

## BUSHIRE AND THE ANGALI CANAL

### *I. Introduction: The setting and the canal*

Archaeological sites on the littoral of the Iranian coast have not been systematically explored, especially by comparison with the Susiana plain. While the fringe of the mountain edge generally lies fairly close to the sea, there are several regions where the coastal plain is relatively broad and watered by perennial streams (Fig. A). The hinterland of the port of Bushire, a plain of ca. 80 x 65 km, is an example of such a region, with the Shapur (Dalaki—Hilleh) river watering the large palm groves around Borazjan. This paper will examine the relationship of archaeological sites in the area of Borazjan with those of the Bushire peninsula.

That there was a relationship between these two areas is made manifest by an archaeological feature of the plain, a great canal stretching almost 40 km from the Dalaki river near Borazjan to Shif opposite the town of Bushire (Fig. B). Following the territorial divisions of the plain presented in Lorimer<sup>1</sup>, this canal is here called the Angali canal.

An archaeological survey undertaken by the author in 1973 recorded sites in the regions of Borazjan and Ahram. The Angali canal was discovered after this field work<sup>2</sup> and confirmed only through air photographs. After a straight stretch of the Dalaki river running southwest from the village of Dalaki, the river turns northwest while a short qanat continues on southwest in the direction of Shif (Fig. C). A clear line of raised ground passes the villages of Deh Now, Nokar-i Mokhi, Nokar-i Gazi and Hasan Nadom and ends at Shif, a projection into the shallow khor (or bay) of Bushire. One section is marked Shur-i Khosh Ab (stream of good water) on Iranian maps; the raised ground of the canal has been the usual track across this often mud-

<sup>1</sup> The best study of this region remains J. G. LORIMER, *Gazetteer of the Persian Gulf*, Calcutta 1908. The Angali region is described in volume IIa, pp. 79-82, with maps 20, 21, 23.

<sup>2</sup> The author wishes to acknowledge the assistance of David Stronach for arranging the contacts which led to the discovery of the Angali canal. The 1973 survey was sponsored by the University of Chicago under the direction of Robert McC. Adams and enjoyed the support of Dr. Firuz Bagherzadeh of the Ministry of Culture and Arts. Ceramics from the Bushire peninsula, Fig. D, were collected in 1966 and were less fully described than the survey pottery.

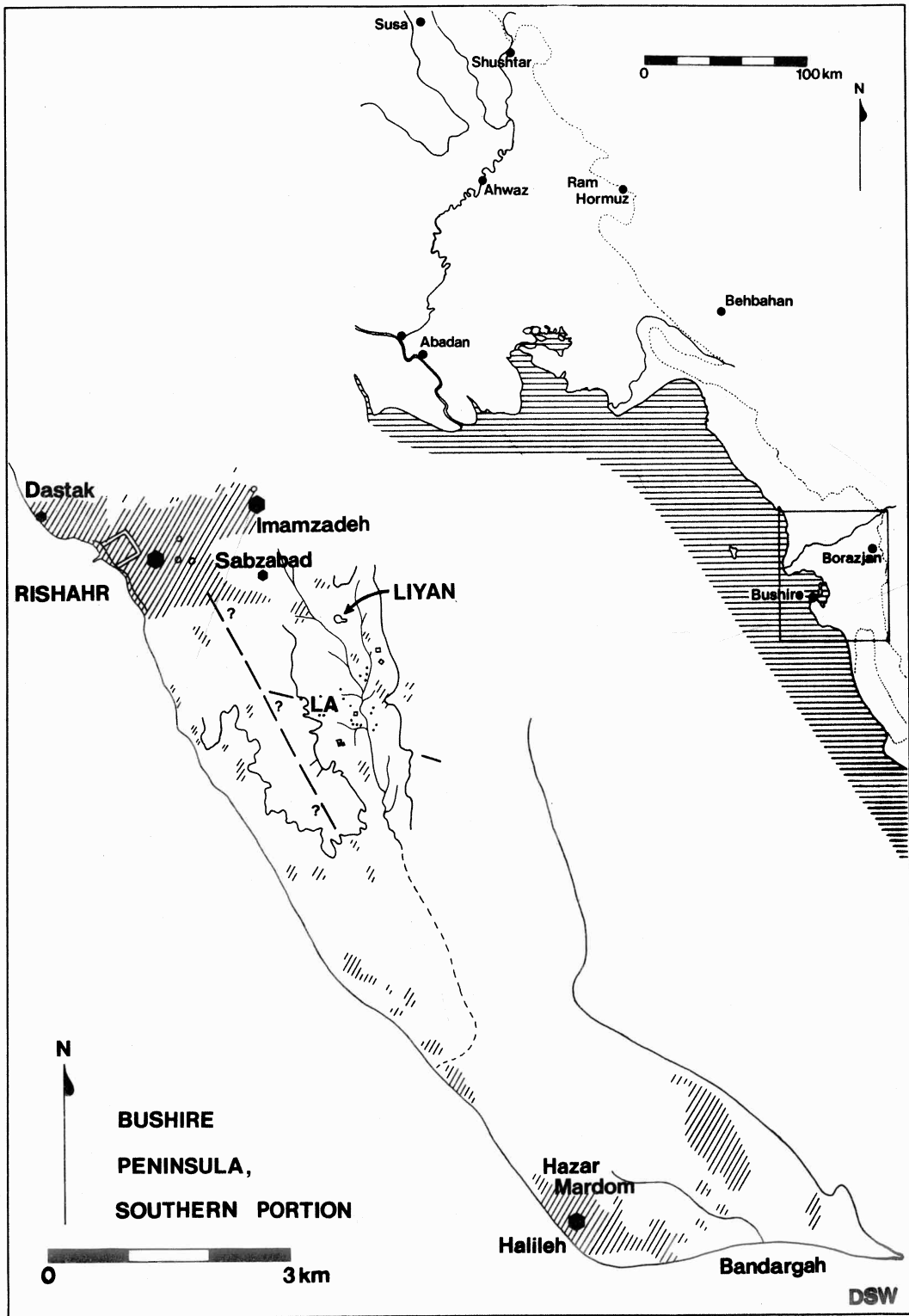


Fig. A - South portion of the Bushire peninsula (after WHITEHOUSE and WILLIAMSON, *op. cit.*, Fig. 4, and PEZARD, *op. cit.*) and general map of Khuzistan and the Iranian coast.

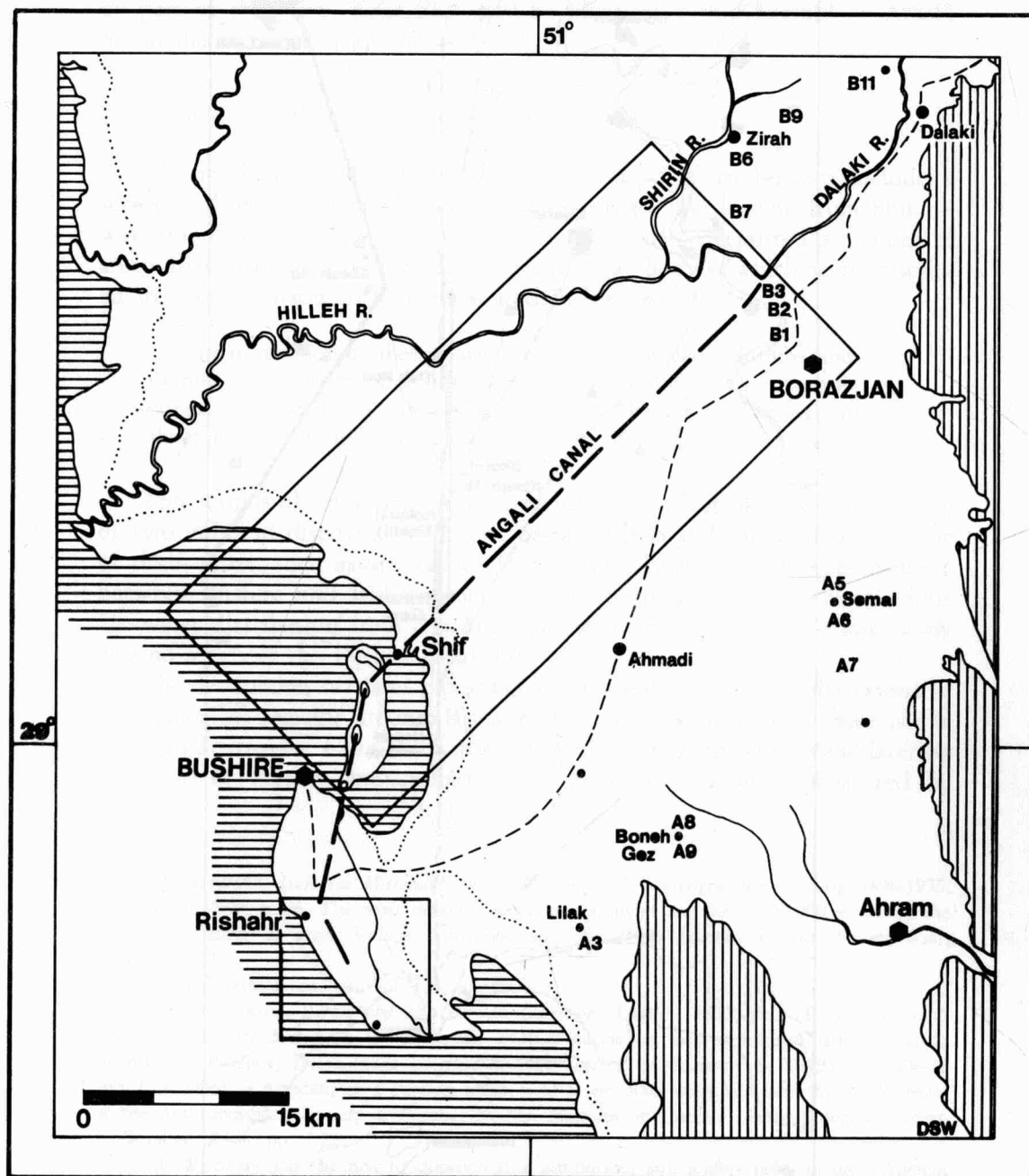


Fig. B - The hinterland of Bushire with the Angali canal.

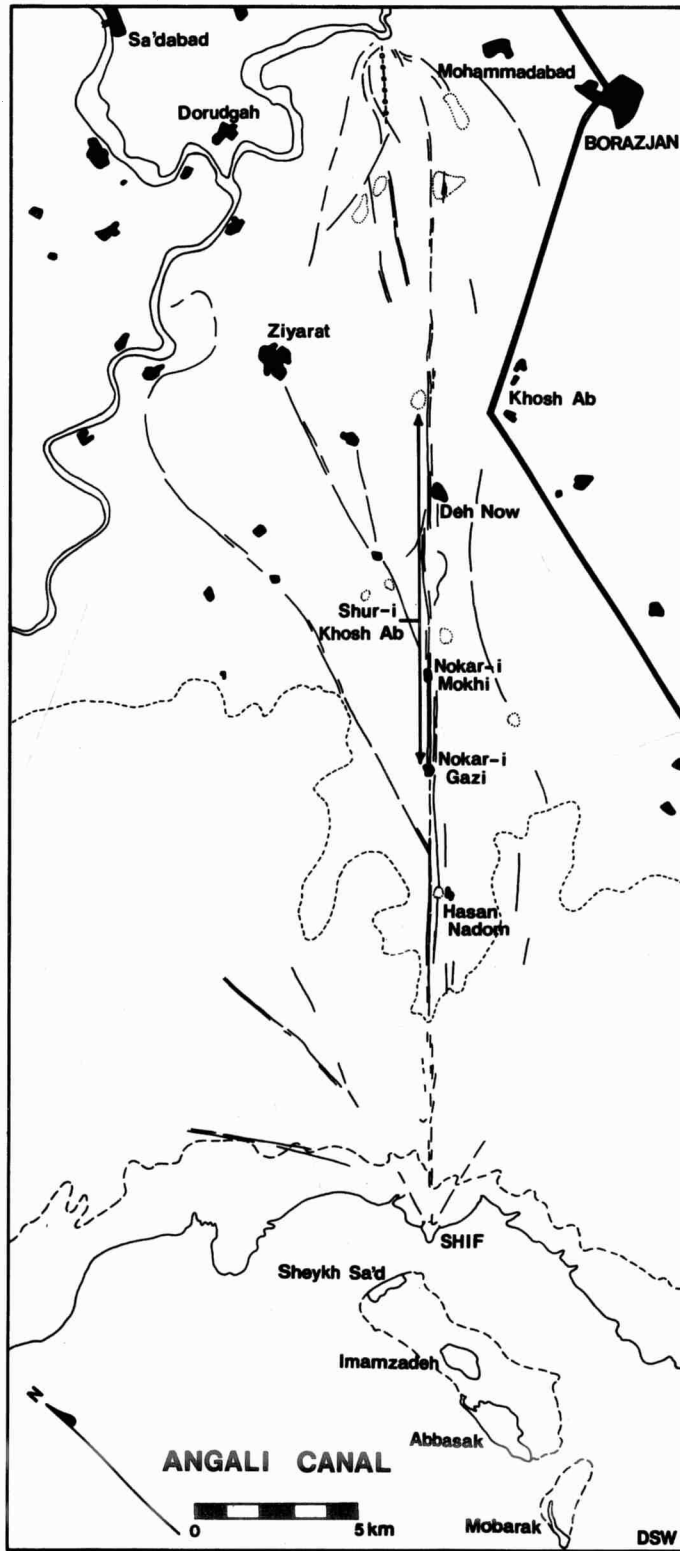


Fig. C - Traces of the Angali canal (from air photographs).

dy part of the plain. Khor Shif may be identical with Khorshid or Amali-Sif in the medieval geographers<sup>3</sup>.

## II. *Bushire and Rishahr; extension of the canal*

The mud-flats leading across the bay from Shif to Bushire include a series of three small islands; these islands form a line leading from Shif toward the modern village of Rishahr (Fig. B)<sup>4</sup>. Curzon reported a number of antiquities near Bushire, including numerous jar burials, which were described in detail. Curzon further elaborated in his report:

« A great number of these have been found between Bushire and Reshire, at a depth of about two feet below the surface, usually placed horizontally in a long line one after the other. The jars are about three feet in length and one foot in diameter »<sup>5</sup>.

This sounds like a most unusual cemetery and in fact like the confounding of two different discoveries, the one of jar burials and the second of a line of drain pipes, such as are known from Susa. These lines of pipes running between Bushire and Rishahr may be hypothesized to have been conduits for water distribution from the Angali canal where it crossed the low sandy ground south of the Bushire headland.

The destination of these pipes would apparently have been the extensive archaeological remains around Rishahr. The most prominent of these is the so-called Portuguese fort, which may be dated to the 13th century and later on the basis of literary and archaeological evidence<sup>6</sup>. Ceramics recovered by

<sup>3</sup> P. SCHWARZ, *Iran im Mittelalter nach den arabischen Geographien*, Leipzig 1896-1935, Hildesheim 1969, p. 66. The most detailed maps for toponyms are the 1 : 50,000 series by the Statistical Center of Iran, *Village Gazetteer*, vol. 10: *Ports Islands of the Persian Gulf*, Teheran 1970.

<sup>4</sup> J. G. LORIMER, *op. cit.*, vol. IIa, p. 340.

<sup>5</sup> G. N. CURZON, *Persia and the Persian Question*, London 1892, vol. II, p. 235, n. 2. Other reports are found in W. ERSKINE, « Observations on two sepulchral urns found at Bushire, in Persia », *Transactions of the Literary Society of Bombay*, 1 (1879), pp. 206-13 and J. J. MODI, « Astodan, or a Persian coffin, said to be 3000 years old, sent to the Museum of the Anthropological Society of Bombay by Mr. Malcolm of Bushir », *Anthropological Papers*, 1 (Bombay 1911), pp. 7-22.

<sup>6</sup> A. W. STIFFE was the first to question this attribution, still widely held, in his « Ancient trade centers of the Persian Gulf, III: Pre-Muhammadan settlements », *Geographical Journal*, 1897, pp. 309-14. See also D. WHITEHOUSE and A. WILLIAMSON, « Sasanian maritime trade », *Iran*, 11 (1973), p. 35 and Pl. IIa, b.

Williamson in a wide area around the fort are, however, mainly Sasanian. This Sasanian material suggests that this Rishahr was originally a Sasanian town named Rev Ardashir (see below).

East of Rishahr, and south of the village of Sabzabad, is the Elamite site known as Liyan from cuneiform inscriptions on bricks found on the mound (Fig. A). These inscriptions describe the construction and refurbishing of a temple complex under several Elamite rulers dating from ca. 1275 to ca. 1120 B.C. Ceramics from the mound are datable to the Kaftari period; these were published with the excavations of the French mission to Bushire in 1914<sup>7</sup>. Pezard also mapped the large dissected wadi which stretches south of the mound of Liyan. At the edge of the wadi Pezard noted a qanat shaft (at Eskat Kraoui, site LA) and two short lengths of canals, which he described as branches from the « main canal » that ran along the ridge followed by the modern road<sup>8</sup>.

Stein also examined the edges of this wadi (or nullah as he called it) and found three canals on the western side and a fourth on the eastern side. He recognized in the wadi a series of « small terraces rising between deeply eroded small ravines and covered with low remains of walls built with roughly cut stones in regular courses but without mortar. These terraces extend for about 300 yards from north to south and are obvious 'witnesses' marking the original ground level... » He further suggested that the canals « were intended to carry water for irrigating... the wildly fissured nullah... »<sup>9</sup>. Within this irregular landscape and near the terraces, Stein found stone « towers » which he identified as wells (based on the local name of one example, chah-boland)<sup>10</sup>. It may be suggested that these are more likely to have been mills, similar to those described in the hinterland of Siraf<sup>11</sup>.

The formation of such « badlands » from formerly cultivable fields has been amply demonstrated by Wilkinson for the immediate hinterland of

<sup>7</sup> This dating for the Elamite remains follows E. CARTER and M. W. STOLPER, *Elam: Surveys of Political History and Archaeology*, Berkeley 1984. Carter has related the ceramics to the Kaftari period at Tepe Malyan, p. 154; these ceramics were found by M. PEZARD, *Mission à Bender Bouchir*, Paris 1914.

<sup>8</sup> M. PEZARD, *op. cit.*, pp. 37-38, sites IX, XI, XII.

<sup>9</sup> M. A. STEIN, *Archaeological Reconnaissances in North-western India and South-eastern Iran*, London 1937, pp. 238-39.

<sup>10</sup> M. A. STEIN, *op. cit.*, pp. 239-40, Fig. 88; the identification as towers is that of M. PEZARD, *op. cit.*, p. 36, site VIII.

<sup>11</sup> Such mills are known as Norse mills and are extensively discussed in T. J. WILKINSON, « Siraf, the physical landscape », *Siraf I: Introduction*, London n.d. The mills are mentioned, but not identified, in D. WHITEHOUSE, « Excavations at Siraf: Fifth interim report », *Iran*, 10 (1972), p. 65.

Siraf. There, canals from the mountains have been discovered and an extensive covering of sherds (from manuring practices) proves the use of the fields in early Islamic times<sup>12</sup>. Stein also recovered sherds from the Sabzabad terraces which included « turquoise-blue pottery with low relief decoration [resembling] those common at Siraf », strongly suggesting a Sasanian or early Islamic date for the Sabzabad material<sup>13</sup>.

Thus one might suggest that the waters of the Angali canal not only supplied the settlement at Rishahr but were used for agricultural lands to the south. The main line of the canals seems to follow the ridge leading to the southernmost tip of the peninsula at Hazar Mardom (Halileh) where Williamson found evidence of a large settlement of Sasanian and possibly earlier periods.

### III. Archaeological dating evidence

Other than the Elamite ceramics from Pezard's excavations, materials from the Bushire peninsula have been rather neglected. Pezard mentioned two square enclosures which are small farmsteads<sup>14</sup>. One of these produced blue glazed pottery and thumb-impressed ware, suggestive of a late Sasanian date. Ceramics collected by the author from the vicinity of one of these farmsteads (LA) and from Dastak and Hazar Mardom show a uniformity and may be generally characterized as Parthian and Sasanian (Fig. D). Haerincx's recent study of Parthian ceramics in Iran mentions this coastal region (part of his Region IX) as having a distinctive fine, painted orange ware; this information is based on Williamson's survey<sup>15</sup>. While no examples of this ware were found in the above survey, some of the fine grey wares point to a Gulf or Indian inspiration. Sites on the opposite coast of

<sup>12</sup> T. J. WILKINSON, « Agricultural decline in the Siraf region, Iran », *Paleorient*, 2 (1974), pp. 123-32, and « The definition of ancient manured zones by means of extensive sherd-sampling techniques », *Journal of Field Archaeology*, 9 (1982), pp. 323-34.

<sup>13</sup> M. A. STEIN, *op. cit.*, p. 239.

<sup>14</sup> These are not Portuguese forts as described by M. PEZARD, *op. cit.*, sites VIII, X, Fig. 6. The pottery is sketched as his Fig. 5.

<sup>15</sup> E. HAERINCK, *La céramique en Iran pendant la période parthe (ca. 250 av. J.C. à ca. 225 après J.C.): Typologie, chronologie et distribution*, Ghent 1983, pp. 228-30; this is Type 1 and 2 in A. WILLIAMSON, « Persian Gulf commerce in the Sassanian period and the first two centuries of Islam », *Bastanshenasi va bonar-e Iran*, 9-10 (1972), pp. 99-100, and drawn in D. WHITEHOUSE and A. WILLIAMSON, *op. cit.*, Fig. 5. Some of the fine, grey ceramics may be « brittle ware », described as Sasanian by D. WHITEHOUSE, « Survey of excavations: Siraf », *Iran*, 13 (1975), p. 187, and as early Islamic by A. WILLIAMSON, *op. cit.*, Type 5, p. 101.

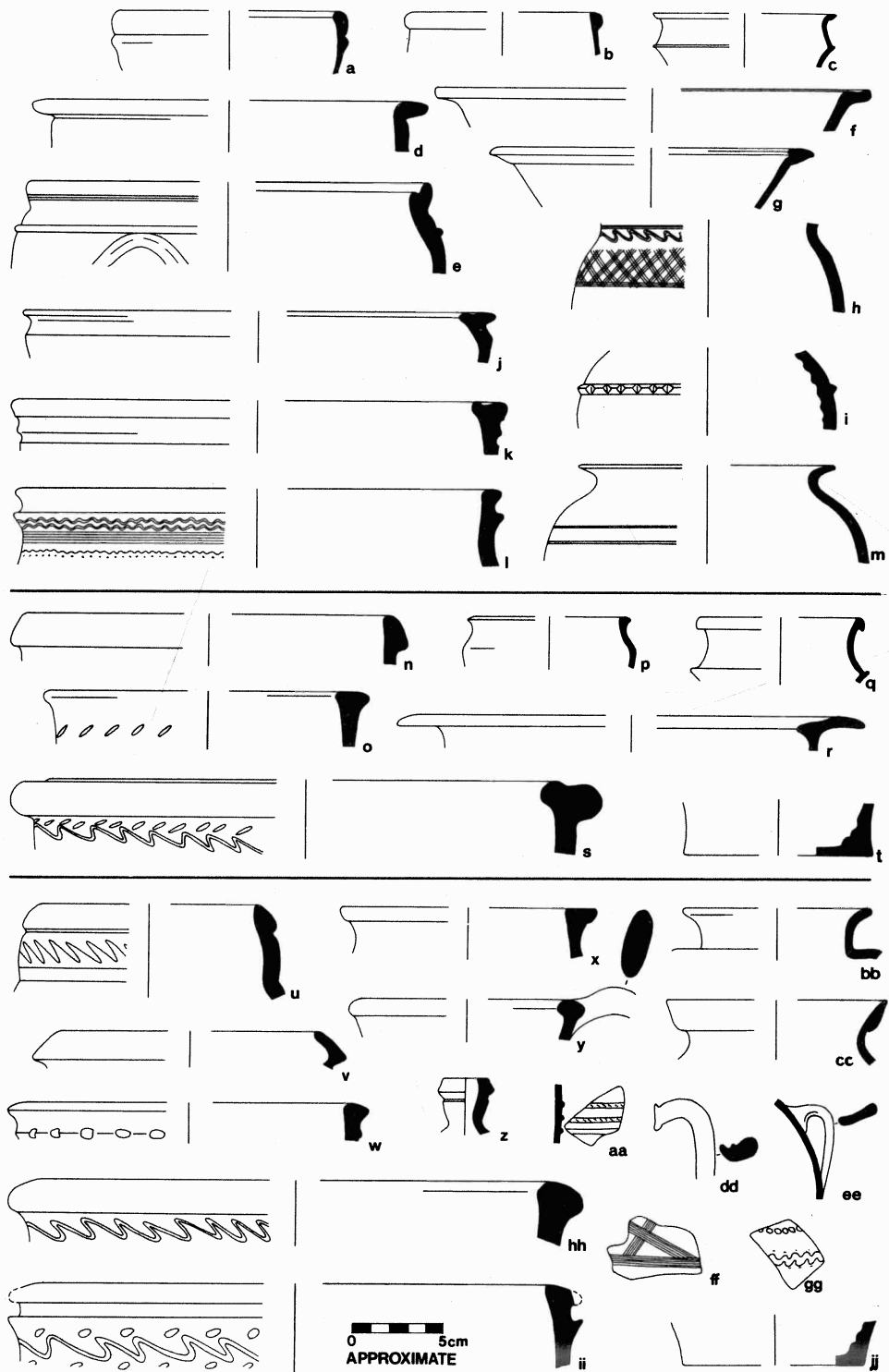


Fig. D - Ceramics from the Bushire peninsula: LA, Dastak, Hazar Mardom.



Fig. D - Ceramics from the Bushire peninsula.

## LA

- a grey ware
- b grey ware, grey slip on interior
- c grey ware, fine
- d buff ware, black slip on interior
- e buff-cream ware, green glaze on interior, appliqué
- f buff ware
- g black ware, brown slip, white grit temper
- h red ware, comb incised decoration
- i red ware, cut ridge decoration
- j grey ware, common grit temper
- k buff-cream ware
- l red-brown ware, green glaze on exterior, comb incised decoration
- m grey-black ware, grey slip, incised lines, common grit temper

## Dastak

- n black ware, red core
- o buff ware, punctate decoration, red grit temper
- p cream ware, black slip
- q grey ware
- r red ware
- s buff-red ware, incised and punctate decoration
- t red ware, vertical shaving on exterior

## Hazar Mardom

- u cream ware, green glaze, incised decoration
- v cream ware, blue-green glaze
- w red-buff ware, punctate decoration
- x cream ware, yellow glaze
- y cream ware
- z buff ware, red wash
- aa buff ware, appliqué bands
- bb black ware
- cc black ware, burnished (?)
- dd buff ware, black slip (?)
- ee grey ware
- ff red ware, comb incised decoration
- gg black ware, red core, incised and punctate decoration, black slip (?)
- hh pink ware, incised decoration, red grit temper
- ii grey ware, incised and punctate decoration
- jj red ware, vertical shaving on exterior

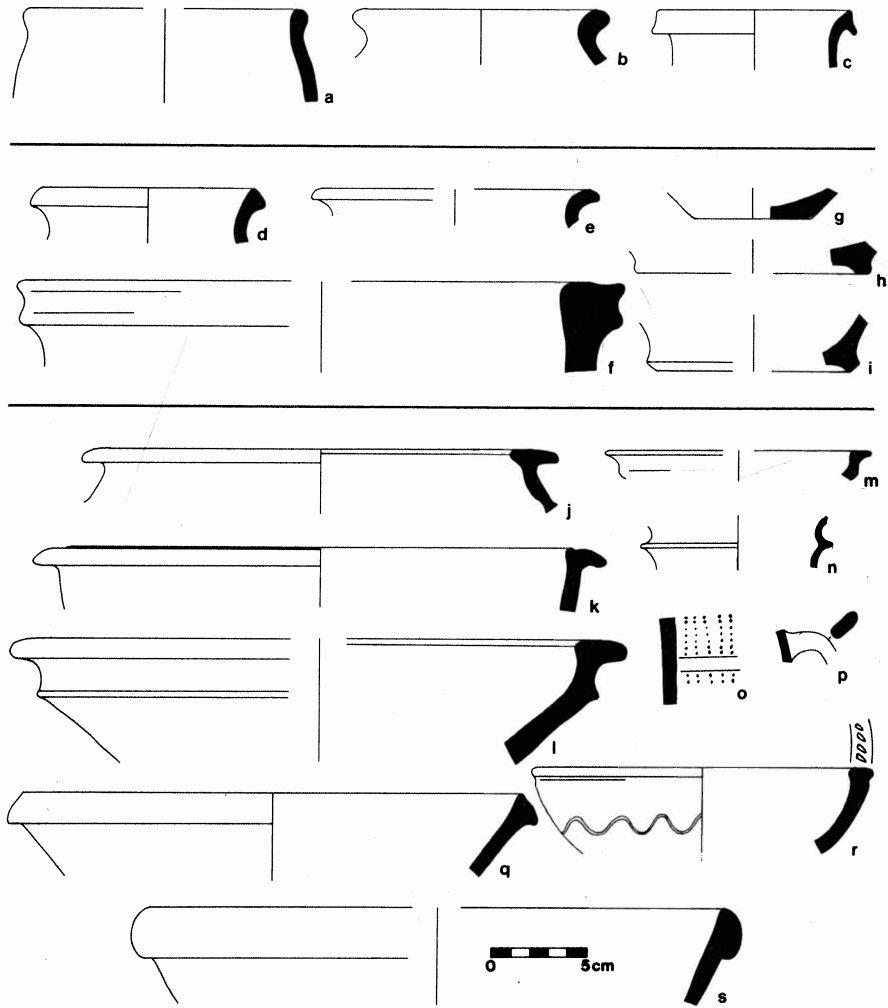


Fig. E - Ceramics from the Borazjan region: B3 (Tul-e Qal'eh), B1, B2 (Tul-e Khandaq)

Fig. E - Ceramics from the Borazjan region.

## B3 (Tul-e Qal'eh)

- a dark red ware, orange-tan surfaces, cream slip on exterior, grit temper
- b red ware, grit temper
- c tan-grey ware, black slip, grit temper

## B1

- d orange ware, cream slip on exterior, sandy grit temper
- e light grey ware, black slip, grit temper
- f orange-tan ware, cream slip, large black grit temper
- g cream-orange-tan ware, fine
- h red ware, common grit temper
- i grey ware, light grey slip on interior, grit temper

## B2 (Tul-e Khandaq)

- j grey ware, black slip, common grit temper
- k orange-tan ware, greenish cream slip on rim and exterior (brown on interior), grit temper
- l cream ware, green glaze on interior and exterior, grit temper
- m light grey ware, dark grey slip, grit temper
- n grey ware, cream-tan slip on exterior (brown on interior), grit temper
- o cream ware, comb punctate decoration, grit temper
- p red ware, red slip, grit temper
- q orange-tan ware, white slip, black grit temper
- r red ware, red slip on rim and exterior, punctate and incised decoration, grit temper
- s cream ware, black slip, grit temper

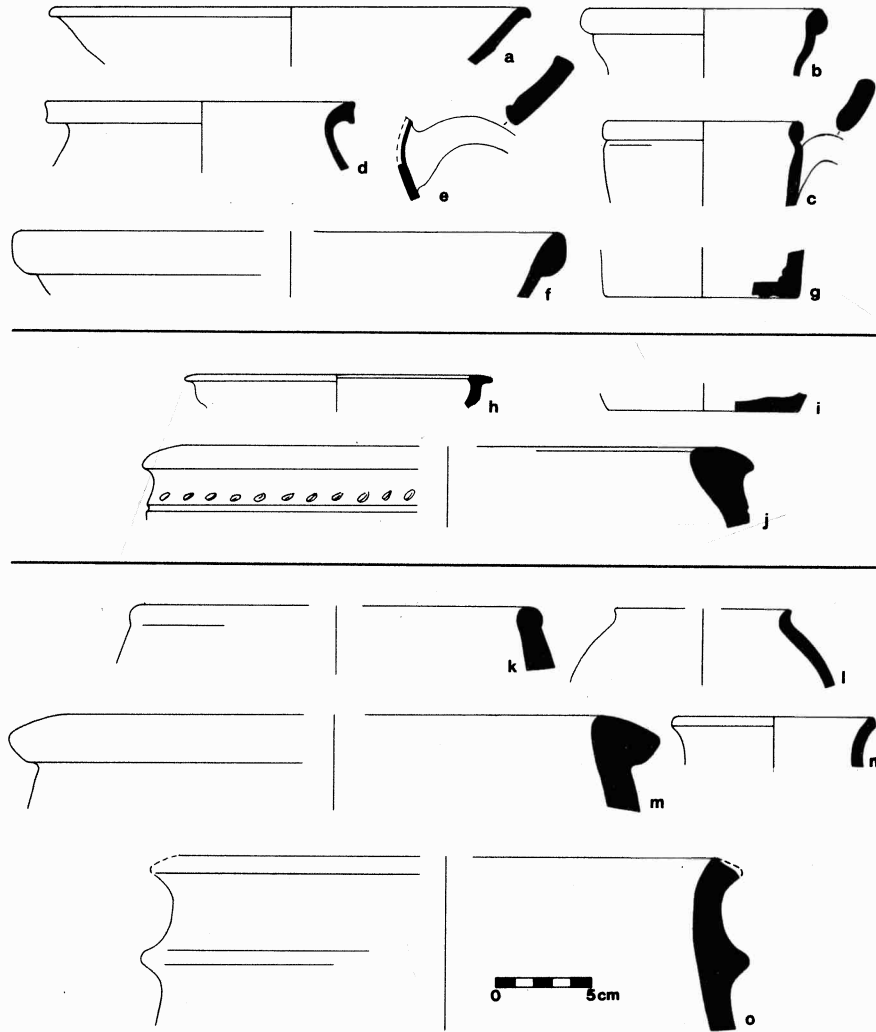


Fig. F - Ceramics from the Borazjan region: B7, B11 (Tul-e Karavas), B9 (Tul-e Qatel Kohneh).

Fig. F - Ceramics from the Borazjan region.

## B7

- a orange-tan ware, orange-tan slip, sandy grit temper
- b dark grey ware, dark grey slip, grit temper (handle attachment?)
- c red ware, dark red slip, grit temper
- d orange-tan ware, orange-tan slip (grey on rim), grit temper
- e light grey ware, black slip, grit temper
- f cream ware, common grit temper
- g red ware, dark red slip, vertical shaving on exterior

## B11 (Tul-e Karavas)

- h light grey ware, dark grey slip, grit temper
- i orange-tan ware, dark grey slip, grit temper
- j cream ware, punctate and incised decoration, grit and chaff temper

## B9 (Tul-e Qatel Kohneh)

- k orange-tan ware, grit temper
- l orange-tan ware, thick red slip, common grit temper
- m orange-tan ware, cream slip on exterior, chaff temper
- n cream ware, chaff temper
- o orange-tan ware, grey core, cream slip, common chaff temper

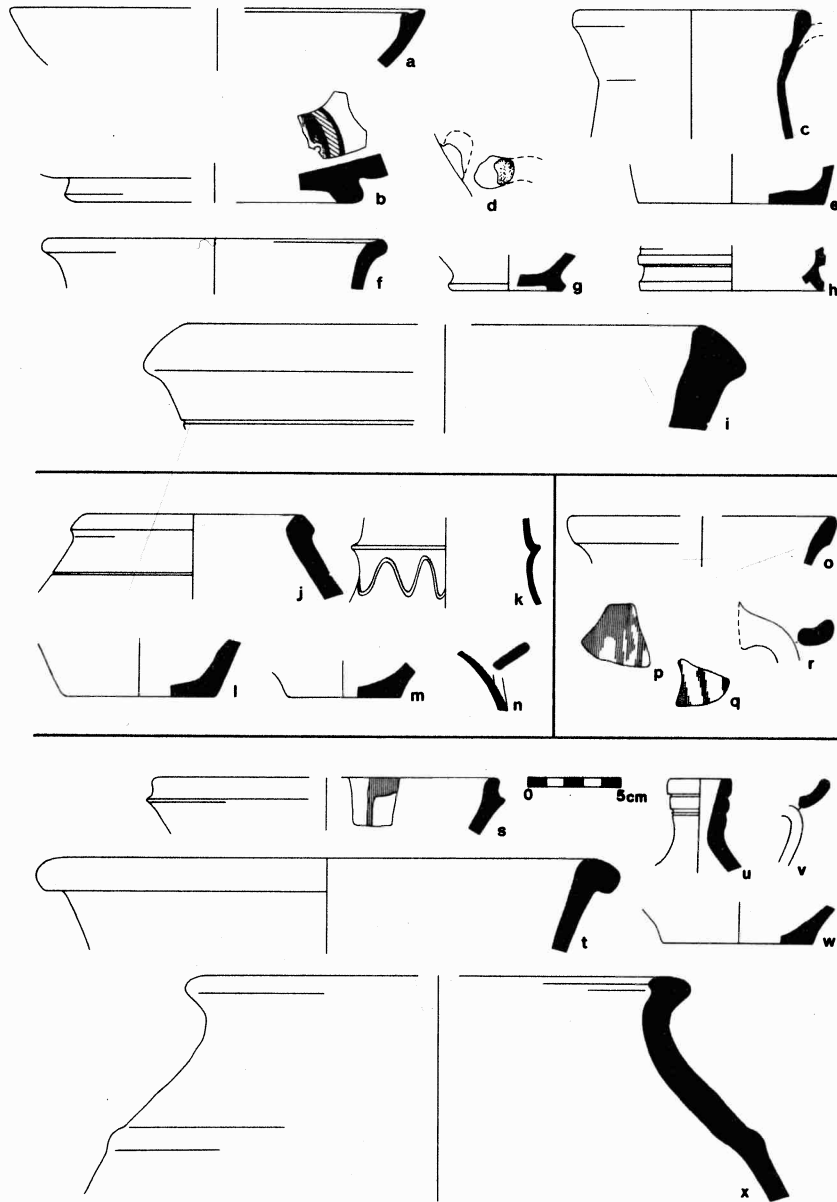


Fig. G - Ceramics from the Ahram region: A3 (Lilak), A5 (Semal), A7.

Fig. G - Ceramics from the Ahram region.

## A3 (Lilak)

- a cream-orange-tan ware, cream slip, white (green?) glaze on interior, grit temper
- b cream ware, brown, green, clear glaze on interior, grit temper
- c dark grey ware, grit temper
- d grey ware, dark brown glaze on exterior, stoneware
- e grey ware, vertical shaving on exterior, grit temper
- f light grey ware, light grey slip, large grit temper
- g orange-tan ware, cream slip, grit temper
- h light grey ware, grey slip, grit temper
- i orange-tan ware, sandy grit and chaff temper

## A6

- j orange-tan ware, cream slip on exterior, incised decoration, sandy grit temper
- k light grey ware, dark grey slip, incised decoration, grit temper
- l light grey ware, dark grey slip, vertical shaving on exterior, grit temper
- m grey ware, dark grey slip, grit temper
- n orange-tan ware, dark grey slip, grit temper

## A5 (Semal)

- o cream ware, black slip, black grit temper
- p cream ware, brown, green glaze on exterior, grit temper
- q cream ware, brown, green glaze on exterior, green glaze on interior, grit temper
- r light grey ware, black grit temper

## A7

- s orange-tan ware, cream slip, brown paint, grit temper
- t cream ware, black slip on rim, grit temper
- u orange-tan ware, purple wash, grit and chaff temper
- v cream ware, light grey slip, grit temper
- w light grey ware, cream slip on interior, black slip on exterior, grit temper
- x orange ware, black core, red slip on interior, grit and chaff temper

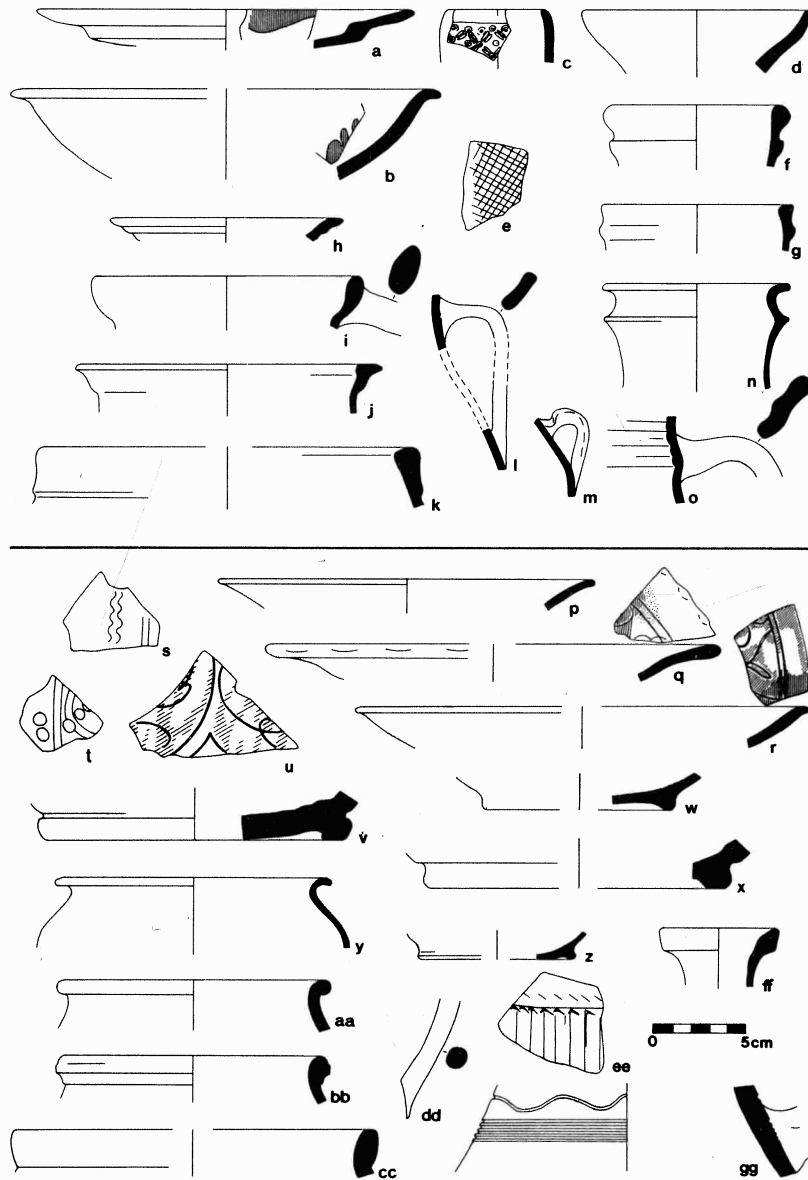


Fig. H - Ceramics from the Ahram region: A9 (Bonch Gez), A8 (Tul-e Sefid).



Fig. H - Ceramics from the Ahram region.

## A9 (Boneh Gez)

- a cream ware, cobalt blue and white glaze, grit temper
- b cream ware, cobalt blue and white glaze, grit temper
- c cream ware, green glaze on interior and exterior, moulded decoration, grit temper
- d cream ware, white glaze, grit temper
- e cream ware, incised decoration, grit temper
- f cream ware, green glaze on interior and exterior, grit temper
- g cream ware, fine grit temper
- h grey ware, dark grey slip, grit temper
- i cream ware, grit temper
- j grey ware, dark grey slip, grit temper
- k tan ware, grey core, grit temper
- l tan-cream ware, dark brown slip, grit temper
- m tan ware, dark brown slip, grit temper
- n tan ware, dark brown slip on exterior and neck, grit temper
- o cream ware, grit temper

## A8 (Tul-e Sefid)

- p cream ware, green glaze on interior and exterior, grit temper
- q orange-tan ware, green, yellow glaze, sgraffiato, grit temper
- r orange-tan ware, white slip, green, yellow, brown glaze, sgraffiato, grit temper
- s cream ware, green glaze on exterior, appliqué, grit temper
- t cream ware, thick green glaze on interior and exterior, appliqué, grit temper
- u orange-tan ware, white slip, green, yellow glaze, sgraffiato, grit temper
- v cream ware, thick green glaze on interior and exterior, grit temper
- w cream ware, white glaze on interior and exterior, grit temper
- x cream ware, white glaze with green splash on interior, grit temper
- y cream ware, fine
- z cream ware, fine
- aa cream ware, traces of brown slip on exterior, fine
- bb cream ware, dark grit temper
- cc cream ware, grit temper
- dd cream ware, grit temper
- ee cream ware, incised decoration, grit temper
- ff cream ware, fine
- gg cream ware, incised and comb decoration, grit temper

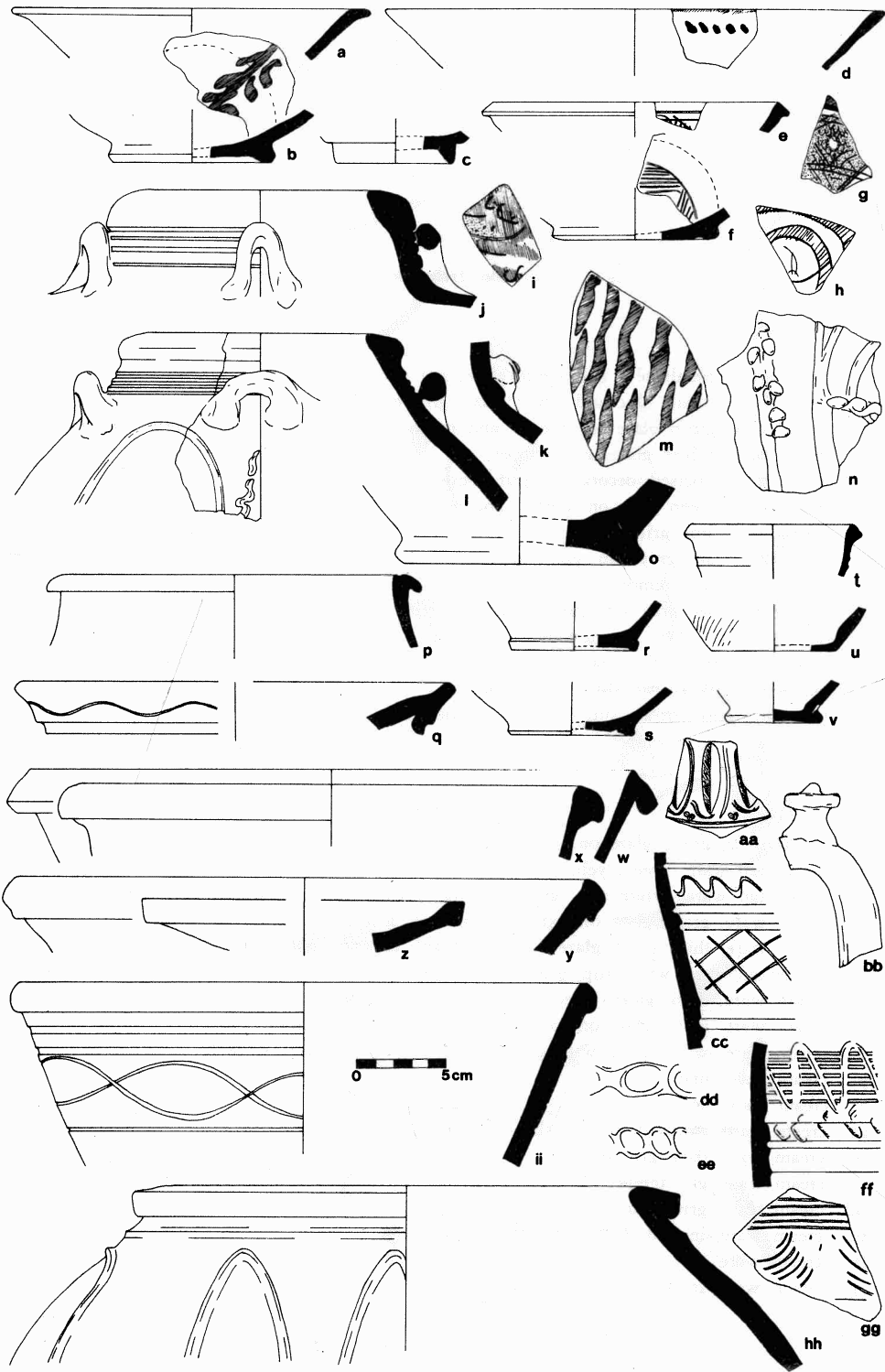


Fig. I - Ceramics from the site of Tawwaj: B6 (Zirah).

Fig. I - Ceramics from the site of Tawwaj.

## B6 (Zirah)

- a cream ware, white glaze on interior and exterior, grit temper
- b orange-tan-cream ware, yellow, light green glaze, grit temper
- c cream ware, dark blue glaze on interior and exterior, grit temper
- d orange-tan ware, white slip, brown, green, clear glaze, grit temper
- e orange-tan ware, light and dark green glaze, sgraffiato, grit temper
- f orange-tan ware, green, yellow glaze, sgraffiato, grit temper
- g cream ware, yellow, brown, green glaze, sgraffiato, grit temper
- h orange-tan ware, white glaze, sgraffiato, grit temper
- i cream-orange-tan ware, white, green glaze, sgraffiato, grit temper
- j cream ware, thick green glaze on interior and exterior, grit temper
- k cream ware, blue-green glaze on interior and exterior, grit temper
- l cream ware, green glaze on interior and exterior, appliqué, grit temper
- m orange-tan ware, white and green glaze, grit temper
- n cream ware, green glaze on interior and exterior, appliqué, grit temper
- o cream ware, thick green glaze, grit temper
- p orange-tan ware, orange-tan slip, fine grit temper
- q orange-tan ware, thick white slip, incised decoration, grit temper
- r cream ware, grit temper
- s cream ware, grit temper
- t cream ware, grit temper
- u cream ware, black residue in interior, shaved exterior, grit temper
- v cream ware, grit temper
- w orange-tan ware, dark orange slip on exterior (brown on interior), grit temper
- x cream ware, grit temper
- y cream ware, grit temper
- z cream ware, grit temper
- aa cream ware, incised and cut decoration, grit temper
- bb cream ware, large grit temper
- cc orange-tan ware, brown slip on interior, cream slip on exterior, incised decoration, large black grit temper
- dd cream ware, blue-green glaze, grit temper
- ee cream ware, black residue on interior, brown slip on exterior (?), large black grit temper
- ff cream ware, incised decoration, grit temper
- gg cream ware, comb incised decoration, large black grit temper
- hh orange-tan ware, grey surfaces, black slip on exterior, grit temper
- ii tan-cream ware, cream slip on exterior, incised decoration, chaff temper

the Gulf with comparanda are, for example, ed-Dour for the Parthian and Jazirat Ghanam for the Sasanian<sup>16</sup>.

Other Parthian—Sasanian ceramics were found near the head of the canal (B1, B2, B3; Fig. E) and in the Tawwaj area (B6, B7, B11; Figs. F and I). Several sites indicate an Elamite occupation, especially B9, with B3 near the canal and possibly Tawwaj itself (B6). Unfortunately, comparison with ceramics from the Sabzabad mound (Liyan) is no longer possible, except through Pezard's photographs.

The Ahram region, on the eastern edge of the plain, has one possible Elamite site (A7) and Parthian—Sasanian at A6 and A7. Most of the sites in these foothills appear to be late Sasanian and Islamic (A3, A5, A8, A9; Figs. G and H). The site of Lilak (A3) shows a similar occupation near the Bushire peninsula<sup>17</sup>. The early Islamic period is most dramatically represented at B6, the site of Tawwaj (Fig. I).

Since ceramics from the length of the Angali canal have not been collected archaeological evidence cannot be used to determine the date of the canal. The nearby Borazjan sites, as well as those on the Bushire peninsula, suggest that the construction and use of the canal may be limited to three general periods, the Elamite, the Achaemenian and early Parthian, and the late Parthian—Sasanian. Fortunately, an often-quoted literary reference helps to clarify the early history of the Angali canal.

#### IV. *Literary evidence: Nearchus*

In Nearchus' voyage up the Iranian coast of the Gulf<sup>18</sup>, the Bushire peninsula has long been identified as Mesambria, a land with many gardens and fruit trees. Nearchus found there the city of Hieratis, which might be identified as either Rishahr or the settlement at Hazar Mardom. His description continues:

« They anchored in a *channel* running from the river to the sea and called Heratemis. At sunrise they sailed along the coast to a *torrent* called Padargos; the entire district forms a peninsula ».

<sup>16</sup> Among the growing number of recent studies are J.-F. SALLES, « Céramiques de surface à ed-Dour, Émirats arabes unis », *Arabie orientale, Mésopotamie, et Iran méridional de l'âge du fer au début de la période islamique*, Paris 1984, pp. 241-70, and B. DE CARDI, « Archaeological survey in northern Oman, 1972 », *East and West*, 25 (1975), pp. 9-75.

<sup>17</sup> The site of Lilak may be identical to « Bushire 2 », reported in D. WHITEHOUSE, « Excavations at Siraf: First interim report », *Iran*, 6 (1968), p. 15, n. 34.

<sup>18</sup> The account of Nearchus' report is preserved in Arrian's *Indica*, chapter XXXIX (emphasis added).

The two anchorages are thus presumably at opposite ends of the peninsula. The Heratemis channel is usually placed south of Bushire; Whitehouse and Williamson have suggested a silted creek, presumably that near Bandargah. The Padargos torrent is usually placed near Shif<sup>19</sup>.

It is important to note, however, that, according to the terminology used, the Padargos was a « winter-flowing river », i.e., a wadi, and that the Heratemis was an « excavated trench or canal ». One may thus suggest a corruption in the text of Arrian, a reversal of these locations. The Padargos may well have been the mouth of a wadi at the southern end of the peninsula, while the Heratemis was the canal at Shif, the Angali canal, which indeed ran from a river (the Dalaki) to the sea. It was this canal which allowed the gardens and fruit trees of Mesambria.

The name of the Heratemis channel was seen by Tomaschek as a corruption of Phratemis, in turn related to the Phrystimus known to Pliny<sup>20</sup>. This « river » was claimed to be navigable as was the Granis, the modern Hilleh river which leads to the site of Taoke/Tawwaj. Arrian mentions that inland from the mouth of the Granis « was a Persian royal residence », no doubt associated with the Achaemenian ruins found near Borazjan by Sarfaraz<sup>21</sup>.

#### V. Conclusions: settlement and irrigation

The evidence from Nearchus' description strongly indicates that the Angali canal was already in existence in the Achaemenian period. The canal may have been an Achaemenian enterprise or inherited from the Elamites. The prevalence of Parthian pottery suggests a renovation probably under Antiochus I, when he founded Antioch-in-Persis<sup>22</sup>. The reuse of this hydraulic feature by the Sasanians can be assumed, based on the intensity of occupa-

<sup>19</sup> D. WHITEHOUSE and A. WILLIAMSON, *op. cit.*, n. 45; other discussions of this topography and toponyms are found in E. HERZFELD, « Pasargadae », *Klio*, 8 (1908) p. 7, and W. TOMASCHEK, « Topographische Erläuterung der Kustfahrt Nearchs », *Sitzungsberichte, Phil.-hist. class. Akad. der Wissenschaften*, Vienna 1890, p. 63.

<sup>20</sup> This is found in Pliny's *Natural History* VI, XXVI, 101.

<sup>21</sup> At least three separate Achaemenian sites are known from this region; preliminary reports on the excavations are in A. SARFARAZ, « Un pavillon de l'époque de Cyrus le Grand à Borazdjan », *Bastanshenasi va honar-e Iran*, 7-8 (1971), pp. 22-25, and « Borazjan, Survey of excavation », *Iran*, 11 (1973), pp. 188-89. Tawwaj/Taoke has been identified as the Achaemenian place name, Tamukkan, by R. T. HALLOCK, *Persepolis Fortification Tablets*, Chicago 1969, p. 760.

<sup>22</sup> Antioch-in-Persis is usually located at Bushire, as in G. LE RIDER, *Suse sous les Séleucides et les Parthes*, Paris 1965, pp. 270, 301. I am indebted to D. T. Potts for assistance in this identification.

tion on the Bushire peninsula. The Angali canal resolves the problem which Williamson observed, that « throughout its history, the water supply must have presented a considerable problem to the inhabitants of Rishahr, since the peninsula has no perennial surface flow »; and further, that « despite a shortage of water..., the peninsula was cultivated, it supported a large population and it contained an important entrepot »<sup>23</sup>.

An understanding of the function and impact of the Angali canal requires a closer examination of the historical circumstances of Sasanian Rishahr and Islamic Tawwaj. The medieval and modern confusion between Rishahr on the coast near Bushire and a second Rishahr near Arrajan has been extensively discussed<sup>24</sup>. Gaube presents the only serious archaeological challenge to the location of Sasanian Rishahr near Bushire; unfortunately, he did not have the advantage of Williamson's report on the extensive Sasanian remains in this region and seems influenced by Stiffes' report of the Elamite mound and a late Islamic, pseudo-Portuguese fort in the same vicinity<sup>25</sup>.

One of the earliest medieval reports is that of Baladhuri, whose description of the Arab conquest was already some 200 years after the fact; he states that « Rishahr belongs to the province of Sabur (Shapur) and lies in the vicinity of Tawwaj »<sup>26</sup>. Tawwaj, the ancient Taöke on the Shirin river just north of Borazjan (Fig. B, site B6), was the first town of Fars province to be conquered by 'Uthmān ibn abī 'l-'Āṣ, who built the first mosque there and made it his headquarters from which he raided Arrajan, « which bordered upon it ». This provoked the *marzbān*, Shahrak, into taking an army to Rishahr, where a major battle occurred, compared by contemporaries to the battle of Qadisiyah. The incident of the wadi during this battle could refer to the Hilleh river or even the Angali canal; whatever the tactics might have been, this battle was almost certainly fought near the canal, on the

<sup>23</sup> D. WHITEHOUSE and A. WILLIAMSON, *op. cit.*, p. 40.

<sup>24</sup> D. WHITEHOUSE and A. WILLIAMSON, *op. cit.*, p. 41, n. 55; H. GAUBE, *Die südpersische Provinz Arragān/Kūb-Gilūyeh von der arabischen Eroberung bis zur Safawidenzeit*, Vienna 1973, pp. 199-200, and p. 32, n. 141; J. M. FIEY, « Diocèses syriens orientaux du Golfe persique », *Mem. Mgr. Gabriel Khouri-Sarkis*, Louvain 1969, pp. 179-80, and « Les communautés syriaques en Iran des premiers siècles à 1552 », *Acta Iranica*, 3 (1974), p. 281; R. BOUCHARLAT and J.-F. SALLES, « The history and archaeology of the Gulf from the fifth century B.C. to seventh century A.D.: A review of the evidence », *Proceedings of the Seminar for Arabian Studies*, 11 (1981), pp. 69-70; and M. HINDS, « The first Arab conquests in Fars », *Iran*, 22 (1984), n. 87.

<sup>25</sup> H. GAUBE, *op. cit.*, p. 35.

<sup>26</sup> F. C. MURGOTTEN, *The Origins of the Islamic State: Kitab Futuh al-Buldan of al-Baladhuri*, part 2, New York 1924, p. 128.

plain before Rishahr<sup>27</sup>. The details of the historical sources for this campaign have been recently examined by Hinds<sup>28</sup>.

Rishahr was taken by the Muslims immediately after the battle and is not mentioned again; Tawwaj on the other hand became a *misr*, a planned Islamic town<sup>29</sup>, and subsequently grew into a middle-size town in the midst of the abundant palm groves. The primary industry was its textiles, both the Susanjird style and a multi-colored linen fabric shot with gold threads called « Tawwazi » and imitated in Kazerun and other places. It was in connection with the encouragement of this industry that Adud al-Dawla increased the population of Tawwaj with Syrians in the 10th century<sup>30</sup>. By the 12th century the town was in ruins and the site was not discovered in modern times until the visit of Iqtidari<sup>31</sup>.

The disappearance of Rishahr is problematic; towns were very rarely destroyed in the course of the Islamic conquest and this one held the Nestorian metropolitan, possibly a mint, and was of major importance in Sasanian maritime trade<sup>32</sup>. As in the abandonment of Tawwaj, one should look for an explanation of the disappearance of Rishahr in changing functions resting on political and economic factors. The relatively detailed picture for Tawwaj now includes archaeological evidence for agricultural and industrial activity in the Borazjan and Ahram areas. There is no evidence of a port, other than a note by Yaqut of a small port named Khor Sif (Khorshid?) between Siraf and Basra, possibly Shif, which may have functioned as port for Tawwaj. The apparent lack of early Islamic remains on the Bushire peninsula might imply the disuse of the Angali canal during this period.

The 13th century reoccupation of Rishahr (the so-called Portuguese fort) occurs after the decline of Tawwaj. Indeed, in this sequence one might see a pattern of competition and alternating predominance of hinterland and port as urban entities. The large Sasanian and Parthian occupations on the Bushire peninsula correspond to only minor agricultural settlements in the

<sup>27</sup> *Ibid.*; the battle was not on the Hindijan, as Gaube has proposed, *op. cit.*, p. 36.

<sup>28</sup> M. HINDS, *op. cit.*, nn. 88, 90, gives sources for alternate names of the location of the battle.

<sup>29</sup> Preliminary discussions on the archaeological nature of the early Islamic *misr* are found in D. WHITCOMB, « The city of Istakhr and the Marvdasht plain », *Akten des VII Internationalen Kongresses für iranische Kunst und Archäologie*, Berlin 1979, pp. 363-70, and *Before the Roses and Nightingales: Excavations at Qasr-i Abu Nasr, old Shiraz*, New York 1985, pp. 221-33.

<sup>30</sup> G. LE STRANGE, *The Lands of the Eastern Caliphate*, Cambridge 1905, p. 321.

<sup>31</sup> A. IQTIDARI, *Remains of ancient Cities on the Coasts and Islands of the Persian Gulf and Sea of Oman*, Teheran 1970, p. 93.

<sup>32</sup> D. WHITEHOUSE and A. WILLIAMSON, *op. cit.*, p. 41.

hinterland. The Achaemenian royal attentions to Taoke may be balanced by the « city » of Hieratis, though there is little archaeological evidence for this settlement. Finally the Elamite ritual center of Liyan would seem to be balanced by limited hinterland occupation, on the Sasanian pattern. This reconstruction is obviously premature, given the scarcity of archaeological evidence. What is evident, however, is an historical complexity for which archaeological evidence is vital. The connecting feature, the thread running through this region, is the Angali canal.

The control of water resources is an important technological feature characteristic of civilization in southern Mesopotamia and the Susiana plain<sup>33</sup>. The possible builders of the Angali canal all had experience with great canals: the Elamites at Chogha Zanbil, the Parthians on the Karkheh, the Sasanians on the Nahrawan canal<sup>34</sup>, to name but a few examples. This hydraulic technology at Bushire is but one aspect of a complex adaptation to this coastal region; comparisons with archaeological evidence from Bahrain<sup>35</sup>, the Emirates and Oman are needed to amplify our understanding of this culture.

The Angali canal is of more importance than as an explanation of permanent large occupation of the Bushire peninsula. It symbolizes the sophisticated development of this region, particularly an interaction of port and hinterland as an example of a littoral type of environmental adaptation. Though this region is much smaller than Khuzistan, the complexity of its occupations over 3000 years is still poorly understood due to limited field work. The Angali canal is a beginning for much further research into the wider economic and political patterns of the archaeology of the Gulf.

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<sup>33</sup> Much detailed information on aspects of irrigation systems are to be found in T. E. DOWNING and McG. GIBSON, *Irrigation's Impact on Society*, Tuscon 1974; especially useful comparisons are in J. A. NEELY's article on « Sassanian and early Islamic water-control and irrigation systems on the Deh Luran Plain, Iran », pp. 21-42. The region of Khuzistan, painted in broader strokes, is described by R. M. ADAMS, in his « Agriculture and urban life in early southwestern Iran », *Science*, 136 (1962), pp. 109-22.

<sup>34</sup> The Elamite canal is described in R. GHIRSHMAN, *Tchoga Zanbil (Dur-Untash)*, vol. II: *Temenos, temples, palais, tombes*, Paris 1968, Fig. 41; this canal is a particularly interesting comparison, given the likelihood that the mound excavated by Pezard (Liyan) is an Elamite ziggurat. The later canals are found in J. HANSMAN, « Charax and the Karkheh », *Iranica Antiqua*, 7 (1967), pp. 21-58; and R. M. ADAMS, *Land behind Baghdad*, Chicago 1965.

<sup>35</sup> C. E. LARSEN, *Life and Land Use on the Bahrain Islands: The Geoarcheology of an Ancient Society*, Chicago 1983.



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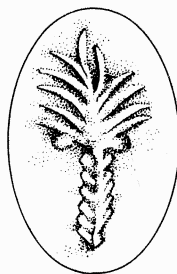
# MESOPOTAMIA

RIVISTA DI ARCHEOLOGIA, EPIGRAFIA E  
STORIA ORIENTALE ANTICA

*a cura del Dipartimento di Scienze Antropologiche,  
Archeologiche e Storico-Territoriali  
dell'Università di Torino*

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