THE EARLIEST ARCHAEOLOGY.

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ARCHAEOLOGY has been called the *Scientia Scientiarum*, and if we consider the number of other Sciences it calls to its aid it is well named.

Starting from the absolute ignorance and pure (but confident) guessing of a century or so ago, it has established itself as a Science dependent on accurate observation assisted by more of the older Sciences than one can enumerate—Geology, Zoology, Botany, Astronomy, and a host of their own sub-sciences.

Archaeology may be defined as the Study of Prehistoric Man, and since few, if any, Zoologists now maintain that he had reached the stage of *Homo Sapiens* before the end of the last Glacial Epoch, we may take that as the starting point of our study.

It is true that he has left no actual marks upon the earth that we can study as his handiwork like field Archaeology for some thousand years this side of that date, but in the last few years so many discoveries have been made by the other Sciences and they have thrown so much light on his origin and earliest movements that to ignore them is impossible.

One of the most interesting and important of these discoveries is that Geological time can now be measured back to the first melting of the last Glacial Epoch and expressed in terms of years. This has been made possible by the existence in many parts of Sweden of banded clays, each band consisting of the clay laid down every summer by the water from the melting glacier. These bands, or "Varves" to give them their technical name, naturally vary somewhat in thickness according to the heat and length of the summer in which they were deposited, and to their composition according to the nature of the sediment they consist of.

Professor de Geer, the Geologist of Stockholm, set himself and his students to measure and record with meticulous accuracy the particulars of each one in several series—one series alone numbered 3000 Varves! By means of an extraordinarily ingenious method of recording diagrammatically the character and measurements of each band, Prof. de Geer and his students have been able to identify Varves of the same summer when they appear in different series in other parts of Sweden, and so by linking up the incomplete series to count the years that have elapsed from the first melting of the glaciers to the very end of the post-Glacial Epoch, giving a result of about 8,700 years.

This Swedish time-table has been adopted and its methods applied to other parts of the world in which glaciers existed—to Iceland, Canada, North America and the N.W. Himalayas in the Northern Hemisphere, and to Southern Chile and the Argentine south of the Equator.

Considering that more than 80 per cent. of the Varves measured in these countries are similar to those in Sweden, thousands of miles away, and that this similarity is continued from century to century, it is out of the question that it can be by chance ; it must be due to an identity of cause, and this cause can only have been a change in the amount of heat received from the sun.

It may well be asked : "What has all this to do with Archaeology ? " Granted that the loss of heat from the sun caused this awful deterioration of climate and the two great Glacial Epochs of the Quaternary Period and can now be shown to have affected the whole earth simultaneously, what has this to do with man who was nearly certainly in a stage as low, or lower, than an anthropoid ape ?

Professor de Geer's answer is that it must have had a great influence in pushing him out of this anthropoid stage to better things.

"This influence," he says, "may indeed have been the immediate cause of that adaptation to more and more exigent natural conditions, and the consequent evolution of the intelligence which led to the beginning of the human stage. This was especially true of regions where the supply of edible fruit became insufficient, and fishing and hunting became necessary. This led to the development of skill and weapons, whilst the rigours of the climate necessitated the use of clothing and sheltered dwellings—one invention led to another, such as the making of boats, the art of pottery, and that important step in evolution when man first took fire into his service. By extensive excavations in many regions, Archaeology has now been able to establish the succession in which the various types of tools and weapons follow each other, and also which species of animals and plants have been observed together with these finds. In this way for certain regions it has been possible to establish so regular a succession of strata as well to justify attempts at correlation within limited areas."

The points to emphasize in de Geer's delightful "starve 'em to it" theory of the rapid evolution of *Homo Sapiens* lie in the words "for certain regions" and "correlation within limited areas."

No one supposes that *Homo Sapiens* was evolved exclusively in one particular part of the earth or from one particular brand of non-sapient predecessor. Our evolution had unknown numbers of predecessors to derive from, unlimited crosses to merge with, and

also unlimited time to counteract distance. It is possible too that such near neighbours as *Homo Sapiens* and Neanderthal man had diverged too far to inter-breed.

After the close of the last Glacial Epoch in England—for it lasted considerably longer in Scotland and Iceland—there followed five changes of climate which each cover several thousand of years. These have been best studied in the Scandinavian countries which were less under the moderating influence of the Atlantic, but they are quite recognisable in Britain.

They have been named the pre-Boreal, Boreal, Atlantic, sub-Boreal and sub-Atlantic—" Boreal " meaning broadly a drier and more Continental climate with sunshine and cold, clear nights, and "Atlantic " damper and more foggy conditions with more rain under the influence of the cyclones from the Western Ocean.

Each climate-period is marked by the differences in the vegetation and trees which gradually spread over the face of the land where the soil was suitable, and which have left their remains in the submerged forests and tree-stools as well as in their tree-pollen preserved in various layers of peat found at different levels—these latter often in themselves disclosing fluctuations of climate.

Each " climate period " saw a change of soil conditions as the ice retreated and it grew warmer. The surface, hitherto ice-bound, first became tundra and steppes—bog and mud in summer and frozen hard in winter in which a thin grass and mosses struggled to hold their own. The first tree to establish itself was the Birch, the greatest lover of moisture, rapidly followed by the Aspen and the Willow ; then in the drier Boreal period came Pine forests which reached as far north as the Orkneys, and were followed by Hazel scrub. Then came mixed Oak woods, to be followed later by Alders and last of all by Beeches.

During the tens of thousands of years (I have seen it estimated at 100,000) when North Europe was growing habitable, various wild animals such as the Woolly Rhinoceros, spread over it to feed on the trees, and man followed—no doubt equally hairy—and fed on them. The climate was still extremely cold ; Scotland, Norway, and Sweden were frequently ice-covered. The Alps, Pyrenees, and Caucasus ranges were still blocks of ice, and freezing marshes existed everywhere.

It was under these conditions that man began the Palaeolithic Age in Britain. He was a cave dweller, and it is needless to say that the possessions by which we judge of his culture are his flint instruments.

Thirty years ago it was customary to divide these relics into ten classes named after French caves and sites where the chief forms of flint instruments occur and shew a certain progress in the efficiency of their culture : Chellean, Acheulean, Mousterian, Aurignacean,

Solutrean, Magdalenean, Tardenoisian and Azilean. Of late years, however, a more scientific classification has been adopted according to what is now recognized as having been the order in which the skill required in working flints was improved and their efficiency for different purposes with it.

They are divided into three classes: (1) "*Core*" industries where a flint is chipped into the required shape and forms the instrument; (2) "*Flake*" instruments in which a flake for a certain purpose is required and made in one blow, and (3) "*Blade*" instruments which came later—essentially the same as Flakes but elaborated for various purposes by blunting their backs and so forth.

Britain was at that time connected with the rest of Europe by the chalk not yet cut through at the Straits of Dover. The North Sea did not exist in its present form, the land stood higher. Its southern part formed the delta of the Rhine veined, no doubt, by streams but with considerable areas of dry land, such as the Dogger Bank, so that a trek of a couple of days would bring the immigrant from North Germany to the East Anglian coast. The Lowlands of Britain, in fact, form the end of the great European plain which stretches N.W. from the mountains of Asia and has seen so many migrations.

During the long "Forest Period" which succeeded the Glacial, when the climate was slowly getting warmer, the land falling and the sea encroaching, the Paleolithic cultures established themselves in Britain and steadily progressed in perfection. Flint was not their only material; bone, shell and wood were used, but naturally they have rarely survived. Hunting, fishing and food gathering were their only means of living, caves were their chief dwelling places, though temporary tree shelters and wattle huts were doubtless used but have left no trace.

And who were these early immigrants? Doubtless small parties of Continental communities of *Homo Sapiens* from France and North Europe, some of whom flourished and formed communities who became the founders of our nation, and many adventurers who did not.

Very few of their bones have come down to us in a sufficiently good state of preservation to enable osteologists to class them with the groups of their Continental cousins who were slowly evolving into distinct types.

One thing, however, is becoming increasingly clear—not all the stray human bones and skulls that are found belong to the same race of *Homo*.

The *Homo Sapiens* skeleton can be easily distinguished from that of the "Neanderthal" man; the first has a fully erect figure developed for quick active movement, and is very little short of modern man in that respect. The "Neanderthal" type has been

thus described, though I regret to say I cannot lay my hand on my authority :

" They had a knowledge of fire, they sheltered in caves ; they had a large brain capacity and could chip and flake flints into definite well-shaped implements and weapons, and they were right-handed—but their brains were placed more at the back of their skulls where the more animal and less intellectual qualities lie. Their brow ridges were large and protruding and their foreheads low and flat. They carried their heads poking forward. They could not raise them to look straight up above them or turn them round to look behind. They had retreating chins and their teeth were different and stronger than ours and suitable to a coarse vegetable diet. Their hands were more like paws and they could not bring together the tips of their thumbs to their fingers."

This was the " Neanderthal " man whose fossil bones were first found in a cave in Germany, and he continued on in Europe up to the third period of the old French list—that of le Moustier—which had reached the *middle* Palaeolithic stage of civilization. In fact Mr. Hawkes lays it down that " wherever Middle Palaeolithic sites in Europe have produced fossil human remains, they have approximated more or less closely to the " Neanderthal " type, and the associated industries have been flake—cultures of one or other aspect of the Mousterian complex."

After the Middle Palaeolithic period this ancient type died out unless his slouching, shuffling, incompetent figure is occasionally seen in the mentally deficient ward of one of our public institutions.

The earliest fossil skeleton of *Homo Sapiens* found in Europe is the Cromagnon, named from a cave in the S. of France where several skeletons were found. They are not only human in every particular, but remarkably good looking, and great was the glee of the French scientists when they pointed out this fact to their opposite numbers in Germany who then claimed the " Neanderthal " as their parental stock !

At least one of the Cromagnon type came to Britain, for his skeleton has been found in a cave in Scotland, and throughout the world *Homo Sapiens* has been throwing off variety after variety who developed into separate communities, but that is a branch of Ethnology that lies far beyond the scope of this paper.

During the second and third Palaeolithic Period two great advances were made in flint instruments ; the first was the striking of " *blades*," differing from the old " flakes " in that they were made for cutting as knives. They had the sharpest possible edge and their backs were broader and blunted by chipping so that the user could put on pressure with his fingers. The second was the invention of the " graver " or " burin," the essential point of which is that a flake is cut off at the end and a narrow cutting edge

results—more or less at right angles to the length of the flake like that of a thick chisel or gouge.

These two may take all sorts of shapes, but they are the father and mother of all forms of cutting tools—the knife and the chisel.

A great discovery that advanced all the developments of late Palaeolithic times was that flint can be worked into smaller and more efficient instruments by " pressure-flaking " by bone or hard wood as well, or better than by chipping by another flint. This reduced the size and clumsiness of the other flint instruments, and small size and handiness are the essence of efficiency. All the achievements in hafting and mounting their instruments and the use of other materials than flint (before the age of metal), *e.g.*, the beautifully finished bone needles with which the wife made her skin clothes, and the harpoons with which her husband speared her dinner, may be put down to these early discoveries, though they took thousands of years to bring them about.

The general progress of achievements in the last Palaeolithic period is remarkable ; the rough old forms of hunting their great game such as the mammoth—digging pits, for instance, to trap him and then pounding him to death with the heaviest of flint instruments they could make—gave way to more crafty methods when the forests grew thicker and the quarry changed to deer and smaller animals, where skill and trapping took the place of brute force.

The Mesolithic Age.

The treatment of the Mesolithic Age by the students of prehistory in the early days of last century is one of the comedies of Science. They had found numerous traces of man's settlements up to the end of the Palaeolithic Age and investigated them with the greatest learning, and then suddenly, just when all the evidence gave certainty that there had been an improvement in his natural living conditions, all traces of him disappeared and no more could be found until he reappeared in the Neolithic Age with domestic animals and cultivating corn ! Here was a dilemma ! How were the savants to treat this situation ? They were resourceful men—they declared that man had ceased to exist in Europe which was altogether depopulated, and called it the " great hiatus " ! So that was that ! and it was not till 1895, when Piette published his findings at Mas d'Azil, that Man was allowed to breathe in Europe once more !

In giving a very short account of what had really happened to the unfortunate descendants of the Palaeolithic people I shall follow very closely what is said by Mr. Grahame Clark in the first chapter of his book on the *Mesolithic Age in Britain*. There is, I believe, no other on the subject, and if there is I am quite convinced that it is not so good.

One may sum up Mr. Clark's answers to the question of what was the poor Palaeolithic man to do when he found rapid changes setting in all round him that he had never coped with. That he could emigrate, but where to? That he could suit himself to the new conditions, or "that he could by new and revolutionary discoveries alter the character of his exploitation of natural resources from the food gathering to the productive stage." This last, naturally, never occurred to him.

What he did do was to suit his weapons to his new kind of game and in the winter go down to the seashore and live on shellfish.

With regard to the alteration in his weapons and tools, the curious thing is that, new or old, it always seems to be in the direction of smallness.

Microliths, or "pigmy" flints, spread everywhere, including India and Australia! Enormous trouble has been spent in explaining the purpose of every variety not by any means always obvious. There seems to be something attractive in mere smallness, as witness the love of a *tiny* wrist watch—or it may be superstition, but undoubtedly any good workman likes a small tool.

The "Tranchet" square-ended tools became the square arrow head, or developed into axes—in some cases mounted in a reindeer horn.

Slightly sunken hut sites with hearths or fire-holes are frequently found surrounded by numerous pygmy flints in the course of the making, but never another sign of human occupation. They are usually only six or eight feet in diameter, and this has been used as an argument for a pygmy people. This is strongly objected to by Mr. Clark, as well as the term pygmy, lest it should imply a dwarf population which he evidently resents for his Mesolithic friends. But pygmy people survive everywhere; I myself have driven for a whole day in Norway behind a dwarf who exactly resembled in every way the "trolls" of my nursery books, and I have been looked after by an Italian waiter very small in stature with pointed, hairy ears like a satyr! Mr. Clark himself stresses that no Mesolithic skeleton has ever been found, but mentions the contemporary Mugens of the Tagus, a people whose skeletons averaged 5ft. 4ins., decidedly short, though not so much so as the present pygmy tribes of Africa.

Before the end of the Mesolithic people Brachy-Cephals had begun to be common in Europe, bringing their wide skulls, of course, from Asia—"but this is another story."