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Neolithic sites in the Wadi Howar (Western Sudan)

Ecological setting

The Wadi Howar is one of the largest wadi systems in Northern Sudan stretching over 1000 km from the Ennedi in the west to the River Nile in the east. The wadi has been surveyed several times but its exact course was not known to previous researchers (Maydon 1923; Newbold 1924; Bagnold 1933; Sandford 1935; Shaw 1936). Recent LANDSAT-interpretation suggested the location of the former river mouth of the Wadi Howar in the Nile Valley south of Dongola (Meissner and Schmitz 1983). Thus the Wadi Howar constituted a natural connection between the mountains of the Eastern Chad and the lowlands of the Nile Basin during periods of favourable climatic conditions (Pachur and Röper 1984).

Field studies by Pachur and his colleagues (Pachur and Röper 1984) attested to fluvial activity based on an autochthonous recharge system with local precipitation during early and mid-Holocene times. Shallow freshwater lakes seem to have characterised the Wadi bed.

Today the Wadi Howar defines the southern frontier of the Libyan Desert against the very northern part of the Sudanese Gizzu grasslands exploited by camel nomad tribes of Northern Darfour. Few nomad families live around some small wells in the Rahib area at present. This position of the Wadi at the outermost border of a nomad civilization can provide a hypothetic model for Laqiya area in prehistoric times (Cziesla 1986; Schuck, this volume).

B.O.S. research programme

The 1980 and 1984 B.O.S. (Besiedlungsgeschichte der Ost-Sahara) campaigns conducted by Rudolph Kuper aimed essentially at the problem of the Sahara-Sudanese Neolithic which, so far, had not been documented in the eastern part of the Libyan

Desert (Kuper 1981; 1986; Gabriel *et al.* 1985). The later Neolithic periods also were an important research subject to the expedition although they had been noticed by previous researchers as well (Bagnold 1933; Newbold and Shaw 1928; Rhotert 1952; Hölscher 1937). 48 out of 120 discovered sites have been excavated, mostly by small test trenches.

Main areas of investigation have been the Wadi Howar valley west of the Djebel Rahib and the southern slopes of the Djebel Rahib in 1980 and the Wadi Howar banks and valley from Djebel Rahib to Djabarona in the West in 1984. Surveys led the expedition to the dune sites east of Rahib Wells, to Dongola (following up the course of Wadi Howar), to the Djebel Tageru and to Mellit in the South (crossing the Gizzu grasslands).

Early ceramic settlements on dune sites

East of the Djebel Rahib (Fig. 1) some fossil dunes have been protected from wind erosion and have therefore been fixed at their original positions by prehistoric living floors, covering their surface with millions of artefacts. Dunes of such parabolic

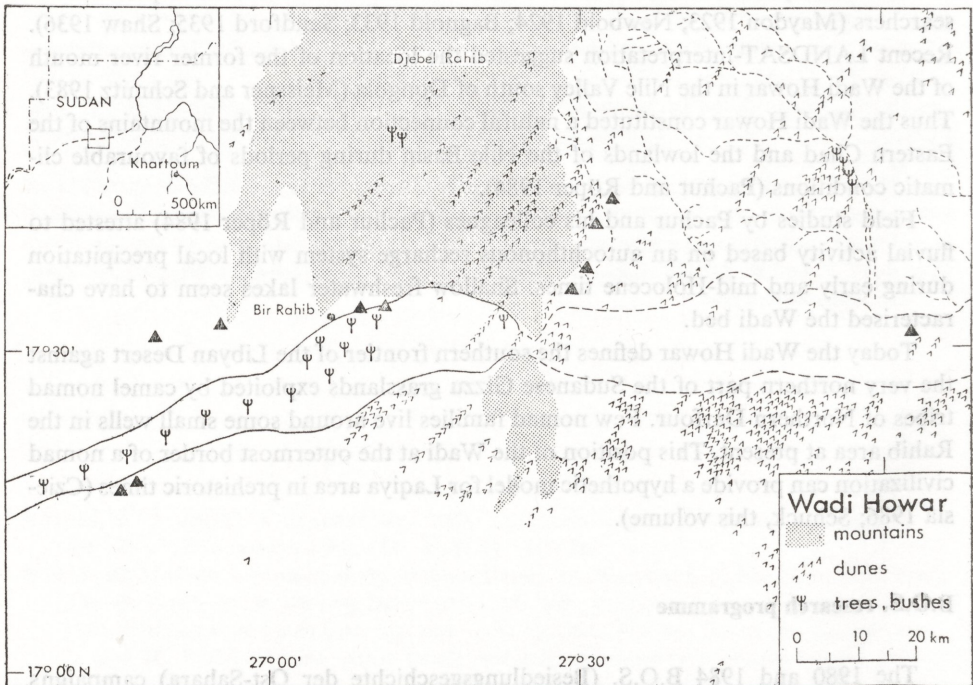


FIG. 1. Wadi Howar. Distribution of Khartoum related and Laqiya Type sites

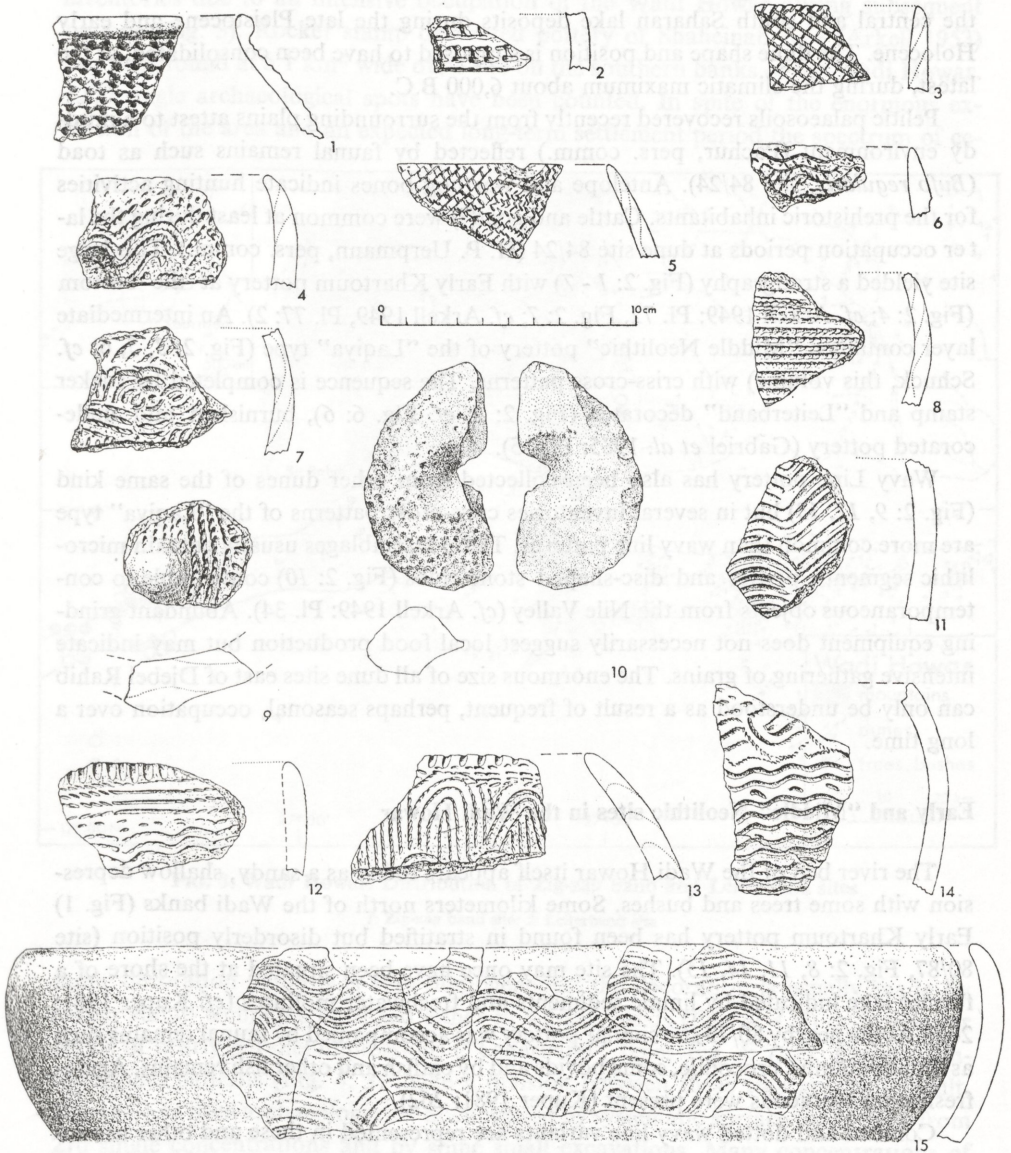


FIG. 2. Wadi Howar

1, 2: Site 84/24, upper horizon; 3, 5, 6: Site 84/24, intermediate horizon; 4, 7: Site 84/24, lower horizon; 9, 10, 12, 13: Site 84/50; 8, 11, 14, 15: Site 80/87

shape occur during more humid periods with denser vegetation cover. Gabriel *et al.* (1985) related the origin of the parabolic dunes (Parabeldünen) to the main phase of the central and south Saharan lake deposits during the late Pleistocene and early Holocene. The dune shape and position is supposed to have been consolidated, at the latest, during the climatic maximum about 6,000 B.C.

Pelitic palaeosoils recovered recently from the surrounding plains attest to a muddy environment (Pachur, pers. comm.) reflected by faunal remains such as toad (*Bufo regularis*, site 84/24). Antelope and warhog bones indicate hunting activities for the prehistoric inhabitants. Cattle and goat(?) were common at least during the later occupation periods at dune site 84/24 (H. P. Uerpmann, pers. comm.). This large site yielded a stratigraphy (Fig. 2: 1 - 7) with Early Khartoum pottery at the bottom (Fig. 2: 4; cf. Arkell 1949: Pl. 72, Fig. 2: 7; cf. Arkell 1949, Pl. 77: 2). An intermediate layer contained "Middle Neolithic" pottery of the "Laqiya" type (Fig. 2: 3, 5, 6; cf. Schuck, this volume) with criss-cross patterns. The sequence is completed by rocker stamp and "Leiterband" decorated (Fig. 2: 2; cf. Fig. 6: 6), burnished and undecorated pottery (Gabriel *et al.* 1985: Fig. 5).

Wavy Line pottery has also been collected from other dunes of the same kind (Fig. 2: 9, 12, 13) but in several inventories criss-cross patterns of the "Laqiya" type are more common than wavy line patterns. These assemblages usually contain microlithic segments, pestles and disc-shaped stone clubs (Fig. 2: 10) comparable to contemporaneous objects from the Nile Valley (cf. Arkell 1949: Pl. 34). Abundant grinding equipment does not necessarily suggest local food production but may indicate intensive gathering of grains. The enormous size of all dune sites east of Djebel Rahib can only be understood as a result of frequent, perhaps seasonal, occupation over a long time.

Early and "Middle" Neolithic sites in the Wadi Howar

The river bed of the Wadi Howar itself appears today as a sandy, shallow depression with some trees and bushes. Some kilometers north of the Wadi banks (Fig. 1) Early Khartoum pottery has been found in stratified but disorderly position (site 80/87, Fig. 2: 8, 11, 14, 15). The site may once have been situated at the shore of a former lake indicated by limnic sediments and freshwater molluscs (cf. Kuper 1981: 266). At the nearby 80/73 site similar pottery was accompanied by faunal remains such as hippopotamus, crocodile, some bovinds and by catfish and other fish remains. Again-freshwater ostracods were present (Kuper 1981: 262).

Combed and dotted wavy line variants are represented in these and other assemblages like in the eponymous site of Khartoum itself (Arkell 1949). An obviously "Middle Neolithic" ceramic facies with criss-cross patterns of the "Laqiya" type is not yet known from the Nile Valley (cf. Kuper 1981: 263).

Sites of the above mentioned type show two main patterns of settlement location: either on dunes or along small fossil freshwater lakes.

The Early Khartoum and "Laqiya" type assemblages are followed by abundant inventories due to an intensive occupation of the Wadi Howar during subsequent periods (Fig. 3). Rocker stamp decorated pottery of Shaheinab type (Arkell 1953) has been found at a 1 km² wide dune site on the southern banks of the Wadi Howar. 1200 single archaeological spots have been counted. In spite of the enormous extension of the area and an expected long-term settlement period the spectrum of ce-

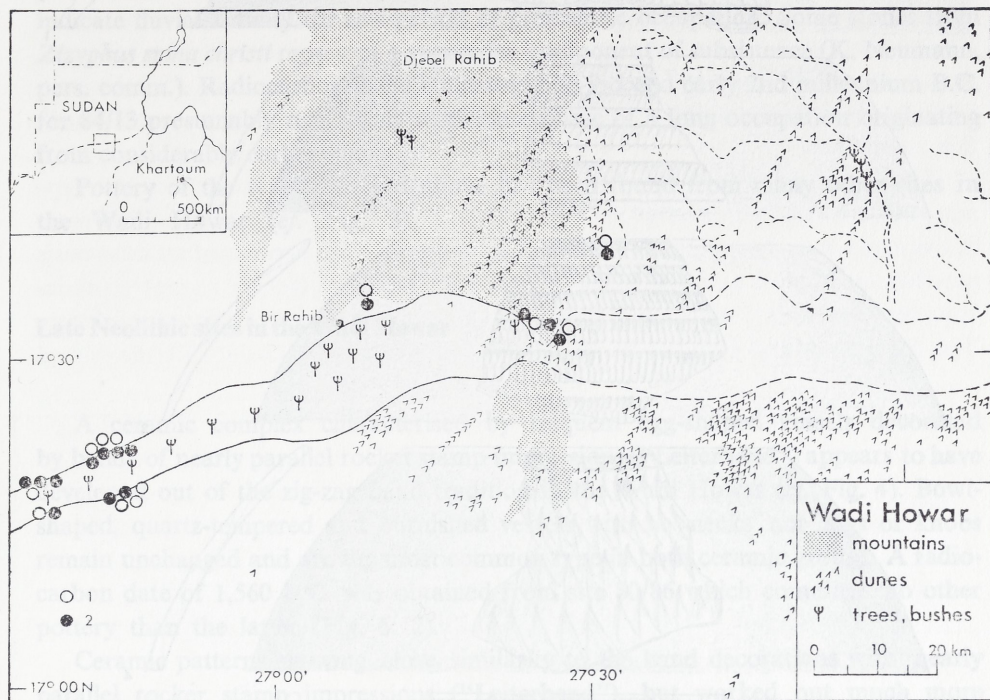


Fig. 3. Wadi Howar. Distribution of Zig-zag band and Leiterband sites

1: Zig-zag band site; 2: Leiterband site

ramic decoration patterns is very homogeneous: the decoration is usually made by rocker stamp technique arranged either in zig-zag bands (Fig. 4: 4, 5) or in regular bands of nearly parallel impressions ("Leiterband" type; Fig. 4: 1, 2). Frequent intermediate patterns (Fig. 4: 3) make a division between these two groups difficult. The site has been archaeologically documented by systematic surface collections from 270 single concentrations and by some small excavations. Many concentrations of bones and pottery were identified as remnants of former pits being partly destroyed by wind erosion. Numerous complete pits have been excavated as well. A 1.20 m deep pit from 84/13 - 5 contained material from two stratigraphic units: rocker stamp decorated pottery, two transverse arrowheads and an ostrich eggshell bead superposed on an undecorated complete bowl-shaped vessel.

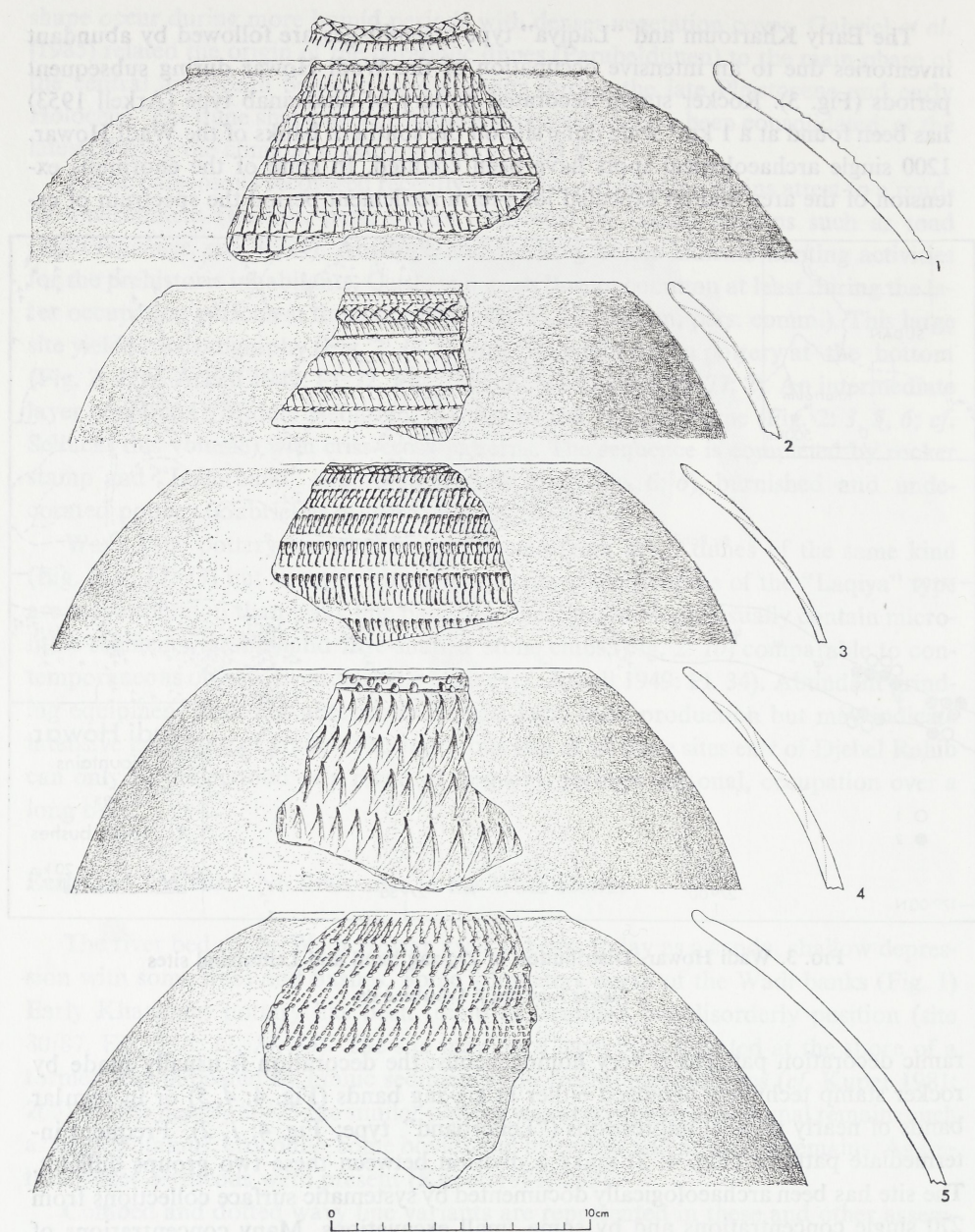


FIG. 4. Wadi Howar. Site 84/13

Rocker stamp patterns from this large site correspond well to equivalents from the eponymous site of the Shaheinab ceramic complex (Khartoum Neolithic or Gouge Culture: Fig. 4: 3; cf. Arke11 1953; Pl. 31: 7, Fig. 4: 4; cf. *loc. cit.*: Pl. 32: 6, Fig. 4: 5;

cf. loc. cit.: Pl. 32: 3, 5) north of Khartoum but the range of band ornament variations from 84/13 far exceeds the Shaheinab repertoire. By contrast, the typical Shaheinab gouges are completely absent from the Wadi Howar assemblages. Instead, as a possible woodworking equipment, "Darfour adzes" are usually found here and all over the Eastern Libyan Desert (Kuper 1981; Fig. 43).

Pits and concentrations have revealed numerous faunal remains such as hippopotamus, bovids and other species. Fish bones, particularly catfish and river shells, indicate fluvial activity for this period of prehistoric occupation. Some stones from *Zizyphus spina christi* represent a vegetarian component of subsistence (K. Neumann, pers. comm.). Radiocarbon dates indicating late 3rd and early 2nd millennium B.C. for 84/13 presumably relate only to the late phase of a long occupation originating from considerably earlier times.

Pottery of the type discussed above has been found from many other sites in the Wadi Howar (*cf.* Fig. 3).

Late Neolithic sites in the Wadi Howar

A ceramic complex characterised by frequent egg-shaped vessels decorated by bands of nearly parallel rocker stamp impressions ("Leiterband") appears to have developed out of the zig-zag band tradition in the Wadi Howar (*cf.* Fig. 4). Bowl-shaped, quartz-tempered and burnished vessels with no necks nor lugs or knobs remain unchanged and are the most common type in both ceramic groups. A radiocarbon date of 1,560 B.C. was obtained from site 80/86 which contained no other pottery than the latter (Fig. 6: 2).

Ceramic patterns showing close similarity to the band decorations with nearly parallel rocker stamp impressions ("Leiterband"), but worked out much more plastically, occur on the northern banks of the Wadi Howar (Fig. 5). Often single impressions have crescent-like shapes (*cf.* A.B. Smith 1980: Photo 18: 5). This type of pottery differs from Khartoum and Shaheinab related facies by its plant fibre temper.

Medium-sized transverse arrowheads (Kuper 1981: Fig. 36: 14) and polished stone discs of coin size used to be found together with pottery of the mentioned type. Rare iron fragments need not belong to these assemblages.

Pottery with woven-mat decoration is usually tempered by organic material (Fig 6: 1). This is sometimes accompanied by incised geometric ornaments (Fig. 6: 3 - 5) and "boutons repoussées" comparable to Nubian C-Group and Kerma patterns. But C-Group pottery as mentioned by Hölscher (1937) and Bietak (1979) now actually seems to be a rather rare phenomenon in the Wadi Howar when compared with the rich, possibly partially contemporaneous occurrence, of the Zig-zag band and "Leiterband" types.

Conclusion

The geographic key position of the Wadi Howar area is reflected by its rich archaeological inventories.

The Khartoum and Shaheinab related pottery provides evidence for connections to the eastern Chad (Tixier 1962; Arkell 1964; Courtin 1969; Gabriel 1981) as well as to the Nile Valley (Arkell 1949; 1953; 1972; Shiner 1971; Krzyżaniak 1974; Caneva 1978) and the Atbara region (Otto 1963; 1964; Fattovich *et al.* 1984). Khartoum related pottery has recently been found as far north as Gilf Kebir (Kuper, pers. comm.). The "Laqiya" type is known from Chad (Arkell 1964; Pl. 45: 2; Courtin 1969) but is more abundant in the Wadi Howar, Wadi Shaw and Laqiya area (Schuck, this volume).

This wide north-to-south distribution of the Khartoum and "Laqiya" type ceramics coincides with Pachur's (Pachur and Röper 1984) hypothesis of disjunct vegetation areas in early-to-mid Holocene Libyan desert which encouraged an inter-oasis mobility for hunters and pastoralists (?). Shaheinab related (rocker stamp) ceramics have very few, and "Leiterband" ware has no comparable specimens north of Atrun. The Wadi Shaw and Laqiya sites have produced A-Group, C-Group, Kerma related

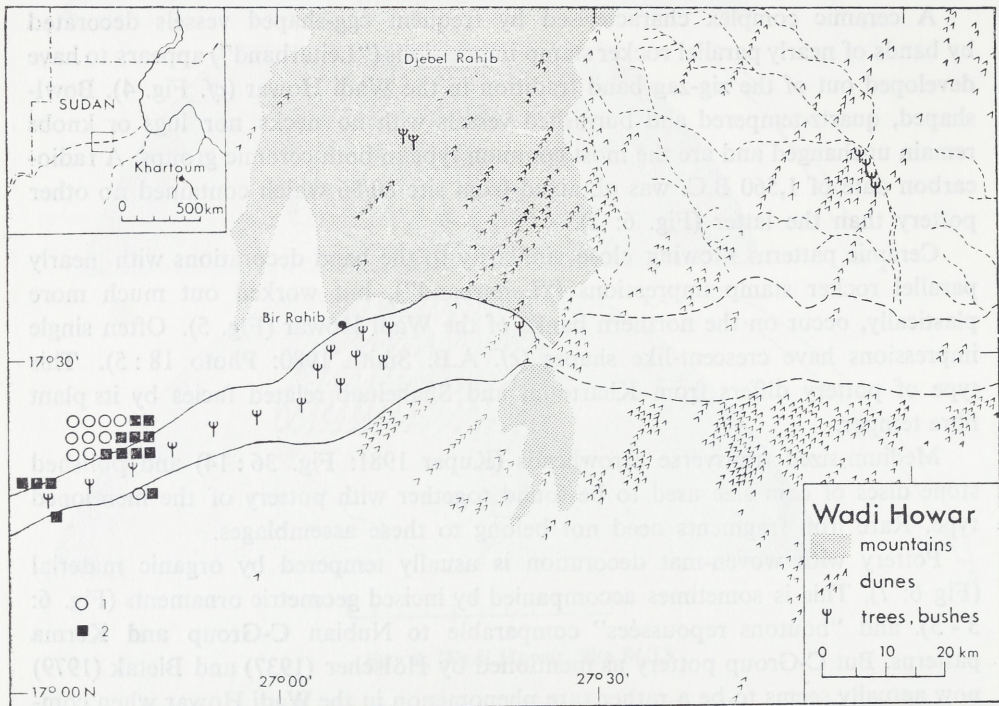


FIG. 5. Wadi Howar. Distribution of sites with plant fibre tempered pottery

1: Plactical Leiterband; 2: Geometric ornaments

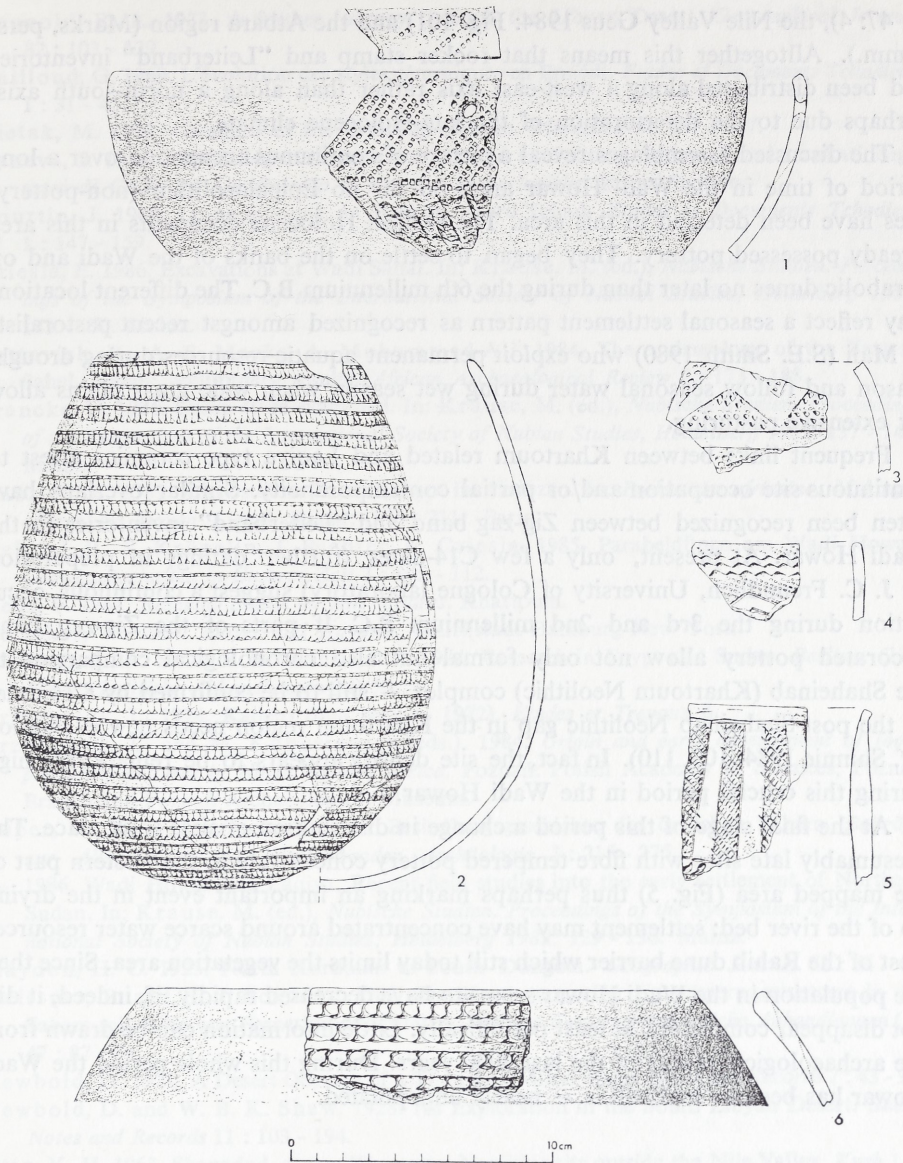


FIG. 6. Wadi Howar

1: Site 84/19; 2: Site 80/86; 3 - 5: Site 80/85; 6: Site 84/13

and other decorations instead (Kuper 1981; Francke 1986; Czesla 1986; Schuck, this volume).

The abundance of the "Leiterband" ornament at Wadi Howar contrasts its very rare occurrence in the Ennedi Mountains (Bailloud 1969: Fig. 3A; Arkell 1964:

Pl. 47: 4), the Nile Valley Geus 1984: Fig. 101) and the Atbara region (Marks, pers. comm.). Altogether this means that rocker stamp and "Leiterband" inventories had been distributed along a west-east axis rather than along a north-south axis, perhaps due to the deterioration of the late-Holocene climate.

The discussed assemblages reveal a picture of continuous occupation over a long period of time in the Wadi Howar area. So far no Epipalaeolithic (non-pottery) sites have been detected in this area. The earliest Holocene occupants in this area already possessed pottery. They began to settle on the banks of the Wadi and on parabolic dunes no later than during the 6th millennium B.C. The different locations may reflect a seasonal settlement pattern as recognized amongst recent pastoralists in Mali (S.E. Smith 1980) who exploit permanent aquatic resources during drought season and follow seasonal water during wet season when wide grass plains allow for extensive pasturing.

Frequent links between Khartoum related and Lapiya type ceramics attest to continuous site occupation and/or partial contemporaneity. Similar overlaps have often been recognized between Zig-zag band and "Leiterband" inventories in the Wadi Howar. At present, only a few C14-dates (further datings in preparation by J. C. Freundlich, University of Cologne laboratory) suggest a continuous occupation during the 3rd and 2nd millennium B.C. If parts of the Zig-zag band decorated pottery allow not only formal but also chronological comparison to the Shaheinab (Khartoum Neolithic) complex — still to be confirmed by C14-dates — the post-Shaheinab Neolithic gap in the Khartoum region needs new evaluation (*cf.* Shinnie 1984: 109, 110). In fact, the site density appears to be remarkably high during this crucial period in the Wadi Howar.

At the final stage of this period a change in distribution of sites took place. The presumably late sites with fibre tempered pottery concentrate in the western part of the mapped area (Fig. 5) thus perhaps marking an important event in the drying up of the river bed: settlement may have concentrated around scarce water resources west of the Rahib dune barrier which still today limits the vegetation area. Since then the population in the Wadi Howar seems to have decreased rapidly, if, indeed, it did not disappear completely, at least periodically. Little information can be drawn from the archaeological report of the last 2000 years. During this whole period the Wadi Howar has been — and still is — nearly unpopulated.

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