrote, «the association of the *mušelu* with the *sikkatu*... suggests that the latter was the object which the former was supposed to make go up».

To return to the *Encyclopedia Britannica's* definition of the Egyptian lock, we may annotate it as follows: «It consists of a large wooden bolt (*aškuttu/šigaru/sikkuru*), which secures the door, through which is pierced a slot with several holes (*uppu*) in its upper surface. An assembly (*namqaqu*) attached to the door contains several wooden pins (*sikkatu*) positioned to drop into these holes (*uppu*) and grip the bolt (*aškuttu/šigaru/sikkuru*). The key (*mušlu*) is a large wooden bar, something like a toothbrush in shape, istead of bristles it has upright pegs that match the holes (*uppu*) and the pins (*sikkatu*). Inserted in the large keyhole (*uppu*) below the vertical pins (*sikkatu*) it is simply lifted (e), raising the pins (*sikkatu*) clear and allowing the bolt (*aškuttu/šigaru/sikkuru*), with the key (*mušelu*) in it, to be slid back».

DAN T. POTTS

[25] Or 57:423.

[26] A.D. KILMER, «Notes on Akkadian *uppu*», in M. DE JONG ELLIS (ed.), *Essays on the Ancient Near East in Memory of Jacob Joel Finkelstein*, Mem. Conn. Acad. Arts and Sciences XIX, Hamden 1977, p. 130.

[27] JCS 39/2:191.

[28] Or 57:424.

[29] E.G. B. MEISSNER, «Die fünfte Tafel der Serie harra = *ḫubullum*», *Assyriologische Forschungen* I] = *AOAT*/1], Leiden 1916, p. 38.

[30] A. SALONEN, *Die Türen des alten Mesopotamien*, AASF 124, Helsinki 1961, p. 80.

UNIVERSITÀ DI TORINO

MESOPOTAMIA

RIVISTA DI ARCHEOLOGIA, EPIGRAFIA E STORIA ORIENTALE ANTICA

a cura del
Centro Ricerche Archeologiche e Scavi di Torino
per il Medio Oriente e l'Asia

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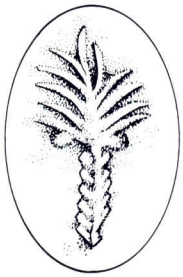

CASA EDITRICE LE LETTERE
FIRENZE

Si prega di indirizzare la corrispondenza diretta alla Redazione ed i manoscritti al Prof. A. Invernizzi, Redazione di Mesopotamia, Dipartimento di Scienze Archeologiche, Via S. Ottavio 20, 10122 TORINO.
Segreteria di redazione: Dott.ssa Donatella Taverna.

SOMMARIO

ELENCO DELLE ABBREVIAZIONI

AAA	Annals of Archaeology and Anthropology. Liverpool.
AAs	Arts Asiatiques. Paris.
AAsiae	Artibus Asiae. Ascona.
AASOR	The Annual of the American School of Oriental Research. Jerusalem-New Haven.
ADOG	Abhandlungen der Deutschen Orient-Gesellschaft. Berlin.
AfO	Archiv für Orientforschung. Graz.
AJA	American Journal of Archaeology. Princeton.
AJSL	American Journal of Semitic Languages and Literatures. Chicago.
AMI	Archäologische Mitteilungen aus Iran. Berlin.
An Or	Analecta Orientalia. Roma.
Antiquity	Antiquity. A Quarterly Review of Archaeology. London.
AntJ	The Antiquaries Journal. London.
AO	Der Alte Orient. Leipzig.
AOS	American Oriental Series. New Haven.
APAW	Abhandlungen der Preussischen Akademie der Wissenschaften. Berlin.
Archaeologia	Archaeologia. London.
Archaeology	Archaeology. New York.
ARM	Archives Royales de Mari. Paris.
ArOr	Archiv Orientální. Prag.
Ars Isl	Ars Islamica. Ann Arbor.
Ars Or	Ars Orientalis. Baltimore.
AS	Assyriological Studies. Chicago.
ASt	Anatolian Studies. London.
'Atiqot	'Atiqot. Journal of the Israel Department of Antiquities. Jerusalem.
BAIPA	Bulletin of the American Institute for Persian Art and Archaeology. New York.
BArch	The Biblical Archaeologist. American School of Oriental Research. Jerusalem-Baghdad.
BASOR	Bulletin of the American School of Oriental Research. Jerusalem-Baghdad.
BJV	Berliner Jahrbuch für Vor- und Frühgeschichte. Berlin.

BM	Baghdader Mitteilungen. Berlin.
BMC	A Catalogue of the Greek Coins in the British Museum. London (Reprint Bologna).
BMMA	The Bulletin of the Metropolitan Museum of Art. New York.
BMQ	The British Museum Quarterly. London.
BO	Bibliotheca Orientalis. Leiden.
BSOAS	Bulletin of the School of Oriental and African Studies. London.
CAD	The Chicago Assyrian Dictionary. Chicago.
CAH	The Cambridge Ancient History. Cambridge.
CRAI	Compte Rendus des Séances de l'Académie des Inscriptions et Belles-Lettres. Paris.
CT	Cuneiform Texts from Babylonian Tablets in the British Museum. London.
DAFA	Mémoires de la Délégation Archéologique Française en Afghanistan. Paris.
DAFI	Cahiers de la Délégation Archéologique Française en Iran. Paris.
EAA	Enciclopedia dell'Arte Antica Classica e Orientale. Roma.
EUA	Enciclopedia Universale dell'Arte. Venezia-Roma.
GSAI	Giornale della Società Asiatica Italiana. Firenze.
IA	Iranica Antiqua. Leiden.
IEJ	Israel Exploration Journal. Jerusalem.
ILN	The Illustrated London News. London.
IM	Istanbuler Mitteilungen. Berlin.
Iran	Iran. Journal of the British Institute of Persian Studies. London.
Iraq	Iraq. British School of Archaeology in Iraq. London.
JA	Journal Asiatique. Paris.
JAOS	Journal of the American Oriental Society. New Haven.
JCS	Journal of the Cuneiform Studies. New Haven.
JEA	Journal of Egyptian Archaeology. London.
JEOL	Jaarbericht Ex Oriente Lux. Leiden.
JESHO	Journal of Economic and Social History of the Orient. Leiden.
JGS	Journal of Glass Studies. Corning.
JNES	Journal of Near Eastern Studies. Chicago.
JRAS	Journal of the Royal Asiatic Society. London.
KAH	Keilschrifttexte aus Assur historischen Inhalts.
KAR	Keilschrifttexte aus Assur religiösen Inhalts.
KAV	Keilschrifttexte aus Assur verschiedenen Inhalts.
KB	Keilinschriftliche Bibliothek.
KlF	Kleinasiatische Forschungen. Weimar.
LSS	Leipziger Semitische Studien. Leipzig.
MAOG	Mitteilungen der Altorientalischen Gesellschaft. Leipzig.
MCS	Manchester Cuneiform Studies. Manchester.
MDOG	Mitteilungen der Deutschen Orient-Gesellschaft zu Berlin. Berlin.
MDP	Mémoires de la Délégation Archéologique en Perse. Paris.

MIA	Materialy i Issledovanija po Arheologii SSSR. Moskva.
MIO	Mitteilungen des Instituts für Orientforschung. Berlin.
MJ	The Museum Journal. Philadelphia.
MSL	B. LANDSBERGER, Materialien zum Sumerischen Lexicon. Rome.
MUSJ	Mélanges de L'Université Saint Joseph. Beyrouth.
MVAG	Mitteilungen der Vorderasiatisch-Aegyptischen Gesellschaft. Berlin.
OIC	Oriental Institute Communications. Chicago.
OIP	Oriental Institute Publications. Chicago.
OLZ	Orientalische Literaturzeitung. Berlin.
Or An	Oriens Antiquus. Roma.
Or, NS	Orientalia, Nova Series. Roma.
Or, SP	Orientalia, Series Prior. Roma.
Or Suecana	Orientalia Suecana. Uppsala.
PBS	The University Museum. Publications of the Babylonian Section. Philadelphia.
PRESC	Preliminary Report of Excavations at Seleucia and Ctesiphon, *Mesopotamia*. Torino.
QDAP	The Quarterly of the Department of Antiquities in Palestine. London.
RAA	Revue des Arts Asiatiques. Annales du Musée Guimet. Paris.
RAAO	Revue d'Assyriologie et Archéologie Orientale. Paris.
RB	Revue Biblique. Paris.
RHA	Revue Hittite et Asianique. Paris.
RivStOr	Rivista degli Studi Orientali. Roma.
RlA	Reallexikon der Assyriologie. Berlin.
SA	Soveckaja Arheologija. Moskva.
SAOC	Studies in Ancient Oriental Civilization. Chicago.
SemKondakov	Annales de l'Institut Kondakov. Seminarium Kondakovianum. Beograd.
SPA	A. U. POPE, A Survey of Persian Art from Prehistoric Times to the Present, London-New York 1938.
SL	A. DEIMEL, *Sumerisches Lexicon.*
Sumer	Sumer. Baghdad.
Syria	Syria. Revue d'Art Oriental et d'Archéologie. Paris.
TCL	Textes Cunéiformes, Musée du Louvre. Paris.
UA	Ausgrabungen der Deutschen Forschungsgemeinschaft in Uruk-Warka. Leipzig-Berlin.
UE	Ur Excavations. London.
UET	Ur Excavations Texts. London.
UF	Ugarit Forschungen.
UVB	Uruk Vorläufiger Bericht. Berlin.
VAB	Vorderasiatische Bibliothek.
VAT	Vorderasiatische Abteilung, Tontafeln.
VDI	Vestnik Drevnej Istorii. Moskva.
WO	Die Welt des Orients. Göttingen.

WVDOG	Wissenschaftliche Veröffentlichung der Deutschen Orient-Gesellschaft. Leipzig-Berlin.
WZKM	Wiener Zeitschrift für die Kunde des Morgenlandes. Wien.
YOS	Yale Oriental Series. New Haven.
ZA	Zeitschrift für Assyriologie und Vorderasiatische Archäologie. Berlin.
ZDMG	Zeitschrift der Deutschen Morgenländischen Gesellschaft. Wiesbaden.
ZK	Zeitschrift für Keilschriftforschung. Leipzig.

PRELIMINARY REPORT ON THE 1988-1989 OPERATIONS AT BABYLON, SHU-ANNA

After the first season work carried on in Autumn 1987, the Babylon expedition of the Iraqi-Italian Institute of Archaeological Sciences undertook further activities on the site. The final goal of the project is a systematic exploration of the ancient city quarter of Shu-Anna.

A new complete survey of the area was carried on in November-December 1988, as preliminary to the second digging season, which took place in March-May 1989[1].

The survey

The results of the 1987 excavations, when traces of a huge building on high terrace had emerged from the cuts of robbed masonries, strongly stressed the need for a new topographical survey of the area, especially to detect the multiple interventions it underwent in ancient and modern times. The features of the land close to the 1987 sounding, in fact, must be considered as primary documents of the building decay, as exactly matching the dynamics of its fall into ruin and subsequent brick-robbing. To be noticed, too, that early excavators like Layard and Rassam did operate in the area, and contributed to the general disturbance. Most probably, many of the structures we put to light had been involved in those early operations. Nevertheless, other features nearby emerge as results of the former German operations, as for instance the huge

[1] For the report of the Ist season see G. BERGAMINI, «Excavation in Shu-Anna, Babylon 1987», *Mesopotamia* XXIII (1988), pp. 5-17. The survey took place from November 15th to December 20th, 1988, and was carried on by Mr. Franco Rejnero, topographer, and by the writer. The second excavation season lasted from March 15th to May 11th, 1989. The expedition staff was formed by Dr. Michela Ruffa, assistant director, Dr. Paolo Brusasco and Miss Emanuela Merluzzi, archaeologists. Mr. Franco Rejnero was appointed as topographer and surveyor; Mr. Mauro Ricci and Mr. Filippo Occhino joined the expedition for a few days as restorer and photographer respectively. Dr. Wahbi Abdul Razak was appointed to the expedition on Iraqi side; we warmly thank him for his effective cooperation. Thanks are due also to Dr. Rabia'a al Qaisi, manager of the Babylon Project, and to Dr. Muajed Sayid Demerji, Director General of Antiquities, for having supported our work.

dump-heaps from the excavations at the temples of Ishara and Ninurta. They were never recorded before with a sufficient degree of precision[2].

The surveyed area resulted in a 400×400 mts square, including the main part of the Southern city walls. The other limits were roughly the Ishara Temple on the West side, and the Ninurta Temple on the East. The survey was planned in order to get original plots at 1:200 scale, with a high degree of precision and suitable to be correlated, with a good *ratio*, to the maps of the excavation in progress.

Contemporarily, the land texture was investigated in the whole area, as regards soil hardness, distribution of sherds and other surface remains, vegetation etc. Among the main results, substantial homogeneity emerged in the texture of the soils resulted from the brick-robbing before, from the German excavations afterwards, with slight differences in hardness only[3]. As regards the Ninurta Temple area, we could settle that the intensive German excavations at the temple itself occurred after the completion of the trial trenches East of it: in fact, it is clear that the débris (mostly accurately dumped, also by means of tilting wagons) were laid over most of the former trenches[4]. It is interesting to note how large extensions of very soft soils including high percentages of sherds were detected South of the Ishara temple: they indicate the presence of huge robbed brickworks along the path of the ancient Nabu-Dayyan-Nisheshu street, which was leading from the Esagil to the Urash-Gate[5]. On the contrary, very hard soil (*leben* in situ) marks the line of the city walls, and a massif South of the excavation area. A further analysis of the surface land features showed how the bulk of the high terrace we had found, together with the central part of the South stretch of the Inner walls, could withstand floods and erosions till the present days, while the city area drained Southward through the stretch of walls East of the Urash-Gate[6]. Deep strata of sand, mud and rubble characterize the stratigraphical situation there: the German excavators found the Urash Gate

[2] As we said in the previous report, the Germans just added the single excavation plots to the same topographical background, previous to any digging. See, on the matter, BERGAMINI, *Mesopotamia* XXIII (1988), p. 6, note 4.

[3] Mostly due to the different periods of formation; the basic components of the soils, coming from the regular excavations and from the brick-robbing are in fact the same. It is to be remembered that sherds were not systematically collected in the old digs.

[4] See R. KOLDEWEY, *Die Tempel von Babylon und Borsippa*, WVDOG 15 (1911), pp. 24 ff. and Pl. IV. This course of operations was not clearly emerging from the main excavation report.

[5] See BERGAMINI, *Mesopotamia*, XXIII, pp. 12 ff., Fig. C.

[6] Till now the area to the South of the line of the Inner walls is particularly swampy during the rainy season. A straight canal, cut in modern times near the Jumjuma village, serves as a drainage for this low land.

itself deeply damaged by weathering and erosions[7]. Immediately to the East, the soil raises up rapidly for more than six meters, and the main feature is there a solid massif overhanging the fortified line. Such a massive mud-brick structure (brick courses are still visible on the top) was not taken into account by Wetzel when he exposed the Southern stretch of walls, although it had been recorded in the former survey of 1900-1902[8].

That some misunderstanding occurred there is shown by the uncertain location of the Urash Gate: according to our new survey, it is liable to be shifted Eastward for some 18 meters, unless there was some gap in the length of the walls between the gate itself and the place of the long trench where the moat-walls were exposed, slightly Eastward[9]. Not by chance, the breadth of the massif is around 18 meters. No special mention of the latter was done by Wetzel in the excavation report: the only unusual features to be noticed in this area were the scarp walls at the feet of Towers 9-13[10]. They were referred to some later rearrangements: their function should be more clear now, as strengthening for the fortification line, which was acting in that place also as retaining wall for a platform behind it.

These intriguing features added new reasons to our decision to extend the excavation till the Urash Gate and the walls, to clarify relations and limits of the terrace (and of the building, of course) on this side[11]. Another primary goal was to expose the East side of the passageway, to ascertain its structure and to measure more exactly its span.

The excavations

To do so, further soundings were opened in the passageway: they revealed a stratigraphical layout not so different from that we ascertained in the 1987 operations. Only, the surface erosion affected the structures on top of the platform more deeply: the transverse wall, M 1, for instance, could be followed for a short tract in the N C square (Pl. I); its lower courses were laid over M 15 - M 16, a plasterless strengthening wall of the platform, running in NW-SE

[7] F. WETZEL, *Die Stadtmauern von Babylon*, VWDOG 48 (1930), pp. 58 ff., Pl. 41.

[8] See KOLDEWEY, *Die Tempel von Babylon und Borsippa*, pls. IV and VIII, showing the line of the walls before excavation.

[9] See WETZEL, *Stadtmauern*, Pl. 41, C-C and Pl. 40, stretch IV. This trench through Tower 8, still clearly recognizable nowadays, is a key-point for overlapping the two different surveys.

[10] WETZEL, *Stadtmauern*, pp. 26-29.

[11] It is worth to remember that heavy brickworks lining the gate and barring the oldest passageway, emerged from the German excavations. They are probably related to the same raisings of the soil. See BERGAMINI, *Mesopotamia* XXIII, p. 13, note 20.

direction, in the S C square. M 7 and E 17, on the contrary, were detected extending to the Northern part of N C sounding. Here, too, scattered remains of the surface mud-brick plastering came to light, although badly weathered and deeply disturbed by later activities: more Southward, in fact, a coffin was found smashed and full of rubble (T 6). In the South-east corner of the square, a small circular silos, 1.40 mts wide, was put to light: dug to a shallow depth from the terrace surface, it was surrounded by mud bricks and plastered with a thick coat of mud. Together with a small fireplace (E 30) found slightly South, in the S C sounding, it confirms some domestic use of the area in its latest phases[12]. Bad preservation, unfortunately, did not allow to clarify nature and function of the many features found during the first season immediately under surface.

Intrusive graves, mostly oblong coffin-burials, were found in the S C area; one of them (T 7), the only one with furniture, cut the M 16 wall[13].

The East side of the passageway was also cleared (Fig. 1:1): the two ditches, symmetrically corresponding to the ones discovered in the first season, were sounded. Their profiles, less sharp, show that the erosion was stronger on this side. As in the former ones, the softer silted soil was easy to remove from the ditches, so we could trace their limits fairly easily. In the North-East cut (E 38), a collapsed wall is to be recognized in a brick-on-edge layer (E 39), most probably belonging to M 24, the latter probably on the same alignment of M 7. This situation matches exactly what we found in 1987 in N B area, when the collapse of M 3 came to light near the mouth of the robbing tunnel E 5. The South-East ditch was roughly square in shape. A mud-brick partition wall, running in North-South direction, was found at its Eastern end: it was cut in two stretches, M 18 and M 26: the latter still bore the traces of the diggers' picks on the Northern face (Fig. 1:6).

Here, too, some inaccuracy in the German survey emerged: the span of the passageway, in fact, could be no less than 13.5 mts in the Northern couple of jambs, 15 mts in the Southern one instead of 11. Too wide for arched gates, as we formerly supposed (combining our evidence with the data of the early survey).

Further East, we widely exposed the platform surface at +33.32 (E 34) and reached a limit of its upper terrace in the shape of a sharp ditch running in North-South direction. Remains of a ramp with two subsequent floors were

[12] These «Getreidegruben» were a common feature in the later periods at Merkes. See O. REUTHER, *Die Innenstadt von Babylon (Merkes)*, VWDOG 47 (1926), pp. 148 ff. See also H. KLENGEL, «Babylon zur Zeit der Perser, Griechen und Parther», *Staatliche Museen zu Berlin, Forschungen und Berichte*, 5 (1962), p. 52.

[13] For the dating of these «Lange Trogsarkophage» see E. STROMMENGER, «Grabformen in Babylon», *BaM* 3 (1964), pp. 157-153, fig. 1 and fig. 4:3.