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A «Silsilian» Occupation Site (GS-2B-II) of the Kom Ombo Plain, Upper Egypt: Geology, Archeology and Paleo-Ecology

Introduction

In 1963 the Yale Prehistoric Nubia Expedition discovered an unusual late Paleolithic occupation site on the Kom Ombo Plain of Upper Egypt. The site consisted of a rich, hitherto undescribed microlithic assemblage in primary context, geologically sealed in a minor overflow channel of the Nile River (see Reed *et al.*, 1967, as reported in 1963). Designated as " Gebel Silsila 2B, Area II " (GS-2B-II), the occurence was gridded and partially excavated in January and February, 1963, by David S. Boloyan with the assistance of several local laborers and under the general supervision of Martin A. Baumhoff. This work was followed by geological study by Butzer (1967 and unpublished; Butzer and Hansen, 1968: 132 ff., Table 3-7, and 177). Except for a brief oral report (Baumhoff, 1965), the archeology has not been reported and the collections remained unstudied until 1969, when Baumhoff released them to Phillips. In the meanwhile the limited collection of mammalian fauna has been identified by C. A. Reed and Priscilla Turnbull (unpublished), and we have obtained a further radiocarbon date from Isotopes, Inc.

Already during the course of the field excavation it was apparent that GS-2B-II was similar to assemblages elsewhere on the Kom Ombo Plain, namely a surface collection (GS-1-IX) and an *in situ* excavation (GS-1-III) of P. E. L. Smith (1966a, 1966b, 1967, 1968a). Subsequently, it was possible to show that this assemblage, designated as Silsilian by Smith (1966a), had counterparts in an unpublished surface occurrence near Esna studied by Romuald Schild (pers. comm.). Since all these sites have since been destroyed by land-grading activities as part of the Nubian resettlement scheme, it seems important that they be published as fully as possible. Furthermore, since Phillips has completed the first detailed study of a Silsilian assemblage, the present report on GS-2B-II allows a broader evaluation of the status of the Silsilian.

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The Kom Ombo Plain is a large sedimentary basin, located east of the modern Nile, some 30 to 55 km north of Aswan. The northern and southern margins are formed by the Etbai Uplands, an erosional terrain of hills and upland plains formed in Nubian Sandstone and bevelled by a Mio/Pliocene planation surface. The eastern terminus of the Plain consists of downfaulted blocks of Paleocene Chalk amid a Pliocene infilling that coalasces — some 30 to 35 km away from the Nile — with another plain, the Atmur Nuqra, of unstudied bedrock geology and structure. The western periphery of the Plains is delimited by the massive alluvial accumulations of the Gallaba Gravel Plain, of early Pleistocene age. The actual demarcation of the Kom Ombo Plain is a result of a network of faults and other lines of deformation, modified by a set of Pleistocene fluvial platforms and alluvial terraces. Controversial, unpublished borings suggest that downwarping may have begun in late Cretaceous times, since the igneous and metamorphic basement was first struck at 850 m below sea level. However, Paleocene and Eocene strata are demonstrably faulted, whereas the Middle to Upper Pliocene beds were deposited into an existing graben. Consequently the primary tectonic deformation must be attributed to the Oligocene-Miocene transition (for details, see Butzer and Hansen, 1968: chap. 2).

The contemporary surficial deposits on the floor of the Kom Ombo Plain accumulated in late Pleistocene times, after a protracted period of dissection during which most of the early to middle Pleistocene deposits of the Nile and its major wadi tributaries were eroded. The resulting depositional plain comprises some 275 km^2 of nilotic sediments and almost half that area again of coeval wadi alluvium. These nilotic and wadi sequences were first informally subdivided by Butzer and Hansen (1965, 1967) and subsequently given formal lithostratigraphic status, with full description of facies, stratigraphic details, and type sections (Butzer and Hansen, 1968: chap. 3 and 1 : 100,000 roll map). The nilotic sequence, relevant to site GS-2B-II, is as follows:

(a) *Korosko Formation.* Subaqueous to fluvial marl, gravelly marl, and sandy gravel with stratigraphic thickness in excess of 15 m, primarily suballuvial, and attaining a floodplain elevation of at least 108 m. Abundant molluscan fauna, but lacking primary archeological contexts. Terminal beds $\geq$ (greater than or equal to) a C^{14} date of 25,250 $\pm$ 1000/900 B.C. [1] in Nubia.

(b) *Masmas Formation.* Flood silts and some channel beds with a thickness of at least 23 m (probably in excess of 43 m), with maximum floodplain elevation of 110 m. Rare mammalian bone, diverse molluscan fauna, but lacking archeological inclusions. Terminal dates of 16,350 $\pm$ 310 and 15,150 $\pm$ 400 B.C., the last possibly too young.

(c) *Gebel Silsila Formation, Darau Member.* Channel beds with some flood silts, considerably more than 14 m in cumulative thickness. Locally subdivided into

[1] In deference to the convention used in Egyptian Pleistocene publications during the last decade, all C^{14} dates are quoted in years B.C., with reference to the unadjusted, Libby half-life.

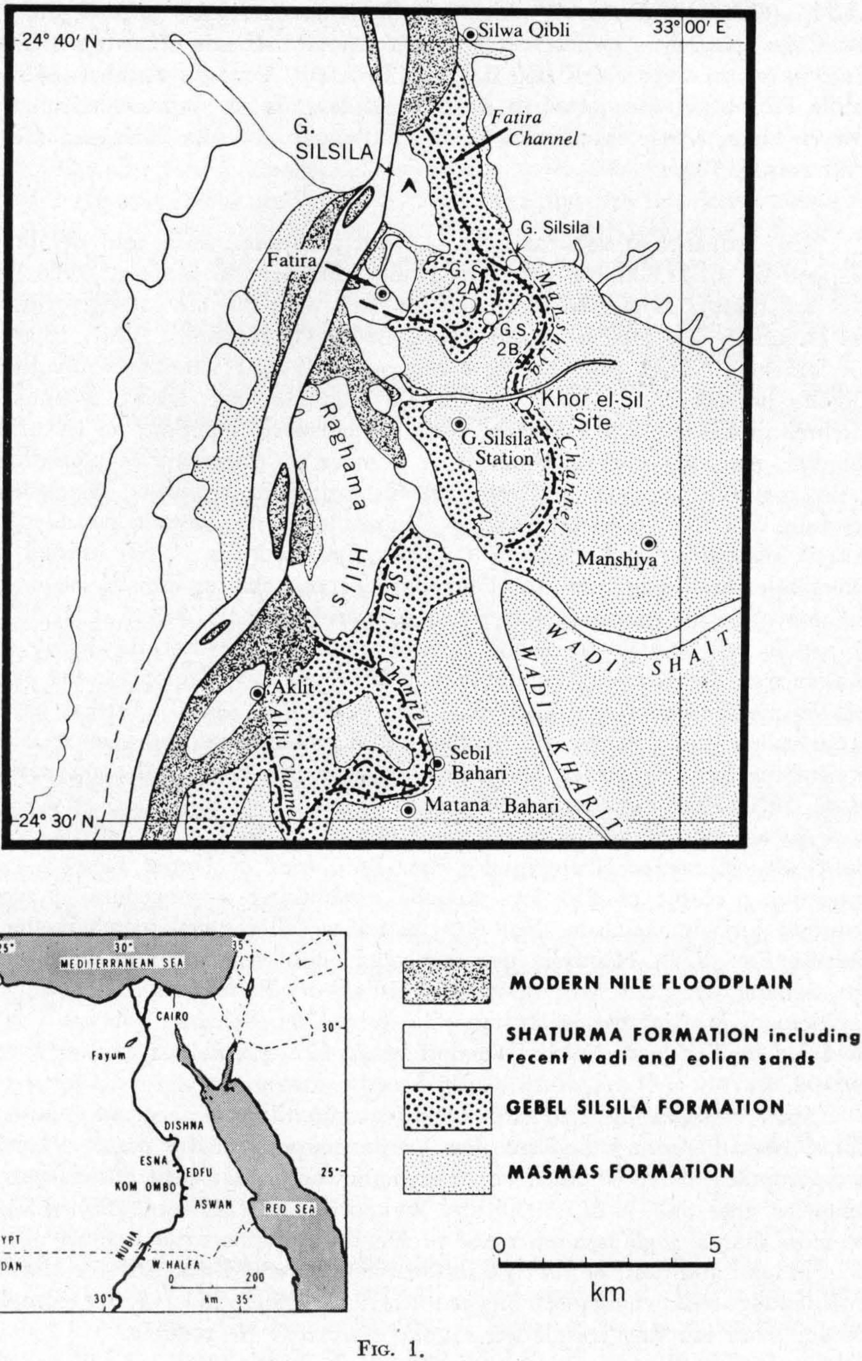
24° 40′ N
Silwa Qibli
33° 00′ E
G. SILSILA
Fatira Channel
G. Silsila I
Fatira
G. S. 2A
G.S. 2B
Manshiya Channel
Khor el-Sil Site
Raghama Hills
G. Silsila Station
Manshiya
Sebil Channel
WADI SHAIT
WADI KHARIT
Aklit
Aklit Channel
Sebil Bahari
Matana Bahari
24° 30′ N
25°
30°
35°
MEDITERRANEAN SEA
CAIRO
Fayum
DISHNA
ESNA
EDFU
KOM OMBO
ASWAN
RED SEA
LIBYA
EGYPT
SUDAN
NUBIA
W. HALFA
0 200
km.
MODERN NILE FLOODPLAIN
SHATURMA FORMATION including recent wadi and eolian sands
GEBEL SILSILA FORMATION
MASMAS FORMATION
0 5
km

Fig. 1.

3 " channel stages ", with median floodplain elevations of 100 — 102 m (*ca.* 15,000 — 12,500 B.C., 4 C^{14} dates), 98-99 m (*ca.* 12,500 — 11,000 B.C., 10 C^{14} dates, see also Smith, 1968a) and 97 m (*ca.* 10,500 B.C. one C^{14} date). A final, high flood phase occurred *ca.* 10,000 B.C. (3 C^{14} dates). Younger members of the Gebel Silsila Formation, recognized in Egyptian Nubia, are not represented on the Kom Ombo Plain, being suballuvial north of Aswan and the Kalabsha Gorge (see Vermeersch, 1970).

This sequence is replicated in — with additional units and details -- and mapped at 1 : 41,500 for Egyptian Nubia (Butzer and Hansen, 1968: chap. 6 and roll maps). It can be compared, in part, with the lithostratigraphic units of De Heinzelin (De Heinzelin and Paepe, 1965; De Heinzelin, 1967, 1968) defined for Sudanese Nubia, whereby the Masmas Fm. is approximately equivalent to the Dibeira-Jer (ex-Khor Musa) Fm. of De Heinzelin, the Darau Member to De Heinzelin's Sahaba Fm. However, since De Heinzelin mentions no textural, heavy mineral, nor clay mineral analyses, a number of discrepancies regarding eolian facies, possible paleosols, and other details cannot be resolved. The stratigraphic resolution of De Heinzelin's earlier deposits does not permit possible Sudanese correlations with the Korosko Fm. Thus, De Heinzelin (1968) insisted that the Dibeira-Jer Fm. included the earliest nilotic deposits, basing himself solely on pebble lithology. To the contrary, Butzer and Hansen (1968: 95, 148 ff., 271, 329, 455 f., Appendices B and D) were able to show conclusively that the heavy and clay minerals of the Korosko Fm, militated for a part — Ethiopian and specifically nilotic origin. Butzer and Hansen (1968: 78 f., 264, 453 ff.) further argued that summer-flood components of Ethiopian origin probably reached back well into mid-Pleistocene times or earlier, a viewpoint now finding additional confirmation (Said *et al.*, 1970; Fekri Hassan, pers. comm.).

An element of confusion has been caused by Said *et al.* (1970) transferring the Sudanese nomenclature to the Esna-Edfu area of Upper Egypt — with an intervening hiatus of 350 km, thereby establishing a procedural precedent in stratigraphic nomenclature. However, instead of defining new members, the original Sahaba Fm. of De Heinzelin was truncated, with the early and middle stages of the Sahaba relegated to a new, Deir el-Fakhuri Formation. To compound the problem of ever-increasing stratigraphic terms, the Sahaban concept was further modified for Sudanese Nubia (Wendorf *et al.*, 1971), rendering existing correlations invalid.

Since stratigraphic and chronometric comparisons are necessary between the Kom Ombo Plain and the Esna area for the purposes of this paper, a brief review is appropriate here. It must be stressed, however, that such correlations remain tentative since Said *et al.* (1970) and Wendorf *et al.* (1970a, 1970b, 1971) provide no more than a single non-schematic profile, offer the most rudimentary of lithologic descriptions, and describe no type sections in either the Esna, Edfu or Dishna areas. Fortunately, sedimentological analyses are now either underway or completed, so that a more exacting correlation should untimately be possible.

(a) The oldest defined entity in the Esna/Edfu region is the *Dibeira-Jer Formation*, a massive nilotic silt whose terminal units are interbedded with dune sands and carry 7 C^{14} dates that range from 16,070 to 15,000 B.C. The eolian sands were formerly defined as the recessional Ballana Fm. by De Heinzelin (1968), although crucial textural data were never published (see reservations of Butzer and Hansen, 1968: 291, 324); significantly, Wendorf *et al.* (1970a, 1970b, 1971) now accept the fact that these sands are no more than a facies. The implications for a dry climate in the Esna area find confirmation on the Kom Ombo Plain, where the contemporary Masnas Fm. shows next to no evidence of wadi activity (Butzer and Hansen, 1968: 102 f.. On the basis of our familiarity with what are presently labelled as Dibeira-Jer silts near Edfu (Sandford and Arkell, 1933: 45 f.; Butzer, 1960, 1961; Butzer and Hansen, 1968: 146 f.) there can be little question that the main body of these sediments is closely comparable to and coeval with the Masmas Fm. The terminal eolian facies understandably find no parallel on the eastern bank of the Nile, although the earliest date of 15,050 ± B.C. (Smith, 1968) from the Khor el-Sil channel (Channel A) of the Darau Member of Kom Ombo suggests that the youngest eolian deposits may in fact be contemporary with the base of the Darau Member.

(b) The *Deir el-Fakhuri Formation* currently refers to a series of poorly dated pond deposits, with diatoms, from intradunal swales well west of the Nile floodplain, where terminal units may include wadi wash. The two available dates are 14,880 and 10,740 B.C., the latter considered too young, the former obtained from below the actual sediments in question (Wendorf *et al.*, 1971). Although contemporary deposits of the Eastern Desert wadis record a moister, local climate — in the form of the Malki Member of the Ineiba Formation (Butzer and Hansen, 1968: 116 ff.), with a basal date of 15,450 ± 300 B.C. and a terminal date of 10,070 ± 205 B.C. — the paleoclimatic evidence from the Esna area is inconclusive: (i) the non-calcic, humic, " mediterranean " type soil (Said *et al.*, 1970: 54; Wendorf *et al.*, 1971: 63) remains to be described in even basic terms; (ii) the diatom-rich ponds do not prove « cooler summer temperatures " (Said *et al.*, 1970: 56), but can be adequately explained by lateral seepage from the Nile-controlled water-table, even during the low-water season (cf. modern lagoons and swales west of Dairut, e.g. Butzer, 1959c). Comparable pond deposits near Ballana Police Post in Egyptian Nubia are included as facies within the Darau Member by Butzer and Hansen (1968: 291 f. and Fig. 6-10).

(c) The truncated *Sahaba Formation* is associated with C^{14} dates of 11,430 and 10,550 B.C., the latter recording a widespread brush fire that provides a provocative marker horizon along the former floodplain from Esna to Dishna (Romuald Schild, pers. comm.). An approximate temporal correlation with Channels B and C of the Darau Member is suggested, inferring that the Deir el-Fakhuri unit probably coincides with Channel A.

(d) A *Dishna Formation* may possibly be represented in the Esna area by a " recessional beach " with a date of 9610 B.C. (Wendorf *et al.*, 1971). By contrast, the youngest, non-functional nilotic deposits at Kom Ombo are exceptionally high flood silts with C^{14} dates of 10,050 ± 120 and 9770 ± 195 B.C. (Butzer and Hansen, 1968: 115 f.). Thus the Dishna " beach " may represent a point-bar deposit of a downcutting Nile.

The site GS-2B-II is situated 22 km north of Kom Ombo Town, about 1 km east of km 819 of the Cairo-Aswan Shellal railroad, at an elevation of 97.5 m above sea-level (see Butzer and Hansen, 1968: Fig. 3-1, 132 ff.; 168 ff.). To the east and south is a deflated plain of dark, Masmas silt loams and clay loams [2], at elevations of 96-101 m. To the west and north are undulating, deflated remnants of pale brown sands, sandy loams, and silt loams of the Darau Member, Gebel Silsila Fm., now exposed at 92-99 m elevation. Whereas the Masmas deposits constitute flood silts and backswamp facies, the Darau sediments are dominated by channel and levee beds, with only sporadic flood silts. The Darau units pertain to a secondary Nile channel bifurcating 4 km further west, at Fatira, and swinging past the GS-2A/2B site complex northwards through the gap east of Gebel Silsila. At the entrance to this valley, the Fatira Channel once joined the Manshiya Channel coming north from the Khor el-Sil sites; the confluence was located just downstream of GS-1-III, about 1.3 km north of GS-2B-II.

In effect, the northeastern corner of the Kom Ombo Plain was a maze of secondary and tertiary Nile channels at the time of the Darau Channel stages A and B, with broad areas of alluvial inundation or seepage. Relatively high ground was provided by Tertiary outcrops and mid-Pleistocene terraces adjacent to the main Nile course to the west, with broken, sandstone terrain some 1.5 km both to the northwest and northeast, on the flanks of Gebel Silsila and the Etbai Uplands.

Channel A curves northwards to the east of the surface site-complex GS-2A, as yet undated, the channel axis situated some 300 m west of GS-2B-II (Fig. 2). Channel B was oriented parallel to its predecessor, passing just west of GS-2B-I/II. In terms of elevation and the local facies exposed, GS-2B-II was related to a tertiary, overflow channel once associated with Channel B. However, complex and ephemeral patterns of bifurcation and meandering render impossible any specific paleogeographic reconstruction in time.

Site GS-2B-II is intimately related to the fill of a minor Nile channel that initially cut a meter or two into the adjacent Masmas sediments (see Fig. 3). The oldest Darau deposits at this immediate location pertain to a local channel oriented N 40° E and no more than 17 m wide. The materials consist of almost 1 m of alternating brown silt loam and pale brown loam, to an elevation of 98 m. The sandy units are current-bedded, while the lateral facies are inclined as much as 17-22° in backset levee beds. These basal sediments predate the archeological site, which is linked with the later stages of aggradation in an atrophied channel only 7 to 8 m in width:

(a) *5-10 cm.* Pale brown matrix of silt loam to an agglomeration of derived silt pseudo-pebbles, i.e. rolled, calcareous silt aggregates. Strata laterally inclined 3-4°, parallel to channel perimeter. Lowest archeological level (— 40 to — 50 cm).

(b) *0-30 cm.* Wedge of brown, silt loam embedding derived, silt pseudo-pebbles, with lenticles of pale brown, coarse sand. Essentially sterile.

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(2) Textural classes follow the international soil classification, rather than the Wentworth grades used in Butzer and Hansen (1968). All textures are based on hydrometer and wet-sieve determinations.

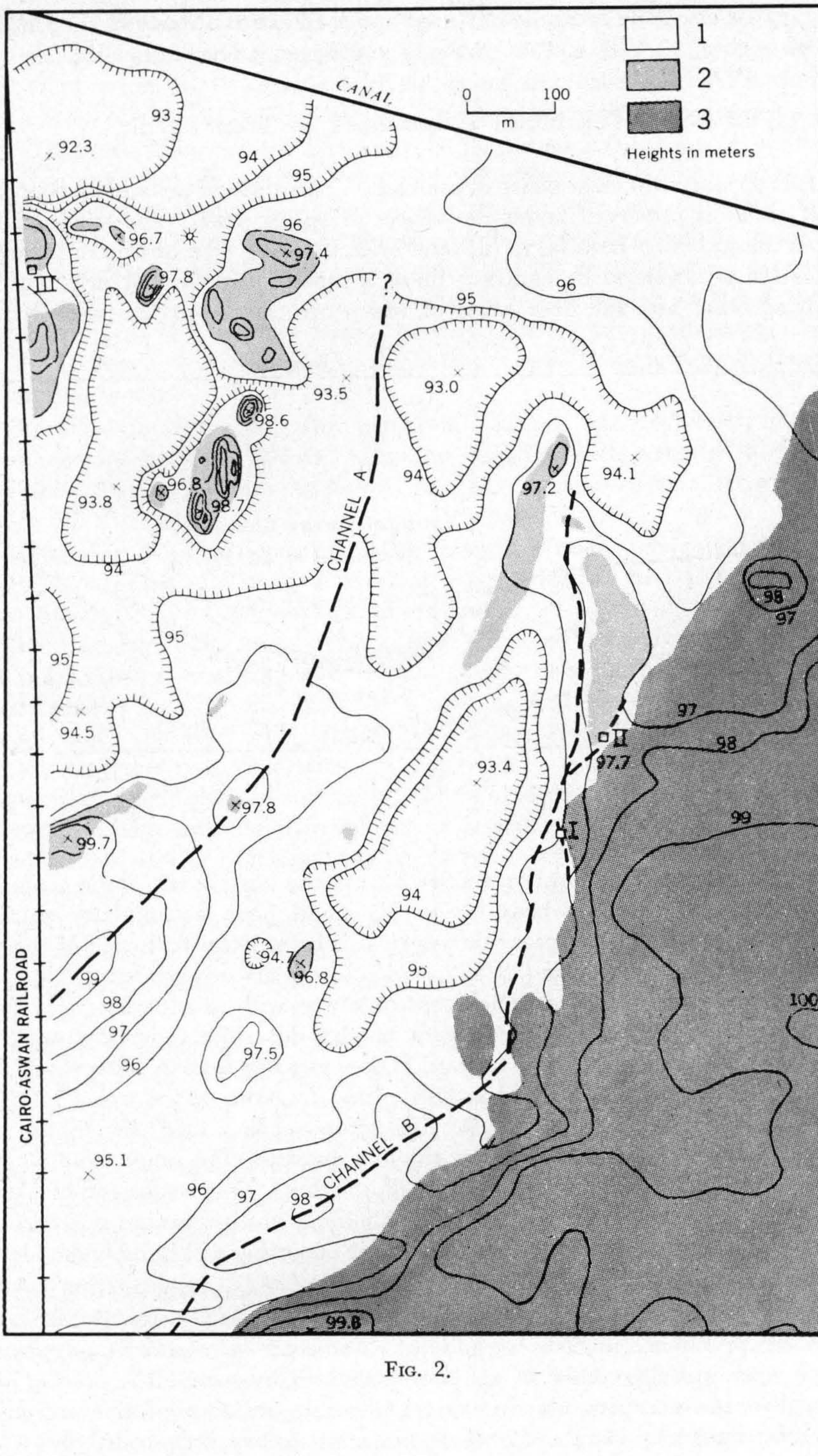
1
2
3
Heights in meters
0
100
m
CANAL
CAIRO-ASWAN RAILROAD
CHANNEL A
CHANNEL B
I
II
III
92.3
93
94
95
96
96.7
97.4
97.8
93.5
93.0
98.6
96.8
98.7
93.8
94.1
97.2
97.7
93.4
94.5
97.8
99.7
94.7
96.8
97.5
95.1
99.8
100

Fig. 2.

(c) *40 cm.* Pale brown loamy sand and loam, current-bedded. Some distinct, medium yellow (10 YR) mottles. Middle and upper archeological levels (— 30 to — 40, and 0 to — 30 cm).

(d) *10-30 cm.* Pale brown well-stratified, silt loam. Sterile.

Bed (d) marks the final phase of alluviation, after which deflation has prevailed; no soil profile is preserved under the veneer of eolian sand. The temporal breaks between the successive beds (a) to (d) were brief, allowing no root drip or pedogenetic phenomena to develop. By contrast, there is minor, vertical root drip within the underlying basal bed, the finer lenses of which are calcareous and weakly mottled

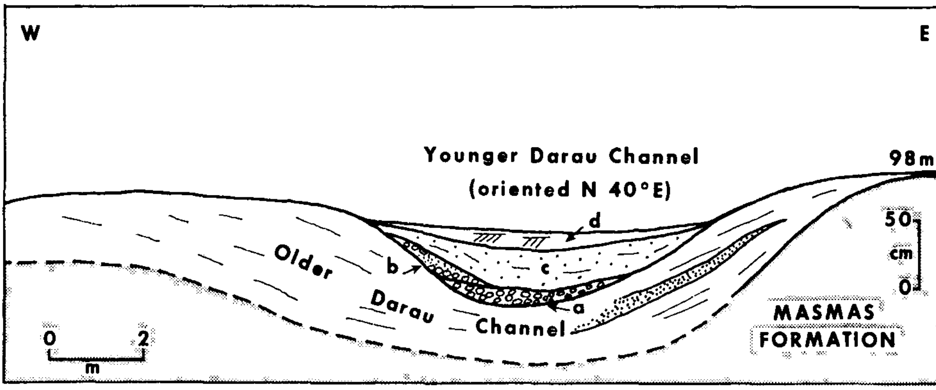

FIG. 3.

by ferric solutions along former rootlet zones; the top is salt impregnated and water-eroded. Conceivably, beds (a) to (d) could have accumulated during as little as 4 consecutive flood seasons; however, it is more likely that each of the minor erosional breaks between beds (a)-(d) lasted a few years or decades.

The sediments of the channel contemporary with occupation at GS-2B-II allow some inferences as to the nature of the depositional environment. Five complete grain-size analyses give textural classes ranging from silt loams and loams to loamy sands for the matrix sediments. Clay fractions range from 9-20%, silt from 24-77% and sand from 3-67%. The grade median (Md) lies in the coarse silt grade, between 30 and 52 microns, the first quartiles (Q_1) range from 63 to 125 microns, third quartiles (Q_3) from 8 to 28 microns. The coefficient of skewness (Q_1Q_3/Md^2) varies from 0.48 to 1.25 in weakly bimodal distributions due to a minor secondary maximum in the clay fraction. Degree of sorting within individual lenticles is moderately good, with the coefficient of sorting ($\sqrt{Q_1Q_3}$) ranging from 1.7 to 3.1. Although quartz sands coarser than 300 microns are totally absent, silt pseudo-pebbles are prominent in beds (a) and (b). These are subrounded and ellipsoidal in shape, and typically consist of silt loam cemented by some 20% $CaCO_3$. These " clay galls " are compact silt chunks or, in a few instances, former concretions that were released by rapid channel erosion and subsequently rolled downstream (see Butzer and Hansen, 1968: 141). They are derived from the underlying Darau sediment, with very little intermediate transport. Diameters of the pseudo-pebbles range from 1 mm to 40 mm, with a maximum frequency in the 2-4 mm grade.

In terms of mineral composition the sand fraction consists very largely of quartz sand. The heavy minerals are dominated by pyroxenes (mainly augite) and epidote, with accessory iron ore opaques, altered hornblende, and biotite (see Butzer and Hansen, 1968: appendix B). Whereas the heavies are thus of nilotic type, the quartz sand is primarily of more local origin, with the predominant 63 to 210 micron grade subangular to subrounded, and as many as 15% of the grains unworn (Butzer and Hansen, 1968: appendix C). This indicates one source in the Precambrian rocks exposed in the cataract region between Aswan and Kalabsha. There also is a small component of grains with microscopic oxide skins, similar to those of the Nubian Sandstone.

Stratification is distinct, with planar laminations and current-beds most prominent; graded beds are absent. Minimum bedding units vary in thickness from a few millimeters to 20 cm, with ratio of thickness to cross-sectional length averaging near 1 : 50.

Altogether these are typical fluvial sediments, primarily deposited under conditions of rapid, torrential flow. The initial deposits (beds a and b) consist primarily of bed-load, the later ones (c and d) are suspended sediments; all, however, are characteristic channel deposits. The most reasonable interpretation is a minor Nile overflow channel that sporadically carried swiftly moving flood waters: maximum velocities were greater initially (beds a and b), but even the terminal bed (d) indicates high velocities. The almost total absence of quartz and chert pebbles indicates that this channel probably did not bifurcate directly from a major Nile channel but, instead, carried converging overbank discharge. Such an interpretation is compatible both with the coarse-silt grade maximum and with the pseudo-pebbles eroded in the process of channel development. Whereas this tertiary, floodplain " gathering stream " had a width of only 7 to 8 m, the Fatira Channel, a secondary Nile arm measuring at least 100 to 150 m from bank to bank, was probably situated less than 50 m away. The primary Nile channel, today some 500-1000 m wide, was almost certainly located near its present axis and flowing *west* of Gebel Silsila.

Such a paleo-topographic context is directly relevant to interpretation of the archeological levels of GS-2B-II. In view of the nature of the sediments, the artifact assemblages and other residues cannot have been strictly contemporaneous with aggradation since occupation was clearly not possible at times of rapid channel discharge. Either the occupation record is older, and therefore reworked, or younger and either intrusive or postdepositional. The archeological materials themselves resolve these corollary questions. The lowest level, in bed (a), consists primarily of masses of artifacts, unworn and chaotically intermixed within the sediment; additional residues include fractured pieces of basalt, diabase, and quartz in the 2 to 6 cm grade as well as broken *Unio* shells, at least in part representing food refuse. The upper two levels contain a reduced concentration of unworn artifacts, primarily bedded on flat surfaces, together with fragments of igneous rocks and disarticulated but unrolled fish and mammalian bone. The lower level is unquestionably in undisturbed primary context since the pseudo-pebbles are well-stratified, resting on their flat faces, while the archeological materials are not, and suggest that they were stamped into wet mud underfoot. This indicates temporary occupation during the early stages of the Nile flood, possibly in late September or October. The upper levels are more equivocal; stratification may be a result of water action and there are no surface-like concentrations, although the wholly fresh nature of the materials precludes any appreciable transport. It is therefore suggested that the archeological record of the intermediate and upper levels is in semi-primary context. A post-flood occupance is also implied.

Two C^{14} dates have been obtained from the archeological levels: 13,360 ± 200 B.C. (Y-1376) from charcoal and 12,440 ± 200 B.C. (I-5180) from *Unio* shell. The latter almost certainly comes from bed (a), while the charcoal sample came from a depth of — 30 cm (C. A. Reed, pers. comm.), i.e. presumably from bed (c). This apparent inversion, together with the fact that shell dates generally yield older results than charcoal assays, suggests that the charcoal fragment dated was " floated " into bed (c) after derivation from reworked, older Darau deposits. Indeed it is possible that the basal, 17 m wide channel bed dates *ca.* 13,400 B.C. while the successive archeological levels of the 7 to 8 m wide channel fill date *ca.* 12,400 B.C. Such a hiatus of almost a millenium would be fully compatible with the erosional disconformity, pedogenetic alteration, and channel change that preceded aggradation of bed (a).

The new shell date now clarifies the temporal relationships of sites GS-2B-I and GS-2B-II. The former, with dates of 11,610 ± 120 B.C. (Y-1447) on *Unio* shell and 11,120 ± 160 B.C. (Y-1375) on charcoal flecks (Reed, 1965), both from level 2, is clearly the younger, by about a millenium. It is apparent that site GS-2B-II dates from the initial phases of the Channel B substage of the Darau time unit, site GS-2B-I from the final phases of the same substage.

Comparable data is not yet available from the Silsilian site GS-1-III, as the report of R. J. Fulton remains unpublished. However, cursory observations by Butzer indicate that the site was located on or near the bank of a secondary Nile arm, near the confluence of the Fatira and Manshiya cahnnels. The Silsilian here has no C^{14} dates but the orverlying Sebekian level has 5 incoherent determinations: 14,050 ± 800 B.C. (M-1551), 13,250 ± 700 B.C. (M-1642), 12,290 ± 370 B.C. (I-1291), 12,150 ± 450 B.C. (I-1292), and 11,660 ± 600 B.C. (M-1641) (Smith, 1968a). Even allowing for 2-sigma deviations, this gives a minimum time range of 13,250 — 12,260 B.C., which is unrealistic and contradictory with the evidence from GS-2B-II. The two shell dates of 12,290 and 12,150 B.C. have the lowest standard deviations and may indicate a true age for the Sebekian that is only 2 or 3 centuries younger than the Silsilian.

The GS-2B-II excavation

The excavation of site GS-2B-II was done by means of 1-meter squares and by 3 arbitrary levels of 0-30, 30-40 and 40-50 cm (see Fig. 4). Since the channel dips slightly to the north, with bed (c) thinning and bed (d) thickening, these levels cannot be exactly related to the sedimentary strata. In a general way, however, the 40-50 cm level corresponds closely with bed (a), while the remaining levels as well as the deflated surface materials pertain to bed (c).

Unfortunately, only 3 squares of the 40-50 cm (" Z ") level were collected before the 1963 excavations were prematurely terminated, leaving large segments of the Z-level exposed but unrecorded. As already noted, artifact concentration here was greatest and archeological context primary. Twenty-one squares of the 30-40 cm (" Y "—) level were collected, and 10 of the 0-30 cm (" X "—) level. Most of the X-level materials were deflated at the north and western parts of the site, where there are next to no materials obtained from geological contexts (see Fig. 4). All of the surface materials appear to have been lumped in one bag, although the absence of an archeological field record precludes a firm answer on this as well as on several other pertinent questions.

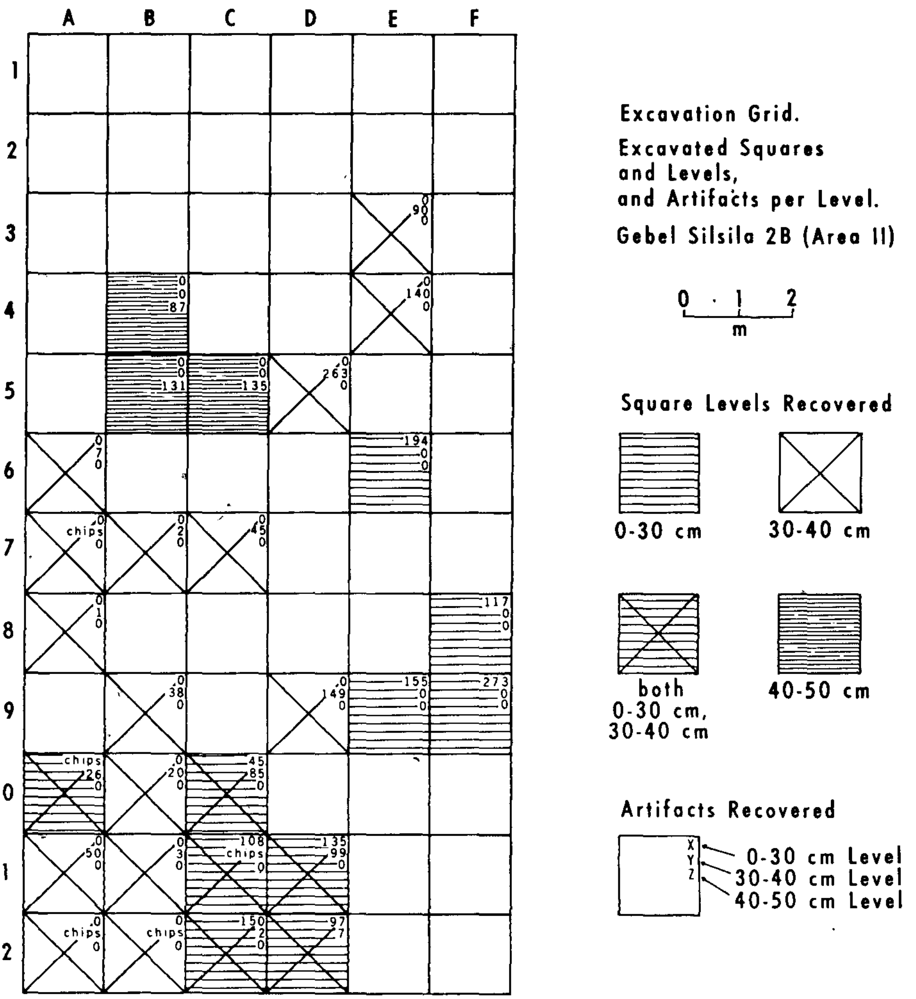

FIG. 4.

A total of 3,513 lithic artifacts are found in the collections, together with another 1,541 pieces of artifactual debris too small to have been anything but by-products of flaking. Of the artifacts, 106 were cores, 1269 blades, 1597 secondary flakes, and 487 primary flakes (Table 2). Of the total, 373 blades, 16 flakes, and one core were retouched to form tools.

Most of the raw material utilized consisted of chert (Table 3), the majority of which was derived from Nile pebbles, the remainder from local sources of chert, primarily in breccia masses of Nummulitic Limestone (Lower Eocene). The latter material is white to light gray in color, and frequently shows nummulites. This local chert is distinguished in Table 3 from all other chert categories which are of deeper color, higher silica grade, and in major part appear to be derived from the Hudi cherts (Oligocene) of the central Sudan. Wherever cortex is preserved these exotic cherts show waterworn pebble surfaces. The agates are closely related to the cherts of Hudi type, as are most or all of the rare jasper samples. The quartz and petrified wood could have been obtained from local wadi terraces or from nilotic gravels, the latter in immediate proximity. Consequently as much as 98% of the raw material may have been obtained from bed-load deposits within exposures or active channels of the Fatira Channel. This strong preference for nilotic pebbles was by no means shared by all other groups represented in the Gebel Silsila 2 site-complex. However, at GS-2B-II, raw material shows no significant variations from one artifact category to another (Table 3), nor from one level to the other.

In terms of basic technology, most flake platforms are unfacetted (see Table 4). In preparing the platforms of the cores, the manufacturers rarely struck more than one flake off the platform (75.4% had either a cortex or unfacetted platform). Most of the flakes have length/width ratios closer to flakes than to blades, with 45.6% in the 1 : 1-1.5 : 1 class (Table 5, Fig. 4).

After flakes, the second largest artifact class is represented by blades, mainly bladelets and microblades. The blade platforms are seldom facetted (see Table 4) and there are many fewer cortex platforms. Unidentifiable platforms refer to ones that are either too small to be identified, or have been crushed in core preparation. We assume that the manufacturers' technique called for punching the blades off cores that had been lightly retouched to regulate the platform edge. The distal ends of the unretouched blades are mainly blunt or overpassed (82.4% Table 7) which varies from the retouched blade sample (see below). This interesting phenomenon is discussed later. Figure 3 (and Table 5) illustrate the length/width ratios of unretouched blades, with the highest frequency in the 2 : 1-3 : 1 category but fully 47% in the greater than 3:1 category. Retouch or backing generally narrows and blunts a piece ,thus increasing the length/width ratio. Over 69% of the sample would qualify as microblades, with only one blade.

The 390 retouched tools represent 11% of the *entire* assemblage (minus the debris), a rather high figure. The X-Level had the most tools (254), the Y-Level= = 89, and the Z-Level = 47. Length/width ratios could not be determined on the flake tools, as all but three were broken. However, there is a slight difference between the length/width ratio of retouched blades/bladelets/microblades and their unretouched counterparts (compare Figs. 4 and 5 and Tables 5 and 7). Thus 54% of the retouched pieces fall into the 3:1-5:1 category, compared with 47% in the unretouched category. As the process of backing and retouching tends to narrow a piece, these figures should not be surprising (Table 7).

As the blade-tool samples are small, differences between the levels should not be overstressed. Contrasts in tool length are interesting, however (see Table 9). The only two blades—an obliquely distal truncated blade and a *piquant-trièdre*—are found in the X-Level. There also is a bimodal distribution in tool length (see Fig. 5). For all measured artifacts the 15-27 mm category varies from 59.1% in the X-Level, to 72.5% in the Y-Level. What is even more striking however, is that the 15-27 mm length also constitutes at least 86.7% of the microlithic tools in the Z-Level and 94.6% in the X-Level.

Lithic typology

End-scrapers (7)

The 7 end-scrapers comprise only 1.8% of the entire tool assemblage. Five were on bladelets, 1 on a retouched primary flake, and 1 was a core scraper.

Burins (11). Fig. 9

Burins account for 3.2% of the tool assemblage. Five (62.5%) of the burins were microblades, while the other three were bladelets (37.5%); only 4 on flakes. Of the burin types defined by de Sonneville-Bordes and Perrot (1956: 408, 411) and by Tixier (1963: 67-84, Figs. 18-27), 2 main types are evident, dihedral (7) and on truncations (3). The other is a multiple mixed on a blade.

Multiple Tools (6)

Multiple tools account for 1.5% of the assemblage. Two of these, a dihedral angle burin/end-scraper and a side scraper/convex basal trunction, are on flakes; of the others, three are obliquely truncated microblades/basal rounded end-scrapers, and one is a broken thick blade with a dihedral déjete burin on the butt with 7 adjoining micronotches on the lateral edge.

Straight-Backed Pointed Bladelets/Microblades (5)

Straight-backed, pointed bladelets account for only 1.3% of the assemblage. There is only 1 of the simplest defined type, i.e. entirely backed along one lateral edge, straight or very slightly convex, with one extremity pointed on either the distal or proximal end. The other 4 are partially backed, all on the basal portion of the piece, two being bladelets and two microblades.

This category of artifacts make up 15.6% of the assemblage. Arched tipped bladelets of several types have the highest frequency *within* this category (20, or 45.9%). These are defined as bladelets/microblades with a limited amount of convex backing which forms an asymmetric point where it joins an unretouched

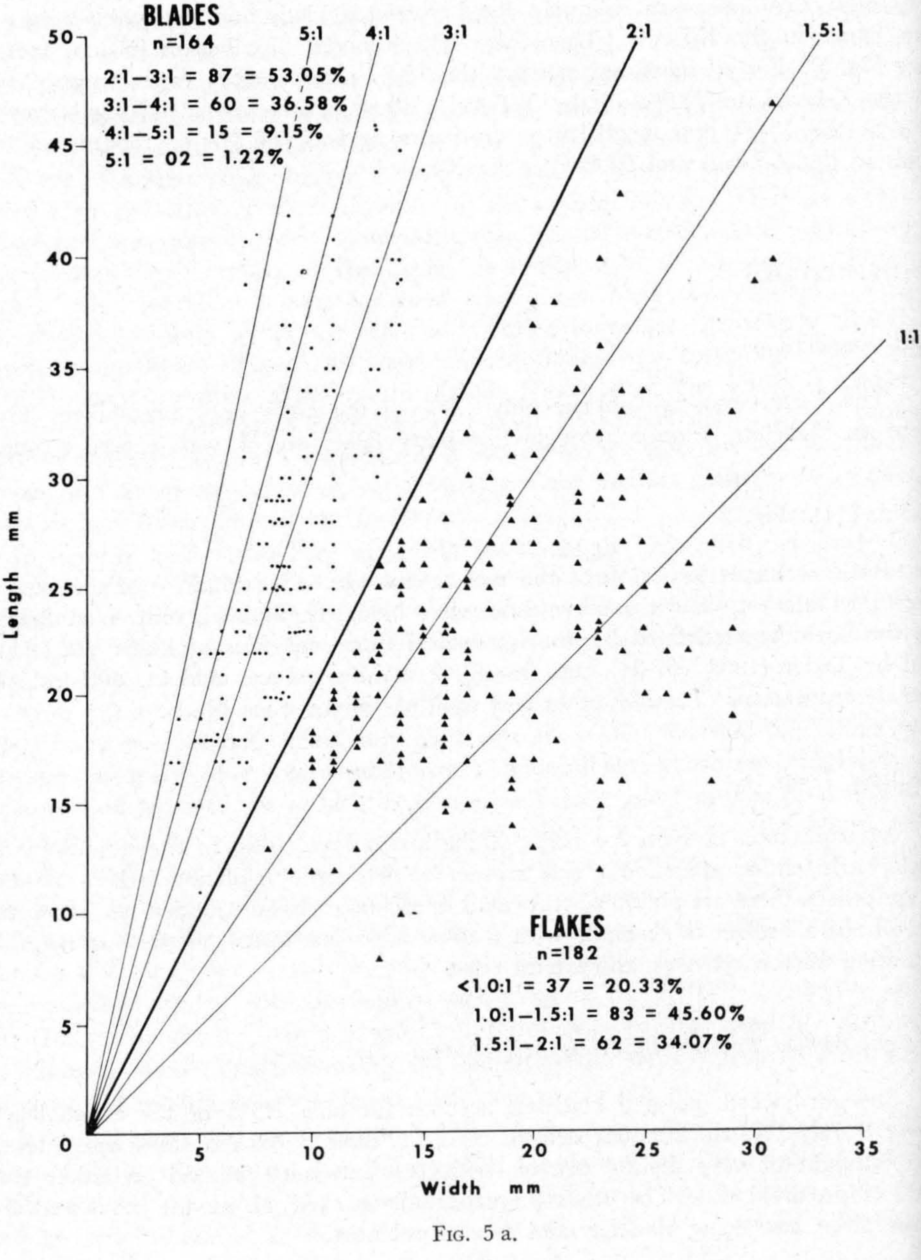

FIG. 5 a.

LENGTH / WIDTH RATIO OF BLADE TOOLS, GEBEL SILSILA 2B (AREA II), ACCORDING TO LEVELS

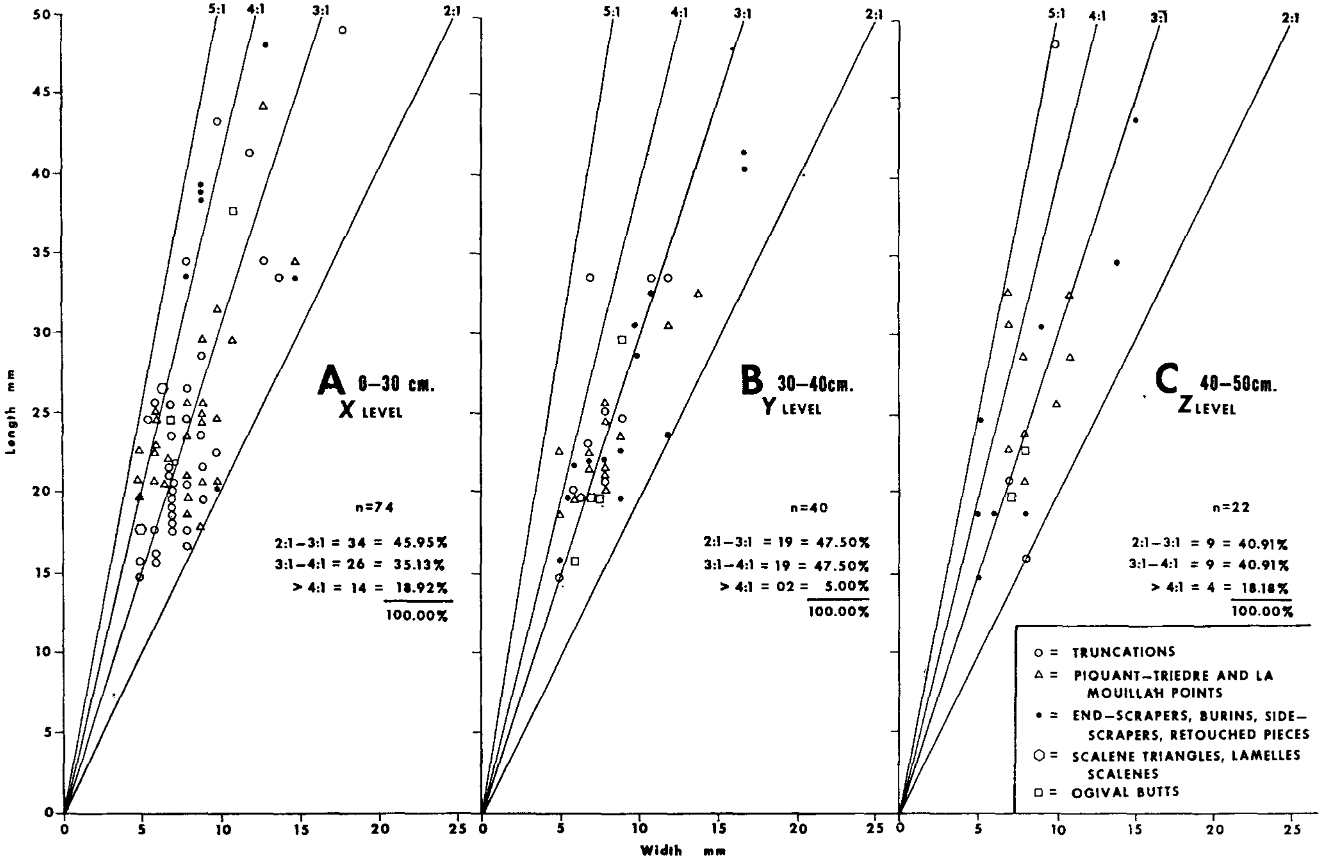

FIG. 5 b.

edge at either extremity of the piece. Ten of these are unbroken and all are on microblades. The types with the next highest frequency (7) are microblades in the X and Y Levels as defined above, but with the addition of bilateral converging retouch to form an ogival base (Fig. 7) Partially backed bladelets (arched) account for 21.3% of the entire category. Of the 13 examples, 8 are microblades, 2 bladelets, and the other 3 are broken. There are 6 *La Mouillah* points in this assemblage, 5 on microblades, 1 on a flake. These are all typical of the definition ("... bladelets where one lateral edge is backed by abrupt retouch, which is terminated by a *piquant-trièdre,* either distal or proximal" Tixier, 1963: 106; Figs. 37-38; p. 107, 109); they are also slightly arched, and therefore, placed in the arched backed bladelet category. Three shouldered bladelets (*lamelle à cran* [Tixier, 1963: 110]), defined as having one edge partially backed by abrupt retouch, are present. The retouch begins at one extremity and proceeds along the edge, forming a shoulder by cutting into the piece enough to make it appear concave. They are all bladelets, one having an ogival base (see Figs. 7, 8). Of the 6 arched backed and obliquely truncated microblades (*lamelles scalènes*; Tixier, 1963; 111, Fig. 39, 113-114) 3 had ogival bases, 3 rounded bases. Obviously none of these fit into the *specific* definition of Tixier; the addition of basal retouch seems to be a common typological feature at this site and is discussed below.

Ouchtata Bladelets/Microblades (15)

Ouchtata bladelets/microblades account for 3.9% of the tools. These have been defined by Tixier (1963: 115), with further work by Phillips (1973: 127-134). All are microblades, in part exceptionally small; none are over 22 mm.

Notched Pieces (31)

Notched pieces make up 7.91% of the tools, 25 on bladelets/microblades, 6 on flakes. All 6 notched flakes are broken; all had retouched lateral macronotches. Of the 25 other pieces, 23 are broken bladelets, 1 a microblade and 1 a bladelet. The occasional, single-blow notches may be accidental. The category termed " other " in the table refers to those pieces with double notches, all on the same lateral edge, i.e. never opposed.

Truncations (93). Figs. 7, 8

Truncated pieces account for 23.3% of the tools. Of these, 92 are on bladelets/microblades, only 1 is on a flake. Of the unbroken examples (44 pieces) 32 are microblades (72.7 percent), 11 (25.5 percent) bladelets, and 1 a blade. The highest frequency in the entire category is for obliquely truncated pieces, distal or basal. The 58 pieces make up 62.4% of all truncations (see de Sonneville-Bordes and Perrot, 1956: 548; 550, Fig. 2, Nos. 24,25, 29 for definitions). The next highest frequency is for double truncated bladelets/microblades (10-10.8% of the truncations). Seven are microblades, 1 is a bladelet, and 3 are broken. Six of the double-truncated pieces have both basal oblique and distal oblique truncations, but none are geometrics and part of the bulb remains. Of the

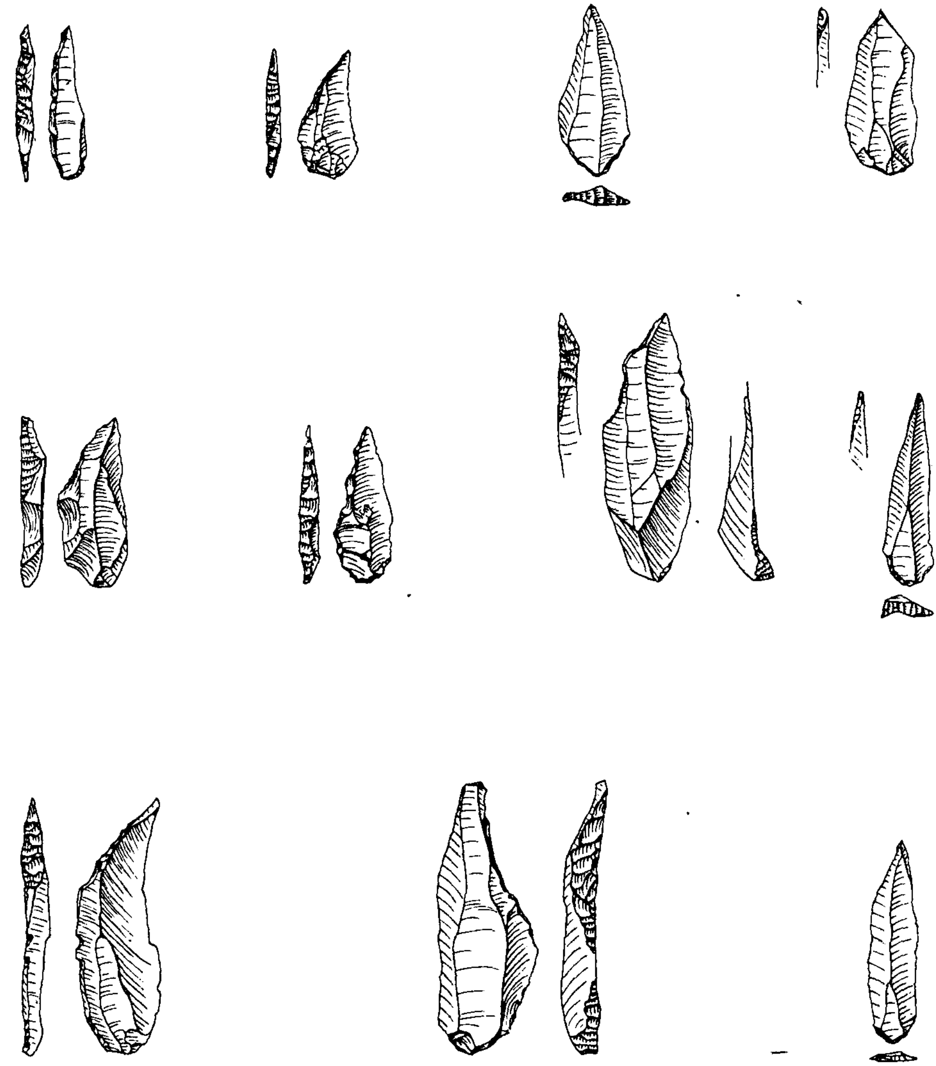

FIG. 6. - Truncations, ogival butts, arched backed bladelets.

remaining 4, two are microblades with a concave distal and oblique basal truncation; one a bladelet with a straight distal and oblique truncation; and, finally, a microblade with a distal oblique and straight basal truncation. Eight pieces (8.6% of the truncations) are concavely truncated, seven on the distal end and one on the basal portion. Five pieces have straight truncations, 3 on the distal extremity and 2 on the basal extremity; all were on microblades. Eight pieces have oblique distal truncations and ogival butts. Seven are microblades while one is a bladelet. These are excellent examples of Tixier's type No. 81 (Tixier, 1963: 127) (See Fig. 6 below).

Geometrics (1). Fig. 7

There was only one geometric at this site, a scalene triangle with one short head, on a microblade (23 × 6 mm) (Fig. 7).

Microburin Technique (121). Figs. 7, 8, 10

The microburin technique accounts for 30.8% of the tools, if indeed they should be classified as tools. However, as much of the microburin technique are on *piquant-trièdres,* they are included in the tool list. Of this class, 67 (55.4%) are *piquant-trièdres,* while the remaining 54 (44.6%) are simple microburins (see Tixier, 1963: 137-145 for definitions of both *piquant-trièdres* and simple micro-

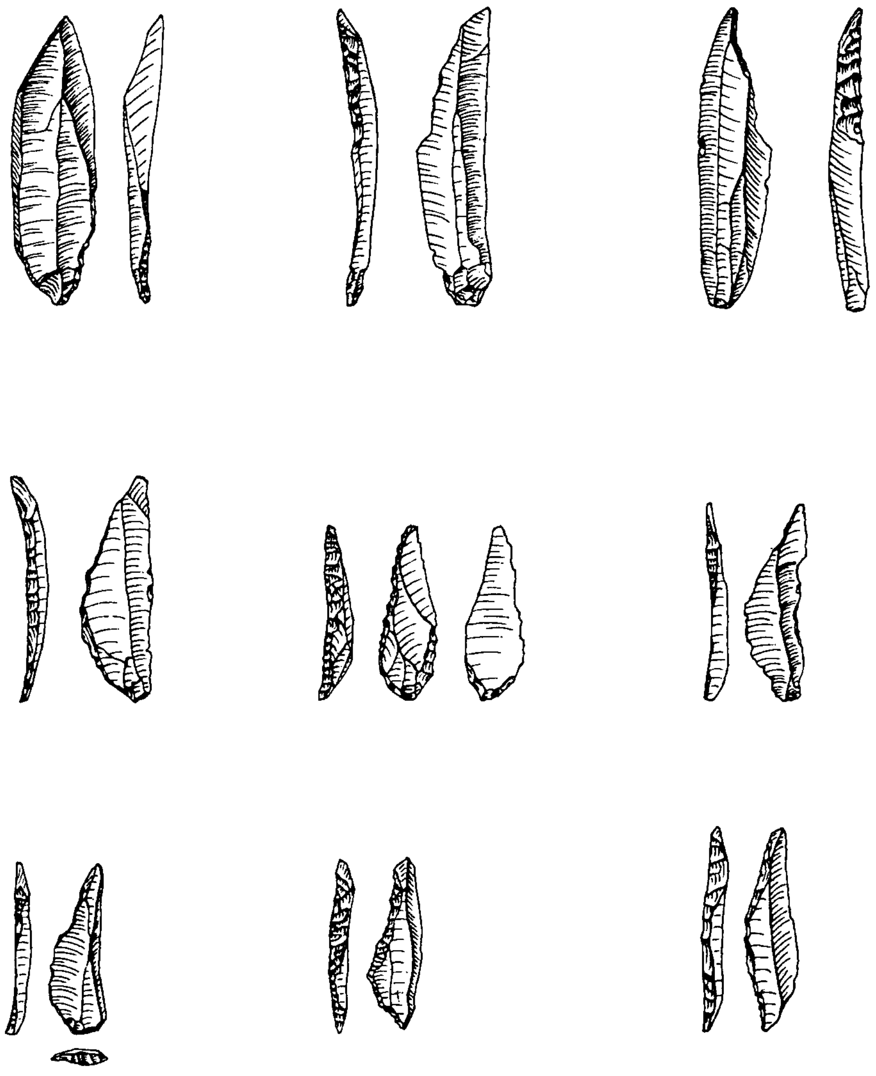

FIG. 7. - Truncations, triangles.

burins). Forty-six of the *piquant-trièdres* were of the simple variety (Fig. 7), while the remainder had some basal retouch. Of these, 13 had ogival bases, 3 were basally truncated, and 5 had rounded end-scrapers on their butts.

Of the simple, unbroken *piquant-trièdres,* 26 (89.7%) were microblades, and 3 (10.3%) were bladelets; 16 were broken. The same proportions apply to the other category of *piquant-trièdres,* i.e. of the 9 unbroken examples with ogival butts, 8 are microblades and only 1 is a bladelet. The microburins represent a very significant section of the assemblage (see Table 10).

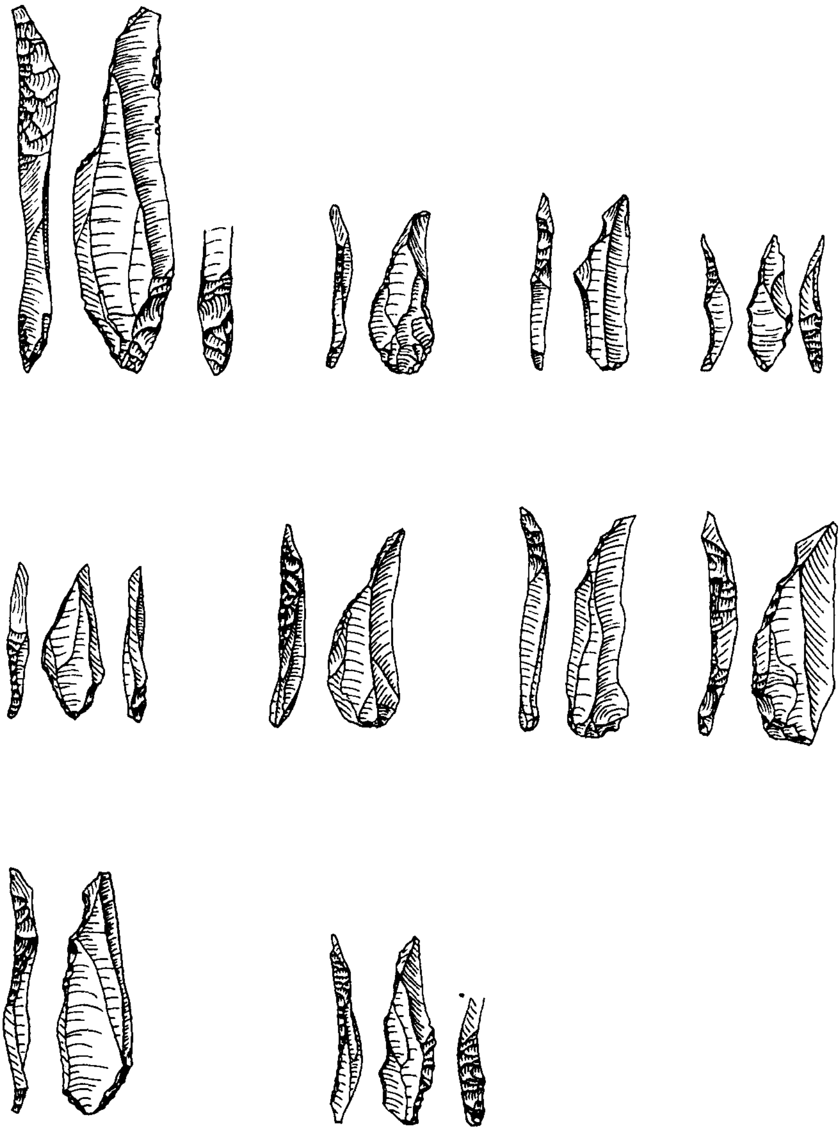

FIG. 8 - Truncations, some with ogival butts.

Retouched Pieces (31)

Included in this category are 18 (4.6% of the tools) pieces, all bladelts/ microblades with ogival bases (see Tixier's type No. 109; 1963 : 152 (also Figs. 6, 7). Of the unbroken examples, five are microblades and two are bladelets. Continuously retouched pieces (11) make up 2.8% of the tool assemblage. Nine are on bladelet fragments, while 2 are on flakes, 1 secondary, the other primary.

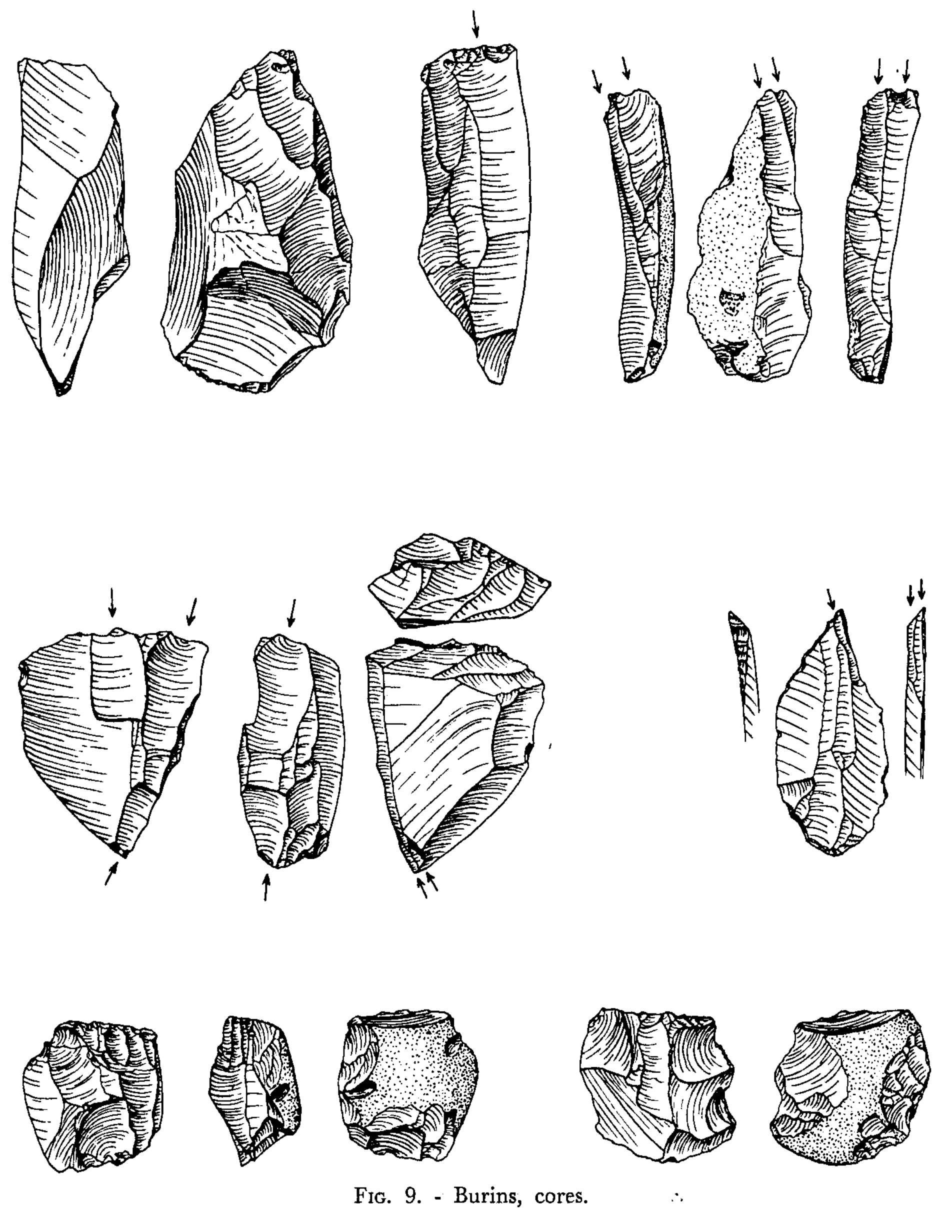

Fig. 9. - Burins, cores.

Side Scraper (1)

There is only one simple convex side-scraper on a bladelet, 47 × 22 mm found in the X-Level.

Varia (1)

This is a broken bladelet with bilateral Ouchtata retouch, and an ogival basal-end-scraper found in the X-Level.

Cores (108). Figs. 9, 10, 11

The cores account for 3.1% of the total assemblage. There are a very high frequency of cores of Nile material (97.2%) while only a few are on local, Nummulitic chert (see Table 3). These figures accord well with the material counts from all other categories of artifacts.

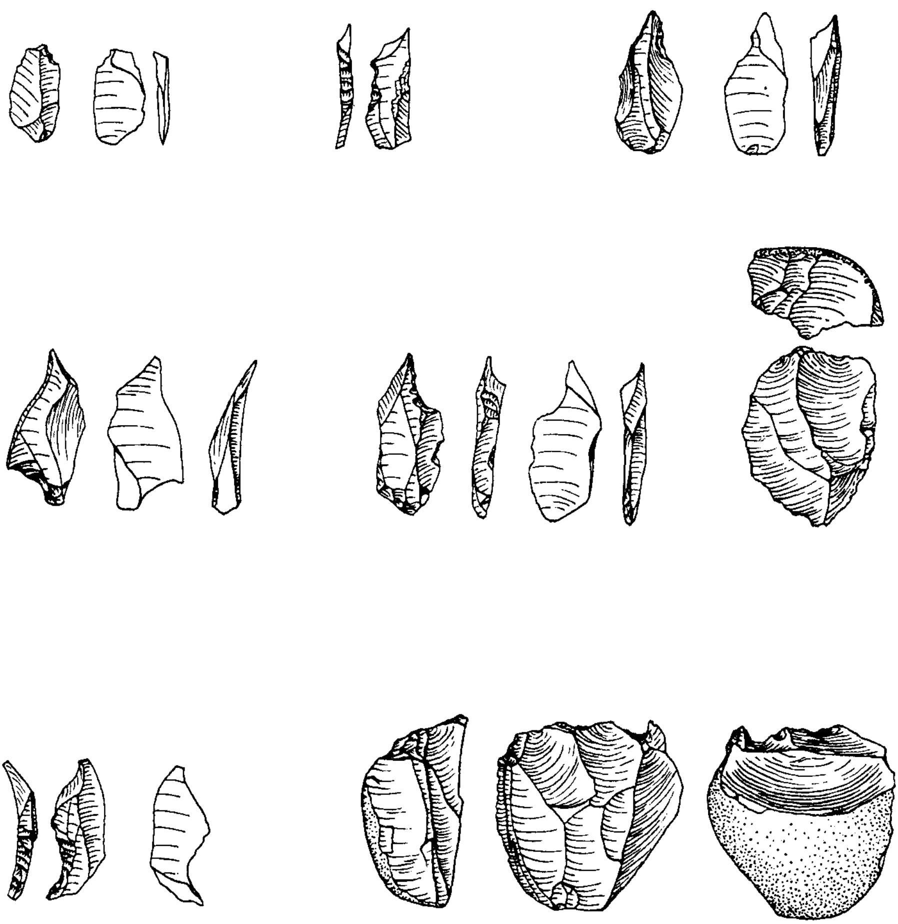

FIG. 10. - Microburins, piquant trièdre, cores.

The amazing aspect of thé core technology is their size. Of the bladelet/ microblade cores, from all three levels, 91 (86.7%) are microlithic, thirteen (12.4%) are bladelet, and only one is a blade core (see Table 11).

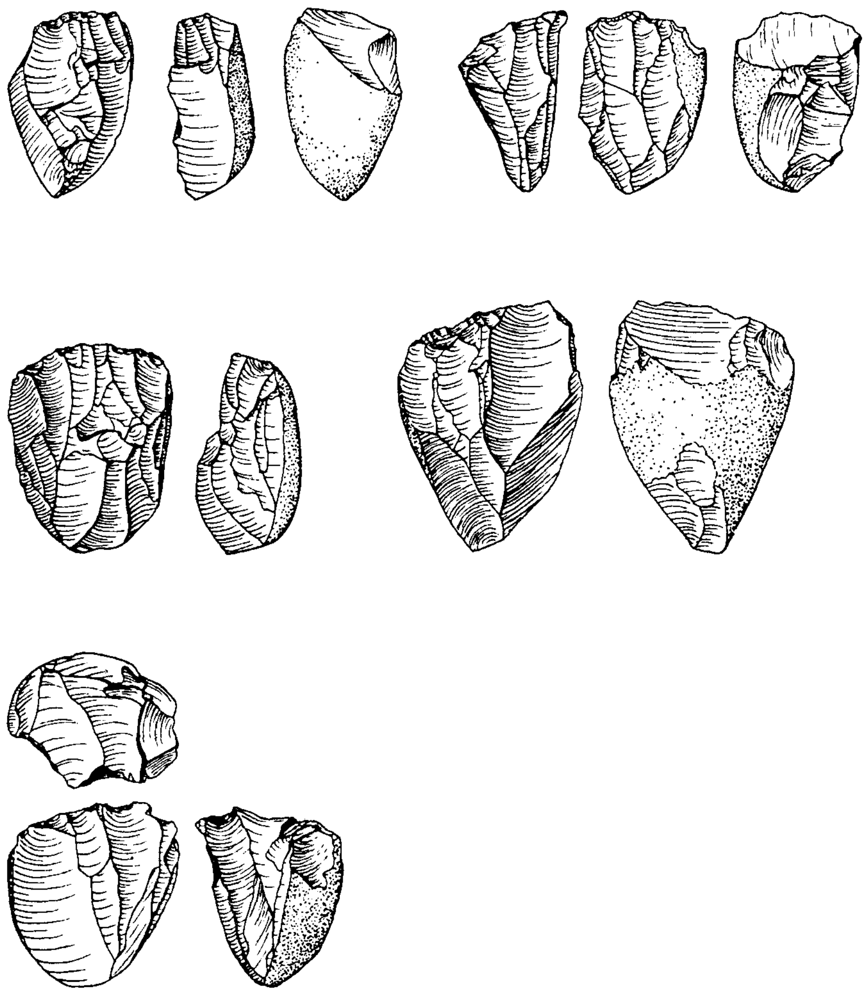

FIG. 11. - Cores.

The core type list, Table 12, indicates that the class with the highest frequency are those cores which have only one striking platform (65% of all cores). Of these, three are for flake manufacture (all in the X-Level) while 68 are for the manufacture of bladelet/microblades. These are overwhelmingly microlithic (59-85.5%), while the remaining ten (14.5%) are for bladelets. Within the single platform category, the unfacetted platform type has the highest frequency (82.4%) while the simple facetted types account for 17.7%.

Opposed platform bladelet/microblade cores have the next highest frequency in the core assemblage (29.6%). Again these are overwhelmingly cores for the manufacture of microblades (71.9%), while 28.1% were for bladelets.

It must be emphasized that these cores are not the worn down remnants of bladelet or blade cores; rather, the pebbles were quite small and were selected as such by the site inhabitants. As should be obvious, there is a direct correlation between the size of the bladelet/microblade tools and the cores from which they were struck. Thus, we can assume that the tools, cores, debris, *débitage,* etc. were manufactured at the site from pebbles gathered from the nearby secondary channel of the Nile.

Interpretation of the site

Some interesting features emerge from the typological analysis. First and foremost, the assemblage is dominated by three features: truncations, backed bladelets, and the microburin technique (Table 13). Other striking features of the assemblage are the high frequency of retouched butts and of microlithic tools. Fully 27.7% of all tools in the Y-Level had retouch on their butts (this figure includes basal truncations) and 29.1% of all bladelet/microblade tools are thus retouched. Of the bladelet/microblade tools in this level that are basally retouched (but omitting basal truncations), 90.4% are retouched to form ogival or pointed butts. This *may* indicate that these artifacts were hafted, as in spear points (for fishing?) or arrows (for hunting small game).

It is obvious from Fig. 4 that clusters of artifacts appear in each level. Within the level of resolution allowed by 1-meter squares from a partially excavated grid (Fig. 4), the accumulated evidence indicates at least three separate clusters in the X+Y level, with another in the Z-Level. Each of these clusters contains enough different categories of artifacts to indicate that they were both primary *and* secondary chipping stations. By this we mean that the prehistoric flint-knappers both blocked out cores and finished tools at the same locale. Each cluster, about 3×4 m in diameter, has fire-cracked rock, shells, and fish remains, perhaps indicating separate hearths, or at least separate encampments by similar groups, if not the same community.

The encampment in the Z-Level was somewhat earlier than the other two. However, the technological and typological data indicate very close relationships, if not the same group. By way of caution it should be emphasized that, since the Z-Level contained only 47 tools found in 3 adjacent 1-meter squares, the frequency and distribution may not be fully significant. If these parameters had indeed been very distinctive with respect to the other levels, it would have been difficult to assign both assemblages to the same archeological culture (Clarke, 1968: 230 ff.). As can be seen in Table 13, however, the differences, although certainly evident, are minor.

The archeological clusters appear to be spatially circumscribed and are mutually exclusive, i.e., few artifacts are found between them. This suggests that each cluster reflects an autonomous chipping station. The area and density of each cluster would appear to suggest that each was occupied by groups no larger than small extended families. The core typology and the technique of manufacture seem to be standardized between units, even when we view the somewhat earlier occurrences in the Z-Level. There is no indication of *intra* unit patterning, except in one small area of the X+Y Level. There, it seems clear, the cores were blocked out, but the blades produced were retouched, or at least finished, elsewhere. The indications are that the bladelets with ogival bases were finished near the southern edge of the site, whereas all other finished products show no clustering at all. Truncations and the microburin technique (simple, *piquant-trièdre,* and La Mouillah points) are found in nearly the same frequencies in each unit. Therefore we cannot really speak of specific activity areas. Rather, the data suggest autonomous units with nearly the same range of variation within and between them.

The faunal collection from GS-2B-II is small and probably exclusively from the exposed grids of the X+Y-Levels of bed (c). As postively identified by C. A. Reed and Priscilla Turnbull (pers. comm.) there are catfish (*Clarias* sp.), and fresh-water clams (*Unio* sp.), and the Egyptian bandicoot or pest rat (*Nesokia indica*). However, smaller bone fragments were not systematically collected, so that a few larger mammals may also have been present. Since the pH of the sediments varies from 7.5-8.2 and carbonate content 1-8%, it seems unlikely that bone preservation has been selective or poor. Consequently, the emphasis on fish and bivalves is real enough and may well indicate a specialized function for the site.

The GS-2B-II fauna is significantly complemented by that from the Silsilian level of GS-1-III (Churcher and Smith, 1972):

Clarias anguillaris	Nile catfish
Platalea leucordia	Spoonbill
(?) *Anser fabalis*	Bean goose
(?) *Pandion haliaetus*	Osprey
Homo sapiens	
Equus asinus cf. *africanus*	Nubian wild ass
Hippopotamus amphibius	Hippo
Bos primigenius	Wild cattle
Alcelaphus buselaphus	Bubal hartebeest
Gazella dorcas	Dorcas gazelle

The more complete faunal spectrum from the overlying Sebekian level at GS-1-III makes a good case for year-round occupation, as based on the presence of migratory water-birds (January to March) and immature hartebeest (summer) (Churcher and Smith, 1972). Both the stratigraphic uncertainty of the bean goose and osprey from the Silsilian level, and the limited mammalian collection implicit, appear to weaken such an argument for the Silsilian. Nonetheless, year-round occupation would have been possible next to a secondary Nile arm, such as at GS-1, but next to impossible within a sporadic or seasonal gathering stream as at GS-2B-II. Consequently GS-2B-II will presumably reflect a more restricted range of activities than GS-I-III.

GS-2B-II AND THE "SILSILIAN"

The closest similarities of GS-2B-II are with the nearby site of GS-1-III which has been rudimentarily described by Smith in several publications (1966a; 1966b : 338 and Fig. 3, nos. 7-17; 1968a : 148-49; 1968b : 394-96 and Fig. 1, nos. 1-20).

The site is stratified, with the lower occurrence containing...

> ... a microlithic industry and same poorly preserved faunal materials. The artifacts include microburins, a few triangular and trapezoidal forms, burins, and especially curved backed blades and bladelets with the tips prepared by the microburin technique (*piquant-trièdres*). Cores are small and often bipolar, and exotic pebbles of chalcedony, agate, jasper and carnelian were favored. The levallois technique is absent. It may have been from a similar assemblage that Vignard in 1923 made his small collection in the Wadi Shait (Vignard, 1955d). From a surface concentration (G.S. IX) apparently exposed by deflation near G.S. III we recovered many thousands of artifacts of this type, and the term *Silsilian* (our emphasis) (after the nearby mountain) has been applied to it (Smith, 1967 : 147).

Stratified above this assemblage is another which is quite different in terms of raw material, technology, and typology. This assemblage has been given the industrial/culture term of *Sebekian*. According to Smith, the overwhelming raw material used is a pale gray or whitish flint, while the Nile chert of the *Silsilian* was rarely used. The very brief descriptions published include the following:

> The cores... are flattened, elongated, or sometimes semicylindrical in form, with one or often two very oblique striking platorms... But the microburin technique is absent, as is the Levallois technique although butts are sometimes facetted, and there are no geometrics or true pointed bladelets such as characterized the Silsilian... Generally the retouch (often "nibbled" or semi-abrupt, reminiscent of the Ouchtata retouch) is concentrated at the bulbar end on one or both sides..., but occasionally it extends further up the blade and the distal end is occasionally retouched (Smith, 1968 : 396).

The five dates from the single Sebekian living floor cover a period of approximately 3,000 years, and are thus of limited use (see above).

Although Smith (1966a and *passim*) has given an industrial appelation to the basal archeological occurrence of GS-1-III and to the surface concentration GS-1-IX, Nile Valley prehistorians have — after 6 years (1972) — still to receive a statistical analysis of the Silsilian or, for that matter, of any of his other new industrial traditions from the Kom Ombo Plain. Consequently it is impossible to provide rigorous arguments for grouping GS-2B-II and E71K20B on the one hand, and GS-1-III on the other. Nonetheless the availabble qualitative descriptions leave little doubt that GS-2B-II and E71K20B fall within the basic parameters given by Smith for the Silsilian. We will accordingly adopt the designation, both in deference to the rules of nomenclature and as a matter of convenience, while reserving the possibility of revision pending adequate publication of Smith's materials.

THE PLACE OF GS-2B-II IN THE LATE PALEOLITHIC OF THE NILE VALLEY

The assemblage from GS-2B-II is of considerable interest in the context of the Late Paleolithic occupation of the Nile Valley. It is significant for a number of reasons, chiefly that it was *in situ*, that a least four separate camps were established at the site, and that intra unit patterning is not apparent. We can profitably compare this site with others in the Nile Valley that are stratigraphically and chronologically antecedent (or more or less coeval) in the time range ca. 18,000-14,000 B.P. These assemblages, which include the Halfan, Ballanan and Fakhurian, as well as Esna sites E71K12, E71K13, E71K20B, are all characterized by bladelet/microblade frequencies which often exceed 90%. They are dispersed from Sudanese Nubia to Esna in Upper Egypt, and appear to be related to a variety of microecological situations. (3)

The Halfan industry is subdivided into five stages, and occurs along the Nile from the Khor Musa in Sudanese Nubia to Ballana, in Egyptian Nubia. Other possible occurrences have been briefly reported from the Kom Ombo Plain (Smith, 1966a : 238; 19667 : 149) and Edfu (Wendorf and Said, 1967 : 246). The Nubian Halfan sites always represent small camps that appear to have been occupied (or reoccupied) over protracted periods of time. The occupants of the Halfan sites seem to have emphasized hunting of large, savanna mammals, such as hartebeest and gazelle; but fishing is also indicated. Several dates have been published, (4) suggesting a time span between 18,000 and 15,000 B.C. Dates from similar sites in Upper Egypt include 15,050 ± 600 B.C. (I-1297), from Khor el-Sil III (Smith, 1967 : 149) and a median value of ca. 15,000 B.C. for Site E71P2A near Edfu (see Wendorf, Said, and Schild, 1970 : 1165). The Halfan is found in the " Ballana Formation " and in the base of the Sahaba (Wendorf, 1968b : 10048); Wendorf regards the Halfan as occurring at a time when the Ballana dune was interfingering with a silt, i.e. within the Debeira-Jer Formation (Wendorf, Said, and Schild, 1970 : 1159).

According to Marks (1968b : 457), the Halfa V Stage contains only one site (1028), and:

> The technology has finally become dominated by microblade production, although microflakes are still common... The core typology is mainly based on unfacetted, single platform and opposed platform microblade cores.
>
> Typologically, the industry is almost totally made up of backed microblades. Backed flakes are exceedingly rare, as are Halfa flakes. Scrapers, burins, and denticulates still occur but in very small numbers-even less than in Stage IV...

The *Ballanan* industry is recorded along the Nile only near Ballana, in Egyptian Nubia. Wendorf (1968b : 1050) mentions that it may possibly be present opposite Wadi Halfa in the Sudan and at Kom Ombo, the latter suggestion possibly reflecting on Smith's report of sites with high truncation elements in the Kom Ombo Plain. The Ballanan sites are small and " compact ", and are found within the Darau Member of the Gebel Silsila Fm., probably in the time interval represented by the Deir el-Fakhuri unit of Wendorf, Said and Schild (1970 : 1165). A possibly associated date of 12,050 ± 280 B.C. (WSU-329-Site 8896), has been

(3) We would like to express our appreciation to Romuald Schild and Fred Wendorf for providing a type list for the as yet unpublished site of Esna E71K20B, and for allowing us to use that data in this article.

(4) The dates are: 17,200 ± 375 B.C. (WSU-332; Site 2014); 16,650 ± 550 B.C. (WSU-318; Site 859); 14,550 ± 500 B.C. (WSU-201; Site 443) (Wendorf, 1968b : 1048).

reported. Subsistence was based on mixed hunting and fishing, emphasizing the same large gregarious mammals as in the Halfan. Wendorf (1968a : 841-847) reports that the Ballanan is characterized by a series of backed and truncated microblades. The microlithic tool index is 90, the blade-tool index 68. Backed and truncated flakes are also abundant, as are truncated microblades. Nile chert is the predominant raw material.

The *Fakhurian* (Lubell, 1971; referred to as Complex B by Wendorf, Said and Schild, 1970 : 1165), is found at 4 sites next to the monastery of Deir el-Fakhuri, near Esna. The sites are rather compact and occur in the Debeira-Jer Formation. Although the remains of large savanna animals are present, it appears that fishing was the most important activity. Huge quantities of Nile catfish were present, especially at Site E71K3. " The typology is dominated by denticulates, retouched pieces, end-scrapers on flakes, double backed perforators, and bladelets with Ouchtata retouch " (Wendorf, Said, and Schild, 1970 : 1165). Two radiocarbon determinations have been published, 16,070 ± 300 B.C. (I-3416, and 15,640 ± 300 B.C. (I-3415).

Esna sites E71K12 and 13 are ca. 9 kms. NW of the town of Esna, on the west bank of the river. The sites are found about 50 m apart, on the top of, and within, fossil dunes which were stabilized by vegetation *after* the occupation. Based on stratigraphic and chronometric evidence, the sites were most probably occupied between 15,000-14,000 B.C. (see discussion in Phillips, 1973). Each of the sites was composed of a very concentrated cluster of artifacts — more artifacts per square meter than in any other prehistoric site in Upper Egypt — but consisted of totally -different archeological assemblages. Site 12 (Phillips, 1973 : 34-95) had an assemblage dominated by straight backed pointed bladelets — many with retouch on either their distal ends or the butts — a peculiar type of *mèche de foret,* notches and denticulates; only one geometric appears, and there is no evidence of either the microburin or levallois technique. Over 75% of the tools at Site 13 are variations of the Ouchtata retouched bladelet (Tixier, 1963 : 113-115; Phillips, 1970, 1973 : 96-150). Notches, denticulates, and retouched pieces fill out the remainder of the assemblage. No levallois or microburin technique (except for 6 pieces) were found. Both sites have less than 2% end-scrapers or burins.

The most comparable site is Esna E71K20B, found on a dune remnant, about 200 m. west of Site E71K5, at Deir el-Fakhuri. Since it was entirely a surface occurrence, dating is open to question. The site was a concentrated occurrence of tools, cores, *débitage,* with no faunal remains, and has the same lithic characteristics as GS-2B-II. As Tables 17-19 indicate, it should be considered as part of the " Silsilian " archeological culture. Tables 14-18 illustrate the nature of the relationship betwen GS-2B-II and the previous assemblages. It is clear that GS-2B-II and E71K20B are different from the others, but it must be stressed that the other Nubian *and* Egyptian assemblages are themselves difficult to group together into larger agregates.

The overall picture suggests assemblages that share quite general characteristics but that nonetheless can be separated from one another by several criteria, such as tool types or techniques of manufacture. This can be interpreted by David Clarke's concept of a techno-complex, defined as " a group of cultures characterized by assemblages sharing a polythetic range but differing specific types, shared as a widely diffused and interlinked response to common factors in environment, economy, and technology " (Clarke, 1968 :-357). In this sense it is possible to view all Nile Valley bladelet/microblade assemblages ca. 16,000-11,000 B.C. as representing autonomous groups which may derive their origins from very similar background. The time depth, geographic isolation, and settlement patterns also tend to support such a hypothesis. Thus, nearly all sites are located in close proximity to primary or secondary Nile channels, on either side of the river; except for three cases, subsistence was based on exploitation of both riverine and wadi/plateau faunas. The tool kits reflect hunting proclivities; although tools that are traditionally related to hideworking (end-scrapers and side-scrapers) are generally quite rare. Burins, which may have been used for engraving or grooving — either wood or bone — are also quite rare. On the other hand, notches and denticulates — tools possibly used in the sharpening, straightening, or cleaning of branches, reeds, etc. — are quite common in most sites.

For the Silsilian sites it seems probable that pseudo-points (naturally or artificially pointed microblades with ogival butts) were used as tips for arrows, presumably — as in Archaic Egypt — mounted on reeds, or that they were fitted to harpoons, for spearing fish. Of course, these technological interpretations are mere suggestions, that could only be verified if such pseudopoints were found in the unlikely context of being embedded in the remains of an animal. But given the geographical, faunal and technological data available, they appear to provide a useful working-hypothesis if approached with appropriate caution.

Each Silsilian site discovered so far appears to be a small seasonal camp, with the possible exception of GS1-III; thus no large base camps, such as those of the possibly contemporary Qadan and Isnan and later Affian archaeological cultures (Wendorf & Schild, in press) have been found. This may be significant, for several of the Qadan, Isnan, and one Affian site indicate rather strong evidence of the use of a non aquatic food source, namely grain. Grinding stones and pieces of flint with sheen are found at these larger sites, in addition to fish, mollusks, and mammalian fauna. The lithic assemblages for Qadan, Isnan, and Affian sites are dominated by scrapers, geometrics (lunates in Qadan, trapzoidal forms in Affian, none in Isnan), and nearly no blades or bladelets; in other words, a butchering rather than hunting tool kit. Fifteen % of the *in situ* tools from one Isnan site, E71K14B, had sheen on their edges (Wendorf & Schild, n.d. : 16).

Three alternative hypotheses present themselves:

(1) The Silsilian might be older than the Qadan and Isnan so that it may predate the apparent grinding of grain at Tushka and Esna;

(2) In view of the apparent semipermanent settlement at GS1-III (Churcher and Smith, 1972; Churcher, 1972), it is possible that our site represents only a very specialized short term occupation site, not representative of the full spectrum of Silsilian activities;

(3) In view of the incomplete pubblication of GS1-III, we cannot as yet exclude the possibility that the Silsilian groups actually never coalesced during that part of the year favorable for the survival of larger groups. They may, in fact, have remained as small nuclear or extended families throughout the year, seasonally exploiting the available fauna, getting together with other families only for social occasions. Therefore, they may never have actually *lived together* in larger groups and this might be reflected in their settlement pattern and the size of their sites.

The Silsilian of upper Egypt

The available information from GS-2B-II and E71K20B (but lacking *débitage* statistics for the latter) suggests that a more comprehensive description of the Silsilian industry is now not only possible but desirable. In our understanding of the term, " an industry *has both cultural and historical reality,* representing the material remains of a people who shared a common way of life, who used and made the same kinds of tols, and who practiced the same technological skills and preferences. These skills and preferences are manifested in the material culture of the group, seen from assemblage to assemblage or from closely similar configurations of typological and technological attributes " (Mark, Wendorf, and Shiner, 1968 : 8, also Marks' résumé in the same publication, 1968d- : 15-21).

A - *General Information*

(1) *Area.* Along both banks of the Nile, from the Kom Ombo Plain downstream to beyond Esna.

(2) *Stratigraphic Context.* Geologically *in situ* and archeologically in primary as well as semi-primary context in the Darau Member of the Gebel Silsila Fm. (Kom Ombo Plain), with GS-2B-II closely linked to the Channel B substage. Apparent association at Esna with coeval Deir el-Fakhuri (i.e. early Sahaban in the sense of De Heinzelin) time unit.

(3) *Chronometry.* One acceptable C^{14} shell date of 12,440 ± 200 B.C. (I-5180) from GS-2B-II, rejecting a charcoal date of 13,360 ± 200 B.C. (Y-1376) as too old and presumably derived from older strata. Dates from overlying Sebekian horizon at GS-I-III indicate that approximately 12,300 B.C. should be considered as a *terminus ante quem,* although no lower range can be stated.

(4) *Settlement Patterns.* Combined occupation and flaking sites, with a riverine focus, including locations within a tertiary Nile channel (gathering stream) at GS-2B-II and adjacent to a secondary Nile arm at GS-I-III; micro-environmental contexts uncertain in Esna area.

(5) *Economic Activities.* Exploitation of 3 distinct but really overlapping ecological niches is evident from the GS-I-III fauna (Churcer and Smith, 1972): aquatic forms (catfish, mollusca, hippo, migratory water-birds), galeria woodland

forms (*Bos primigenius*), and open-country grazers (hartebeest, gazelle, wild ass). Suggests a diversified riverine-specialized economy based on fishing, collecting and hunting.

B - Technology

(1) At the Kom Ombo sites, nearly exclusive used of Nile pebbles (chert, chalcedony, agate, cryptocrystalline quartz). At the Esna site, use of wadi-derived flint is dominant (Schild, personal communication).

(2) Very low frequency of facetting of butts, both on flakes and bladelets/microblades (9.2% of the former, 2.4% of the latter at GS-2B-II).

(3) Cores generally made on small pebbles (GS-1-III, GS-I-IX, GS-2B-II) but also on larger wadi concretion (E71K20B . Three types of cores: single platform, opposed platform (Smith's bipolar type 1967 : 147), and 90° cores, whereas many more single platform types appear in the GS-2B-II assemblage.

(4) No levallois artifacts or cores present.

(5) Retouch almost exclusively unifacial, but occasionally bifacial on retouched ogival butts.

C - Typology

(1) Industry characterized by numerical dominance of 4 major categories: backed bladelets, truncations, notches and denticulates, and the microburin technique, especially on *piquant trièdres* and La Mouillah points. The range for the two analyzed assemblages is expressed in Table 13.

(2) End-scrapers are rare:

(a) Index of 1 at E71K20B
(b) Index of 4 at GS-2B-II

(3) Burins rare:

(a) Index of 2 at E71K20B
(b) Index of 3 at GS-2B-II

(4) Geometric microliths rare or absent.

(5) Ouchtata retouch rare.

(6 Basal retouch, other than truncation, abundant.

(a) 17.9% of all bladelet/microblade tools at E71K20B
(b) 14.4% of all bladelet/microblade tools at GS-2B-II

(7) Absence of perforators, blade tools.

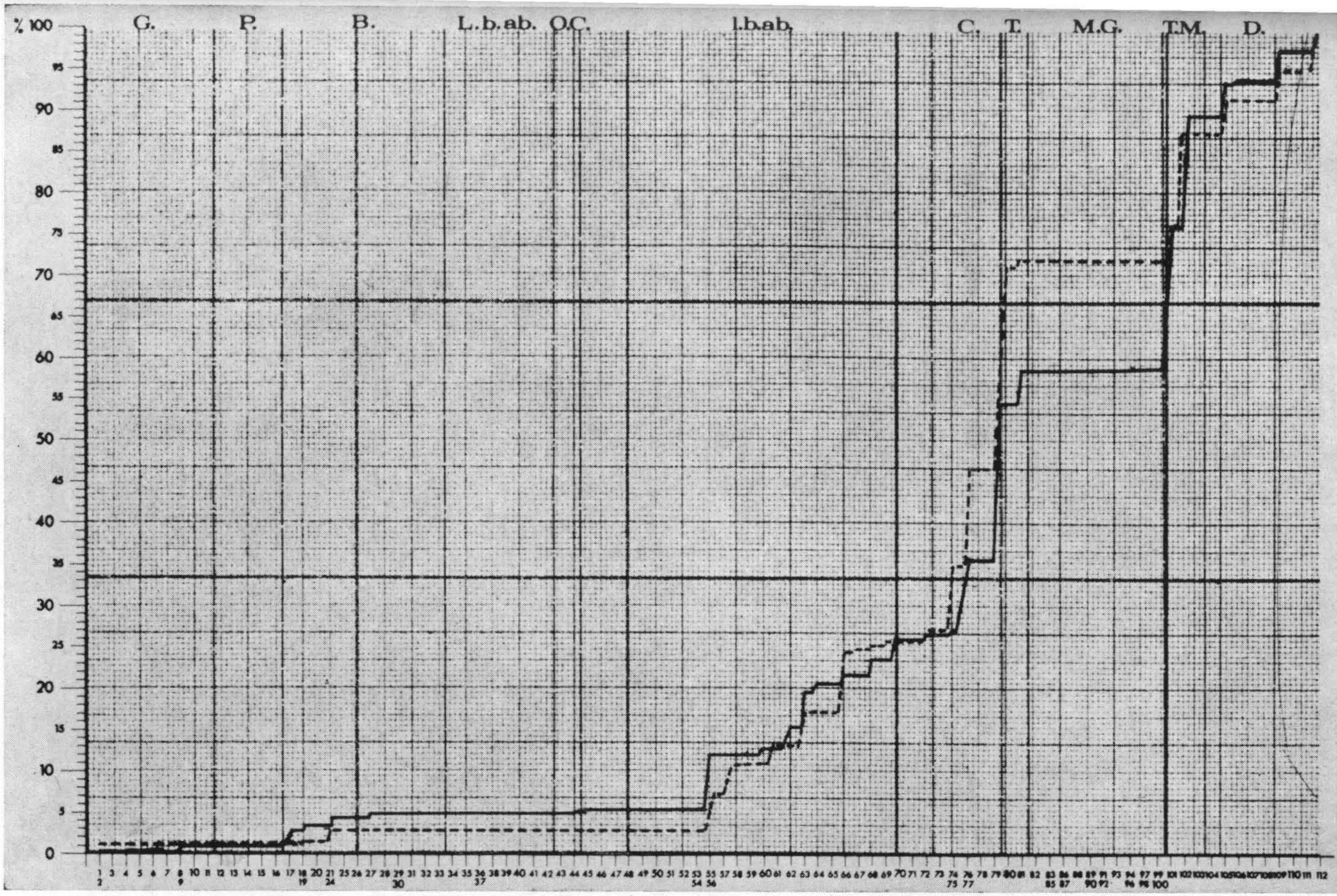

FIG. 12. - Cumulative graph of Silsilian Tool Assemblages. ---- E71K20B ——— G.S.2B-II

TABLE 1. - LATE PLEISTOCENE SEDIMENTARY UNITS AND KEY ARCHEOLOGICAL SITES OF THE NORTHERN KOM OMBO PLAIN

(In part, modified after Butzer and Hansen, 1968; Smith, 1968a; Vermeersch, 1970)

Litho-Stratigraphic Units		Major Archeological Sites
Arminna Member, Gebel Silsila Fm.	Suballuvial	(Represented by Epi-Paleolithic sites of El-Kab Fm., *ca.* 6400-5980 B.C. at Edfu)
Darau Member, Gebel Silsila Fm.	Terminal High Floods, (*ca.* 10.000 B.C.) not represented locally	
	Channel C Stage (*ca.* 10,500 B.C.)	? KS-IV
	Channel B Stage (*ca.* 12,500 - 11,000 B.C.)	GS-2B-I, GS-1-XIII GS-2B-II, GS-1-III
	Channel A Stage (*ca.* 15,000 - 12,500 B.C.)	GS-2A complex KS-II/III
Masmas Fm.	*ca.* 22,000 - 16,000 B.C.	None
Korosko Fm.	Terminating *ca.* 24,000 B.C.	None

TABLE 2. - DISTRIBUTION OF ARTIFACTS BY MAJOR CLASSES

	Number	*Percent*
Blades	1269	36.12
Flakes	1597	45.46
Cores	108	3.07
Primary Flakes	487	13.87
Burin Spalls	18	0.51
Core Trimming Pieces	34	0.97
Total	3513	100.00

TABLE 3. - RAW MATERIALS

	Flakes		Blades		P. Flakes		Cores	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
Hudi Chert (nilotic)	1499	93.86	1189	93.70	442	90.76	85	78.70
Nummulitic chert (local) . . .	34	2.13	26	2.05	9	1.84	3	2.78
Variegated transparent agate .	46	2.88	34	2.68	21	4.32	15	13.89
Banded transparent agate . . .	13	0.81	10	0.79	12	2.46	4	3.70
Cryptocrystalline quartz . . .	3	0.19	6	0.47	3	0.62	1	.93
Jasper	—	—	4	0.31	—	—	—	—
Petrified wood	2	0.13	—	—	—	—	—	—
Total . . .	1597	100.00	1269	100.00	487	100.00	108	100.00

TABLE 4. - FORMS OF FLAKE AND BLADE PLATFORMS
(Sample includes all unretouched flakes and blades with platforms)

	Flakes		Blades	
	Number	*Percent*	*Number*	*Percent*
Unfacetted	102	58.29	149	70.95
Facetted	15	8.57	5	2.38
Dihedral Facetted	2	1.14	—	—
Cortex	30	17.14	5	2.38
Unidentified	26	14.86	51	24.29
	175	100.00	210	100.00

TABLE 5. - LENGTH/WIDTH RATIO OF UNRETOUCHED FLAKES AND BLADES
(Measured from all unbroken, unretouched, secondary flakes and blades)

	Number	*Percent*
<1 : 1	37	20.33
1 : 1-1.5 : 1	83	45.60
1.5 : 1-2 : 1	62	34.07
2 : 1-3 : 1	62	45.58
3 : 1-4 : 1	54	39.71
4 : 1-5 : 1	20	14.71
>5 : 1	—	——

Table 6. - BLADES BY TYPES OF DISTAL END

	Number	*Percent*
Blunt	158	75.24
Pointed	37	17.62
Overpassed	15	7.14
Total	210	100.00

Table 7. - LENGTH/WIDTH RATIO OF RETOUCHED BLADE TOOLS

(Samples includg all unbroken, retouched blade tools)

	X - Level		Y - Level		Z - Level		Total	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
2 : 1-3 : 1	34	45.95	19	47.50	9	40.91	62	45.59
3 : -4 : 1	26	35.13	19	47.50	9	40.91	54	39.71
4 : -5 : 1	14	18.92	2	5.00	4	18.18	20	14.70
>5 : 1	—	—	—	—	—	—	—	—
Total	74	100.00	40	100.00	22	100.00	136	100.00

Table 8. - DETERMINATION OF BLADE TOOL CLASS

(Samples include all unbroken, blade tools)

	X - Level		Y - Level		Z - Level		Total	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
Blades	2	2.70	—	—	—	—	2	1.47
Bladelets	19	25.68	10	25.00	7	31.82	36	26.47
Microblades	53	71.62	30	75.00	15	68.18	98	72.06
Total	74	100.00	40	100.00	22	100.00	136	100.00

TABLE 9. - TOOL TYPE LIST

Type[1]	Depth-0-40 cm. (X&Y-Levels)		40-50 cm. (Z-Level)	
	Number	*Percent*	*Number*	*Percent*
End-Scraper on Retouched Flake (※2)	1	0.29	—	—
Core Scraper (※4)	1	0.29	—	—
End-Scraper on Blade (※8)	2	0.58	3	6.39
Burin, Straight Dihedral, Blade (※17)	2	0.58	—	—
Burin, Straight Dihedral, Multiple Facetted, Blade (※17)	1	0.29	—	—
Burin, Straight Dihedral, Flake (※17)	2	0.58	—	—
Burin, Dihedral Angle, Blade (※18)	1	0.29	—	—
Burin, Dihedral Angle, Flake (※18)	1	0.29	—	—
Burin, on Oblique Truncation, Blade (※22)	2	0.58	—	—
Burin, on Convex Truncation, Blade (※24)	1	0.29	—	—
Burin, Multiple Mixed, Blade (※27)	1	0.29	—	—
Burin/End-Scraper, Flake (※44)	1	0.29	—	—
Bladelet, Straight Backed Pointed (※45)	1	0.29	—	—
Bladelet, Arched Tip (※55)	17	4.96	3	6.39
Bladelet, Arched Tip and Ogival Base (※55)	7	2.05	—	—
Bladelet, Arched Tip and Retouched Base (※55)	1	0.29	—	—
Bladelet, Arched Backed Pointed (※56)	1	0.29	—	—
Bladelet, Arched Backed Pointed and Retouched Base (※59)	—	—	1	2.13
Bladelet, Humped Backed (※60)	1	0.29	—	—
Bladelet, Humped Backed and Ogival Base (※60)	—	—	1	2.13
La Mouillah Point (※62)	5	1.46	—	—
La Mouillah Point, Flake (※62)	1	0.29	—	—
Bladelet, Partial Backed (※63)	15	4.37	2	4.25
Bladelet, Shouldered (*Lamelle à cran*) (※64)	2	0.58	—	—
Bladelet, Shouldered and Ogival Base (*Lamelle à cran*) (※64)	1	0,29	—	—
Bladelet, Backed Fragment (※66)	4	1.17	3	6.39
Bladelet, Backed and Obliquely Truncated with Ogival Base (*Lamelle scalène*) (※68)	3	0.87	—	—
Bladelet, Backed and Obliquely Truncated with Rounded Base (*Lamelle scalène*) (※68)	3	0.87	—	—
Bladelet, Ouchtata, Distal (※70)	12	3.50	—	—
Bladelet, Ouchtata, Fragment (※72)	2	0.58	1	2.13
Flake, Notched (※74)	6	1.75	—	—
Blade, Notched (※76)	21	6.12	4	8.51
Total				

TABLE 9. - TOOL TYPE LIST - *Continued*

Type[1]	Depth-0-40 cm. (X&Y-Levels)		40-50 cm. (Z-Level)	
	Number	*Percent*	*Number*	*Percent*
Truncation, Distal Oblique, Bladelet (※80) . . .	32	9.33	8	17.02
Truncation, Straight Distal, Bladelet (※80) . . .	2	0.58	—	—
Truncation, Straight Distal, Flake (※80)	1	0.29	—	—
Truncation, Concave Distal, Bladelet (※80). . . .	7	2.05	—	—
Truncation, Convex Distal, Bladelet (※80)	3	0.88	—	—
Truncation, Oblique Basal, Bladelet (※80)	18	5.25	—	—
Truncation, Straight Basal, Bladelet (※90)	3	0.87	—	—
Truncation, Concave Basal, Bladelet (※80)	1	0.29	—	—
Truncation, Double, Bladelet (※80)	9	2.62	1	2.13
Truncation, Oblique Distal, with Ogival Base (※81)	7	2.05	1	2.13
Triangle, Scalene, with one Short Head (※95) . .	1	0.29	—	—
Piquant-Trièdre (※101)	39	11.37	7	14.89
Piquant-Trièdre, with Ogival Base (※101)	13	3.79	—	—
Piquant-Trièdre, with Basal Truncation (※101) . . .	2	0.58	1	2.13
Piquant-Trièdre, with End-Scraper (※101)	5	1.46	—	—
Microburin (※102)	44	12.85	10	21.28
Bladelet, with Continuous Retouch (※105)	11	3.22	—	—
Flake, with Continuous Retouch (※105)	2	0.58	—	—
Blade, Side-Scraper (※106)	1	0.29	—	—
Bladelet, Pointed with ogival base (※109)	17	4.96	1	2.13
Side-Scraper/Convex Basal Truncation, Flake (※12)	1	0.29	—	—
Denticulate/Dihedral Burin, Blade (※112)	1	0.29	—	—
End-Scraper, Ogival/Double Ouchtata Retouched, Bladelet (※112)	1	0.29	—	—
Truncation, Oblique Distal/End-Scraper, Bladelet (※112).	3	0.87	—	—
Total . . .	343	100.00	47	100.00

(1) All numbers in parentheses refer to the types in Tixier (1963).

Table 10. - TYPES OF SIMPLE MICROBURINS

	0-30 cm (X-Level)		30-40 cm (Y-Level)		40-50 cm (Z-Level)	
	※	%	※	%	※	%
Proximal	18	48.65	3	42.86	6	60.00
Distal	9	24.32	2	28.57	2	20.00
Central	10	27.00	2	28.57	2	20.00
Total	37	100.00	7	100.00	10	100.00

Table 11. - CORE LENGTH BY MAJOR CLASSES

	X Level	Y Level	Z Level
Single Platform			
Bladelet/Microblade:			
Range	16–37	17–45	30
$\bar{x}$	24.37	27.06	30
Mode	23	18	30
Flake:			
Range	14–24	....	....
$\bar{x}$	18	....	....
Mode	18	....	....
Opposed Platform			
Bladelet/Microblade:			
Range	20–41	17–36	19–29
$\bar{x}$	26.75	26.89	23
Mode	23	28	23
90° *same side*			
Bladelet/Microblade:			
Range	....	....	16–51
$\bar{x}$	....	....	35.50
Mode	....	....	35.50
Multiple Platform			
Bladelet/Microblade:			
Range	20–24	....	....
$\bar{x}$	23	....	....
Mode	23	....	....

Table 12. - CORE TYPE LIST

	X Level No.	X Level Percent	Y Level No.	Y Level Percent	Z Level No.	Z Level Percent	TOTAL No.	TOTAL Percent
Single Platform								
Flake:								
Unfacetted	2	2.60	..	..	..	..	2	1.85
Facetted	1	1.30	..	..	..	..	1	0.94
Bladelet/Microblade:								
Unfacetted	43	55.84	12	48.00	1	16.67	56	51.85
Facetted	8	10.39	4	16.00	..	..	12	11.11
Opposed Platform								
Bladelet/Microblade:								
Unfacetted 2x	12	15.58	1	4.00	1	16.67	14	12.96
Facetted/Unfacetted	6	7.79	2	8.00	1	16.67	9	8.33
Opposite side	2	2.60	4	16.00	1	16.67	7	6.48
Twisted	..	....	2	8.00	..	..	2	1.85
90°								
Bladelet/Microblade:								
Same side	..	....	..	....	2	33.32	2	1.85
Multiple Platform								
Bladelet/Microblade	3	3.90	..	....	..	....	3	2.78
	77	100.00	25	100.00	6	100.00	108	100.00

Table 13. - TYPOLOGICAL INDICES OF GS-2B-II and ESNA E71K20B

	X + Y Level	Z Level	E71K20B
End-Scrapers	3	6	1
Burins	3	....	2
Backed Bladelets	18	21	23
Ouchtata	4	3	2
Notches & Denticulates	9	8	17
Truncations	27	21	27
Microburin Technique	30	38	16
Retouched Pieces	8	3	6

TABLE 14. - DISTRIBUTION OF ARTIFACTS BY MAJOR CLASSES WITHIN SEVERAL NILE VALLEY LATE PALEOLITHIC ASSEMBLAGES

	Halfan IV (443) (1)		Halfan V (1028) (2)		Ballanan (8956) (3)		E71K12		E71K13	
	No.	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*	*No.*	*Percent*
Blades	2.747	20.04	540	22.20	1,794	11.62	10,149	31.40	21,502	35.41
Flakes	3,599	26.25	277	11.39	5,183	33.57	16,203	50.13	30,554	50.32
Primary Flakes . .	6,724	49.05	1,447	59.50	4,795	31.05	5,067	15.67	6,940	11.43
Cores	638	4.65	168	6.91	3,669	23.76	905	2.80	1,721	2.83
Total . . .	13,708	99.99	2,432	100.00	15,441	100.00	32,330	100.00	60,717	99.99

(1) These figures have been readjusted to exclude the debris. Data from Marks (1968a: 436-46).
(2) *Ibid.* Data from Marks (1968a: 449-54).
(3) *Ibid.* Data from Wendorf (1968a: 831-47).

TABLE 15. - TYPES OF RAW MATERIAL USED IN SEVERAL NILE VALLEY LATE PALEOLITHIC ASSEMBLAGES

	Halfan IV (443) (4)		Halfan V (1028) (5)		Ballanan (8956) (6)		Twelve		Thirteen		GS-2B-II	
	C.	T.	C.	T.	C.	T.	C.	T.	C.	T.	C.	T.
Nile Chert .	95.3	98.3	80.9	89.3	84.2	90.1	50.4	20.4	3.8	3.2	78.70	86.40
Wadi Flint .	—	—	—	—	—	—	49.5	79.5	96.2	96.8	—	—
Agate . . .	3.4	1.4	1.2	6.2	15.8	9.5	+	+	—	—	17.59	12.63
Quartz . .	0.2	—	—	—	—	—	+	+	—	—	0.93	—
Fossil Wood	0.9	—	17.3	3.8	+	—	—	—	—	—	—	0.65
Precambrian	—	—	0.6	0.7	—	—	—	—	—	—	—	—
Sandstone .	—	—	—	—	—	0.4	—	—	—	—	—	—
Others . . .	—	—	—	—	—	—	+	+	—	—	2.78	0.32

(4) See Marks (1968a: 436-46).
(5) Marks (1968a: 449-54)
(6) Wendorf (1968a: 831-47).

TABLE 16. - LITHIC INDICES FROM SELECTED LATE PALEOLITHIC ASSEMBLAGES IN THE NILE VALLEY

	Fakhurian (7)				Halfan IV (443) (8)	Halfan V (8956) (9)	Ballanan (8956) (10)	E71K12	E71K13	GS-2B-II	E71 K20B
	E71K1	3	4	5							
Backed Bladelets . .	14.62	21.21	18.93	24.05	64.60	84.18	56.90	65.70	8.50	22	23
Straight . .	+	50.00	60.00	57.00	63.58	*	*	92.39	40.61	91	91
Arched . .	2.51	50.00	40.00	43.00	29.86	22.00	*	7.61	59.39	9	9
Concave .	*	*	*	*	6.55	*	*	—	—	—	—
Microburin Technique .	—	—	—	—	—	—	—	—	—	32	16
Backed Flakes	4.93	2.23	2.10	3.22	16.90	0.70	5.49	0.03	0.60	—	—
Perforators. .	9.15	15.45	9.82	9.72	0.60	0.30	—	4.10	+	—	—
Ouchtata . .	0.53	1.78	4.06	13.61	*	*	*	3.80	78.80	4	2
Truncations .	6.01	6.54	4.03	6.11	1.70	1.90	59.60	4.10	2.40	27	27
End-Scrapers .	10.49	3.27	7.99	6.06	2.50	0.60	2.90	1.10	0.40		
Burins . . .	3.05	2.53	2.81	1.72	1.00	1.50	12.40	2.20	2.10	3	2

(7) The data for the Fakhurian is based on the types in Lubell (1971, and personal communication).

(8) See Marks (1968a: 436-46). The figures under the heading Backed Bladelets are based on both the backed *and* partially backed pieces.

(9) Marks (1968a: 449-54).

(10) Wendorf (1968a: 831-47).

(11) The indices for E71K20B are preliminary and will most likely change somewhat in the final analysis of Wendorf and Schild.

(12) These figures do not include convex truncations, or concave truncations.

* Unknown.

Table 17. - FREQUENCY OF TOOL CATEGORIES IN SELECTED NILE VALLEY SITES

	Fakhurian				Halfan IV (443)	Halfan V (1028)	Ballanan (8956)	Twelve	Thirteen	G.S.2B,II	E71K20B (13)
	E71K1	3	4	5							
Blade Tools	47.53	66.72	59.05	80.83	71.70	92.70	69.90	88.57	93.21	95.64	90
Flake Tools	47.53	30.46	38.85	18.67	25.70	5.20	17.90	11.42	6.70	4.10	10
Core Tools	4.93	2.82	2.10	0.50	2.60	2.10	9.80	0.01	0.09	0.26	—

(13) The data for Site E71K20B is preliminary, and will most likely change somewhat in the final analysis by Wendorf and Schild.

Table 18. - CORE TYPOLOGY OF SELECTED LATE PALEOLITHIC ASSEMBLAGES WITHIN IN THE NILE VALLEY

TYPE	Halfan IV (2014, 443) (14)	Fakhurian (E71K1-5) (15)	Ballanan (8956, 8863) (16)	Twelve	Thirteen	G.S.2B,2	E71K20B
	%	%	%	%	%	%	%
Single Platform	53.7–77.4	24.96–35.83	33.4–48.6	35.64.48–74	16.09–20.16	67.75	26.05
Opposed Platform.	3.2–7.8	27.15–53.32	20.8–22.3	40.47–50.77	71.83–78.25	29.62	46.22
90°	2.0–2.1	8.50–17.82	1.8–2.4	2.02–14.22	4.18.4.65	4.63	19.33

(14) See Marks (1968a).
(15) See Lubell (1971).
(16) See Wendorf (1968a).

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ZUSAMMENFASSUNG

Die *in situ* Freilandstation Gebel Silsila-2B-II liegt 22 km nördlich von Kom Ombo, im nordöstlichen Teil der Kom Ombo - Ebene, Oberägypten. Lage und Fauna lassen auf eine Jagd-und Fischereiwirtschaft, die am Rande einer kleiner Nilabzweigung, unmittelbar nach den sommerlichen Fluten im Spätseptember oder Oktober ausgeübt wurde, schliessen. Die mikrolithischen Steinwerkzeuge werden durch gestumpfe Mikroklingen, Mikrostichel, sowie pseudo- Striel spitzen gekennzeichnet. Zumindest 4 kleinere Lagerplätze wurden aufgefunden, die alle enge Zusammenhänge aufweisen. Die Fundstelle ist die erste des Silsilien die voll beschrieben wird und nimmt daher eine wichtige Stellung in der Kulturgeschichte und Stratigraphie des Spätpaläolithikums des Niltals ein.

RÉSUMÉ

Le gisement en plein air *in situ* de Gebel Silsila-2B-II se trouve a 22 km au Nord de la ville de Kom Ombo dans le quadrant Nord-Est de la plaine de Kom Ombo (Egypte). La situation de ce gisement et la faune indiquent l'existence d'une economie de chasse et pêche; le site, se trouvant sur un ancien chenal du Nil, était probablement occupé après les crues annuelles, à partir de fin septembre ou octobre. L'industrie, microlithique, est caracterisée par des lamelles à troncature, la technique du microburin et des pointes à pseudo-pédoncule. Au moins quatre petites stations, campements en plein air, offrant de nombreux traits communs, ont été repérées. Cet ensemble silsilien est le premier à être décrit en détail; il apporte ainsi une contribution non négligeable à la connaissance de la séquence culturelle et de la stratigraphie du Paléolithique final de la vallée du Nil.