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BT-14, a stratified Middle Palaeolithic site at Bir Tarfawi, Western Desert of Egypt

Site BT-14 lies in the northern part of Bir Tarfawi, a deflational basin in the Eastern Sahara, at 22°52.4'N, 28°52.9'E. It is a very extensive and deeply stratified Middle Palaeolithic site, associated with a series of lake-sediments. It was first studied in 1974, when most of the effort was devoted to the surface exposures of large, mammal bones associated with Middle Palaeolithic artefacts, and to the separate surface scatters of artefacts without bones (Wendorf and Schild 1980: 53 - 80). Stratigraphic trenching in 1974 also revealed a deep sequence of lake-sediments, which was confirmed when the site was visited in 1985 and one of the earlier trenches reopened and expanded.

Major excavations of the site were carried out in 1986 and 1987. A total of 78 m^2 were excavated through the lake-sediments to the underlying white dune sands, which occurred at a depth of 2 - 2.5 m. These excavations revealed a sequence of four lake-episodes, all associated with Middle Palaeolithic artefacts and separated from each other by periods of aridity, indicated by truncations and, elsewhere in the area, by aeolian deposits. There are the remnants of an earlier Middle Palaeolithic lake nearby in the northern part of Bir Tarfawi and of another, possibly still earlier, pond in the southern area.

The four lakes represented at BT-14 have been named, from earliest to latest, Grey Phases 1, 2 and 3 and the Green Phase of the East Lake (Fig. 1). They were fed by groundwater and reflect increased precipitation locally and, probably, farther to the south as well; the wetter periods in this area during the Holocene resulted from northward shifts of the monsoon belt and this was probably the case during the Middle Palaeolithic. The micromammalian remains from deposits of Grey Phase 2 suggest local rainfall of at least 500 mm *per annum* (Kowalski *et al.* 1989). Uranium-thorium dates (H.P. Schwarcz, pers. comm.) and amino acid racemisation of ostrich eggshell (Miller *et al.* 1991) indicate that Grey

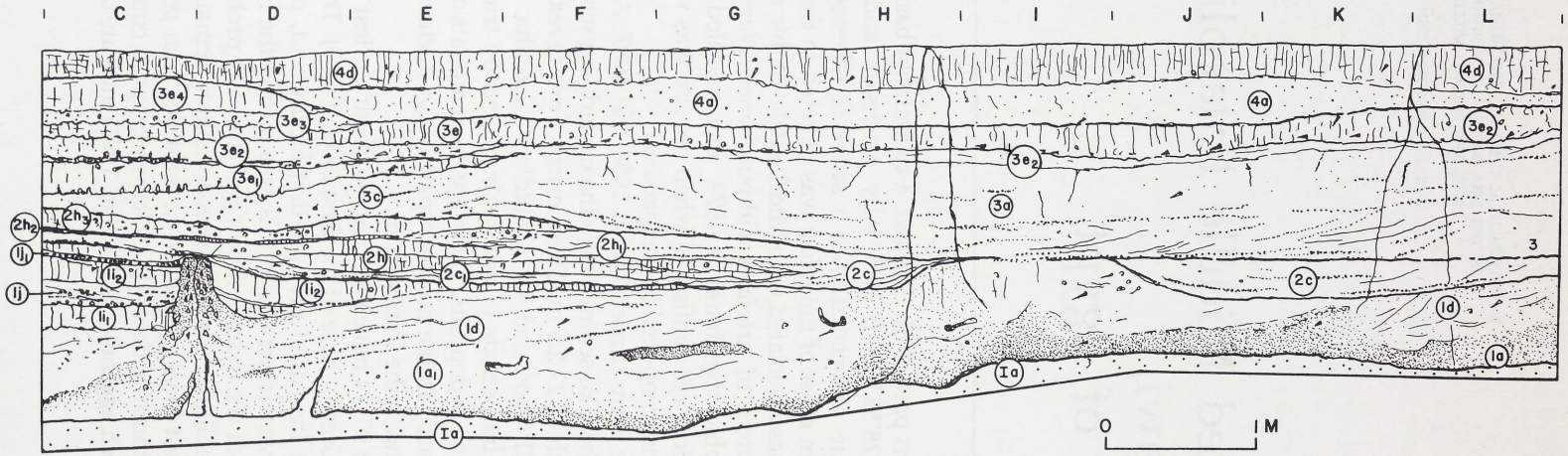

Fig. 1. Northern profile of main excavated area at BT-14;

Ia: zone of bioturbation in basal dune;

Grey Lake 1. 1: dark brown cemented sands; 1a: organic -rich basal section becoming more silty and more cemented toward centre of lake, and bedding becomes broken by desiccation ($1a_1$); 1d: with conspicuous concave bedding; 1e: clay pebbles; 1i: cement ed silty lenses; $1i_1$: clayey silt with blocky structure in places, traces of burning and of sand from above worked in by desiccation processes; 1j: laminated sands with occasional sand-cemented silt pebbles and crushed shells; $1i_2$: silty cemented sand with traces of lamination and animal burrow (*ca* 15 cm diameter); $1j_1$: coarse, gravely sand separating silts; $1i_3$ as $1i_2$;

Grey Lake 2. 2c: coarse beach sands grading laterally into cemented silty sands with lenses of coarser sand (2h); $2c_1$: coarse sand grading into finer sands between silty cemented sands; $2h_1$: consolidated to friable, laminated sands;

Grey Lake 3. 3a: coarser, poorly sorted beach sands, with streaks of finer material, especially in lower part, rare consolidated root-casts in the upper part, and sporadic lenses of more gravelly sand throughout; 3c: upper part of coarse beach sands; $3e_1$: cemented sandy silt with vermicular structure, grading laterally into fine sands ($3e_2$) ($3e_1$: silty sand in western wall); 3e: cemented silt; siltier bed between $3e_1$ and $3e_2$ in the western part; $3e_3$: fine silty sand with gastropods; $3e_4$: mottled, gleyey silt;

Olive-Green Lake. 4a: thick lens of fine, friable sand with slightly cemented root-casts; 4d: cemented, olive-green silts.

(Profile drawn and described by R. Schild.)

Phases 1 - 3 were brief wet intervals, all occurring within a period of less than 10,000 years about 130,000 years ago. There was a longer period of aridity before the Green Phase which is dated to 104,000 BP +10,000/–20,000 years.

Grey Phase 1 was a permanent, quite deep, but areally rather limited body of water. It fluctuated considerably between wet and dry seasons and normally had a maximum diameter of about 40 m. The presence of large fish indicates that the lake did not dry out completely (van Neer, this volume). The excavated area of BT-14 was not far from the deepest part of the lake and was under water during the wet seasons; it must therefore reflect dry-season occupations, probably (and deliberately) close to the dry-season remnant of the lake. This could well have been the only open water available within a considerable distance. The bodies of water were areally larger during the periods of Grey Phases 2 and 3, but the excavated area of BT-14 was, again, seasonally flooded. The repeated occupations and seasonal flooding have combined to destroy any individual living-surfaces, so that horizontal control is very limited. However, the nature of the deposits means that vertical control is quite fine and Grey Phases 1 - 3 together provide a sequence of almost 2 m of Middle Palaeolithic occupations, which will be summarized here.

The artefact recovered from the Grey Phases are generally similar, although much more numerous in the first lake than in the following two (Tables 1 and 2). However, Grey Phases 2 and 3 were much larger than was Grey Phase 1 and it is probable that the main occupations during these periods were outside the area excavated. The artefacts are almost all made of locally available quartzitic sandstone of variable quality; quartz occurs rarely. The quartzitic sandstone used during the Green Phase tends to be lighter in colour than that of the Grey Phases and more consistently fine-grained. The debitage consists mostly of chips and broken flakes; the proportion of whole, identifiable flakes among the debitage increases through the sequence from only 1.7% in Grey Phase 1 to 5.6% in the Green Phase. Identifiable flakes tend to be derived from single platform cores. Primary flakes and early-stage preparation-flakes are very rare, but there

Table 1

Frequencies of core-types and of debitage at site BT-14.

Specimens	Green Lake	Grey Lake 1	Grey Lake 2	Grey Lake 3
Single platform	0	1	2	12
Opposed platform	1	0	2	5
Ninety-degree	1	0	0	7
Patterned multiple platform	0	0	0	4
Globular	0	0	0	12
Levallois	3	1	1	18
Discoidal	1	0	1	12
Initially struck	0	1	1	25
Unidentifiable	0	0	2	16
Total	6	3	9	111
No. of debitage	108	3816	13 016	35 932

are some Levallois preparation flakes. Nevertheless, initial core-preparation does not seem to have been a frequent activity at BT-14.

The frequencies of types of cores (Figs. 2c; 3e, h) within each lake are given in Table 1. Their most notable characteristic overall is their rarity. The site yielded considerable quantities of debitage and retouched tools, so that the number of cores recovered cannot represent more than a small fraction involved in the production of the flakes found and may not, therefore, provide a reliable indicator of the overall core-typology favoured by the inhabitants of BT-14. It should be observed that cores are not relatively rare in the Green Phase, indicating that the nature of the Green Phase occupation(s) was different from those of the underlying layers.

Table 2

Frequencies of tool-classes at site BT-14.

Specimens	Green Lake	Grey Lake 3	Grey Lake 2	Grey Lake 1
Levallois flakes	2	6	4	37
Mousterian points	0	1	0	4
Sidescrapers	1	19	26	182
Upper Pal. group	0	8	12	100
Notches	2	31	55	252
Denticulates	2	31	56	265
Continuously ret'd.	2	23	53	306
Bifacial pieces	0	2	3	13
Other flake-tools	1	31	49	168
Total	10	152	258	1327

The tool-classes are listed in Table 2. Overall, the sequence is typologically consistent. Tools are more frequent in the Green Phase, where there are 10.8 pieces of debitage per tool, than in the Grey Phase, with 30.4 pieces of debitage per tool. They are better made in the early stages of Grey Lake 1 than in later parts of the sequence; the base of the sequence also yielded a series of large tools, which did not occur in higher layers. Only a small minority (18.6%) of the tools are unbroken.

Levallois pieces are present throughout the sequence but are never common; this accords with observations of the debitage and cores. As would be expected, a disproportionately high number of the retouched tools are made on Levallois (that is, better made) blanks; however, the Levallois typological indices are only 9.6, 5.4 and 9.9 in Grey Phases 1, 2 and 3, respectively, but a full 30.0 in the Green Phase.

The Mousterian point group is virtually absent.

Sidescrapers are numerically one of the more important classes and are also usually of a higher standard of manufacture than the notches, denticulates, or pieces with continuous retouch. Most of them are single straight or single convex types, but there is a full range of the complex varieties and combinations, most of them quite typical (Fig. 2a).

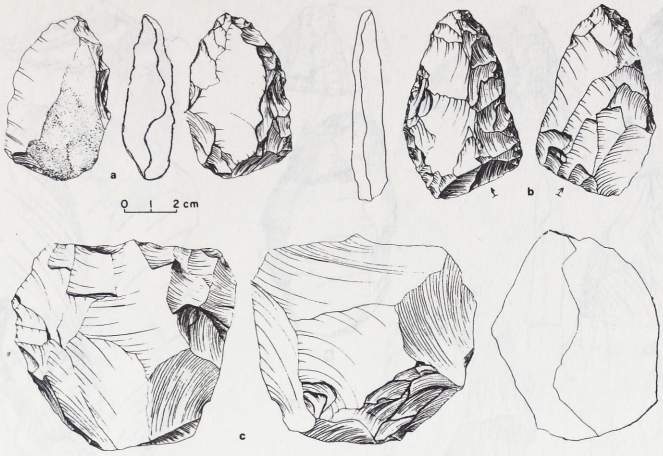

Fig. 2. Site BT-14. Tools and core from Grey Lake 1;
a: alternate sidescraper; b: bifacial foliate; c: core.

The Upper Palaeolithic group is well represented and consists mostly of endscrapers (Fig. 3c, d, g). Most of these are typical and very well made, and many are fine thumbnail scrapers. There is also a consistent group of pieces with alternating scraper-edges. There are a few burins and several small perforators, most of the latter being atypical (Fig. 3i).

Notches are numerically the second most important tool-class, but tend not to be well made. Almost all (84.4% of the class) are fragmentary (Fig. 3f) and a majority of them could well be accidental, particularly in light of the numerous re-occupations of the site.

Denticulates are the third most common tool-class (Fig. 4e), but Tayac points are extremely rare. The denticulates are often irregular. They are not likely to be accidental, but tend to be sinuous (in part because so many are alternating) rather than "toothed". Classic denticulates are not common.

The pieces with continuous retouch (Fig. 3b) are the most common tool-class, but, overall, they are a poorly made and inconsistent group that may well be largely made up of *ad hoc* and accidental "tools". Most (84.4% of the class, as with the notches) are fragmentary and have only limited areas of retouch. The group seems to include a more consistent type, with alternating retouch (Fig. 4c), but even these are not numerous.

Bifacial foliates are rare but occur throughout the sequence of Grey Phases (they occur in occupations associated with the Green Phase in the southern part of Bir Tarfawi) and those that are finished are usually exquisitely made (Figs. 2b, 4d). Two-thirds of them are broken and represented only by extreme tip fragments (Figs. 3, 4b). One complete example is noteworthy for being well below the normal size-range for Middle Palaeolithic foliates (Fig. 4a).

The class of other flake-tools includes occasional, rather poorly made becs, raclettes and truncations and a few very well made choppers (Fig. 5). Some 96.4% of this class are broken and most are simply unidentifiable fragments.

Fig. 3. Site BT-14. Tools and cores from Grey Lake 1;
a: bifacial foliate; b: piece with bifacial retouch; c, d, g: endscrapers; e, h: cores; f: notched triangle; i: atypical perforate.

Apart from the flaked stone tools, a noteworthy feature was the occurrence almost at the base of Grey Phase 1 of six large, ground and pitted artefacts that resemble lower grinding-stones (Fig. 6), or nutting-stones, and a handstone. Two of them have been pecked rather than ground and could be anvils, which would most probably have been for the smashing of bones, since there is no indication of an anvil technique on the artefacts. The others are ground. None of

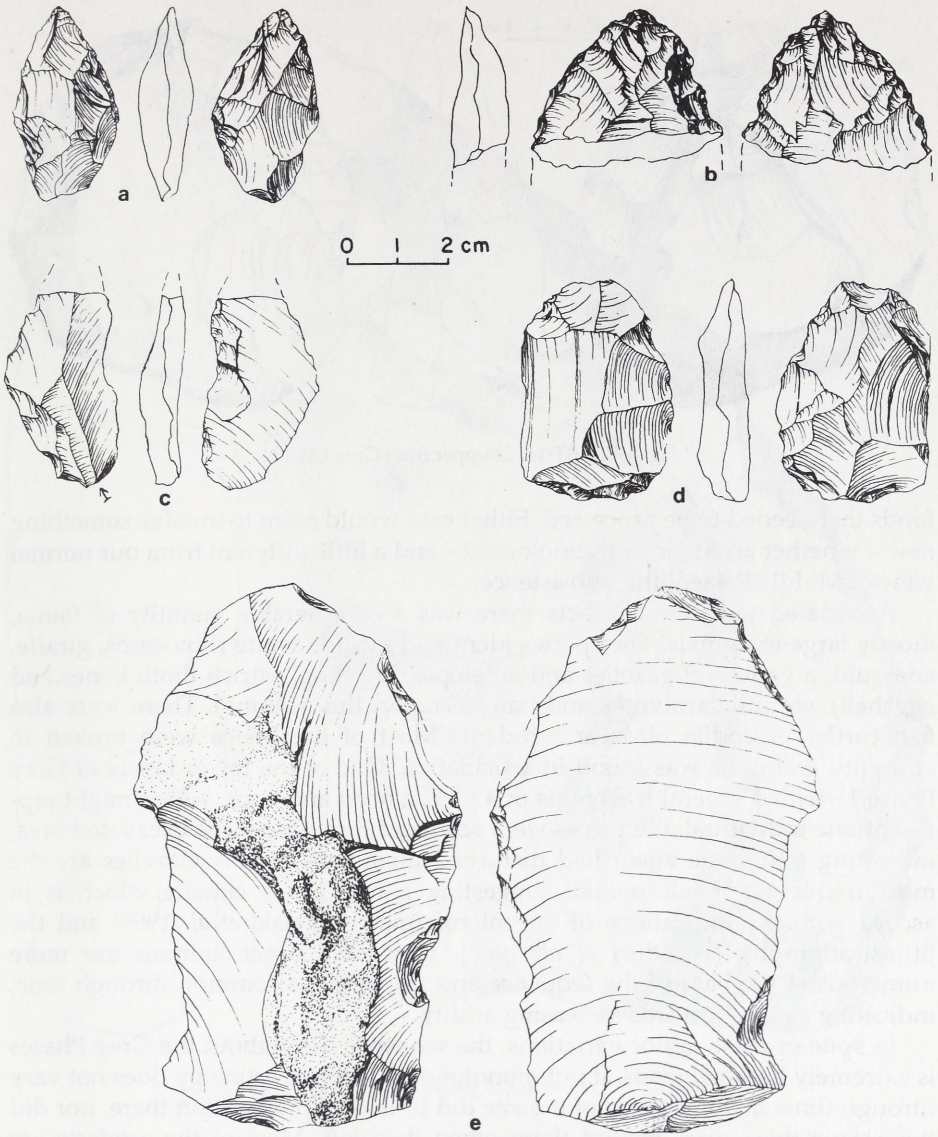

Fig. 4. Site BT-14. Tools from Grey Lake 1;
a, b, d: bifacial foliates; c: piece with alternate retouch; e: denticulate.

them has any traces of ochre, although ochre was found at the site. One supposes that the grinding-stones were used for processing plant-foods, of which, of course, no remains were found. The eating of plants in Last Interglacial times is not surprising, but the existence of tools for processing them is rather different. It would imply either that people had developed a taste for plants processed rather than straight from the bush, or that they were eating plant-

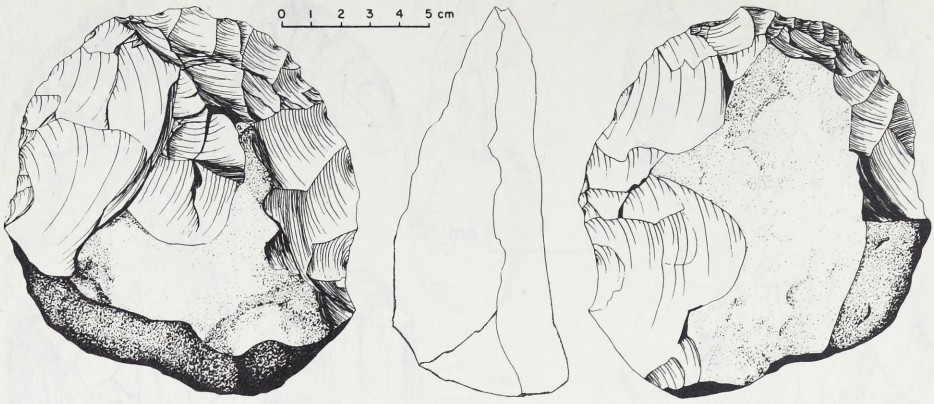

Fig. 5. Site BT-14. Chopper from Grey Lake 1.

foods that needed to be processed. Either case would seem to involve something new – whether aesthetic or technological – and a little different from our normal view of Middle Palaeolithic subsistence.

Associated with the artefacts there was a considerable quantity of fauna, mostly large mammals. The species identified include white rhinoceros, giraffe, an equid, a variety of gazelles and antelopes, warthog, ostrich (both bones and eggshell), several carnivores and hare (Gautier, this volume). There were also fish, turtles, crocodile, birds and rodents. Most of the bones were broken in antiquity and none was found in articulation. One of the lower layers of Grey Phase 1 yielded several fragments of a giraffe head and neck, which might represent one individual; the pieces were scattered throughout the excavated area, indicating that some agent had disturbed them *post mortem*. Gazelles are the most frequent animals overall, suggesting a rather dry climate, which is in accord with the indications of the microfauna (Kowalski *et al.* 1989) and the lithostratigraphy (Wendorf *et al.* 1987). However, larger animals are more numerous at the base of the sequence and become less common through time, indicating a trend towards increasing aridity.

In spite of these minor variations, the sequence throughout the Grey Phases is extremely homogeneous, if not monotonous. The tool typology does not vary through time; the occupants of the site did little core preparation there, nor did they leave their cores behind them when they left. Most of the artefacts are broken, there are many chips and most artefacts are lightly polished, presumably by water. The bones are also fragmentary and are never still in articulation.

The high number of tools and of broken artefacts and the rarity of cores suggest that BT-14 was not simply a living-site. The artefacts and bones are not associated by chance, and suggest the presence of a butchery area. However, until the analyses of the fauna are completed, we cannot tell how the people obtained the animals that they seem to have been butchering. The excavated area was re-occupied so many times – particularly during Grey Phase 1 – that its position next to the dry-season water-hole (that is, the deepest part of the lake) is not

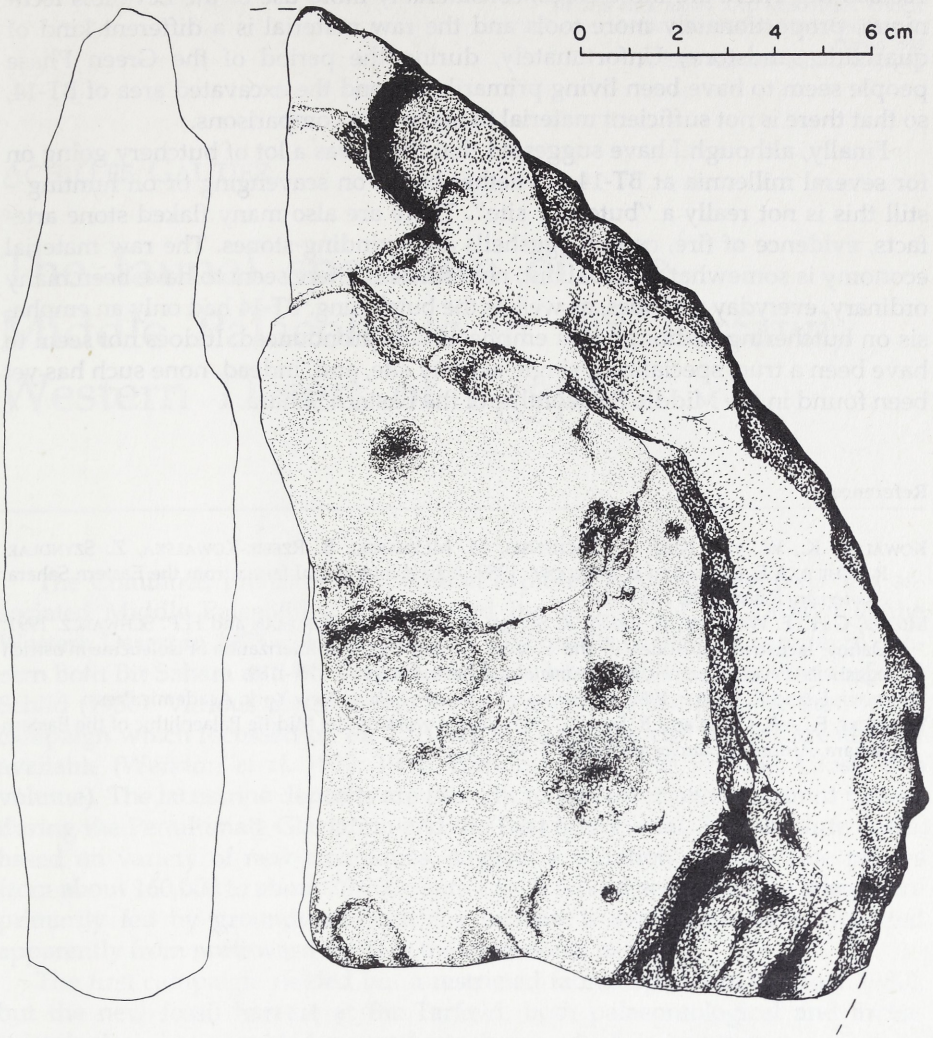

Fig. 6. Site BT-14. Grinding-stone from Grey Lake 1.

likely to be coincidental. It may have been located to take advantage of the animals' coming down to the water to drink: there was probably no other open water for a great distance. However, a dry-season water-hole would be the site of a large number of animal deaths, without need for the intervention of human hunters. In this case, if the occupants of BT-14 simply acted as resident dry-season scavengers, they could have had as much access to carcasses as would resident dry-season hunters, and distinguishing between the two may be difficult.

There seems finally to have been some change in the nature of the occupations of BT-14 during the Green Phase at the top of the sequence, dating to about

100,000 BP. There are more cores, considerably more use of the Levallois technique, proportionately more tools and the raw material is a different kind of quartzitic sandstone. Unfortunately, during the period of the Green Phase people seem to have been living primarily beyond the excavated area of BT-14, so that there is not sufficient material to make firm comparisons.

Finally, although I have suggested that there was a lot of butchery going on for several millennia at BT-14 – whether based on scavenging or on hunting – still this is not really a "butchery site". There are also many flaked stone artefacts, evidence of fire, ostrich eggshells and grinding-stones. The raw material economy is somewhat unusual but, nevertheless, there seem to have been many ordinary, everyday activities, as well as the butchering. BT-14 had only an emphasis on butchering, although that emphasis was pronounced. It does not seem to have been a true, specialized, single-activity site, and, indeed, none such has yet been found in the Middle Palaeolithic of the Eastern Sahara.

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