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1. THE PREHISTORIC ORIGINS OF AFRICAN CULTURE

By J. DESMOND CLARK

REMARKABLE and exciting discoveries that have been made in Africa during the last five years suggest that it was here that tool-making first appeared in the geological record, and that it was then carried to other continents by hominid forms, the discovery of which has necessitated completely new thinking about the biological development of Man. In the same way the discovery, undreamed of twenty years ago, of urban centres in the Near East, dating to as early as the eighth millennium B.C., is providing unique details of life in early Neolithic times and is causing prehistorians to look back ever further into the past, almost to the close of the last glacial, for the first signs of the domestication of plants and animals and of settled village life.

Such discoveries are fundamental to the study of the origins and growth of social and economic life, and increasing use is being made of the archaeological record by the cultural anthropologist and ethno-historian, although there is still in places a lingering tendency to consider that prehistory has nothing to offer the student of present-day culture. The success of collaboration between anthropologists, linguists, historians and archaeologists has, however, already been amply demonstrated in several African countries—for example in Uganda¹ and Northern² and Southern³ Rhodesia. Indeed, the archaeologist is now an indispensable part of any co-operative project to reconstruct the history of a pre-literate population.

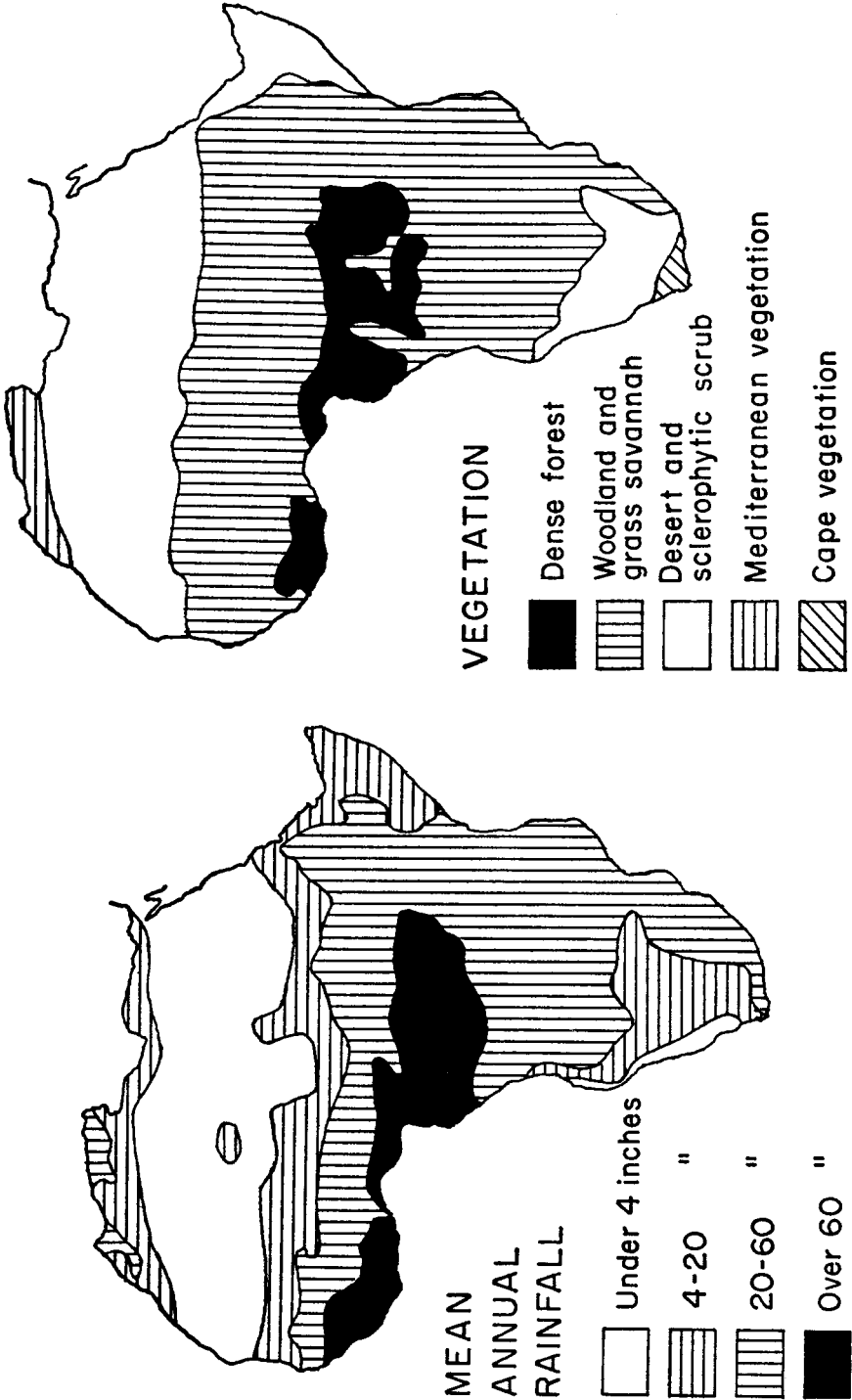
While, therefore, it is now obvious that archaeology can provide some of the best source material for the reconstruction of cultural antecedents, population movements, and even of the origins of some social and religious practices on a factual basis, it is the new ways in which the archaeologist is using his data that render the results and potential so valuable. Today the archaeologist relies heavily on the help of his colleagues in many disciplines, particularly on those in the natural sciences. This, together with the precision resulting from improved field techniques and more meticulous observation and analysis, is providing an increasing quantity of solid scientific data, and permitting radical reassessment in

¹ M. Posnansky, 'Some archaeological aspects of the ethno-history of Uganda', in G. Mortelmans (editor), *Actes du IV^e Congrès Panafricain de Préhistoire (Leopoldville, 1959)*. Tervuren (1962), 375–80.

² B. M. Fagan, 'The Iron Age sequence in the Southern Province of Northern Rhodesia'. *Journal of African History* (1963), IV, 2, 157–77.

³ E. T. Stokes (editor), 'Historians in tropical Africa', in *Proceedings of the Leverhulme Intercollegiate History Conference (Salisbury, 1960)*. Salisbury, Southern Rhodesia (1962).

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i. Rainfall and vegetation

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their interpretation. The absolute dating techniques now available have revolutionized chronologies, just as the more accurate knowledge of past environments has imparted new and vital significance to cultural remains, and permitted a deeper appreciation of the importance of the inseparable relationship there has always been between environment, culture and biological adaptation.

In addition to the close collaboration between palaeo-ecologist, physical anthropologist and prehistorian, the cultural anthropologist and ethnographer are drawn upon for help in the interpretation of the cultural evidence. Thus, on the one hand, primate behaviour studies are important as a basis for the reconstruction of life in Australopithecine times; on the other hand, ecological studies of present-day Bantu agriculturalists are a vital necessity for the interpretation of early Iron Age cultures in southern Africa, and it is necessary to study the whole continuous process of culture change in prehistoric times on a continental scale if we are to try to understand it at the regional level.

The earliest evidence of culture in the world occurs at the unique site at the Olduvai Gorge, the discovery of which is due to Dr and Mrs L. S. B. Leakey (as also is so much of our knowledge of the earliest history of man the tool-maker). Olduvai Gorge is situated in northern Tanganyika in the Eastern Rift, and cuts through some 300 feet of old lake sediments of Lower and Middle Pleistocene age. These beds are dated relatively in respect of the fossil faunas and cultural remains they contain, and absolutely by the potassium/argon method.⁴ Bed I is between 1½ and 2 million years old, and indisputable evidence of cultural activity has been found from top to bottom within it. The tool-makers camped round the edge of shallow open water near small lakes, and formed temporary camps on the mud flats exposed by seasonal fluctuations of the water level of the kind that can be seen at many of the Rift Valley lakes today. The surfaces on which the artifacts occur appear to have been covered fairly rapidly by falls of volcanic tuffs from the adjacent Ngorongoro crater.⁵ The skill and patience with which these occupation areas have been uncovered have permitted the making of floor plans that show beyond any question the artificial nature of the accumulations. On these floors stones and bones are concentrated in quantity, and many of them have been artificially broken.⁶ Many stones occur which, though unworked, are not natural in the area and can only have been carried in, while many others have been intentionally flaked, and bashing stones, choppers, cores, flakes and small chunks, some utilized and occasionally retouched, occur inextricably mixed with the

⁴ L. S. B. Leakey, *Olduvai Gorge* (Cambridge, 1951). L. S. B. Leakey, J. F. Evernden and G. H. Curtis, 'The age of Bed I, Olduvai Gorge, Tanganyika', *Nature* (1961), cxc, 478.

⁵ R. L. Hay, 'Stratigraphy of Beds I through IV, Olduvai Gorge, Tanganyika', *Science* (1963), cxxxix, 829-33.

⁶ L. S. B. Leakey, 'A new fossil skull from Olduvai', *Nature* (1959), clxxxiv, 491-3. 'Recent discoveries at Olduvai Gorge', *Nature* (1960), clxxxviii, 1050-1. 'New finds at Olduvai Gorge', *Nature* (1961), clxxxix, 649-50.

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smashed bones of a number of different species of animal.⁷ Long bones and other bones have been broken to extract the marrow, and some of them show unmistakable marks of having been smashed with a rounded blunt object. The most famous of these floors is that in the upper part of Bed I, on which were lying the remains of the Australopithecine *Zinjanthropus boisei*. Here the Leakeys found a concentration of highly comminuted bone some 15 feet in diameter, with larger bones on the periphery and a mass of worked stone in and among the bone. The remains represented several different antelopes, pig, tortoise, catfish, a snake, and several other small animals. A high proportion of the pig and antelope remains are from immature creatures.⁸ The most characteristic forms of tool are a chopper flaked from two directions to form an irregular and usually wide-angled cutting or chopping edge, made on a lava pebble or chunk of quartz, and a sharp flake for cutting.

The other floors are similar, but of especial interest is one only a foot or so above the lava on which the beds rest. Here the stone tools are, on an average, a good deal smaller, but they are associated with various accumulations of natural stones. It is very difficult to see how these could have got to their present position, resting on the clay, except by having been carried there. There is certainly one, and perhaps two, concentrations in rough semicircles, and several stones rest one upon the other as if they had been purposely piled up.⁹

These occupation floors represent the home bases—the living quarters—of early tool-making hominids who were in part carnivorous, obtaining their meat by hunting and scavenging. It is probable, however, on the analogy of modern hunter-gatherers, that quite 75 per cent of their food was vegetable, and, in this connexion, the pebble chopper may have been developed as a tool for sharpening sticks for digging.

Recent geological assessment of the climatic conditions under which Bed I was formed shows that the environment must have been very like that of the Serengeti Plains today, that is to say, semi-arid grass and parkland, with shallow pans and lakes, and forest relicts on the slopes of the adjacent volcanic masses. The relatively sparse scatter of occupation debris suggests that Lower Pleistocene hominids rarely stayed long in one place.

Artifacts of comparable age and form have been found at a few other sites, notably at Ain Hanech in Algeria, at Casablanca in Morocco, in the Albertine Rift, and at Kanam on the Kavirondo Gulf of Lake Victoria (which yielded also an enigmatic hominid jaw fragment), as well as in residual gravels in river and marine high terraces. It would seem that if it is indeed in the East African tectonic region that tool-making first developed, it was not very long before such a fundamental advance in technology spread widely throughout and beyond the continent (fig. 2).

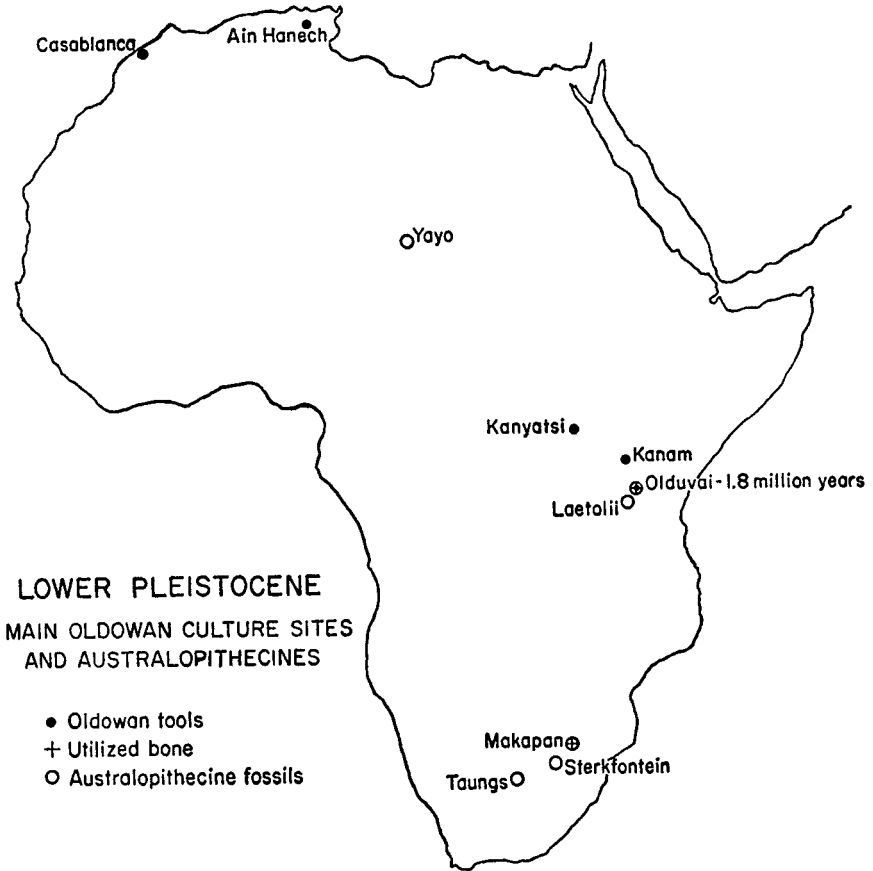
⁷ J. D. Clark, 'Sites yielding Hominid remains in Bed I, Olduvai Gorge', *Nature* (1961), CLXXXIX, 903-4.

⁸ L. S. B. Leakey, *Ibid.* (6a).

⁹ L. S. B. Leakey, 'Adventures in the search for man', *National Geographic Magazine*, Jan. 1963, 132-52.

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2. Distribution of Lower Pleistocene Culture and Australopithecines

No hominid more advanced than the Australopithecines is known from any of these Lower Pleistocene sediments. They are well represented by over 300 fossil remains. Two forms are known—a slenderer type (*Australopithecus africanus*), and a more heavily built type (*A. robustus*, known also as *Paranthropus*). Their membership of the family of the Hominidae is unquestionable on the evidence of their brains, teeth and jaw patterns, and because of their bipedalism and their possession of hands adapted to tool-using. Lightly built and only some 4 feet 6 inches tall, they were nevertheless able to run fast and had arms adapted to throwing.¹⁰ In the small size of the brain and the massiveness of the face, however, they resembled the apes, with the result that they are sometimes known as the ‘Man-Apes’. Napier’s¹¹ study of the hand from the pre-Zinjanthropus horizon

¹⁰ S. L. Washburn, ‘Tools and human evolution’, *Scientific American* (1960), cccii, 3, 1–15.

¹¹ J. R. Napier and J. S. Weiner, ‘Olduvai Gorge and human origins’, *Antiquity* (1962), xxxvi, 41–7.

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at FLK NNI in Bed I at Olduvai shows that though primitive, it is intermediate between the hands of apes and of man, and would have been capable of clumsy tool-making.

The artifacts in the Bed I living-sites show that there can be little doubt that the East African Australopithecines were working stone for use as tools. Indeed, their Pliocene ancestors had been using tools for millions of years. The hand is the best proof of this, though another is the extreme simplicity of the technique involved in making the tools, and we must expect that at the end of the Lower Pleistocene certainly more than one form of hominid was living that was capable of making—and did make—tools.

There is no indication that the Australopithecine tool-makers lived in large groups. The small areas of the living-places rather suggest that there were unlikely to have been more than a dozen or so individuals in the band. While they seem to have been incapable of killing large animals, the concentrations of bones in the Transvaal caves (if they are indeed, as Dart claims, the food debris of the Australopithecines) would argue that they were, none the less, resourceful hunters and scavengers of medium- and small-sized animals. No doubt, also, they made capital of the necessity for the game to seek the only available surface water during the dry season, which was in the deep limestone caves where they were ambushed and slaughtered. For this some co-operation between members of the group must have been essential and, since the young were dependent on the adults for longer than were the young of apes,¹² regular sharing of food is also implicit.

Many find it difficult to accept the wholesale manufacture of bone tools claimed for the Australopithecines by Dart in his 'Osteodontokeratic Culture', and consider that most of this material represents food debris.¹³ These caves have, nevertheless, provided fairly good, though rare, evidence of the utilization of bone, as has also one of the Olduvai floors. The most impressive of these bone tools are fragments of long bones that show shallow, highly polished groovings.

Why did stone tool-making first begin in the savannah? The answer is believed to lie in economic and social necessity. The African savannah is an environment with a long dry season in which a small and very defenceless hominid, forced to protect its hunting territory and ill-equipped biologically for digging or meat-eating, had to find some way to supplement the sources of vegetable foods that would dwindle under times of climatic deterioration. It is believed that this was one of the primary reasons why these early hominids turned to meat-eating, just as baboons sometimes do today. The use of some kind of sharp cutting tool to open the skin of an antelope, or of a bashing tool to break open long bones or

¹² R. A. Dart, 'The infancy of Australopithecines', *Robert Broom Commemorative Volume* (Johannesburg, 1948), 143-52.

¹³ R. A. Dart, 'The Osteodontokeratic culture of *Australopithecus prometheus*', *Memoir No. 10* (1957), Transvaal Museum, Pretoria.

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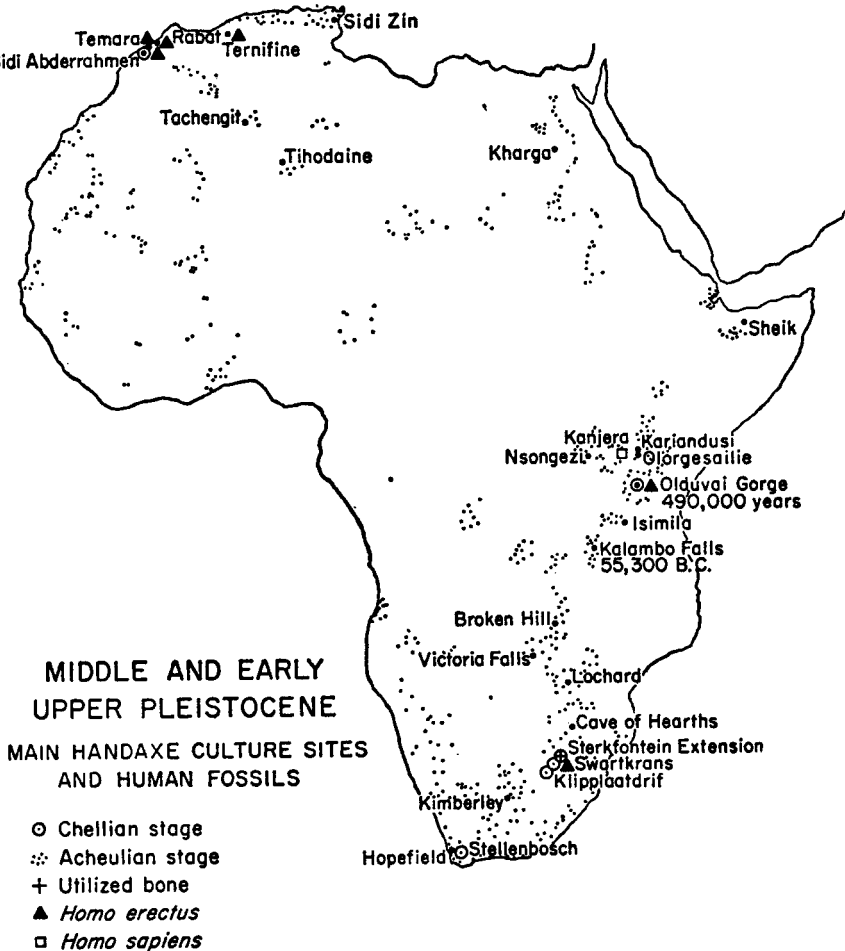
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the shell of a tortoise, or of a sharp tool to point a stick for digging, would have meant a regular and substantial increase in the quantity and variety of food available. The hominids would also have found these tools useful for defence.

Australopithecines have been found in South and East Africa, and now in Chad, as well as in the Far East, so that it is reasonable to suppose that tool-making, this most fundamental of human inventions, spread with remarkable rapidity.

Africa abounds with pebble tools, but the earlier claim that most of these are of Lower Pleistocene age remains as yet largely unsubstantiated, and it is probable that many of these industries belong to the earlier Middle, rather than to the Lower Pleistocene. For knowledge of the cultural



3. Distribution of Middle and early Upper Pleistocene Culture (Chellian and Acheulian) and hominids

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pattern of these times we again rely most heavily on Olduvai, for this site preserves a unique evolutionary sequence of developing stages up to the earlier part of the Upper Pleistocene. But there are now several other sites, equally well dated, though without such a long stratigraphy (fig. 3). By the beginning of the second glaciation in the northern hemisphere, there is substantial evidence that tool-making had spread throughout all the semi-arid regions of the continent and had overflowed into other parts of the Old World. The artifacts are still predominantly choppers, chopping tools and worked flakes, but they are now more shapely, show greater variety, and are generally more skilfully made, though still remaining remarkably crude in appearance. They represent the earliest stages of what is known as the Chelles-Acheul or Handaxe culture, the latter name being derived from the commonest type of tool, roughly the shape of a hand when seen in silhouette, though the earliest examples are very crude and rare.

An evolved pebble culture of this time occurs outside Africa in the Jordan valley.¹⁴ Closely related forms may be seen in the industries from the Choukoutien Cave near Peking and from South-East Asia. In Europe also it has been claimed that a pebble culture occurs with Heidelberg man at Mauer in Germany. In Africa, Europe, the Near East, and India, the Handaxe culture passed through remarkably similar evolutionary stages, and it seems probable that the populations of those continents were not as isolated as was at first supposed and that changes in culture as well as in the genotype were the outcome of free movement, exchange and inter-communication (fig. 4).

What do these early Handaxe cultures look like? The living-sites stratified at the base of Bed II at the Olduvai Gorge, which are now believed to date to about one million years ago, show that important changes had taken place since Bed I times. The accumulations of tools are much more extensive and there are generally many more artifacts. There are choppers, polyhedral stones and utilized flakes in quantity, together with a few pear-shaped, handaxe-like forms. But perhaps the most significant tool is a small flake or chunk that shows careful retouching to form notches and scraping edges. Some of these small, delicate, informal tools look as if they belong to the Later Stone Age, and it is obvious that the hominid that made them was fully capable of what Napier has called 'the precision grip' between finger and thumb. We do not know what these tools were used for, though they would have been effective in trimming the meat off bone, in cleaning skins or in paring wood. It is also evident that hunting techniques had undergone important changes, and now it was very often large animals that provided the major part of the meat supply. These consisted of extinct forms of elephant, giraffids, and ox- and sheep-like creatures that appear to have been driven into swampy ground or into

¹⁴ M. Stekelis, 'Recent discoveries in the Jordan valley', *South African Journal of Science* (1963), LIX, 3, 77-80.

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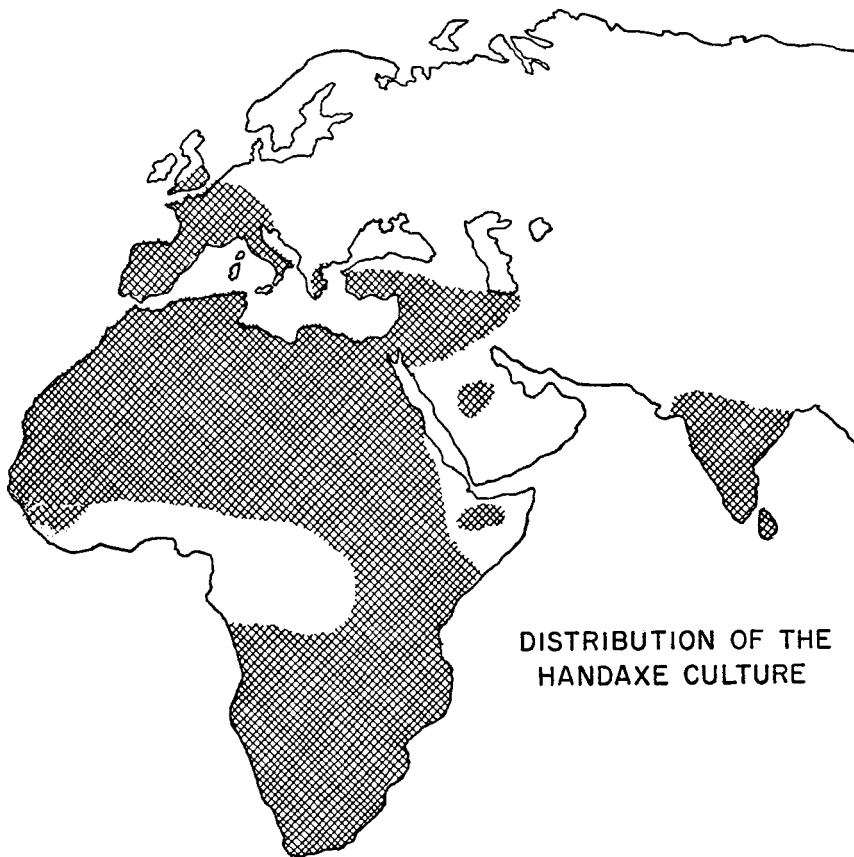
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4. Distribution of the Handaxe Culture in the world

open water and there butchered. This implies not only considerably improved hunting ability, but also reasonably efficient group organization.¹⁵

The only remains of the earliest occupants of Bed II at Olduvai are two teeth, but at Sterkfontein in the Transvaal a similar industry is found in the later, brown breccia. These pebble tools are associated with teeth of *Australopithecus*, but it is suggested that they were really made by an early form of *Homo erectus*. The somewhat later and adjacent site of Swartkrans also contained tools and the large Australopithecine *Paranthropus*, but in addition another hominid is present, previously known as *Telanthropus* and now identified with *Homo erectus*.¹⁶

About mid-way up in Bed II at Olduvai is a horizon known as 'the Chellean III horizon', the latest potassium/argon date for which is

¹⁵ L. S. B. Leakey, 'Recent discoveries at Olduvai Gorge, Tanganyika', *Nature* (1958), CLXXXI, 1099-103. S. Cole, *The Prehistory of East Africa* (Macmillan, New York, 1963).

¹⁶ J. T. Robinson and R. J. Mason, 'Australopithecines and artifacts at Sterkfontein', *South African Archaeological Bulletin* (1962), XVII, 66, 87-125.

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490,000 years. Handaxes made by a stone technique are now much more common, though the pebble chopper still predominates. All the other types of tool occur, and there are now steep core-scraper forms besides, though full details have not yet been published. Associated with this cultural stage, Leakey found the greater part of a skull cap which falls within the pattern of the Pithecanthropoids, or *Homo erectus*, as this stock is now called. The Chellean III skull differs, however, in having a larger cranial capacity, and in anticipating in some measure the Rhodesioid type of man. There can be no doubt that the cultural, physical and intellectual developments that had taken place since Australopithecine times are inextricably interconnected, and the rapidity of the biological change could not have occurred without culture.

With this level at Olduvai we can correlate a 'Chellean' (Clacto-Abevillian) stage from an early marine level at Sidi Abderrahman, near Casablanca, as well as the lakeside site of Ternifine on the Algerian plateau. Here there is a somewhat more developed stone industry, and the usual bone debris from meals, together with three well-preserved jaws and a parietal bone. Arambourg has described these as belonging to an African Pithecanthropoid stock which he has named *Atlantropus*. Thus the African representatives of this 'palaeo-anthropoid' level would be contemporary with those from China and south-east Asia.

The second half of the Handaxe culture—the Acheulian—was a time of population movement into areas where no signs of earlier occupation by man have yet been found, and it was probably a period of population increase also. The extreme richness of Africa in the stone tools of this time points to the very favourable environment in which the Acheulian was practised. It may be inferred, though it has not yet been proved, that with the advances of the polar ice-sheets in the second and third glacials, and during the Great Interglacial, there was a more temperate environment over most of the African continent, so that many areas now desert became favourable for settlement. This was also a time of great proliferation of species among the antelopes, pigs and other African mammals, so that it is to be expected that man was also quick to take advantage of the opportunities now available to him.

The Acheulian populations were, however, still confined to the savannah and, as rainfall and temperature permitted, to the drier parts of the continent. It was only later that the tropical forest zone became permanently occupied. Moreover, Man was still virtually confined in his choice of living quarters to waterside sites, probably because he had evolved no efficient means of carrying water supplies for any distance. Even more important than the richness of the stone industries of this period is the existence of a number of stratigraphically sealed and dated camping-sites, from which we can gain some idea of the manner of living of the people. Most of these occupation sites belong to later Acheulian times, from perhaps 150–50,000 years ago. There are several sites of this