

IAN EDWARDS and COLIN A. HOPE

A note on the Neolithic ceramics from the Dakhleh Oasis (Egypt)

In 1978 the Dakhleh Oasis Project¹ commenced its first survey season of the Dakhleh Oasis in the Egyptian Sahara, and at the time of writing has finished its seventh field season.² Amongst numerous sites discovered by the Project are a series which can be ascribed on the basis of their lithic technology to the Neolithic period.³ These sites can be divided broadly into two groups based upon the presence or absence of pottery, differences between them also being detectable in the lithic technology and faunal remains.⁴ It is the ceramic material from the latter type of Neolithic site which forms the subject of this communication.⁵ Our intention here is to present simply a brief review of the ceramic assemblage as we know it to date, focusing upon some of its more interesting features. A description of the principal pottery fabrics which have been isolated will be found after this general discussion.⁶ No attempt will be made to discuss the distribution of the various types throughout the oasis as the detailed examination of all of the surface collections has not been

¹ Colin A. Hope, since the inception of the Dakhleh Oasis Project, has been co-investigator responsible for the study of the ceramics and kiln sites discovered by the Project. He is currently Research Fellow in Ancient History at Macquarie University, North Ryde, New South Wales, Australia. Queries concerning the material outlined in this paper may be addressed to him there. Ian Edwards, Senior Lecturer in Ceramics at the Victoria College, Burwood Campus, Melbourne, Australia, is adviser to the project on ceramic technology.

² The Project is a Canadian venture sponsored jointly by the Society for the Study of Egyptian Antiquities and the Royal Ontario Museum under the direction of Anthony J. Mills.

³ Descriptions of the sites and accounts of the artefacts they have yielded can be found in the reports on the Project by Churcher 1980, 1981, 1982, 1983; Hope 1979, 1980, 1981, 1983; MacDonald 1980, 1981, 1982, 1983; and Mills 1979, 1980, 1981, 1982, 1983, 1984.

⁴ For a discussion of this two – phase Neolithic in the Oasis see particularly MacDonald 1982: 123 - 133.

⁵ The Neolithic ceramics from Dakhleh were to have been the subject of a paper delivered in absentia for the present authors at the 1984 conference which this volume commemorates.

⁶ The general comments are by Hope and the description of the fabrics by Edwards.

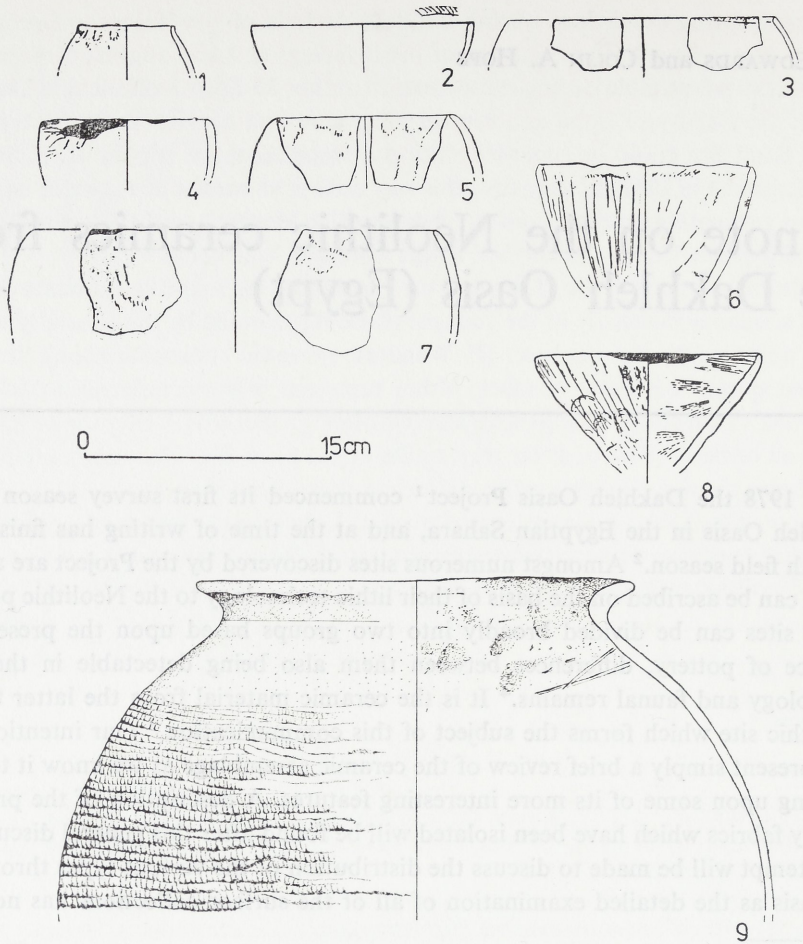


FIG. 1. Dakhleh Oasis. Neolithic ceramics

9: Rim diameter = 22.2 cm

completed. It is perhaps needless to point out that any conclusions drawn in this discussion are of a preliminary nature and may need modification or revision in the light of future research.⁷

While a fairly wide range of hand-made pottery fabrics⁸ has been isolated amongst the collections made so far, there appear to be four fabrics which characterise the material:

⁷ For preliminary discussions of the Neolithic ceramics see Hope 1979: 191 - 192, 1980: 286 - 287, 1981: 237, 1983: 142 - 144.

⁸ The term „fabric” is used to refer to a combination of raw clay, any natural or artificially added temper and the physical characteristics after firing.

a) A rough sand-tempered fabric which is fired orangish-brown in colour with grey cores occurring; the surfaces are coarse and its appearance is very gritty.

b-d) Three fabrics which are distinguished by reference to the size of shale inclusions they contain, *i.e.*, fine *b*, medium *c*, and coarse *d*. They are fired a wide range of colours from grey to pale yellowish-cream depending upon the amount of lime they contained and its bleaching effect upon the iron in the body. Paler surfaces are a feature of some examples of these fabrics, against which the shale particles stand out with colours ranging from grey to red and even green. A variant of *c* has been identified in which a vitrified grey core occurs. All of these fabrics contain quartz.

The four fabrics are undoubtedly of local manufacture, their petrology coinciding exactly with that which would be expected from clays developed within the geomorphological environment of the oasis.⁹ While the surface of these fabrics received a thin wash of red ochre, which occurs plentifully in the oasis, the surface modifications which characterise the material were executed either with a sharp, hollow reed, the potter's fingers or exposure to reducing conditions.

The occurrence of a blackened rim band, usually of irregular size, though occasionally terminating at a fairly even line inside the vessel, is a common feature of Dakhleh Neolithic ceramic assemblages. It occurs on a series of deep conical bowls (Fig. 1: 4, 8) and deep restricted bowls (Fig. 1: 7) and possibly some small restricted jars, most commonly made from the sand-tempered fabric but also in the shale tempered fabrics. In combination with this or on their own may be found a row of thumb impressions below the rim (Fig. 1: 1) and/or vertical or oblique striations (Fig. 1: 8) probably produced by the potter running his or her fingers over the surface of the vessel and exerting pressure while doing so. These features only occur on the exterior of vessels. Vertical or oblique striations sometimes occur on bowls which lack a blackened top (Fig. 1: 6 and 2: 1).

A wide variety of incised decorative motifs or scratchings may be observed on open, shallow or deep bowls, and occasionally on deep restricted bowls, made from the fine to medium shale-tempered fabrics. These motifs include incised rim notches (Fig. 2: 1 - 3), which may also occur on vessels made from sand-tempered fabrics (Fig. 1: 2 - 3), cross-hatching, punctates in either horizontal or vertical rows and pendant triangles filled with punctates between horizontal lines (Fig. 2: 4 - 8). The majority of the sherds with this type of decoration were found on a site near the present capital of the oasis Mut, at site 31/405-G6-1. The morphology of the bowls decorated with these more elaborate designs differs from that of those with the blackened tops, surface striations and simple rim notching or scratching. The former are predominantly straight-sided open forms while the latter have convex sides, are deeper, either open or slightly restricted and generally coarser. The two types occur together on certain sites.

⁹ For reports on this see Churcher 1980, 1981, 1982, 1983; and Brookes 1983.

The majority of the forms are bowls or deep basins. There does not appear to be any difference in the general morphology of decorated and plain types of the coarser vessels, while that of the finer, more elaborately decorated bowls appears to be peculiar to that style. It is possible that the latter possessed flat bases while the former

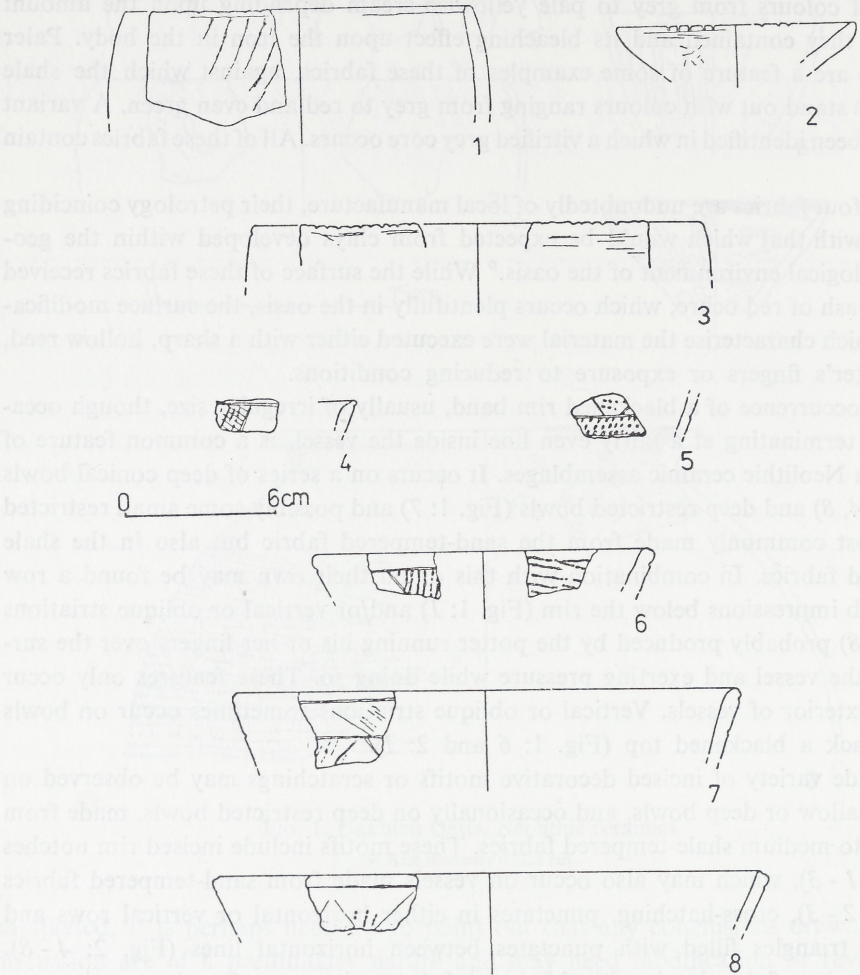


FIG. 2. Dakhleh Oasis. Neolithic ceramics

seem to have had round or pointed bases. Rim types differ also, with flat-topped or rounded rims occurring on the elaborately decorated bowls (Fig. 2: 6 - 8) and tapering pinched rims on the coarser bowls and jars (Fig. 1: 1, 4 - 8).

Very few fragments have definitely been identified as being from jars. The few that have attest globular or ovoid shapes with little or no neck formation (Fig. 1: 1). Exceptions to this are provided by two of the very few vessels it has been possible

to reconstruct (Fig. 1: 9 and Fig. 3). One (Fig. 3) is a small round-base jar with a short neck and globular body made in a sand-tempered fabric. The surface is rough with some straw impressions while the upper neck and rim are decorated with a band of incised cross-hatching; two holes puncture the neck. These were apparently made before firing and may have served to enable the jar to be suspended. Such holes are encountered not infrequently, mostly executed after firing.

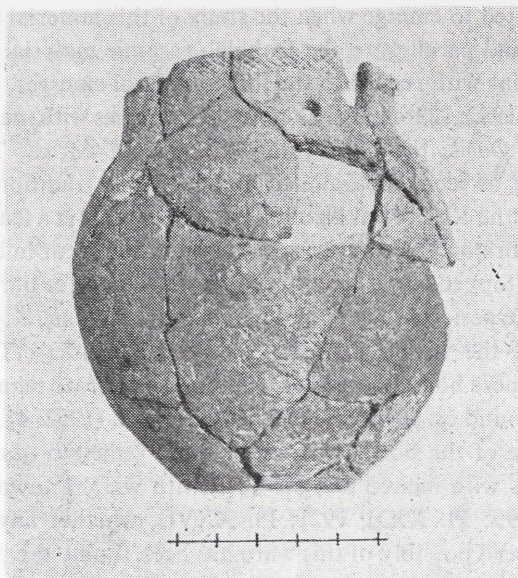


Fig. 3. Dakhleh Oasis. Neolithic jar No. 31/420-C10-2/1

The second is a medium-size, globular-bodied jar with a short neck (Fig. 1: 9). The rim is direct; the base was in all probability round, though there is some uncertainty concerning this as only the upper part of the vessel was reconstructed from the many fragments into which the vessel had broken when found in 1985. The jar is made from a dense quartz-tempered, brown fired fabric and its body is covered with an impressed matting pattern. While this may be purely decorative it is possible that it results from the vessel having been formed using a basket to support and shape its wall. The latter is extremely thin for the size of the jar and very regular.

This jar was found on the surface of site 30/450-B4-1 in the south-eastern part of the oasis. The site has yielded examples of the common black-topped and coarse bowls described above but also a small collection of very interesting sherds in fine wares. These may be summarised as follows:

a) Sherds in a sand-tempered, brown or grey fired fabric with compacted surfaces from open bowls;

- b) Two rim sherds which join, from a small closed vessel, made from a very dense, grey fired fabric tempered with very fine sand. They have a deliberate black top, below which the surface is fired red; the interior is grey;
- c) One sherd from a black-topped bowl which has a red slip on the exterior;
- d) A rim sherd from a shallow bowl in a dense, grey fired fabric;
- e) A sherd from a bowl in black-fired fabric, compacted inside and out.

These pieces illustrate something of the diversity of the indigenous ceramic repertoire which is expected to emerge when the study of this material is complete.

In attempts to find parallels to the Dakhleh ceramic material a situation similar to that which pertains with regard to the lithic material emerges. With regard to the latter, Mc Donald (1982: 123 - 133) has noted similarities with material from Kharga Oasis and Dungul Oasis, the Nile Valley and North Africa. The occurrence of blackened tops may be seen as paralleled by the Nilotic tradition and incised decoration characterises the Khartoum Neolithic and in general is a feature of the Sahara-Sudanese ceramic horizon.¹⁰ However, major differences occur in both of these areas. The Dakhleh black-topped vessels are very rarely red coated or burnished as are those from the Predynastic period in Egypt and their exterior is generally rough or striated; the morphology of the vessels from the two regions differs. The incised designs of the Sahara-Sudanese horizon are generally more elaborate than those from Dakhleh, as were those found on sherds by Caton-Thompson (1952: 41, Fig. 5) in Kharga.

Whilst the shape of the bowls with incised and punctate designs is reminiscent of black ware bowls with incised designs filled with white known from the Naqada I period (Petrie 1895: Pl. XXX; 1921: Pl. XXVI), whether any connection exists is uncertain. One sherd possibly of this ware has been found in Dakhleh (Hope 1980: 287, Pl. XVIIa).

It would appear that the indigenous ceramic assemblage from the Neolithic in Dakhleh stands apart from that of surrounding areas. Several researchers have pointed out the general dissimilarity between the Neolithic in the north-eastern Sahara and the Sahara-Sudanese horizons¹¹, to which the Dakhleh ceramics apparently bear witness. That contacts between Dakhleh Oasis and the Nile Valley did exist is indicated by finds from the oasis in the form of a few sherds from one site of distinctive black-topped, red coated and polished ware of Late Predynastic date and the black-fired sherd with incised designs referred to above. In addition to these mention should be made of a fragment from a fish tail blade found on the top of the escarpment above Teneida at the eastern end of the oasis and a bowl of late 'P' ware which was found by Caton-Thompson (1952: 40, Pl. 121: 5) in the Bulaq Pass near Kharga. It is possible that the few sherds from site 30/450-B4-1, described

¹⁰ Similarities between material from Dakhleh and the Wadi Bakt sites in the Gilf el-Khebir may exist, see McHugh 1975: Fig. 5. The present author has not, at yet, been able to examine this possibility fully.

¹¹ See discussions by Clark 1980, Smith 1980, and Wendorf and Hassan 1980.

above with compacted surfaces, red slips and black tops may have been produced as a result of this contact, though this point will require much further investigation.

Finally, the frequent association of hand-made Neolithic ceramics in the oasis with material of late Old Kingdom date should be referred to, indicating the continuation of local ceramic traditions despite the Egyptian occupation of the oasis throughout the Old Kingdom.

Specific comments on some examples of Dakhleh Oasis Neolithic pottery

Examples of fabric *a*: sherd with "sand" tempering

1. This sherd is extensively tempered with fine water-worn quartz sand, iron stone and shale. The sherd is rough and "sandy" to the touch; reddish exterior surface; grey blue core; some pink on the interior surface; grey blue on the lip; sherd emits a metallic sound when struck; vitrification has begun; some magnetite is present (sherd attracts a magnet slightly).

2. Same description as above but with finer inclusions and the sherd surface is more friable.

Examples of fabric *b*: sherds with fine "shale" inclusions

1. Very limy — some surface lime observed (secondary re-growth); inclusions include lime impregnated "shale"; water-worn quartz particles (of medium size); vitrification has begun; this sherd is pinkish-red in colour with a grey core; sherd emits a metallic sound when struck and has sharp fractured edges.

2. As for above but the sherd is an even grey colour throughout.

3. As for above except that this sherd has a red exterior surface, grey core and a grey interior surface.

Examples of fabric *c*: sherds with medium "shale" inclusions

1. Sherd has a grey-blue core; a pale yellowish-pink outer surface and a grey inner surface; both platy "shale" inclusions and fine red iron-stone fragments are present. Vitrification has begun and the sherd has sharp fractured edges and emits a metallic ring when struck.

2. As for above but the sherd exhibits a greater degree of vitrification.

3. Similar to above but not vitrified to the same degree, sherd fabric has a "flakey" quality.

Variant of fabric *c*: sherd with medium "shale" inclusions

1. Sherd has a grey core and extensive vitrification; red slip is present on the exterior and interior sherd surfaces; the black lip treatment appears to be carbon impregnation; the sherd has a metallic ring when struck and sharp fracture edges.

Example of fabric *d*: sherd with coarse "shale" inclusions

1. Sherd has an open textured fabric with coarse shale inclusions and a partially vitrified body; the sherd has a blue-grey core, a patchy blue and pink exterior surface and a pink interior surface; some magnetite is present as the sherd attracts a magnet.

Comments on the firing of these sherds

1. The presence of some magnetite in sherds of fabric *a* and fabric *b* confirms a firing temperature of 825°C. The presence of magnetite and the grey blue cores in the other sherds suggest heavy reduction firing conditions. The metallic ring of most of the sherds and the extent of the vitrification present in these sherds suggest a firing temperature in the 900°C range. The presence of a high concentration of lime compounds in these fabrics is attested to by the extensive lime re-growth observed on some of the sherds. This lime would have acted as a strong flux and encouraged vitrification at temperatures of about 900°C under reducing conditions. It is proposed that these sherds have come from pots which were fired in a set of conditions which could be described as a "proto-kiln" event, *i.e.*: the pots were placed on a smouldering bed of fuel, (*e.g.* dung) and then more fuel was heaped up over them, thus resulting in a heavy reduction firing atmosphere. A reasonable degree of heat conservation due to the fuel heaped up over the stack of pots would have occurred. As the fuel (dung) finally burnt away the oxygen from the surrounding air would give a pink to red colour to any exposed surfaces of the pots, as it changed the ferrous iron compounds (greyish-blue) to ferric iron compounds (pinkish-red).

2. These sherds have come from pots which have been well made by hand and well fired. All appear to have come from medium to small pottery vessels with the exception of the example of fabric *d* which appears to have come from a large storage jar or bowl.

3. The black rim treatment on the bowl-rim sherds in fabric *a* and the variant of fabric *c* appears to be the result of the pots being taken while still glowing red hot, from the "firing event" and being placed lip down on a shallow bed of husks or straw, thus causing heavy reduction and carbon impregnation at the rim zone.

Some general observations on the development of Neolithic pottery

The striking feature of the earliest pottery making in Egypt and the Levant in the Neolithic Period is its extremely rapid development. Based on investigations by Franken and Kalsbeek (Institute for Pottery Technology, University of Leiden 1972/3) and Edwards and Franken (I.P.T. Univ. Leiden 1984) it is now proposed that man's earliest pottery making in both Egypt and the Levant was not the hesitant work of primitive experiment, but rather the competent work of craftspersons who were heirs to extant bodies of common knowledge about:

1. Clay, clayey soils and clay soil temper mixtures which were commonly used in the making of mud bricks, clay slurries for roofs, floors and the lining of storage pits.

2. The form of domestic vessels made of stone, plaster, sun dried clay, skins, reed baskets and wooden containers.

3. The making and using of fires for heating and heat treating, *e.g.* for the fire hardening of the wooden points of weapons and implements, the heat treating of flint and chert to improve its flaking qualities, the hardening of the clay lining of storage pits dug into house floors by lighting fires in them and the heat treating of limestone and or shell to make lime

4. The use of ochres and coloured mineral earths for painting.

5. The use of smooth stones for burnishing the surfaces of floors and storage pits to improve their durability and general convenience.

6. The calcining of lime and gypsum to form plasters.

Franken (private communication, 1984) proposes that "pot making", in which shapes were readily formed from soft plastic clay and then turned into hard stone-like vessels by placing them in a fire would have readily appealed to people in the Neolithic period for whom ground stone vessels were very valuable and took so long to make.

The innovation of pottery making however can only be said to have been successful when the process could be repeated at will. When this stage was reached the production of pottery burgeoned because pot making processes tend to encourage not only mass production but mass production of a more-or-less standardized repertoire of forms.

Not only is pot making proposed as a natural extension and application of the knowledge and skills of the aceramic period, but also it is seen as a part of a broadening of the technology of fires and the creation of permanent and useful changes in substances by heating. One of the earliest of these heat induced changes used by man was probably that of heat treating chert to make it flake more readily. The use of fire to turn limestone and shell into lime and gypsum into plaster of paris apparently came much latter but preceded pot making in most areas. However the early smelting of copper which followed the innovation of pot making clearly owes much to the early pot firing technology.

Although the representative sherd collection commented on here is far too small to rely on for support of these general propositions, the wider ongoing studing of the Dakhleh pottery carried on by Hope does suggest support for these propositions.

References

JSSEA — *Journal of the Society for the Study of Egyptian Antiquities*

- Brookes, I. A. 1983. Dakhleh Oasis — A Geoarchaeological Reconnaissance. *JSSEA* 13: 167-177.
 Caton-Thompson, G. 1952. *Kharga Oasis in Prehistory*. London: Athlone Press.

- Clark, J. D. 1980. Human Populations and Cultural Adaptations in the Sahara and Nile during Prehistoric Times. In: Williams M. A. J. and H. Faure (eds), 1980: 527 - 582.
- Churcher, C. S. 1980. Preliminary Observations on the Geology and Vertebrate Palaeontology of Northwestern Dakhleh Oasis: A Report on the 1979 Fieldwork. *JSSEA* 10: 379 - 395.
- 1981. Geology and Palaeontology: Interim Report on the 1980 Field Season. *JSSEA* 11: 193 - 212.
- 1982. Geology and Palaeontology: Interim Report on the 1981 Field Season. *JSSEA* 12: 103 - 114.
- 1983. Paleontology: Interim Report on the 1982 Field Season. *JSSEA* 13: 178 - 187.
- Hope, C. A. 1979. Report on the Study of the Pottery and Kilns. *JSSEA* 9: 187 - 201.
- 1980. Report on the Study of the Pottery and Kilns. *JSSEA* 10: 283 - 313.
- 1981. Report on the Study of the Pottery and Kilns: Third Season — 1980. *JSSEA* 11: 233 - 241.
- 1983. Preliminary Report on the Study of the Pottery. *JSSEA* 13: 142 - 157.
- McDonald, M. M. A. 1980. Preliminary Report on the Lithic Industries in the Dakhleh Oasis. *JSSEA* 10: 315 - 329.
- 1981. Second Preliminary Report on the Lithic Industries in the Dakhleh Oasis, *JSSEA* 11: 225 - 231.
- 1982. Third Preliminary Report on the Lithic Industries in the Dakhleh Oasis. *JSSEA* 12: 115 - 138.
- 1983. Fourth Preliminary Report on the Lithic Industries in the Dakhleh Oasis. *JSSEA* 13: 158 - 166.
- McHugh, W. P. 1975. Some Archaeological Results of the Bagnold-Mond Expedition to the Gifl Kebir and Gebel' Uweinat, Southern Libyan Desert. *Journal of the Near Eastern Studies* 33: 31 - 62.
- Mills, A. J. 1979. Report on the First Season of Survey October-December 1978. *JSSEA* 9: 163 - 185.
- 1980. Report on the Second Season of Survey, September-December 1979. *JSSEA* 10: 251 - 282.
- 1981. Report on the Third Season of Survey: September-December, 1980. *JSSEA* 11: 175 - 192.
- 1982. Report on the Fourth Season of Survey, October 1981 — January 1982. *JSSEA* 12: 93 - 101.
- 1983. Report on the Fifth Season of Survey: October, 1982 — January, 1983. *JSSEA* 13: 121 - 141.
- 1984. Report on the Sixth Season of Survey: 1983 - 1984. *JSSEA* 14: 81 - 85.
- Petrie, W. M. F. 1895. *Naqada and Ballas*. London: Quaritch.
- 1921. *Corpus of Prehistoric Pottery and Palettes*. London: British School of Archaeology in Egypt.
- Smith, A. B. 1980. Domesticated Cattle in the Sahara and their Introduction into West Africa. In: Williams and Faure (eds), 1980: 489 - 501.
- Wendorf, F. and F. A. Hassan. 1980. Holocene Geology and Prehistory in the Egyptian Sahara. In: Williams and Faure (eds), 1980: 407 - 419.
- Williams, M. A. J. and H. Faure (eds). 1980. *The Sahara and the Nile. Quaternary Environments and Prehistoric Occupation in Northern Africa*. Rotterdam: A. A. Balkema