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The Fayum Neolithic in the light of new discoveries

The present state of investigations

The term Fayum Neolithic was introduced by G. Caton-Thompson and E. Gardner who in the twenties of this century carried out large-scale excavations at the northern border of the Fayum Oasis, north of the present Birket Qarun Lake (Caton-Thompson and Gardner 1926; 1934). On the strength of the results obtained, the authors claimed that the neolithic inventories discovered in the area were different from the culture units known till that time on the territory of Egypt. The observed differences led – as we know – to the isolation of two new units within the framework of the Egyptian Neolithic. This was done mainly on the evidence from the explored large settlements, *i.e.* Kom W and Kom K, and surface finds from the region around Qasr el-Sagha. The first of the two units is the so-called Fayum A culture.

Its description was based on the materials obtained during exploration of the above-mentioned Kom W and K. According to Caton-Thompson and Gardner the lithic inventory of Fayum A contains typically bifacially retouched tools including knives, arrowheads and sickles, various types of chipped and polished axes, stone grinders, a variety of flint tools with retouch of the edge made on flakes, blades and pebbles. Diverse ceramic types are represented mainly by spherical and hemispherical vessels, S-profile pots, pots with more or less cylindrical necks, vessels with everted rims, bowls of various depth with rims everted, and finally pedestalled vessels. The Fayum A unit had a typical neolithic economy of intensive land cultivation and stock breeding.

The Fayum B culture – which according to Caton-Thompson and Gardner is later than Fayum A – shows considerable differences as to the lithic inventories and economy type. Flint tools contain convex and straight backed pieces and nume-

rous other tools – mainly blade tools formed by retouch of the edge. Besides these, a small number of tools formed by bifacial surface retouch occur. The latter are all hunting tools. In respect of economy the Fayum B was supposed to indicate the reversion to hunting and fishing (economy of the Palaeolithic type). Relative chronology of Fayum A and Fayum B was principally based on the vertical differentiation of sites in relation to their elevation above sea level. Caton-Thompson and Gardner worked on the assumption that the level of the present-day Birket Qarun Lake lowered gradually from the Late Pleistocene to the Early Holocene. Consequently, the sites stratified higher were supposed to be older than the sites situated in lower areas.

Already in 1936 Little verified the hypothesis of Caton-Thompson and Gardner about the dynamics of the changes in the level of the Birket Qarun Lake. Intensive investigations in the region of the Hawara Canal led him to the conclusion that the lake level fluctuated periodically. One of the factors causing fluctuations was the action of rivers discharging their waters into the lake.

Later, the existing conceptions were developed and presented in new light due to investigations by Combined Prehistoric Expedition conducted in the sixties at the northern edge of the Birket Qarun Lake. In the outcome the occurrence of several consecutive lake transgressions was revealed separated by distinct periods of recession when the lake receded a fair distance, thus making large areas accessible by Epi-Palaeolithic and Neolithic populations. Four phases of transgression were distinguished: the earliest falling at *ca* 7,000 b.c., the latest at the Period of the Old Kingdom. They were dennotated respectively: the Palaeo-Moeris, Pre-Moeris, Proto-Moeris and Moeris Lake. Investigations of this Expedition into the prehistory of the end of the Pleistocene and the Early and Middle Holocene in the Qasr el-Sagha region together with the areas directly beyond confirmed the presence of the Fayum A culture – as it was understood by Caton-Thompson – whereas the views on the Fayum B culture underwent revision. Materials supposedly representing Fayum B were reidentified as belonging to a new taxonomic unit which has been distinguished and dennotated as the Qarunian. Numerous stratigraphic observations and radiocarbon determinations date this unit to the 7th and 6th millennia b.c. (Wendorf and Schild 1976). The unit corresponds to the Holocene phase of the Late Palaeolithic in north-eastern Africa and had the hunting and fishing economy.

Further investigations in the region of Qasr el-Sagha were carried out in 1979 by the authors of the present paper from the Archaeological Institute of the Jagiellonian University in Kraków with the participation of the staff of the Mining and Metallurgy Academy and the Archaeological Museum in Kraków, in cooperation with the Cairo Branch of the German Institute of Archaeology. Explorations concentrated about 1.5 km from the Qasr el-Sagha temple and covered the territory investigated by the Combined Prehistoric Expedition – by kind permission of Professors Wendorf and Schild.

Palaeography of the Birket Qarun Lake

Sedimentation in the northern margin of the Fayum depression shows a large hiatus between the Upper Eocene slates (UES formation) and the lacustrine Holocene deposits whose sequence begins with lacustrine marl-diatomites (LMD unit). The sedimentation of the lowermost series of these deposits is connected with several fluctuations of the lake level which discontinued with the arid recession phase. Traces of this phase can be observed such as anhydrite crystals in the top of the LMD unit, and charcoal from fires of the parched vegetation round the dry lake shore. The development of the LMD unit falls within the period of 8,835±890 B.P. (Gd-709) and 7,440±60 B.P. (Bln-2336), in accordance with the dates obtained from recent investigations in the region of Qasr el-Sagha. This dating corresponds to the transgressions of the Pre- and Proto-Moeris Lake as determined by Wendorf and Schild (1976).

Another, much smaller hiatus separated the LMD formation from the overlying grey hard silts (GHS) containing the first traces of Neolithic settlement. The formation of the middle and upper parts of the GHS unit took place in a fairly dry recession phase, when the settlement was distributed at the level of 14.75 m above sea level, in the period from *ca* 6,480±170 B.P. (Gd-2021) and 6,320±60 B.P. (Gd-1497). The silts are medium or fine-grained and do not show sedimentation structures (Fig. 1).

A new transgression period starts with the sedimentation of the white sands silts complex (CWSS), horizontally strongly differentiated in result of differences in the sedimentation regimen and a heavy uneven erosion of the top of the GHS unit. In the western part of the investigated area cross-bedded sands occur. These are deltaic sediments from the estuary of wadis discharging water from the territories of the Western Desert in the north.

The borderline between the GHS and CWSS formation will have fallen at the first half of the 4th millennium b.c. in the interval between the radiocarbon dates 5,990±60 B.P. (Gd-695) and 5,650±70 B.P. (Gd-1495), and 5,540±70 B.P. (Gd-1140).

The top of the CWSS formations corresponds again to a recession period. As a result abundant traces of settlement are found in the eastern part of the investigated area. In the same area humus soil developed on the CWSS unit indicates that the climate ameliorated by becoming drier. It has been dated to ca 5,000±60 B.P. (Gd-1496) and 5,010±110 B.P. (Gd-907). The shore-line at that time displaced markedly to the south, most probably beyond the boundaries of the territory under investigation.

Another transgression of the lake starts with the deposition of brown sands consisting of several layers separated by periods of erosion. The floor itself of the BS unit is dated to 4,829±100 B.P. (Gd-976), although earliest dates have been obtained synchronous with determinations for the soil: 5,080 ±110 B.P. (Gd-976),

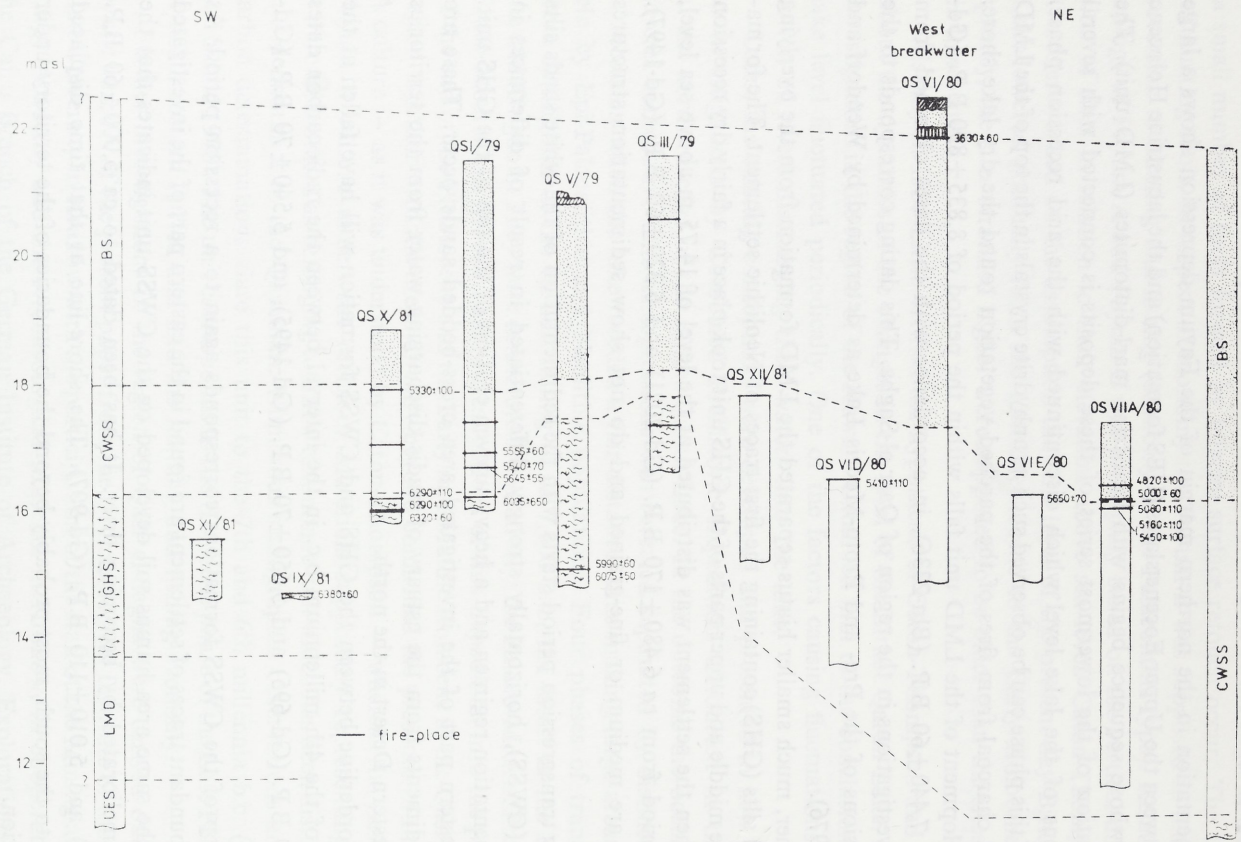

Fig. 1. Simplified stratigraphic section of Qasr el-Sagha region

and 5,120±110 B.P. (Gd-874). The top part of the BS unit is an equivalent of the maximum transgression of the lake during the Middle Kingdom period. When we correlate the stratigraphic units just mentioned with palaeoclimatic events in the Sahara and the Nile Valley, then the end of the LMD sedimentation coincides with the end of a slightly wetter period dated in the Gebel Nabta region in the Western Desert to 9,650±750 B.P. (Wendorf and Schild 1980) corresponding to the aggradation of the Nile verified in the Catfish Cave for the end of the 6th millennium b.c. (Wendt 1966).

The next lake transgression, connected with beginning of the formation of the CWSS unit, corresponds in turn to another aggradation of the Nile dated in the region of Dibeira-West to the middle of the 4th millennium b.c. This was at the same time a wetter period in the Western Desert as shown by huge deltaic sediments at the estuaries of wadis in the western part of the investigated area.

The subsequent recession and aridity of climate took place at the turn of the 4th and 3rd millennia b.c., that is: slightly earlier than the maximum climatic aridity according to data from the oases in the Western Desert, for example, Siwa and Garra (Hassan 1976; 1978).

The lake fluctuation during the deposition of the BS unit seems to have been related primarily to the water works in the region of the Hawara Canal, which permitted periodical flow of water from the Nile to the Fayum depression. Another factor was the action of torrential rains in the Western Desert which brought about partial destruction of Middle Kingdom settlements located in the region of Qasr el-Sagha.

Stratigraphic and geochronological basis for the identification of culture units

Within the sequence of Holocene sediments in the Qasr el-Sagha region we have just discussed, two principal stages of Neolithic settlement can be distinguished in the period between the Epipalaeolithic and Dynastic (possibly Proto-Dynastic) settlement.

The local Epi-Palaeolithic is linked with the LMD formation only and falls at the period from 8,835±890 B.P. (Gd-709), dated by the Epi-Palaeolithic finds on the secondary deposits at site QS I/79, to 7,740±60 B.P. (Bln-2336), and by the hearth in the top of the LMD at site QS II/79. These determinations tally with dates obtained for the Qarunian at site E-29G1: 8,100±130 B.P. (I-4128); E29HI: 8,070± ±115 B.P. (I-4126); E29G3A: 7,500±125 B.P. (I-4130).

If these dates are taken into account, then a large hiatus becomes apparent between the Epi-Palaeolithic and the beginning of the Neolithic. The oldest Neolithic site QS XI/81 in the middle of the GHS formation yielded the date of 6,480±170 years B.P. (Gd-2021). Thus the hiatus is of about one thousand years.

The development of the Early Phase of the Fayum Neolithic falls at the period of formation of the central and upper part of the GHS unit and the lower part of the CWSS unit. This was initially a period of recession, when the lake shore was accessible for at least seasonal settlement, followed by the onset of the transgression phase. Thus, the beginning of the period was dry and then the climate got increasingly wetter until heavy rainfalls occurred in the Wester Desert activating the wadis which discharged water into the lake. Radiometric determinations date this period to the second half of the 5th millennium b.c., for example: site QS XI/81 – 6,480± ±170 B.P. (Gd-2021), QS IX/81 – 6,380±60 B.P. (Gd-149), QS V/79 – 6,075± ±50 B.P. (Bln-2335), 5,990±60 B.P. (Gd-695), QS I/79 – 6,035±650 B.P. (Gd-708), as far as sites stratified within the GHS formation are concerned. Sites which are contained within the bottom of the CWSS and the corresponding deltaic sands date to the first half of the 4th millennium b.c., *e.g.*, QS I/79 – 5,645±55 B.P. (Bln-2334), 5,555±60 B.P. (Bln-2333). 5,540±70 B.P. (Gd-1140), QS VIE/81 – 5,650±70 B.P. (Gd-1495).

Thus, a chronological hiatus is found as well between the sites of the Early Phase of the Neolithic in the GHS formation as well as at the bottom of the CWSS unit in the period from 5,990 to 5,650 B.P. The hiatus may be accounted for, we are inclined to believe, by heavy erosion of the top of the GHS formation which may have caused the destruction of sites originating from this temporal interval, and moreover may have created limited conditions for settlement in the northern part of the Fayum depression.

The onset of the next recession stage corresponding to the top of the CWSS formation and the overlying fossil soil falls within the second half of the 4th millennium b.c. This has been confirmed by dates from the top of the CWSS formation (site VII) A/80: 5,480±100 B.P. (Gd-977), 5,070±110 B.P. (Gd-895), 5,160±120 B.P. (Gd-915); site VID: 5,410±110 B.P. (Gd-903) and the uppermost hearth No. 6 at site QS X/81: 5,330±100 B.P. (Gd-978).

The top of the CWSS formation and the overlying soil contain the Late Phase of the Neolithic settlement. Its taxonomic position differs considerably from that of the Early Phase. The end of the Late Phase in the fossil soil (and possibly initial sediments of BS) is synchronous with the remains of Proto-Dynastic settlement of the Qasr el-Sagha region-sites QS VIII/80: 5,010±120 B.P. (Gd-904), QS VII/80: 5,129±110 B.P. (Gd-874).

The Early Phase of the Fayum Neolithic took place, therefore, after the dry episode had finished and a wetter one began (second half of the 5th and the beginning of the 4th millennium b.c.), whereas the Late Phase developed, on the contrary, at the end of the wet climatic episode (second half of the 4th millenium b.c.). Between the Early and the Late Phase occurs not only a typological hiatus but also – as we intend to show – a chronological hiatus of at least one hundred years in the very middle of the 4th millenium b.c.

Settlement of the Late Phase of the Neolithic persisted during the dry episode until the first Proto-Dynastic settlements appeared in the Qasr el-Sagha region.

The direct confirmation of such a sequence of two phases of the Neolithic is the stratigraphy revealed at site QS X/81. At this site hearth 3 and 4 were contained in the top of the GHS formation. Hearth 1 yielded the date of 6,320±60 B.P. (Gd-1497). Overlying hearths 2 and 5 yielded almost identical dates 6,290±100 B.P. (Gd-979) and 6,290±110 B.P. (Gd -980). Still higher, at the top of the CWSS unit hearth 6 was stratified with the data of 5,330±100 B.P. (Gd-978). Scanty material from hearths 1 - 5 shows links with the Early Phase, and hearth 6 with the Late Phase.

The Early section of the Neolithic sequence: the Fayumian

The early part of the Neolithic sequence in the Qasr el-Sagha region which we have designated as the Fayumian and which is identified with Caton-Thompson's Fayum A culture, is represented by sites concentrating mainly in the SW section of the investigated area, about 1 to 1.5 km SW of the temple. The sites are located at the foot and in the lower parts of mounds surmounted sometimes with stone constructions from the period of the Middle Kingdom. Some sites are located directly next to the mounds. The main bulk of material has been collected from contemporary surfaces of uncovered sediments, while a part comes from excavations of the butts. As we have said in the previous section – the oldest site (QS IX/81) is contained in the central part of the GHS, the next two (QS XI/81 and the lower part of X/81) in the top part of the GHS, next one (middle part of QS X/81) at the bottom of the CWSS, and the youngest sites (QS V/79 and QS I/79) in the central part of the CWSS. The most recent radiocarbon determinations date the oldest site of the Fayumian at 6,480±170 B.P., the youngest site at 5,540±70 B.P. The chronological sequence of the Fayumian we have established is therefore contained within the temporal framework of more than 900 radiocarbon years. The description of the Fayumian is based on the analysis of all the sites mentioned above, first of all on the rich inventory from site QS IX/81.

For flint tools making, pebbles occurring in large quantities on the surface of the high desert plateau between Qasr el-Sagha and Gebel Qatrani were used. Apart from these diverse flint pebbles and thermal fragments of cherts are found. Among small and very small cores single-platform flake cores in various phases of processing prevailed (Fig. 2 : *2 - 6,9*). They are mostly unprepared or only with prepared platforms. Considerably fewer are double–platform flake cores, flake cores with changed orientation (Fig. 2 : *7, 8, 11 - 13*), discoidal and sub-discoidal cores (Fig. 2 : *10*). Only single examples bear traces of flake and blade processing. Debitage is represented almost exclusively by various types of flakes. Blades do not exceed 3% of all

lithic inventories. These are predominantly blades struck off blade-flake cores, or pseudo-blades struck off the edge of the flaking face of the core. On all the sites cortical flakes constitute from one half to two-thirds of all flake forms. Wholly corti-

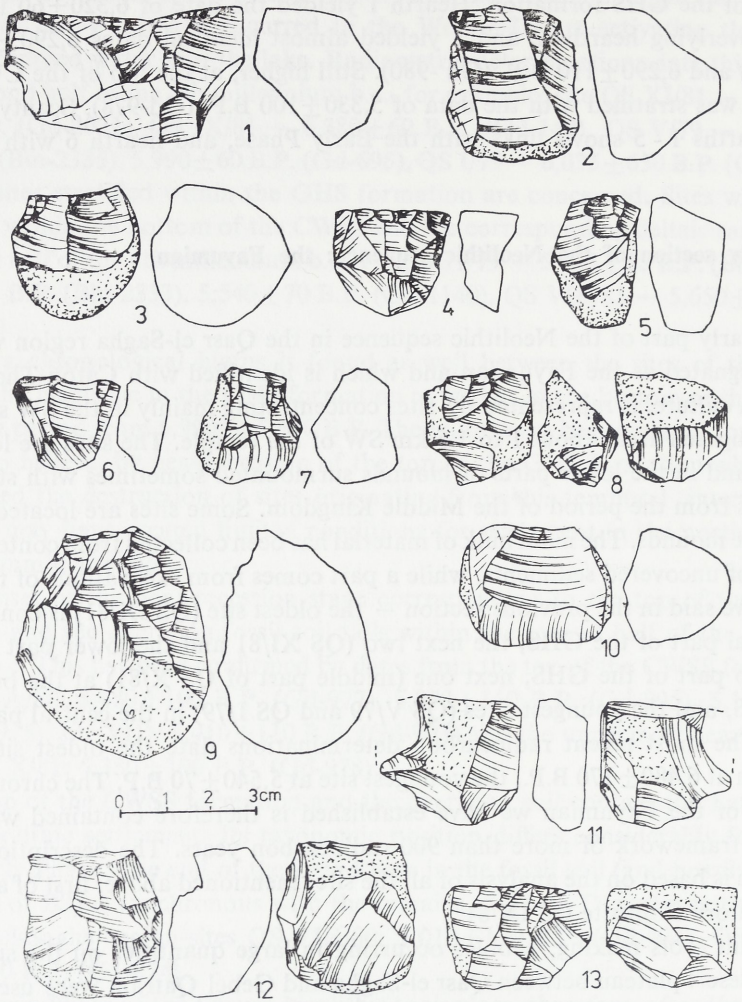

FIG. 2. Qasr el-Sagha, Site IX/81. Cores

cal flakes occur fairly frequently. Next to flakes with scars on the dorsal side struck off parallel to the flake axis there are also flakes with opposite scars struck off double-platform cores with a common flaking face, and flakes with crossing and centripetal scars. The latter are undoubtedly the evidence of the application of discoidal core technique. Relatively numerous are flakes with a narrow strip of cortex on one side

resembling short and thick *couteau à dos naturel*, but removed from discoidal cores. Characteristic but not very frequent are atypical side-blow flakes with the elongated cortical platform and flakes removed by splintered technique.

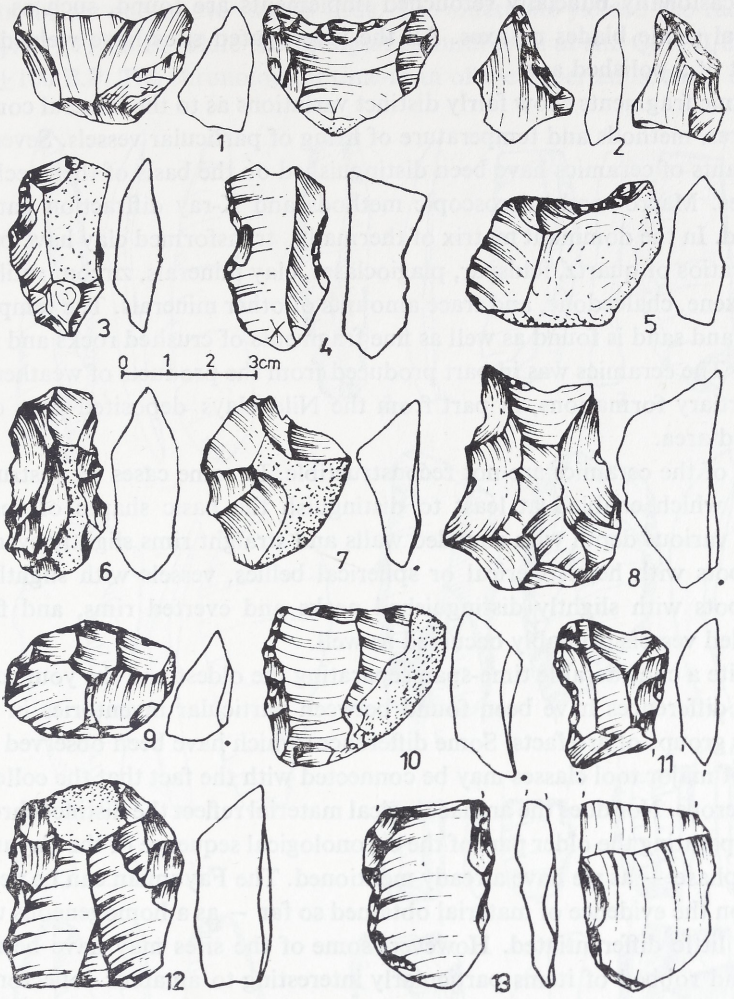

FIG. 3. Qasr el-Sagha, Site IX/81

1 - 5: Notched implements; *6 - 8*: Denticulated tools; *9 - 13*: Side-scrapers

Four basic tool groups have been indentified: notched tools (Fig. 3 : *1 - 5*), denticulated tools (Fig. 3 : *6 - 8*), side-scrapers (Fig. 3 : 9 - *13*) and retouched flakes. They appear in various ratios with the predominance of notched and denticulated tools or with a slight ascendancy of side-scrapers, while the ratio of retouched flakes

remains stable and fairly high. Only in the uppermost culture level at site QSI/79 single retouched blades have been recorded. Tools with retouch on the edge are usually made on flakes. This corresponds to the conspicuously flake-based character of flint industries of the Fayumian observed in the groups of core and debitage. Occasionally bifacially retouched implements are found, such as fragments of bifacial sickle blades or axes. All the investigated sites have yielded only one fragment of a polished axe.

Ceramic fragments show fairly distinct variations as to the mineral composition, admixtures, methods and temperature of firing of particular vessels. Several groups and variants of ceramics have been distinguished on the basis of their technological properties. Macro- and microscopic methods and X-ray diffraction pattern have been used. In the dominant matrix of thermally transformed clay have been found various ratios of quartz, feldspar, plagioclases, clay minerals, zircon, rutile, turmaline, piroxene, chalcedone, and trace amounts of other minerals. The temper is often organic, and sand is found as well as fine fragments of crushed rocks and fragments of shells. The ceramics was in part produced from the products of weathering of the local Tertiary formations, in part from the Nile clays deposited east of the investigated area.

Most of the ceramics are not reconstructible. In some cases reconstruction was possible, which enabled at least to distinguish the basic shapes of vessels, *i.e.*: bowls of various depth with rounded walls and straight rims slightly everted or inverted, pots with hemispherical or spherical bellies, vessels with slightly profiled bellies, pots with slightly distinguished necks and everted rims, and flat plates. Pedestalled vessels probably occurred as well.

Despite a considerable time-span separating the oldest and the youngest sites no essential differences have been found between particular inventories in respect of the basic groups of artefacts. Some differences which have been observed in the frequency of major tool classes may be connected with the fact that the collections are not numerous. Nor does the archaeological material reflect the distinct chronological hiatus separating the older part of the chronological sequence of the Fayumian from its later phase — as we have already mentioned. The Fayumian can be perceived — at least on the evidence of material obtained so far — as a homogeneous unit, typologically little differentiated. However, some of the sites may have been impoverished and robbed of items particularly interesting to amateur collectors, such as especially bifacially retouched tools.

The younger section of the Neolithic sequence — the Moerian

Sites representing the younger section of the Neolithic sequence in the Qasr el-Sagha region are located in the NE part of the investigated area, or directly next to the temple. Part of the material has been collected from the contemporary defla-

tion surface, but a large portion of it has been obtained from excavations, mainly at site QS VII/80. All the assemblages were found in the top of the CWSS (QS VI/80, XII/81 and – as already mentioned – VII/80). Materials from site QS VII/80 formed a stratigraphic sequence occurring in the white unstructured sands over the white silts, below and above humus beds. The oldest site yielded the radiocarbon date of 5,410±110 B.P., while the youngest cultural level at site QS VII/80 is dated to 4,820±100 B.P. The chronological time-span of the Moerian is, then, about 600

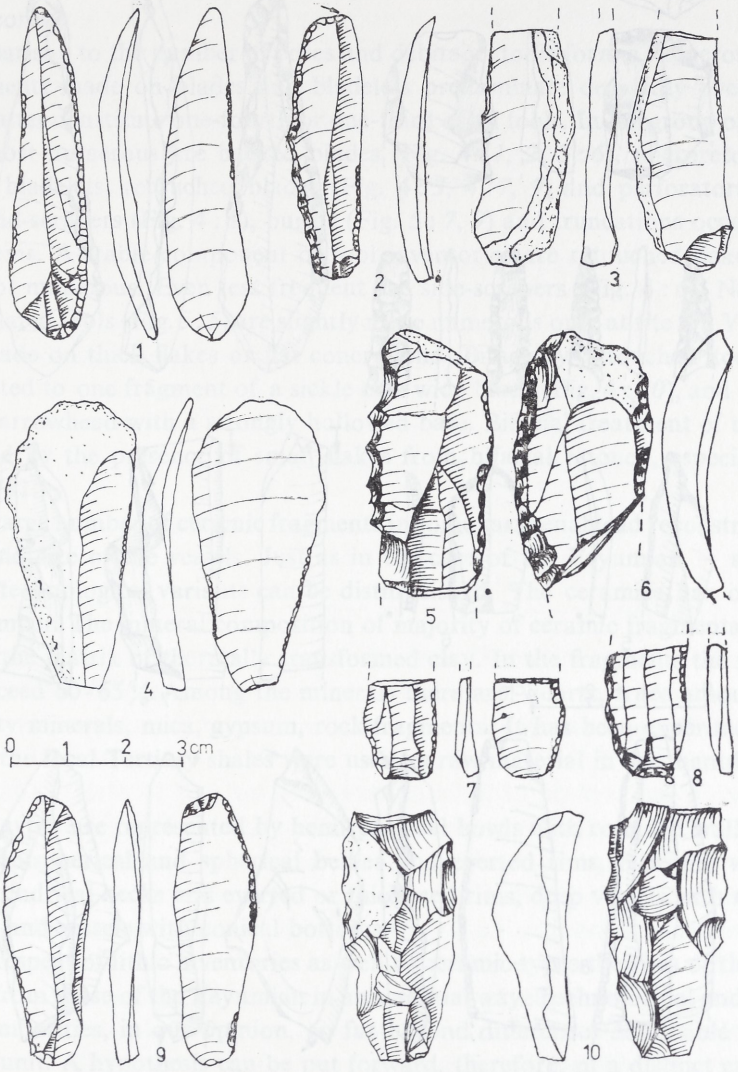

FIG. 4. Qasr el-Sagha, Site VIIA/80

1 2: Backed implements; *3, 4, 7 - 9*: Retouched blades; *5*: Denticulated tool; *6*: Side-scraper; *10*: Bifacially retouched tool

radiocarbon years. The latest date for the Moerian seems to bring to its close the development and persistence of Neolithic cultures at the northern border of the Birket Qarun Lake, clearly overlapping with Proto-Dynastic cultures in this area.

The characterization of the Moerian has been based first of all on materials from the richest site QS VIIA/80. Materials from the remaining poorer sites, have also been taken into account. Numerous ceramic fragments all come from site QS VII/80.

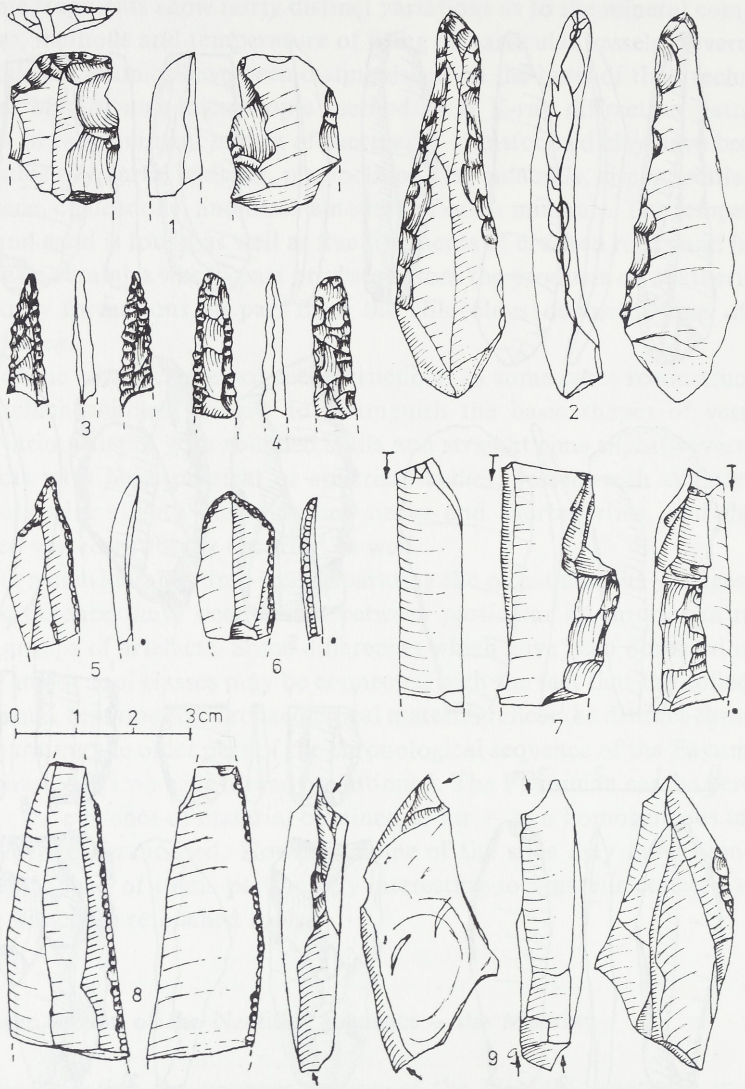

FIG. 5. Qasr el-Sagha, Site VIIA/80

1: End-scraper; *2 - 5*: Perforators; *6*: Backed implement; *7, 9*: Burins; *8*: Retouched blade

The raw materials for flint tools making are mainly small flint pebbles and cherts, and larger concretions probably brought from a distance. These were used to manufacture single- and double-platform cores with separate flaking faces for blades and bladelets, and flake cores single-platform and discoidal. Part of the flakes may have come from the preparation of blade cores. In the group of debitage flakes predominate over occasional blades. There are few elongated blade-flakes. Flakes have scars parallel to the axis of the ventral side, much fewer are flakes with opposite scars, crossing or centripetal. This is in agreement with the character of not very numerous cores.

In comparison to the number of cores and debitage, tools form a numerous group. Implements made on blades and bladelets predominate decidedly over flake tools. The latter constitute one-fourth or one-third of all tools. In the group of blade tools the most numerous are backed blades (Fig. 4 : *1*, *2*; 5 : *6*), microretouched blades and bladelets, retouched blades (Fig. 4 : *3*, *4*, *7*, *9*) and perforators (Fig. 5 : *2* - *5*). End-scrapers (Fig. 4 : *1*), burins (Fig. 5 : *7*, *9*) and truncations occur only as single items. A stable component of tool inventories are retouched flakes, but these are not numerous. Even less frequent are side-scrapers (Fig. 4 : *6*). Notched and denticulated tools (Fig. 5 : *5*) are slightly more numerous only at site QS VID/80. They are made on thick flakes or flat concretions. Bifacially retouched tools are scanty, limited to one fragment of a sickle or a wide blade (Fig. 4 : *10*), and a fragment of an arrowhead with a strongly hollowed base. Bifacial treatment of tools is corroborated by the presence of small flakes from bifacial retouch, especially at site QS XII/81.

A fairly large number of ceramic fragments in some cases enablead reconstruction of shapes and size of the vessels. Just as in the case of the Fayumian – several groups and technological variants can be distinguished. The ceramics has organic and sand temper. The mineral composition of majority of ceramic fragments is dominated by the matrix of thermally transformed clay. In the fragments the matrix does not exceed 60 - 65%. Among the minerals there are: quartz, trace amounts of feldspar, silty minerals, mica, gypsum, rock fragments. It has been experimentally shown that the local Tertiary shales were used as raw material in the manufacture of ceramics.

Ceramic types are represented by hemispherical bowls with rounded walls, vessels with hemispherical and spherical bellies and everted rims, S-profile vessels, pots with cylindrical necks and everted or thickened rims, deep vessels with rounded bottoms, and vessels with conical bottoms.

Both in respect of lithic inventories as well as ceramic types the sites of the Moerian differ from those of the Fayumian in an essential way. Technological and typological dissimilarities, in our opinion, go far beyond differences admissible within one culture unit. A hypothesis can be put forward, therefore, of a distinct cultural and chronological units of the Neolithic at the northern boundary of the Fayum Oasis, or at least along the major section of the shores of the Birket Qarun Lake.

The Fayumian and Fayum A in the approach of G. Caton-Thompson

The culture unit from the Early Phase of the Neolithic in the Qasr el-Sagha region which we have distinguished and described, seems to be a fairly close equivalent of the so-called Fayum A culture as defined by Caton-Thompson and Gardner (1936). The similarity is pronounced in respect to ceramic shapes and ceramic technology. All forms of vessels from sites QS I/79, QS V/79, QS IX/79 and QS XI/79 have close parallels in the ceramics from, for example, Kom W. This refers both to hemispherical bowls (*cf.* Ginter *et al.* 1980: Fig. 18), which have close analogies at Kom W (Caton-Thompson and Gardner 1936, Pl. XIII: *4*, *6*; XVI: *4,7 - 10*, *13*) as well as the taller bag-shaped vessels (Ginter *et al.* 1980: Fig. 19; Caton-Thompson and Gardner 1936, Pl. XIV), and less frequent pedestalled vessels (Ginter *et al.* 1980: Fig. 20: *1 - 3*; Caton-Thompson and Gardner 1936, Pl. XVI: *11*, *12*).

Table 1

Comparison of core types from sites Kom W and QS I/79

Core types	Kom W	QS I/79
Single-platform flake cores Fig. 6:1,2,4	9	2
Discoidal and sub-discoidal cores, often small Fig. 6:6-8	6	6
Cores with changed orientation, on flakes Fig. 6:3,5	2	7

Less obvious are the affiliations in the case of lithic industry, since Fayum A industry consists exclusively of core axes, bifacial leaf points, bifacial arrowheads with a hollowed base, bifacial points in the shape of fish-tail, and elongated sickle blades.

Such a composition of lithic industry, limited only to core and bifacial implements, resembles closely the very specific composition of the industry of the Merimde culture. Verificatory investigations conduced on a small scale at Kom W in 1981 have proved that a different interpretation of the composition of the Fayum A lithic industry is possible. In the area where Caton-Thompson had conducted her research a large number of flake artefacts remained, which suggests that during exploration Caton-Thompson selected her material on the spot. In the effect, only bifacial and core implements were collected. As a control sample, to verify the material overlooked by Caton-Thompson, we have collected finds from a randomly chosen square meter in the neighbourhood of "strip E" – a unit used by Caton-Thompson. The square yielded a total of 34 retouched tools – all on flakes, 15 cores

and 263 flakes which is equivalent to the average density at the Neolithic sites we have explored in the Qasr el-Sagha region, where – on the other hand – core and bifacial tools are very rare. These sites may have been depleted by the activity of amateurs-collectors.

Table 2

Comparison of flake typology from sites Kom W and QS I/79

Flake types	Kom W	QS I/79
Wholly cortical flakes	10	9
Flakes with>50 % of cortex	38	34
Flakes with<50 % of cortex	67	80
Flakes with concentric scars	15	22
Flakes with perpendicular scars	6	14
Flakes with opposite scars double-platform	1	5
Flakes with the same direction of scars	-	14
Flakes from splinters	1	4
Trimming flakes	10	-
Pseudo-blades	18	-
Chips and fragments	20	41
Total	186	223

Table 3

Comparison of platform types on flakes from Kom W and sites excavated in Qasr el-Sagha area

Platform types	Kom W	QS XI/81	QS I/79	QS V/79
Cortical and other unprepared	90	429	86	65
Formed by blows	55	215	24	16
Punctiform	28	160	6	12
Dihedral	11	16	4	4
Faceted	11	4	7	2

The structure of the material which we have collected from Kom W is an exact parallel to our collections from the sites QS I/79, QS V/79, and QS IX/81. The correspondence refers primarily to the occurrence of similar core types (Table 1). The

dissimilarities in frequencies are the result of a less advanced core processing at Kom W, hence fewer cores with changed orientation.

The flake structure is also similar (Table 2). There are similarities as well as regards the structure of flake platforms, which indicates a high degree of technological homogeneity of the series under discussion (Table 3). Although the series of retouched tools are not large, the frequencies of particular groups and types are distincly similar (Table 4).

Table 4

Comparison of retouched tools typology from Kom W and sites excavated in Qasr el-Sagha area

Tool types	Kom W	QS XI /81	QS I/79	QS V/79
Notched tools Fig. 7:3,4,7,8	9	19	5	3
Denticulated tools Fig. 7:2,5,9	14	6	7	10
Side-scrapers Fig. 7:1,6	2	11	1	12
Retouched flakes	5	14	4	4
Perforators	1	5	-	-
End-scrapers	-	1	-	-
Burins	1	-	2	-
Knife-like tools	1	-	2	-
Bifacial tools	1	1	-	1
Backed blades	-	1	-	-
Total	34	59	21	31

On the basis of these comparisons we may infer that at Kom W the lithic industry was principally flake-oriented, based on the processing of single-platform and discoidal cores (Fig. 6 and 7). It was identical with the industry identified for the Early Phase of the Neolithic in the region of Qasr el-Sagha. The industry at Kom W occurred together with a set of bifacial and core implements much less numerous than the debitage and flake tools. Consequently, it should be admitted that the picture of the industry of the Fayum A culture has been distorted by Caton-Thompson due to the selective nature of her collection. Our collection, on the other hand, from sites of the Early Phase of the Neolithic may have been impoverished (particularly sites QS I/79, V/79 and IX/81) by amateur-collectors who had picked bifacial and core implements.

At Kom W ratio of bifacial and core implements to flake tools and debitage cannot be estimated. However, judging from the number of surface finds in the area

excavated by Caton-Thompson and Gardner, flake tools ratio must have been many times higher than the core and bifacial component.

It should be added that the above description of the Fayumian corresponds with the characterization of Neolithic inventories published by Wendorf and Schild

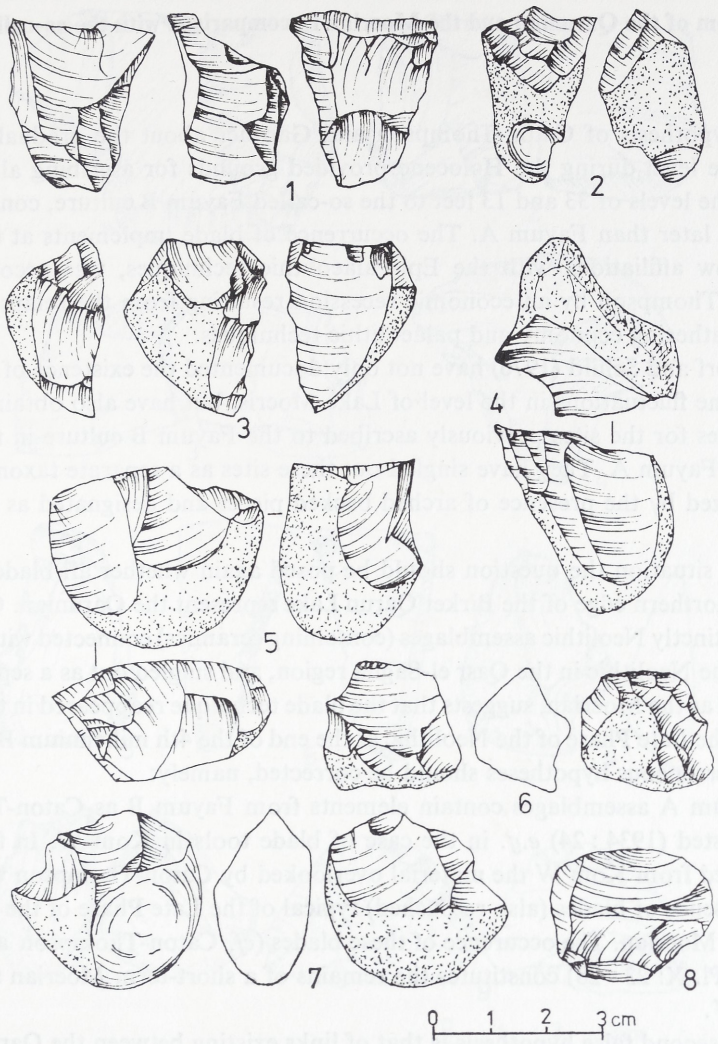

FIG. 6. Kom W. Cores

(1976) from sites E29G3 and E29G2, and the ceramics from the same sites analysed by Banks (1980). Wendorf and Schild have claimed that these lithic industries typically used the flake technique and the hard hammer in the production of some bifacial artefacts. It is characteristic that the radiocarbon date — from the erosional

surface of the GHS formation – 5,910±115 B.P. obtained for site E29H2, *i.e.* Caton-Thompson's Kom W (I-4127) is only slightly later than the dates we have obtained from the top of the GHS formation in the region of Qasr el-Sagha.

The problem of the Qarunian and the Moerian in comparison with the so-called Fayum B culture

The hypothesis of Caton-Thompson and Gardner about the gradual lowering of the lake level during the Holocene provided grounds for ascribing all the sites between the levels of 33 and 13 feet to the so-called Fayum B culture, considered to have been later than Fayum A. The occurrence of blade implements at these sites which show affiliations with the Epi-Palaeolithic techniques, was accounted for by Caton-Thompson by an economic recession resulting from the relapse into the hunting-gathering economy and palaeolithic techniques.

Wendorf and Schild (1976) have not only documented the existence of a number of Holocene fluctuations in the level of Lake Moeris, but have also obtained radiometric dates for the sites previously ascribed to the Fayum B culture in the period preceding Fayum A. They have singled out these sites as a separate taxonomic unit characterized by the presence of arched backed pieces and designated as the Qarunian.

In this situation the question should be posed again whether all blade artefacts from the northern edge of the Birket Qarun Lake represent the Qarunian. Our discovery of distinctly Neolithic assemblages (containing ceramics) connected with the Late Phase of the Neolithic in the Qasr el-Sagha region, and singled out as a separate unit designated as the Moerian, suggests that the blade technique reappeared in the Fayum region in the Late Phase of the Neolithic at the end of the 4th millennium B.C. In this light two erroneous hypotheses should be corrected, namely:

1. Fayum A assemblages contain elements from Fayum B as Caton-Thompson had suggested (1934 : 24) *e.g.* in the case of blade tools in Kom W. In fact, when we collected from Kom W the material overlooked by Caton-Thompson we recorded the presence of blades (also retouched) typical of the Late Phase of the Neolithic, *i.e.*, of the Moerian. The occurence of these blades (*cf.* Caton-Thompson and Gardner 1934, Pl. X: 23 - 28) constitutes the remains of a short-term Moerian settlement at Kom W.

2. The second false hypothesis is that of links existing between the Qarunian and Fayum A, assumed on the basis of – supposedly – the occurrence in the former industry of core axes, bifacial sickle blades and hollow based arrowheads, as suggested by Hoffman (1979: 185). This hypothesis is based on an incorrect interpretation of Moerian assemblages, basing merely on their hypsometric position and the presence of blade tools as belonging to the Qarunian. In fact, the purely Qarunian assemblages – such as have been characterized by Wendorf and Schild – should be

distinguished from Moerian assemblages (with bifacial and core elements and ceramics), or possibly from mixed assemblages containing both Qarunian and Moerian elements, for example site Z (investigations of Caton-Thompson and Gardner 1934: Pl. LXVIII).

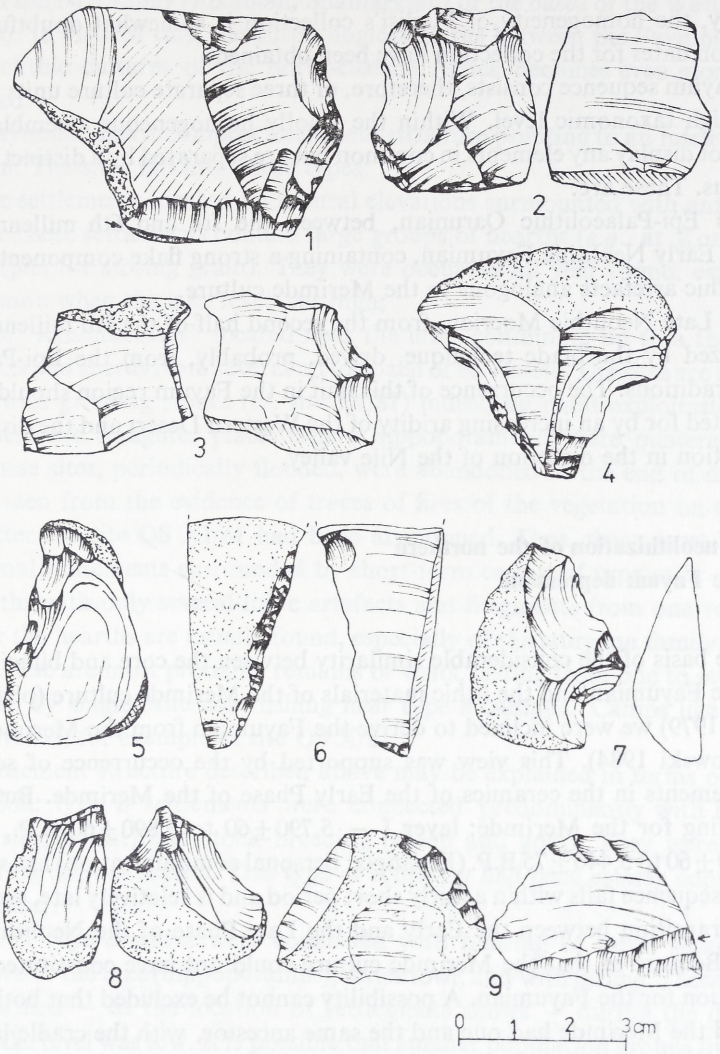

FIG. 7. Kom W

1, 6: Side-scrapers; *2, 5, 9*: Denticulated tools; *3, 4, 7, 8*: Notched implements

It should be stressed that the range of distribution of the Qarunian and the Moerian is much wider than the area we have explored. Investigations of S.M. Puglisi in the north-western part of the Fayum depression (*ca* 7 km north of the contemporary

bank of the Birket Qarun Lake, at the height of *ca* 12 m above sea level) revealed rich Qarunian asemblages (the site known as "Two Sisters", *cf.* Caneva *et al.* 1978; the authors put more emphasis, however, on analogies with the Fakhurian). Puglisi collected at the so-called "East Kom I", next to hearth 12, a set of blade tools including backed blades and triangular bifacial points identical with Moerian artefacts. Unfortunately, the homogeneity of Puglisi's collection is somewhat doubtful; and no radiocarbon dates for the collection have been obtained.

The Fayum sequence consists, therefore, of three separate culture units which differ at a high taxonomic level. Within the wholly homogeneous assemblages these units do not display any elements in common but are separated by a distinct chronological hiatus. These are:

1. The Epi-Palaeolithic Qarunian, between the 7th and 6th millennium B.C.
2. The Early Neolithic Fayumian, containing a strong flake component, core and bifacial lithic artefacts analogous to the Merimde culture.
3. The Late Neolithic Moerian, from the second half of the 4th millennium B.C. characterized by the blade technique, drived, probably, from the Epi-Palaeolithic Saharan traditions. The occurrence of this unit in the Fayum region should, perhaps, be accounted for by an increasing aridity of the Western Desert and the displacement of population in the direction of the Nile valley.

Model of neolithization of the northern part of the Fayum depression

On the basis of the considerable similarity between the core and bifacial component of the Fayumian and the lithic materials of the Merimde culture (phases II - V; Eiwanger 1979) we were inclined to derive the Fayumian from the Merimde (Ginter and Kozłowski 1984). This view was supported by the occurrence of some fairly archaic elements in the ceramics of the Early Phase of the Merimde. But the most recent dating for the Merimde: layer I – 5,790±60 to 5,890±60 B.P., and layer V – 5,760±60 to 5,440±75 B.P. (Eiwanger, personal communication) has shown that the whole sequence falls within a fairly short period and is relatively late, synchronous with the transition between the Early and the Late Phase of the Neolithic in Qasr el-Sagha. Because of that the Merimde culture could not have constituted a source of inspiration for the Fayumian. A possibility cannot be excluded that both the Fayumian and the Merimde had one and the same ancestor, with the cradle land in the Near East, and more specifically in the Jordan valley. It should be emphasized that in north-eastern Africa no pre-Neolithic units with core and bifacial techniques have been recorded, whereas units like this do occur in the Near East both in the ceramic and pre-ceramic Neolithic. Despite the huge chronological hiatus separating the two units Butzer is inclined to derive these techniques in the Egyptian Neolithic from the Aterian (Butzer 1978).

If we assumed the existence of the same ancestor for both the Fayumian and the Merimde, the ancestor characterized by undecorated ceramics, bifacial and core tools with the Near East links, then we would have to ascribe to this ancestor-unit also the flake technique typical only for the Fayumian and unknown in the Late Palaeolithic cultures in the Nile valley (Elkabian, Shamarkian) or the oases of the Western Desert (Qarunian). In view of this, the chronological hiatus between the Fayumian and the Epi-Palaeolithic cultures of the north-eastern Africa becomes even more strongly pronounced.

The Fayumian has a complex settlement structure pointing to an intricate economic system. The sites fall into three types:

a) large settlements located on natural elevations surmounted with antropogenic sediments. These settlements contain large groups of hearths (*e.g.*, at Kom W) and granaries (pits for storing grain). They were occupied all year round, especially in the wet season when the lake level was high;

b) large "Khsemenitsas" located near the lake, containing up to a thousand lithic artefacts and sherds from several up to dozen or so vessels. The sites are sometimes furnished with grinding stones (*cf.* site IX/81) indicating plant exploitation. In the vicinity there are slaughter places where hippopotamuses were quatered (*cf.* site XI/81). These sites, periodically flooded, were abandoned in the end of dry season, as can be seen from the evidence of traces of fires of the vegetation on the banks, directly after the site QS XI/81 had been abandoned. Thus, these must have been base seasonal settlements surrounded by short-term camps of type *c*;

c) hearths with only several lithic artefacts and fragments from one vessel. Fish bones near the hearths are usually found, especially of the sturgeon family (Acipensperidae). These are most probably remains of visits, lasting from one to several days at the most, by single fisherman fishing near type *b* campus. Camps like this have been discovered, for example at site QS X/81.

The settlement structure described above may be explained in terms of seasonal specialization: type *a* settlements were connected predominantly with land cultivation (barley, wheat) and stock breeding (sheep and goat). They were occupied mainly during the wet season. This type of economy had been clearly adopted from the Near East.

Camps of type *b* and *c* were connected with hunting of large game inhabiting the shore of the lake (hippopotamus), water fowl, and with fishing. These activities were performed – as the location of settlements shows – during the dry season when the lake level was low. It is possible that smaller population groups living at the lake shore at that time had brought along stock and perhaps small supplies of grain.

Neolithization introduced with the emergence of the Fayumian had, therefore, a seasonal character, and reduced the hunting-fishing economy to a complementary function in relation to the farming-breeding economy. The model we have offered resembles the neolithization model known in mountain valleys of Mezo-America,

i.e., from Tehuacan (Mc Neish 1963), although even in that area we have a model of a stable farming culture, *e.g.*, in the basin of the Chalco Lake (Niederberger 1980).

It is difficult to determine what had caused the seasonality in the Fayum region. It seems that specific ecological conditions in combination with relative poverty of soils brought about the necessity of supplementing food resources by means of food-gathering and fishing economy.

The origin and economy of the Moerian is totally different. Undoubtedly, this unit with its special distinct blade industry is affiliated to the technological tradition of the Western Desert. Bificial elements too show links with the advanced Neolithic of the Western Desert, *e.g.*, from the region of Gebel Nabta (Wendorf and Schild 1980).

Although some sites of the Moerian contain concentrations of several hearths (site QS VIIA/80 with wind shelters) and single hearths (*e.g.*, site QS XII/80), yet their arrangement is not as varied as that of Fayumian sites. There is no proof either of the seasonal nature of settlements. The fact that a large amount of fish have been found and no traces of plant cultivation have been recorded may suggest that food-producing economy played a minor role.

Most probably synchronously with the end of the Moerian, in the Qasr el-Sagha region emerged blade and flake industries of the Proto-Dynastic type. They differ considerably from both the Fayumian and the Moerian. At the same time, it has been found that neither the Fayumian nor the Moerian exerted influence on the development of the Proto-Dynastic cultures of the Nile valley and the Delta; in these territories a separate evolution took place, connected by new links with the Near East and the Nile valley in Upper Egypt.

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