The Emergence of Culture
in Europe
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B. R. PUBLISHING CORPORATION
DELI-110052.
Preface

It will not be entirely untrue to state that prehistoric archaeology cannot be understood in all its details by every archaeologist. Prehistoric archaeologists can be seen labouring through statistics or primary books of zoology, botany and geology to have a better and fuller understanding of the subject. Likewise, historians, cultural anthropologists, population scientists and some times even Marxist sociologists would like to comprehend all about prehistoric archaeology in order to construct specific models of their own theoretical research.

To prepare a book for this kind of specialists poses a tricky problem, which involves a delicate balancing between oversimplification on the one hand and incorporation of the latest empirical details on the other. I have tried this difficult job in the present book. My main emphasis had been on such terms and concepts, which are freely used in prehistory literature. I had to use some technical terms for the chronological framework but even these have been kept to the minimum.

An extensive bibliography has been specially added to enable interested students getting into specialized probes. I hope, with the ever increasing phenomenon of widening horizons in all subjects of study, this book will be of help to students of both social and natural sciences.

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Basant Panchami, 1978
Foreword

Prehistory is now taught in a number of Universities in India, particularly in the Departments of Archaeology and Anthropology. In both these departments the main emphasis is laid on Indian Prehistory in the same manner as national Prehistory is emphasised everywhere in the world. A comprehensive course on the Prehistory of the outside world is also included all over to enable the students develop the correct perspective of their national Prehistory in the world scene. In India a comprehensive course on extra-Indian Prehistory has mainly been done by us on the basis of secondary sources or summaries appearing from these countries. Dr. Bhattacharya, to my mind, is the first Indian who has made a first-hand study of the material collected in various countries of Europe and brought the information together in this handy volume for us. That he is India-trained and acquainted with Indian problems makes him catch the ‘wave length’ of the Indian students in much better way than an European author of a similar book could have achieved. Palaeolithic studies in Europe are continually growing and becoming more and more technical in their orientation. To any Indian student such a rapid and multi-disciplinary development becomes well-nigh impossible to keep pace with. Hence the publication of this is extremely timely. Dr. Bhattacharya has already given us a large, up-to-date study of this subject in his Palaeolithic Europe. So he is the right person to present this simplified version to our College and University students.
The special feature of the book is its including some such famous sites as Bilzingsleben in East Germany, Sesselfelsgrotte in West Germany, Tata in Hungary and numerous such other sites in Europe which have mostly been reported in non-English languages. It is true that Dr. Bhattacharyya has exercised a great deal of personal choice in selecting the sites he considers—but there can be perhaps no other choice for one who has to summarise within limited space. He takes good care to see that the main issue i.e., culture does not get ‘caught-up’ in technical and over-specialized details. The most significant theoretical point that appeals to me is the distinct emphasis on regionalisation of Palaeolithic traditions sought by the author. It is true that such regionalisations are by no means new in the subject and also are not always correct, the attempt in this book has to be given the credit of at least formulating some time-space scheme, rarely attempted earlier. The chapter on Mesolithic demonstrates how with progression of time distinct regions tend to overlap their boundaries. Palaeolithic art is an extremely complicated topic which again has been easily summerized by Dr. Bhattacharyya in his characteristic manner.

I find the epilogue to the book particularly interesting. Here Dr. Bhattacharyya desists from being merely a dispassionate analyst and ventures at philosophising the conclusions of Prehistory in order to project a future for Man in our planet. While we rightly admire the great, almost unimaginable heights of material culture Man has reached, we are also afraid of the destruction of his own species that he is likely to cause. This is indeed foreseen by seers and philosophers like Shri Aurobindo. Hence, in the Human Cycle Shri Aurobindo had said that all material or artificial means and ways of bringing about equality among men, will ultimately fall. Here what Shri Aurobindo hopes is cited at some length:

“This at least is the highest hope, the possible destiny that opens out before the human view, and it is a possibility which the progress of the human mind seems on the way to re-develop. If the light that is being born increases, if the number of individuals who seek to realise the possibility in
themselves and in the world grows large and they get nearer the right way, then the Spirit who is here in man, now a concealed divinity, a developing light and power, will descend more fully as the Avatar of a yet unseen and un-guessed Godhead from above into the soul of mankind and into the great individualities in whom the light and power are the strongest. There will then be fulfilled the change that will prepare the transition of human life from its present limits into those larger and purer horizons; the earthly evolution will have taken its great impetus upward and accomplished the revealing step in a divine progression of which the birth of thinking and aspiring man from the animal nature was only an obscure preparation and a far-off promise."

Sachchidanand, Deccan College, H. D. Sankaran.
19.5.78.
Acknowledgement

This manuscript has been in circulation among students of anthropology for two years before it went for publication. During this period many students have offered suggestions which have been incorporated. I wish to acknowledge gratefully their help.

One of my students, Rev. Arul Maria Francis Jayapathy, deserves special thanks for the great interest he took during the final stages of preparing the book for the press. He not only suggested the inclusion of the site glossary but also prepared it entirely by himself. I have hardly any adequate words to thank him.

Finally, I wish to thank Prof. H.D. Sankalia for having kindly consented to write the foreword to this small volume.
DEDICATED TO THE SACRED MEMORY OF MY MOTHER, WHO DID NOT LIVE TO SEE THE RESULTS OF HER SACRIFICES.
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CHAPTER ONE

INTRODUCTION

I. HISTORY OF DEVELOPMENT

Such questions as the age of our planet or for that matter, the duration of the history of Man on this planet have been asked by every man in every age. The answers to these questions were sought through man’s own knowledge and perception at various times. Greek philosophers were the first to bring out a series of reasoning which reflected their awareness of the world at that time.

With the advent of Christianity, the Book of Genesis slowly started bringing a kind of uniformity of opinion among its followers. The earlier opinions of philosophers were naturally pushed to the status of folklore.

The newly converted Christian intellectuals were so keen on supplying answers to these ancient questions that one Dr. John Lightfoot from Cambridge University undertook a laborious research of genealogical calculations from Biblical sources and finally in 1654 came out with his conclusion: The earth was created on October 23, 4004 B.C. at 9.00 a.m.* This was also the date of Origin of Man, according to him.

For almost two centuries since then the intellectuals in Europe were comfortable with this view. There had been some

*Dr. Margaret Murray contradicted Lightfoot and gave a fresh suggestion. According to her the World was created on March 21, Wednesday at 6 p.m.
sporadic incidents of accidental finds of unexplainable objects during this period, but very few tried to explain these outside their knowledge of Biblical interpretations.

An instance of such a chance find which later on was to lay-down the foundation of Prehistoric Archaeology in Europe was noticed by John Frere in Suffolk (England) during the diggings for a church construction. In a letter dated June 22, 1797, John Frere wrote to Rev. John Brand, the secretary of an intellectual society in London, his finding of several "weapons" associated with "extraordinary bones". He even ventured to opine that "these weapons may tempt us to refer them to a very remote period indeed, even beyond that of the present world."

Such discoveries, however, could not get any footing during this period. Even as late as middle of the 19th century when more than one such claim of huge deposits of extinct fossils and prehistoric tools have been made the church-moulded intellectuals have attributed them to casualties of Noah's Flood and thunderbolts (for the tools).

The decade lasting from 1850 to 1860 witnessed almost a total conversion of the intellectuals in the West. This was caused by a series of discoveries, which led to some courageous opinions. In 1851, Putman used the word Prehistoric and thus accepted a reality beyond Biblical conception. In 1853, Marcel de Serres suggested the term Human Palaeontology which introduced human existence beyond the popularly held period.

In 1856, in Düsseldorf (W. Germany) quarry-workers discovered the first remains of the Neanderthal Man which was then explained as belonging to a modern race suffering from some disease by such a brilliant scientist as Prof. Rudolf Virchow of the University of Berlin.

In 1859, came the first rude blow to the entire group of conservative scientists. It was the Origin of Species by Charles Darwin. The shock that this most important contribution caused to the intellectensia is best illustrated by the cartoons and editorials published in Punch, The Hornet and Harper's Bazar in London during 1870-1876.

A French customs official, Boucher de Perths, posted at Amiens along the River Somme (France) had been making a
fabulous collection of prehistoric stone tools from 1838 and by 1841 he had published five volumes to illustrate the point that these were prehistoric tools. Unfortunately, he had all through been ridiculed by the intellectual societies for his claims. Darwin's brave theory led many to visit Amiens and re-examine Perth's huge collection and accept them as tools of man before us.

In 1865, Lubbock in France divided man's prehistoric past into *Palaeolithic* and *Neolithic* periods. In 1868, the Cro-Magnon skeleton was discovered from Les Eyzies (France) and finally in 1891 a second class Health Officer in Dutch colonial military forces for South-east Asia, Dr. Eugene Dubois, discovered the *Pithecanthropus* in Java.

While this chain of incidents were slowly breaking through the Biblical hold on knowledge, Tylor (1871) was already trying to break the subjective connotation of the word *culture*. He categorically defined *culture* as a complex which includes knowledge, belief, art, morals, law and customs in any population irrespective of the fact whether it is from the so called civilized West or from the pagan East or South. Thus, culture and the study of it also got a scientific footing before the beginning of our century.

It may be of interest to record the preoccupation of the Eastern or more specifically Indian intellectuals during this period, which we may call as the period of the emergence of the 'Science of Past'. The basic view that the religious and hence the learned heads maintained was an 'infinite age' of this planet where man had been present from the beginning of life.

This infinite age is divided into four periods which occur and reoccur in an unending cyclic system. At the end of each of these periods, man is completely destroyed by deluge and the subsequent period commences with nascent men on earth. The four periods enunciated are of the duration of 1.728 million years (*Satya Yug*); 1.296 million years (*Treta Yug*); 0.864 million years (*Dwapar Yug*) and 0.432 million years (*Kali Yug*).

*The present era is believed to be the *Kali Yug* of which*” in A.D. 1976 exactly 5077 years have passed. There are 8,58,923 years still left of this period and, hence, of the deluge terminating it.
Further, as far as man’s relationship with the animal kingdom is concerned, the Indian view held a much closer tie than what Western thought maintained. Even the philological derivation of the word for monkey in Sanskrit demonstrates this. A monkey is called Va-nara, while man is called nara. (The exact meaning of the addition of the prefix can be translated to mean—the imperfect man.)

However, these were views held by a microscopic section of the population that never bothered to look for evidence to substantiate. For instance, how can the remains of people from earlier yug be preserved when they were destroyed? So, even if tangible evidences were discovered they were never sought to be explained in the line we seek to do today.

With the beginning of the 20th century, there were already geologists, palaeontologists and archaeologists working hand in hand to find out scientific evidences of the past. Soon palaeobotanists, radio-physicists and chemists joined hands to make the knowledge of the past more complete. It will, however, be wrong to state that the Christian dilemma was entirely swept away in the flood of these investigations.

As late as 1972, California’s Board of Education was torn by a dispute over a proposal that children should be taught only the Biblical version of the “Creation”. The proposal eventually lost, but, the Board refused to accept the adoption of biological evolution without any questioning.

II. THE BASIC PRINCIPLES

The study of prehistoric archaeology is essentially involved in the total cultural reconstruction of the past of mankind. Further, as the name would suggest, there is a definite delimiting boundary implied in the extent of the past to be included within the scope of the subject. It involves the period of man’s beginning to the time he invented writing when he began supplying written evidences of the past happenings. These evidences of the past activities of man do not have the remotest similarity with what is known from contemporary societies and their tangible part of culture. Consequently, our understanding of culture needs to be broken down to the simplest core and
the psyche behind its origin needs to be understood.

At the outset, it has to be recognised that every living being has a set of needs of which subsistence occupies the primary position. This need is satisfied by varied kinds of planning and with the help of the environmental resources. In this regard the environment also had been the biggest instructor for the living beings. Almost all wild animals use their biological ability to satisfy this particular need.

It is believed that at some stage in evolution a group of primates developed the brain-power to store experiences as ‘knowledge’ and thus coordinate observed natural phenomena to supplement his biologically endowed ability. (In contrast, the using of leaf midribs to retrieve termites as observed in the chimpanzees is taken as merely extending the bodily function with the help of environment—the leaves).

For the study of archaeology, therefore, these environmental objects, which are specifically shaped by our earliest ancestors are laid down as cultural objects. To appreciate and recognize these objects as cultural remains, therefore, we lay down certain fundamental behavioural axioms:

1. The need of man has been mainly dependant on his impact on the environment within which he seeks to survive.

2. Environment has simultaneously guided man to devise an artificially constructed media through which man survived.

3. Every artificially shaped part of the environment is the fossilized evidence of the manner of achieving survival, and hence are ‘culture attributes’ for our study.

4. An artificially fabricated object for a specific purpose does pass through experimental stages, but on achieving the desired efficiency for a given period gets standardised and is identically repeated all over within a given environmental zone.

5. Contact with different environmental zones and with different culture attributes seldom eliminates the older traits. This is inspite of the fact that the new zone may not provide the same raw material or even the need of the area may not be suitably satisfied by the earlier attributes.

With the above foundations a prehistorian proceeds to define what is meant by culture. It would not be very wrong to state
that the difference between the 'culture attribute' and 'culture' for a prehistorian is comparable to the beginning and the end of a book. Culture is an abstract concept brought within tangible limits in the study of contemporary societies by describing a custom, a value or a system. Even then its expression is through description of (although scientifically controlled) a state of affairs.

In prehistory this ethnographic connotation of culture is aimed through the reconstruction of material remains of the past human activities. In other words, unlike in ethnography, here the basic evidences to start with are tangible objects which can be measured and weighed.

These objects are like the essential ten numbers of mathematics. That is, they are 1, 2, 3,......9 and 0 for us. Each one of these digits are precisely defined yet in combination meant to convey a meaning which has nothing to do with their individual characters. Further they can produce infinite number of combinations. All these combinations will have a common feature of having no more than the above ten digits. This essential common unit for our study has been called tool type in prehistoric archaeology.

Earlier, we had provisionally called them culture attributes because for a relatively younger period in prehistory these can mean coins (the scientific study of which is called numismatics) or particular architectural structures (the study of which is called iconography). In the earliest period of human culture called Palaeolithic Archaeology or Old Stone Age, tool types form the fundamental unit of study.

A vast number of the recovered tool types through time and a reasonably homogeneous space indicate a common trend. This is designated by the word tradition—again a concept borrowed from ethnography. Several local traditions can be clubbed together for a sub-continent and designated as culture. This ascendance to the abstract level from the tangible finds requires a meticulous search of technological innovations or change in the total character of the attributes. Essentially, this happens with major changes in the environment. It is, therefore, the job of a prehistorian to develop his chain of closely controlled logic to give a meaningful character to the identified culture.
III. METHODS OF STUDY

Recovering evidences of the past is without any significant meaning to an archaeologist unless his methodology can provide him a scientific answer to the basic questions of "What kind?" and "How old?".

The first among these two queries attempt to classify various kinds of culture attribute combinations and thus result into what is often referred to as an *assemblage* (when this is from one layer of a site).

The latter, "How old?" is a question which an archaeologist alone cannot answer. For this he seeks help from almost all specialized branches of the natural sciences. The most they can achieve is to obtain a kind of broad age for the finds.

The age diagnosis of these objects convey, by no means, any sense to a layman or a modern historian. This is because for the prehistoric period, the year concept of modern calendar is not feasible. An example will clarify this difference. For instance, when an archaeologist diagnoses the age of his finds, say, as *late Paudorf* it will mean that *Paudorf*, is a specific period with a large number of established geological and zoological characters defining its limits.

In other words, a series of such stages are identified and arranged in a chronological succession. (The names of these periods are taken from the sites where they are first identified.) Thus, though Paudorf is actually the name of a village in Austria, the chronological ascription of the word is valid all over Europe.

Some recently developed radio-isotopic methods have been able to provide a series of absolute age in years for some of these periods. This has enabled us to realize the relative duration of each of these periods. To estimate the age of the various geological and zoological phenomena of the past has thrown such a big challenge to the natural scientists that there is a large group of them involved in establishing through empirical finds every possible detail of facts of the past. These researches have already formed a branch of study referred to as *Environmental Archaeology*.

*Armed* with the tools to describe and *classify* his find and
estimate the broad antiquity of it, the prehistoric archaeologist slowly and carefully builds up a picture of the culture. This is not, by any means, an easy job because he is required to keep conjectural links to the minimum. In the formative period of the subject such conjectural links were used so abundantly, that varied kinds of pictures depicting the early man and his culture as barbaric, was constructed. An example of such a picture is the theory attributing canibalism to most of the prehistoric cultures.

One of the foremost problems facing the scientists in completing the reconstruction of past cultures is the impossibility of knowing the attitude, morals and values of prehistoric men on empirical grounds. The manner in which a given object was prepared can be understood by controlled experiments but the manner in which they were used cannot be proved without using a degree of conjecture—no matter, even if it is at common sense level.

The function of the tools become very important in developing the needs felt by the people. Identifying the needs and the manner in which they were satisfied can finally lead us to develop the culture. Unfortunately this approach to the study is so much fraught with assumptions that the inferences loose their scientific footings. The alternative left is to go for a morphological analysis of there covered objects in the manner of taxonomic analysis in palaeontology.

In taxonomy, every chosen character has an evolutionary significance so that an aggregation of these decides the phylogenetic status of the animal. While in prehistoric archaeology, the chosen features have a marker status in technological scale—so that an aggregate of these decides the technologically advanced tools and hence cultures as opposed to the simpler ones.

However, such morphological analysis, although more scientific, does not help us to understand the total culture. This is specially because now we have enough evidence to hint that stone tools were only a very insignificant proportion of the total culture of the prehistoric man. A larger proportion of his workmanship on such perishable objects as wood, bamboo, bones and antlers are lost forever.
INTRODUCTION

This has led many to devise sophisticated instruments and techniques with the help of which marks of use on the tools can be read and their manner of use can be demonstrated on empirical grounds. The pioneer in this technique, Prof. Semenov from U.S.S.R., feels convinced that this can lead to more meaningful, although complicated, typological classification.

Prof. Francois Bordes of France, who has spent a life-time in devising a morphologically classifiable tool typology system is the strongest opponent of the functional school. In his own words “Semenov’s point of view is the negation of archaeology as a way to study the interplay of cultures, since for him, a Volkswagen and a Ford are the same thing, since they are used for the same purpose: transportation. And I doubt that we will ever know the function of tools well enough to base a classification on them. True enough, tools having the same apparent attributes might have been used for entirely different functions. I have done a lot of different things with my knife. But, also different tools can eventually be used for the same purpose”.

IV. TOOL TYPES

The study of tool types and their techniques of manufacture is a full-time occupation of many archaeologists. This study, often referred to as Typo-Technology and its conclusions form the basic pre-requisite for the understanding of prehistoric archaeology. Here, we shall enumerate some basic details as the full details of this requires a separate treatment, and hence is beyond the purview of this book.

Repeated experiments have led us to the following basic principles in the fabrication of tools.

1. A suitable stone chosen for working is hit with a stone hammer. This results in the removal of a small piece from the chosen stone. This stone, which can be hit repeatedly to obtain the desired shape, is called the core. Likewise, the smaller pieces that are detached from this are called flakes. Morpho-

1Francois Bordes, May 31, 1975—personal communication.
logically, a core is diagnosed by the presence of one or more negative depressions on its points of contact or impact with the hammer. These are called negative bulbs of percussion. Each flake maintains an elevated region corresponding to the negative bulbs where they were cradled before detachment. These are termed as positive bulbs of percussion. Conversely speaking, the presence of a positive bulb or its absence can readily diagnose a given stone as a flake or core respectively.

2. The process that starts with simple flaking ends up with minute border retouching to give rise to a sharp edge.

3. The morphology of the finished specimen in relation to the areas where the evidence of specific border was desired by the prehistoric man decides a tool type.

4. When there is an increased emphasis on obtaining suitable flakes and retouching them into tool types the industry is taken to demonstrate a distinct advancement in its technological level. This is specially because such a stage demonstrates the insight of the prehistoric community into work input/output ratio.

A dozen blows can shape a moderate sized core into having at the most say about 30 cm. long sharp border but if properly planned the same number of blows can yield a dozen flakes, each one of which have the potential of not less than 15 cm. long sharp border. Thus, the shifting of emphasis on flakes can provide $15 \times 12 = 180$ cm. of sharp edge as against only 30 cms. on a core for the same number of blows.

However, it is important to keep in mind that a community continues with some core tools inspite of its knowledge of flake advantage because the sharp border alone cannot serve all his requirements. Heavy tools for chopping is also equally important.

5. There are two disadvantages of shifting emphasis to flakes. Firstly, a core cannot be totally used to convert the entire mass into flakes. This involves the wastage of some of the precious raw material. This is because after reaching the so called critical angle of flaking (usually 90°) the core crumbles into cracked fragments. Secondly, many flakes, being thin, break in the process of giving it a shape subsequent to its removal. These disadvantages are corrected by devising two ingenious methods of
flake manufacture.

*Clactonian*: This technique is first recorded around 4,00,000 years ago at a place called Clacton-on-Sea in England. This involves the blowing off a flake from a surface and using the inclined flake scar on the core to hit for the second flake to be removed from the opposite surface. The process can be repeated until the entire core is exhausted without ever reaching the critical angle. These flakes are characterised by an obtuse angle formed between its axis and the striking platform. After the site-name, these flakes are termed as *Clactonian flakes*.

*Levalloisean*: This technique is recorded from a relatively later period, around 2,00,000 years ago, at a place called Levalloise near Paris, France. This involves delivering a few centrally directed blows on a suitable surface of a core. These scars, which are meant to shape the flake to be detached, meet in the centre of the core. Subsequently a platform is prepared on the top of this dressed surface by controlled pecking to receive a vertical blow. In case a suitable platform is present no such faceting is required.

The final blow detaches a flake which has already been shaped and hence this technique is sometimes also called prepared core technique. Morphologically such flakes are recognised by the presence of centrally directed flake scars on their dorsal surface. Further, very few of these carry their characteristic points of impact, which invariably lie on the core—called Tortoise core—from which the flake has been detached. The flake angle is nearly 90°.

6. Finally, experiments have demonstrated that very early in the history of human culture, man had realised that a stone hammer although useful in detaching large chunks of flakes is not quite suitable for retouching fine and sharp borders without running the risk of damaging them. This seems to have led them to try such hammers of organic material as antlers, bones or even tough wood pieces.

These hammers because of their innumerable pores could very easily absorb shattering effects of blows. Scars removed with these hammers are shallow and elongated and thus deliver the chiseling effect desired. This technique is called cylinder hammer technique or hollow hammer technique.
With this brief introduction of the technological aspects of earliest prehistoric culture, we shall enumerate some of the basic tool types in brief for our purpose.

a. Chopper/Chopping tool: This is a core tool, which is usually massive. Normally a pebble is used. Few deep flakes are removed from one end of the pebble so that its breadth becomes the cutting edge. When these flakes are removed from both the surfaces i.e., the tool is bifacially worked then the tool is called a chopping tool. When the working end is obtained by unifacial flaking, then it is simply called a chopper. (Fig. 1: 9, 10, 14, 15, 16). Normally, these tools lack the fine border retouching and are entirely prepared by stone hammers.

Although a majority of the tool retains the original pebble cortex which gives it a look of crude workmanship, the chopper and chopping tools on experiments have been found to be very effective for felling trees and cutting wet wood of considerable thickness with relatively little effort.

The earliest known human culture, believed to be more than a million years old and occurring at Olduvi George in East Africa, consists of mainly choppers evolving into chopping tools. At the same site, these transverse edged tools slowly give rise to a type with pointed tip obtained by the convergence of two sharp lateral borders.

Bifacially prepared, these roughly triangular looking tools become the magnum opus of our earliest culture. Erroneously called a handaxe, this tool type had also had the longest period of favour of prehistoric man all over the old world—roughly 90 per cent of man’s entire prehistoric past.

b. Handaxe/Cleaver: A handaxe is a roughly triangular core tool which is worked bifacially in such a manner that two sharp lateral borders converge to give rise to a pointed or narrow working end. The opposite end or the butt end of the tool is broad, bulbous and heavy. A cleaver, on the other hand, is also bifacially prepared with a rather broad, bulbous and heavy butt end, but, here the lateral borders run more or less parallel so that the working end is transverse, though thin. In India and Africa most of the cleavers are prepared on large flakes so that the flat bulbous surface hardly requires any flaking. A slanting blow at the anterior end intersects with the flat ventral surface
to give rise to the transverse working end. Prof. Bordes prefers to call them *Flake-cleavers* to distinguish from the bifacial cleavers common in Europe.

The handaxes and cleavers are divided into several sub-types. Here we shall mention some of them with their cultural connotation.

i. *Abbevillian Handaxe*: This is the largest of all handaxes and often weighs as much as 2-4 lbs. Although bifacially worked, these handaxes have scooping deep scars which give rise to very sinuous lateral borders. There are rarely any secondary retouchings done along the borders. Usually their total appearance is never symmetrical. (Fig 1; 1-3)

ii. *Acheulian Handaxe*: This is much smaller and symmetrical in shape. There are numerous secondary border retouchings done in a controlled manner and, hence, the lateral borders are also fairly regular. Around middle Acheulian period cylinder hammer technique is profusely used to execute the final shaping and retouching. In many of these the sharp lateral borders continue over the butt end as well. A special shape of these handaxes is an Ovate which often has a twisted S or Z shape of the border when seen in profile. (Fig. 1: 4, 8 and 13).

iii. *Cleavers*: Since there is no cultural marker among the cleavers’ these are divided into various sub-types on their morphological features alone. For instance, there is the classic U-shaped cleaver with parallelogram cross-section, the pointed butt or V-shaped cleaver and some others (Fig:12)

c. *Scrapers*: These include two distinct categories identified separately as *Racloir* (side-scraper) and *Grattoir* (end-scraper) in French. Here we include them under the same heading for the sake of brevity. Side-scrapers are flake tools along one or more of the borders of which contiguous retouching is done to convert one or more such borders as working edges.

Thus, one can get a single side-scraper or a double side-scraper (when the two scraping borders do not meet) or a convergent side-scraper (when the borders meet). Some of the convergent side-scrapers meet in a deflected manner (as related to the bulb of percussion of the flake in the ventral surface) and these have been called *Dejete* scraper in French.
Side-scrapers are found in the Lower and Middle Palaeolithic period mainly, although they are known to continue into the Upper Palaeolithic period as well in many traditions. (Fig 2: 2 and 3)

End-scrapers start occurring in the Middle Palaeolithic period and become really abundant during the Upper Palaeolithic period. These are prepared on flakes, blades or small nodules by a characteristic retouching at a chosen end. Usually the working edge is plano-convex in cross-section because of steep retouchings done from the ventral surface as a platform to meet on the dorsal surface. (Fig 1:6)

d. Burins: This, like the end-scrapers, develop in the Middle Palaeolithic period and become numerous in the subsequent period. These are blades or flakes (or even small nodules) retouched in such a manner that the thickness of the stone projects out exactly in the manner of a modern screw-driver. The most common variety of this type called the axial burin or bec-de-flute in French is prepared by choosing a blade on the terminal end of which two slanting blows are delivered in such a manner that these converge to meet the short transverse working edge. (Fig 2:7)

e. Borers: This is a flake, blade or core at one end of which two notches are made in such a manner that a projected pointed end is produced.

f. Blade Knives: Elongated blades have two naturally obtained sharp borders. When one of these borders is blunted by steep retouchings then the tool is either called a backed blade or a knife when the backed border meets the sharp edge. Chatellperonean knife-blade is one of the latter types.

When the backing is done in such a manner that the terminal end is pointed (for which some times even the sharp edge at the terminal end may be retouched), this tool is called a Gravettian point. Often many of these Gravettian points have various kinds of shoulders notched out at the base and these give rise to a variety of shouldered points each of which are given type specific names. Some of these shouldered points which will be referred to in later chapters are Font-Robert point, Kostienki point, Hamburgian point, Ahrensburgian point, etc., (Fig 2: 8 and 9)
g. Leaf Points: A large number of exceptionally thin and symmetrical points have been known from Middle Palaeolithic period onwards. In Solutrean tradition of Upper Palaeolithic, these take the finest shape. Some of the leaf points show no pressure flaking and seem to have been prepared by normal flaking technique. These are called Blattspitzen in Germany, where they are found during Middle Palaeolithic period.

During Solutrean tradition, a kind of chiselling on the stone surface as a technique had been developed and these resulted into what is known as Laurel leaf (Fig 5: 26) and Willow leaf types. These are the finest results achieved by man in the whole of his stone age technology. A laurel leaf is bifacial while a willow leaf, which is a little smaller and narrower, is unifacial. Some times even these points are shouldered at their bases.

V. PREHISTORIC CALENDAR

The researches behind the development of the Prehistoric Calendar or chronometer is varied and are so specialized that to go into them in detail will call for a great deal of steering away from our main theme of culture history. We shall, therefore, be content to record the results of these researches as merely an aid to our understanding of culture succession.

However, it is necessary to mention that the basic principle of constructing the calendar is based on what is called the Law of Stratigraphy. According to this in any given stratified deposit, the lowest layer is the oldest in time of occurrence in relation to the successive layers. In case, the deposition took place during a period of down cutting by a river or uplifting of the bed by earth movement, called tectonic motion, then the depositions occur in terraced structure. The Law of Stratigraphy has to be obviously reversed for this kind of depositions. That is to say, the topmost terrace is the oldest in time of occurrence as compared to the lowest terrace.

These relative estimations of a group of deposits in terms of “Older” or “Younger” is the basic unit in the study of chronology. Very soon a large number of sites from a large number of areas gather with their respective local chronologies. These layers are then compared between areas and a
chronology for a larger area is constructed.

The study of the soil reveals the climatic condition during the period of deposition and the study of floral and faunal remains reveal the general environment prevalent during the various depositional phases. Thus, a kind of climatic succession for a large area can be constructed. Radio-isotopic methods can ascertain the absolute age in years for many of these events.

Continuous investigation of every kind of deposition, even if they are not culture bearing, can establish many successions and add or eliminate smaller phases. The more the sub-phases and sub-sub phases are identified, the more detailed becomes the main chronometer. There are some areas where many sub-phases identified elsewhere are not witnessed and in these cases the local chronometer of such areas are more useful.

A very good example of such local variation is the occurrence of the earliest glaciation in Alps (Günz) around a million years ago while in North Europe, there is the total absence of this glaciation except perhaps some of its secondary effects. The first glacial condition witnessed in most of Europe is the second glacial (Mindel). The most commonly used broad chronology for Pleistocene is as follows (Adams, 1966):

<table>
<thead>
<tr>
<th>Time Period</th>
<th>10,000 B.C.</th>
<th>Versilian (2 m)</th>
<th>Pontinian (Rgr)</th>
<th>Tyrrenhian-I (8 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young Pleistocene</td>
<td>1,000,000 yrs.</td>
<td>Würm Glacial</td>
<td>Eem Interglacial</td>
<td>Tyrrenhian-I</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Pleistocene</td>
<td>Riss/Saale</td>
<td>Glacial</td>
<td>Holstein</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Tyrrenhian-I</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(32 m)</td>
</tr>
</tbody>
</table>

*With the advance of glaciations the sea-level fell down by several metres and similarly during interglacials the sea-level rose. These fluctuations of Transgressions and Regressions are taken to correlate with the continental geological phenomena. Here, the names of the Transgression beaches with their height from the present sea-level (as recorded in the Mediterranean region) is given.*
# INTRODUCTION

<table>
<thead>
<tr>
<th>Early Pleistocene</th>
<th>Mindel/Elster Glacial Mosbach Interglacial</th>
<th>*Milazzian (60 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 million years</td>
<td>(Günz Glacial only in Alps)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Earlyest Pleistocene</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Villafranchian *Sicilian (100 m)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Teglian) *Calabrian (200 m)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Donau Glacial (only in Alps)</td>
<td></td>
</tr>
<tr>
<td>2.8 million years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The last glacial phase being the youngest and also because of its having maintained some excellent wind blown deposits (Loess) is better studied. We may, here record the divisions of Würm as followed by the majority of specialists:

<table>
<thead>
<tr>
<th>Würm phase duration</th>
<th>Climate</th>
<th>Deposit names</th>
<th>Radio Carbon age in B.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cold</td>
<td>Younger Dryas</td>
<td>11,300 — 10,200</td>
</tr>
<tr>
<td>Late Würm (2,800 yrs)</td>
<td>Temp.</td>
<td>Alleröd</td>
<td>12,100 — 11,300</td>
</tr>
<tr>
<td></td>
<td>Cold</td>
<td>Older Dryas</td>
<td>12,500 — 12,100</td>
</tr>
<tr>
<td></td>
<td>Temp.</td>
<td>Bölling</td>
<td></td>
</tr>
<tr>
<td>Würm IV†</td>
<td>Cold</td>
<td>Oldest Dryas</td>
<td>13,000 — 12,500</td>
</tr>
<tr>
<td></td>
<td>Cold</td>
<td>Represented by main</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Glacial Tills</td>
<td></td>
<td>29,000—13,000</td>
</tr>
<tr>
<td>Würm III</td>
<td>Temp.</td>
<td>Paudorf or Stillfried B.</td>
<td>40,000—29,000</td>
</tr>
<tr>
<td>Würm-II</td>
<td>Cold</td>
<td>Represented by first glacial advance in South</td>
<td>≥ 750,000</td>
</tr>
<tr>
<td>Early Würm</td>
<td></td>
<td>Baltic Sea</td>
<td></td>
</tr>
</tbody>
</table>

†French Classification.
VI. THEORETICAL CONSIDERATIONS

Prehistoric Archaeology has passed through some important changes in its theoretical trends since the time of its development. For instance, during its earliest phase an evolutionary model had been most popular. Every single study of this period has sought to identify stages in culture (as demonstrated by changes in tool types) parallel to the stages of human evolution.

Closely on heels followed the most popular axioms of diffusionism which traced changes through contact with other areas. Thus, most of the changed culture at a place had to be explained through diffusion from some advanced area. East Africa served as a very good area for consideration of diffusion because of its priority of date of occurrence of many classic tool types. It is during this diffusionistic period that profuse use of ethnographic examples as arguments in prehistoric reconstructions was also started.

Most of the modern prehistorians have used the above theoretical structures in their analysis but with time and gathering experience these have been drastically controlled. Today, for instance, when an area having no existence of say Blattspitzen in a particular period suddenly starts yielding this tool type in a younger layer, it is generally sought to be explained in terms of diffusion, specially when in the immediate neighbourhood Blattspitzen are known to occur from an earlier date. Beyond this, diffusion is not stretched. Otherwise the general trend is to get an additive character for a large number of sites and develop this to frame a tradition for the zone. Usually some specific tool types are essentially common for all these sites.

The use of ethnographic parallel has become a hot issue of discussion between the structuralists and culture historians.
INTRODUCTION

This had a conscious or unconscious sanction from many serious prehistorians because it was realized that the remains of past cultures discovered by archaeologists are in fact an insignificant proportion of his total culture.

Many such vital questions as his behaviour, manner of hunting, division of labour, nature of social units and numerous other cultural attributes are impossible to be reconstructed from the available remains. An urge to complete the cultural scene has, thus, led them to seek analogy with the so-called contemporary primitives. These scientists saw no apparent objection to such comparisons because the basic assumption before them was:

If there is a community surviving even today in the most ancient economy, that is, they are hunting and gathering their daily food, then they should in most of their activities compare with the prehistoric (mainly Palaeolithic) peoples. Hence, what is not reconstructable from prehistoric remains can be easily presumed to be same or similar in kind to what is observable in the primitive contemporary. Often these considerations form the basis of the enquiries embodied in what the Americans call Action Archaeology.

Obviously, this assumption, to state the least, is incorrect nonetheless such analogies have taught the prehistorians some important facts. The most important of which are:

(i) Man in prehistoric past, specially during Palaeolithic period, need not necessarily have had all that degenerated animalistic life as was thought.

(ii) Vegetable food consumption and hence its collection was, by far, the most predominant concern of the Palaeolithic people.

Thus, we might say that introduction to analogy brought in some realization of the untenability of purely conjectural picture drawn of the prehistoric society. At the same time it granted an additional licence to the theoreticians to choose from a variety of possibilities available in the ethnographic record. This ranges from an extremely complicated social system of the Australian Aborigines to the simple individualistic Eskimo hunters of the Arctic. Obviously, such a situation
mixed with nationalism of various countries have led to rather glorified cultural status of one country as compared to poor status in another country depending on who interprets which site.

A group of prehistorians joining hands with the objective archaeologists finally challenged the entire group of earlier models and tried to turn the trend. This group, who call themselves the New Archaeologists criticise the "genealogical approach" of study in Prehistory. They feel that the answer to all possible questions of culture should be sought from within the contents and contexts of the finds. They have also demonstrated some remarkable results by using attribute statistics on the stone tool collection.

Further, science today has developed to such an extent that even the food preferred by the prehistoric people can be found out by corporite analysis. The tools with their marks of use can indicate how these food items were retrieved. Also, the frequency of one job specific tool in relation to another could always be taken to indicate preference or availability of one kind of food to another. With the development of empirical methods to reconstruct climate, fauna and flora of the total region, a general idea of the kind of environment within which the people lived could be developed on firmer grounds. Finally, the relation between the need vis-a-vis the environment could emerge.

The trouble with this new archaeology is that all sites do not provide enough possibility for carrying out the series of empirical investigations. Furthermore, the perishable component of man's workmanship still remains unknown and hence unaccounted in his total cultural reconstruction. Hypothesis that emerge from such vigorously conducted archaeological investigations remain merely as one out of many possibilities.

Consequently, we come back to ethnographic parallels again, although in an extremely controlled manner. Even here, we have to remind ourselves that there is no primitive people living till today which is not aware of modern civilization or some products of it. Further, today, primitive life is adjusted within the present day forest, a large part of whose faunal and floral variety has changed both in quantity and quality. Within
this changed context, a biologically modern human group can be compared only in a limited sense with the Pithecanthropies, the Neanderthal and even early *sapiens* in their Pleistocene forests.

In spite of such a significant difference for some basic questions ethnographic analogy comes quite handy. To illustrate this, let us imagine there is a Prehistoric site in which archaeological analysis demonstrates the presence of a large number of real fine handaxes, but, no particularly important flake tools. Let us also imagine that these are found associated with a good number of large mammal remains. Suppose the palaeobotanical, sedimentological and palaeontological studies indicate that the habitation took place during a period when the climate was hot and humid and the area was surrounded by long grass and sparsely spread clumps of 10-15 ft. tall varieties of deciduous trees.

An objective interpretation of such a find will usually be that this Prehistoric group had been successfully hunting large mammals with handaxe as one of their important weapons. Now if we can find a stone using and large mammal (say elephant) hunting primitive community existing in a comparable environment today, we may seek the following questions through ethnography:

i. How are the elephants hunted? What are the roles of the females, the old and the children in this hunting? And, what strategy and implements are used to kill the powerful animal?

ii. How is the animal transported to the camp and subsequently consumed? What are the roles of various hunters? How are the wounded treated by the group?

The ethnographic data might indicate that the elephants are never hunted by handaxes but by hardened, wooden spears specially made by the females in the group by using unretouched flakes. But, the finished stone tools (in this example the handaxes) were carried by the male hunters to cut the hunted animal.

Further, it might be revealed that the large mammal hunting is closely related to the concept of surplus in economy and not so much to the force of hunger driving the "desperate primitive" to launch such risky hunting. A stone age primitive community can always hunt burrowing animals with ease and
thus take care of his protein requirement.

Thus, the very fact of his going to hunt such animals which involved considerable risk to his life specially when a single horde cannot finish the flesh before it starts putrifying and also invite a horde of scavenging carnivores, should be logically taken to hypothesise cooperation and barter of the food between several hordes of the neighbourhood. This may be inspite of the fact that for all other practical purposes these hordes may be extremely competitive with regards to their exploitation of food resources.

This kind of an insight of the reality or at least the tentative nature of our assumptions can be had if ethnographic analogy is possible. This entirely imaginative situation is given merely to demonstrate that what may appear as archaeologically most logical may not always be the reality. A carefully selected community of contemporary primitives and a study of their hunting behaviour can go a long way to substantiate such or similar alternative hypotheses.

Behavioural conclusions of the prehistoric culture derived out of analogy is always open to criticism and as such the whole need of using ethnographic models by Prehistorians has been repeatedly questioned. A Culture Historian or a Cultural Anthropologist has still no other choice to satisfy the questions he seeks through prehistory. It is admitted that larger the amount of conclusions derived out of empirical data, the greater is the scientific value of the results.

Once the practice of analogy is allowed in an empirical science, this compromise can lead to an uncontrollable extent of stretching the cultural comparisons. It is because of these reasons that analogy is kept as the last and also the least used resort.

Basically, therefore, the model of analysis of a Prehistorian is the technological principle. Causative factors influencing the various technological innovations and/or ramifications serve as a good working indicator of man’s needs vis-a-vis his ability of improvising means to strike a balance with his environment. The concept of surplus economy and division of labour within a horde or similar other questions, therefore, remain beyond the purview of Palaeolithic Prehistory under normal reconstruction techniques.
CHAPTER TWO

LOWER PALAEOLITHIC

I. INTRODUCTION

The earliest known human culture is recorded in the form of quartz or quartzite pebbles, which have been shaped by our earliest culture making ancestors. Till today, the earliest of them are known from Olduvian beds in East Africa. There is, however, a considerably large collection of "tools" recorded so far which are claimed as the earliest human culture from as early as 70 million years ago.

These are known from around 1867 (just about two years after the publication of Lubbock) when Abbe Bourgeois called them *Eoliths*. It was argued that there was an Eolithic (dawn of stone culture) or perhaps even an *Alithic* cultural stage (a period preceding stone using, i.e. when perishable objects were shaped) preceding Palaeolithic culture.

The most important hurdle in proving or disproving them as authentic man-fabricated tools lies in the absence of any established indicator of human fabrication as against natural fracture. As such on direct empirical level the existence of such cultures cannot be contradicted.

However, on the palaeontological ground such a possibility had to be discarded for the lack of any fossil kind in such remote past as 60-70 million years that demonstrate such taxonomic features which can be taken to discount the possibility of culture making ability in them. Thus, the huge collection of
Eoliths in various countries of Europe remain suspended by the thread of uncertainty and scientific doubts.

Palaeolithic culture as suggested by Lubbock has undergone some shift of meaning since then. Today, it is defined as that part of human culture which occurs within the Pleistocene age irrespective of the character of the contents of this culture. It is a cultural term to designate the earliest period of human pre-history which is strictly delimited by the chronologically defined limits. Further division of this stage into Lower, Middle and Upper Palaeolithic periods was suggested by Lartet in 1870. Even this division was not based on cultural attributes but on associated predominant fauna.

Presently, although Lartet’s terms are still used some new cultural attributes are also incorporated to define them. For instance, the West Europeans will feel that Lower Palaeolithic is defined by the predominance of heavy core tools, Middle Palaeolithic by the predominance of medium-size flake tools and Upper Palaeolithic by blade and bone tools. The nature of finds known from other areas of Europe do not entirely agree with this scheme.

A common practice without much of scientific basis counts the cultural traditions from the beginning of Pleistocene to the end of Riss as Lower Palaeolithic, beginning of Eemian to middle of Paudorf as Middle Palaeolithic and the same from the rest of Pleistocene as Upper Palaeolithic.

This practice can lead to a misunderstanding in the mind of students against which they need to be warned. This practice does not mean (i) that these divisions are air-tight compartments, the contents of which are smoothly taken over by successive stages at the same time all over the world and (ii) that an industry occurring after, say, Paudorf and containing heavy and crude core tools needs to be defined as Upper Palaeolithic instead of Lower Palaeolithic as the cultural content will seem to indicate. In other words, these three divisions of Palaeolithic can be correctly understood as shown on page 26.

The nature of occurrence of the various cultural traits is not uniform. In many areas, the stone age tools are made even today and such cases, as is demonstrated in localities C or D, have to be accepted and explained in cultural terms. The cultural
stages, therefore, cannot be taken as uniform succession on a world-wide basis. Further, it is not necessary that every locality has to start with the lowest cultural stage. Neither is it necessary that the duration of such a stage is comparable all over. However, the nature of occurrence as demonstrated in the above schematised representation will indicate the following:

i. Lower Palaeolithic, when it occurs, is always the earliest and the other stages follow it (if they occur) but never precede it.

ii. The change can be from Lower to Upper Palaeolithic in many localities, but never the reverse.

iii. The earliest and the latest occurrence of any particular cultural stage when data from the entire world could be put together can be taken to demonstrate the origin and duration of that stage.

The above discussion is meant to demonstrate the fact that though in practice chronology comes as a convenient means to decide the cultural status of a group of finds, their typo-technology is more important.

II. TRADITIONS

The entire Lower Palaeolithic of Europe can be visualized under two great litho-cultural traditions. We shall try to list them here.

1. Pebble Flake Tradition

This is a provisional name given to a series of industries known from England in the west to Leipzig (E. Germany) in the East. This is better understood as a non-handaxe tradition. Its first occurrence can at the most be taken as the middle of Mindel glacial while it is known to have continued till the entire length of the following interglacial.

The tradition is characterized by the presence of some pebble or core choppers and chopping tools and several clactonian or free flakes of thick base and relatively big size. These flakes are seldom retouched to specific types. Some of them can be taken to indicate an attempt to form side-scrapers, notches and denticulates. In the finished core types some unifacial chopper att-
empts seem to indicate already a narrow working edge.

These tool types which look like attempts towards handaxe, though still unifacial, are commonly called "proto-handaxes." The clactonian industries of South-east England which emerge around the end of Mindel and found till even the last interglacial, have been for long held as a distinct tradition. It seems now to be only a local and late survival of the "pebble/flake" tradition.

2. Abbevillian-Acheulian Tradition

G. de Mortilett during the closing of the last century recognised the occurrence of Lower Palaeolithic in two distinct traditions and called them as Chellean and Acheulian after two sites in Northern France. V. Commont, around the beginning of this century, added a third tradition on the basis of the earliest tools recovered by him on the Somme River deposits and identified them as Pre-Chellean tradition.

Finally, Abbe Henry Breuil took up an extensive study of the Somme Valley deposits and the cultural and palaeontological material recovered from them. To him it appeared that both the Pre-chellean and Chellean kinds of tools are parts of the same tradition and are found in association at a site called Abbeville. He preferred to call this as "Abbevillian."

This tradition was described as occurring in the gravels belonging to a warm phase, which could be anywhere between Mosbach to an interstadial within Mindel. At Somme, tools belonging to this tradition is recorded between 50-45 metre terraces at Montiers and Carriere Freville. The cultural material mainly consists of heavy and crude handaxes, which are accompanied by some crude unretouched flakes. This kind of handaxes are recorded from Thames as well (although nearly at the end of Mindel) with Clactonian flakes.

Acheulian, on the other hand, is a mature handaxe tradition where this tool type reaches a perfection of shape. Most authorities agree that this tradition emerges around the middle of Holstein. It is quite likely that the Abbevillian continued till the end of Mindel and smoothly gave rise to the Acheulian, as indeed the type-technological features of these two traditions
would indicate.

Available evidences do not allow any such interpretation, specially because there are usually no cultural evidences correlative to late Mindel and early Holstein. Many earlier authors have interpreted this absence as representing a migration of people from Europe to Africa.

Today, however, with the increase of finds coming from various travertine beds and undisturbed cave sediments it will seem fairly logical to call Acheulian as a cultural continuity of Abbevillian and hence the name Abbevillian-Acheulian. Acheulian is characterised by the standardising of handaxes.

The cylinder hammer technique becomes common by the middle of this tradition (occurring around early Riss). It is also during this period that Levalloisoine technique is evolved as an integral part of the Acheulian tradition. Acheulian is characterised by such beautiful and symmetrical handaxes as limande, ovate, amygdaloid and triangular. Along with these occur various shapes of cleavers, knives (serial Nos. 37 and 38 of Francois Bordes' typological list and not blade knives of the Upper Palaeolithic), side-scrapers, notches and denticulates. Although at some sites, points (including Levalloise points) have been recorded, these really do not form the fashion until the onset of Middle Palaeolithic and that too in Western Europe.

Breuil's extensive study of the Somme Valley culture was based mainly on the theory of two populations, one being responsible for the "handaxe culture" and the other for the "flake culture". A progression from Acheulian-I to Acheulian VII stages were enunciated. Levalloisean-I was taken to have commenced during the period of Acheulian-III and continued up to the final Levalloisean VI and VII.

Breuil's identification of such stages in the Acheulian and the reliability of a separate and parallel tradition of flake is today doubted. Nevertheless, his stages render considerable clarity in terms of typological variations within the Abbevillio-Acheulian tradition.

Today, this tradition is understood in Europe under three broad headings viz., Lower Acheulian (Breuil's Acheulian-I & II), Middle Acheulian (Breuil's Acheulian III & IV) and Upper Acheulian (Breuil's Acheulian V & VI). Acheulian-VII of Breuil
is taken to be Micoquian or late Acheulian on typological grounds.

III. DISTRIBUTION AND CHARACTER

The foregoing description of the traditions should enable us to look at the total Lower Palaeolithic cultural situation in Europe. It is worthwhile to mention here that solitary finds which do not fit into either of the two traditions are mainly considered on their empirical worth. These cannot be judged for their traditional status until such time as a larger number of similar finds are known.

It will appear that it is easier to describe the typological distribution of Lower Palaeolithic material than arranging a chronological order in them. A typological summary is also open to error with the selective collection of tools being the usual practice earlier. This fails to give us a complete picture.

A precise chronological order of these finds has necessarily to wait until specialists agree upon the dates of various key sites. From whatever appears strongly suggestive at the present stage of our knowledge, it can be said that culture making populations were not entirely unknown before the onset of the Mindel glacial. The cave site of Valonet (France) may be counted as one of the examples of such occupations.

Most probably these earliest populations did not enter Great Britain until the fog end of the Mindel glacial. The culture that these people produced need not be designated with any conventional French Palaeolithic names as this could create confusion in wrongly identifying a unified tradition for entire Europe.

The most significant point that these rather uncommon evidences of early occupations yield, is their attempts at shaping some crude chunks which have been called Choppers. Flakes detached in the process were always used without any further shaping. Perhaps bones and wooden clubs were freely used but we have scarcely any conclusive proof of this. From the middle of Mindel in Spain and France and from the end of Mindel or more correctly early Holstein in Great Britain these groups show evidence of increased activity.
The tools prepared are more certain and confident and many of them already start attempting the handaxe. The emphasis is towards finishing a tool through the primary flaking process and never or seldom going for secondary retouchings. More emphasis is laid on preferred type shapes. At Terra Amata, for instance, pointed Choppers or Chopping tools seem to have been shaped with a specific desire to form handaxes.

A true handaxe produced during this early experimental period does not reach Great Britain until the beginning of Holstein (interglacial) (Roe, 1968). Flakes are no longer a matter of convenient “picking-for-use” but already show preference of forms and kinds in their manufacture. Great Britain and parts of Central Europe show these flakes and core Chopper-occurring industries for a long time when France and some parts of Spain had already adopted handaxes.

It is difficult to say if these early Lower Palaeolithic British and entire Lower Palaeolithic population of parts of Central Europe with so much preference for flakes and only occasional efforts to shape a handaxe or flake hand-point, had anything to do with the pre-Mindel and early-Mindel French population. However, these non-handaxe areas so abound in remains that the pre-Mindel and early Mindel French materials seem rather insignificant in comparison.

The early British industries, which have been called ‘Clactonian’ by many, do show a progressive improvement in tool types and continue even after the handaxe became the fashion in the Island by the beginning of the Holstein interglacial. This has led many to propound a parallel running tradition already referred to earlier. At this stage, it will be safer to assume that the so-called Clactonian of Britain is the precursor of the Acheulian. The continuation of it even after the development of the Acheulian can be taken as the later survival of a conservative group.

Taking the finds of Central and Western Europe together, it can be said that enough evidence of the knowledge of fire taming and use of bone and wood as implements was known by the beginning of Holstein interglacial. The handaxes manufactured from the beginning of Holstein to the end of Eemian interglacial show progressive development of form and reduction of size.
While pointed lanceolate types seem to be the most commonly favoured French tool in the beginning, the British appear to start with crude ovate types without any attempt towards forming a point (Roe, 1968). Later types do not show any significant variation over the combined region.

By the beginning of Riss the prehistoric populations of Western Europe appear to discover the importance of prepared core technique. There is a suggestion that in Britain the evidence of this technique occurs earlier than in France. But, here again, the story of development of this technique is not very clear. The evidence of a tortoise core as being diagnostic for the presence of levalloisian technique has only tended to cloud the issue.

Flake types which already attain such job specific and diversified forms as scrapers, borers, denticulates and backed knives receive considerable impetus with the introduction of this technique. Eventually, handaxe manufacturing suffers a decline in preference. The flake tools become numerous and varied in form and in the degree of fine delicate retouch.

Finally, a kind of Levalloisian flake, commonly called levalloisian point, picks up the fashion. Flake cleavers are rarely produced in France and Great Britain but in Spanish elephant hunting population found at Torralba/Ambrona these cleavers are the most favoured tool type of all the bifaces prepared.

It will appear that Central Europe does not offer any uniformity in its cultural types during Lower Palaeolithic period. While the region of North Germany between the two rivers Weser and Elbe shows extensive occupation during late Middle Pleistocene, the South-eastern areas show occupation from a much earlier time.

In cultural features as well, the Northern zone shows a different emphasis than the South-eastern region. However, the area as a whole shows far more proficiency in fashioning flake tools than cores. It will not be incorrect to state that the tradition of handaxe manufacture is conveniently replaced by flake tool shaping in Central Europe.

The position of Vertesszöllös in Hungary within this scene of activities is rather hard to comment upon. That it is one of the most important Lower Palaeolithic sites in Central Europe...
is incontrovertible. The occurrence of datable *Homo erectus* remains from as early as Mindel-II renders considerable prestige to this site. The industry, however, appears to be rather a special kind which may be taken as characteristic of this region.

The tools are mostly made on quartz pebbles and flakes obtained from them are in average of 24 mm. length. This is smaller in size than most of the Mesolithic tools. The tool types include chopping tools and rather elongated flakes (as compared to their breadth) with steep retouchings. No handaxe nor any influence of the levallois technique, is recorded.

Another site in East Germany called Bilzingsleben has very recently yielded some *Homo erectus* remains from early Holstein beds. The industry associated with this find conform to the normal non-handaxe tradition of Central Europe with additional evidence of the use of antler and bone with minor retouchings. There are some pebble industries known from around this area in Central Europe, like, for instance, Sedlec in Bohemia, but, these do not appear to show even the minimum similarity with the Vertesszöllös to warrant their grouping together.

It will be evident, therefore, that Vertesszöllös requires a far more careful search and perhaps even a functional interpretation for a meaningful explanation of its character in relation with other cultures of the region.

In the later period the earlier tradition is slowly developed to emerge finally as the Central European Middle Palaeolithic. In Western Europe Mousterian development took place through a distinct improvement of Levallois technique while in Central Europe levallois technique plays no role, at least in contributing to the emergence of Middle Palaeolithic.

From East Europe and the Balkans, Lower Palaeolithic finds have been known comparatively recently. Even these, in most cases, are without any possibility of dating. It will be sufficient to record that pebble choppers and chopping tools are known from Rumania. Tools described as handaxes are also known from near the Azov Sea (U.S.S.R.) and the Dniestr Valley.

In terms of habitat and economy, it appears that both French and British Lower Palaeolithic folk preferred riverine open lands for their camps and also mammal hunting. There are
some camps known from coastal river mouths (like for instance, Terra Amata). These latter kinds usually carried larger frequency of flakes in their tool kits. It is possible that these groups may have subsisted on sea shells, but conclusive proof of their economy is not available.

The wooden spear found at Clacten-on-Sea (Fig. 1:17) and the antler picks at Bilzingsleben indicate decidedly the role played by non-lithic environment in Lower Palaeolithic economy. Alas, such finds are so few and far between so that nothing beyond this is possible to reconstruct.

The Torralba/Ambrona appear to indicate another aspect of Lower Palaeolithic economy. From the amount of elephants hunted it is quite logical to surmise that large scale co-operative hunting was practised and further tons of the flesh yield was profitably shared before carnivores attacked them.

In other words, this calls for an interpretation of not only intra but inter-horde communication and social intercourse. Further, the possibility of well articulated language has also to be included. Whether these tribal contacts led to interchange of females or barter of finished tools or even raw material will never be known.

The habitation of Terra Amata in France is yet another evidence of a different kind of specialized settlement pattern. There is no doubt that artificial habitation structures—no matter how primitive in technology may they be—were prepared from the earliest phase of human culture i.e., from Homo erectus stage.
CHAPTER THREE

MIDDLE PALAEOLITHIC

I. INTRODUCTION

The Middle Palaeolithic is a short transitional period within the Palaeolithic history of man. At many places in Europe there are hardly any changes observed in the cultural material, although almost everywhere during this period there is an increase recorded in the cultural heterogeneity. Its earliest emergence is noted at a site called La Micoque in France, where by the closing of Riss (around 1,200,000 years ago) a Middle Palaeolithic assemblage is established. At other places this period is known to have emerged as late as 80,000 years ago during the closing of the last interglacial.

The main tradition which has been conventionally taken to form this cultural stage is called Mousterian. Further, since earlier studies yielded an association of the Neanderthal skeletons with the Mousterian finds it was also held that the author of the entire Middle Palaeolithic culture was the Neanderthal race.

Recent cultural finds coupled with more of palaeontological researches have almost proved that the Neanderthals evolved from the Homo erectus (Pithecanthropine) branch at a much later period than our direct ancestors, who are called Early sapiens. That is, when the Neanderthals came to the scene,
already a developed and evolving variety of *Early sapiens* was ruling parts of the world.

This should logically mean that what has been put together under the compartment of Lower Palaeolithic had in fact the workmanship of *Early sapiens* mixed with those of the *erectus*. Also, what was then known to be included under the single tradition called Mousterian also contained the cultural remains of *Early sapiens*, now evolved enough to be almost on the threshold of our own species.

Culturally, so far there has been no attempt to straighten this dilemma in the Lower Palaeolithic stage. Recent researches in France, thanks to Prof. Bordes’ and his colleagues’ untiring zeal, have now proved that Middle Palaeolithic cultures were rather over simplified in our previous understanding. At the present, it appears that:

i. The Mousterian is a local tradition developed in Southern France which may have spread to the East or independently developed in at least Southern Russia. The possibility of the former appears to be more, though not demonstrable, because of the lack of Lower Palaeolithic in these Soviet regions.

ii. The Rest of Europe developed varied non-Mousterian cultural traditions which are not given any specific names.

iii. The Mousterian of France itself shows a tremendous internal heterogeneity which led Prof. Bordes to use statistics and elucidate four different varieties within it, developing parallelly. He feels that these four varieties should be counted as four independent traditions or more correctly *facies*, so that what was earlier called the Mousterian tradition should now be considered as a Mousterian complex.

Some authorities have later on challenged the theory of the independent traditions and also demonstrated with the use of statistics that these are but merely seasonal changes in the tool kit of the people of only one tradition. Both these theories have their weak points and strong points. A discussion on this may not be of any substantial help until we have much
more data which can finally prove the actuality.

Yet, a third theory has emerged recently. This proceeds with the assumption that Bordes is correct and demonstrates that one of the traditions called *Mousterian of Acheulian Tradition* is never known to occur before the other three traditions. That is, this tradition is the youngest in time of occurrence.

Further, the cultural character of this tradition demonstrates the occurrence of many proto-type Upper Palaeolithic forms. Coupled with this, the fact that no Neanderthal skeletons have ever been found with this tradition can be logically taken to indicate that this may be representing the workmanship of the *Early sapiens*.

So far, no prehistorian has ventured such theories to link cultural evolution with biological evolution because of certain obvious hazards involved in the conception of culture and genetics. Biological evolution cannot be demonstrated as having anything to do with culture. The numerous stone using tribals known to be surviving till about two to three decades ago can be basic proof of this. Also there are no doubts left that these tribals were as much evolved as we ourselves are in their biological attainment. It will be wiser, therefore, not to try to ascribe cultural traditions to the various stages of human evolution.

Speaking culturally alone the variants and their status can be analysed. Bordes identifies the following:

1. *Mousterian of Charentian Tradition*: This is named after the characteristics of the industry from Charente, France. The tradition is identified as composing of an overwhelming proportion of side-scrapers. Handaxes and denticulates are rare, although notched flakes occur in good number. This tradition is further divided into two sub-groups called the *Quina* and the *Ferrassie* (both names are after the site names called La Quina and La Ferrassie). *Quina* is defined on the absence of *levallois* flakes while *Ferrassie* is defined by its presence.

2. *Typical Mousterian*: This group is defined by large percentage of side-scrapers (though lesser than in Charentian) coupled with the presence of some points (Fig 2: 4,5), backed
knives and denticulates (Fig 2: 6). Handaxes are rare but levallois flakes are present.

iii. Mousterian of Acheulian Tradition: This tradition is characterised by the occurrence of typical Middle Palaeolithic handaxes called cordates (Fig 2: 1). Side-scrappers, backed knives and denticulates occur in moderate frequency (often larger in percentage than Typical Mousterian).

This group is further divided into two sub-groups which are called Type A and Type B. Type A is found to be older and occurring either during or earlier than Würm I. Culturally speaking it is also differentiated by the occurrence of a larger proportion of handaxes. Type B is found around Würm I/II to Würm II.

Here besides a decrease in the handaxe frequency there is also a decrease in the frequency of side-scrappers with a corresponding increase in the backed knives.

iv. Mousterian of Denticulate Tradition: This Mousterian group was enunciated at a later stage and defined by a predominant frequency of denticulates and notches in the tool types. Handaxes, as also backed knives, are rare although some side-scrappers are present.

II. TRADITIONS

(The Middle Palaeolithic period, unlike the Lower Palaeolithic develops several local cultural traditions.) The relation between each of these has been conjectured from time to time but nothing beyond similarities of certain tool types are demonstrable on empirical grounds. Nonetheless, we should like to simplify the complex situation by attempting to round up some broad areas of similarity. (Fig.3)

Zone A. A purely Acheulian handaxe tradition with developed levalloisean flake element containing side-scrappers, levalloisean points and backed knives flourish along the stretch of South-east England to Northern flat-land of Germany. The influence of this zone, in all probability, spread in a limited way to areas further East as well.
Zone B. Across the Rhine and in the South from Bonn to Ebringsdorf (N.W. Germany) a predominantly flake culture exists with little or no significant handaxe element. A strong levalloisian influence is noted in the tool types. Some fairly well-finished bifacial points are also known to exist in this zone. Though this zone records the Middle Palaeolithic at a slightly later time than in France, this has been counted as belonging to a Mousterian tradition.

Zone C. South-west Europe shows isolated specialization of flake shaping traditions of at least four different facies with or without levalloisian flakes or handaxes. On the other hand, La Micoque shows the continuation of an early tradition of handaxes with a flake component, but without any obvious attachment to the levalloise technique. Further West, the Micoque kind is not very common.

Zone D. This is the largest area of distribution of a similar kind of culture in Europe. With La Micoque at one end the area extends up to Poland in the North-east covering Schwabisch Alp, Frankische Alp, Switzerland, Bohemia and perhaps even up to the Weichsel Valley. Here Acheulian handaxes, or for that matter, even core tool making tradition seem to continue within Würm in the La Micoque fashion. Though both Zones A and C have handaxes in various proportions, Zone D differs from them mainly in the absence of levalloisean flakes accompanying them.

It is obvious that a large area as this will have some intra-zone variations. A close look at the material from Königsau, Bockstein (Germany) and Kulna (Czechoslovakia) can demonstrate this variability.

Zone E. This forms another area of Zone B with Mousterian industries spreading over the Ukrainian River Valleys and extending up to the mountaineous region of Slovakia in the West. In the South the Trans-Carpethian flat-lands of Rumania and almost the entire Crimea form the limits of the area. In addition to the classic Mousterian tool types, the industries from this area show a reasonably strong influence of the bifacial thin points.

Zone F. The small area between Regensburg and Augsburg in South-east Germany around the Altmühl valley form this
cultural zone. Here the characteristic *Blattspitzen* (Fig.3: 11, 12) emerges along with some general side-scaper varieties. Whether this is a strong cultural area comparable to the other zones is hard to say, specially because, handaxe free flake industries with variable degrees of levalloisean influence are also not unknown from this area. Nonetheless, their preponderance in a small localised manner needs to be accepted as significant.

**Zone G.** This constitutes the South-east of Europe and includes parts of Hungary, Yugoslavia and Greece. Here, a general diminutive tendency with no specifically shaped flake tools is a common feature. Handaxes of the kind known from Zone D are also found at individual sites, but, there are no typical Mousterrian points and levalloisean points (similar to the kinds known from Zones B and C). There are yet some other sites where typical *Blattspitzen* of the kind known from Zone F are found. In other words, this region or, to be more precise, the Southern part of this zone acts as a *cul-de-sac*, where various neighbouring traditions seemed to have seeped in from time to time.

The various zones enunciated above are an attempt to seek groups of culturally homogeneous areas without trying to mean that these are separate traditions. However, this surely can act as the first step towards identifying various cultural traditions and their interplay within the Middle Palaeolithic of Europe.

### III. CHARACTER AND DISTRIBUTION

Middle Palaeolithic cultures in Europe developed different regional forms and traditions and continued for varying periods. All these forms have been grouped under the common heading of Middle Palaeolithic for convenience. These different forms and traditions had influenced one another under favourable situations of migrations. That such neighbouring regions as North Africa or Central Asia had also played important roles in bringing new traditions within the sub-continent cannot also be unconditionally ruled out.

This period also marks the beginning of a new dimension in culture. This is the aspect that concerns with supernatural belief and propitiation rites. It is difficult to deny the absence of similar belief in Lower Palaeolithic cultural history of man, but,
in this period we start getting the earliest direct evidence of cult. This cult involved the use of cave bear skulls as numerous caves with enigmatic arrangements of such skulls have been found in association with Middle Palaeolithic cultural remains.

Excavations at an Asiatic Neanderthal cave called Shanider in Iraq has yielded another important evidence of Neanderthal emotion and expression through flowers. Here the soil with Neanderthal remains on analysis was found to contain a variety of wild flower pollens which could not have come to the cave through wind activity.

The concern for the dead and the visualization of some kind of life after death is demonstrated from some deliberate burials. This will indicate a certain level of the culture which has sought an equation between life and death by way of a cultural rationality.

The Neanderthals inhabited in caves where available. But, that they paid considerable attention to their habitation area also is well indicated by the deliberate paving recorded at La Ferrassie (France) and the post hole found at Combe Grenal (France). In Eastern Europe, Molodova (U.S.S.R.) affords a more direct evidence of a possible habitational structure made by the Middle Palaeolithic authors.

The earliest Middle Palaeolithic development in Western Europe is best represented by the French site of La Micoque. Here, a tradition of flake tools appears to have branched out of the Acheulian at the end phase of Riss. This early flake industry is almost entirely free from what may be called levalloisean element in the initial stages but some evidence of levalloisean flakes emerges at a later stage. This continues along side the late Acheulian in the form of Micoquian. By the end of Eemian and the beginning of Würm a full fledged Mousterian industry develops, while the Micoquian survives as a marginal tradition.

In Great Britain, a strong levalloisean tradition already perfected in the early Eemian develops to form the Middle Palaeolithic. Handaxes in the form of cordates and ovates occur along with the levalloisean points and side-scrapers. By the time the first stadial of Würm sets in, a number of Upper Palaeolithic tool types have been developed.
However, very few sites in Great Britain demonstrate a true Mousterian type or, for that matter, even a true early Upper Palaeolithic industry. The developed levalloisian tradition continued for a long time with perhaps only sporadic evidences of Upper Palaeolithic influence (e.g., the Pin-Hole cave in Derbyshire) from the continent until Creswellian tradition developed in late Würm stage.

In Northern France and Belgium, the perfection of levalloise technique across the channel influenced the existing traditions to give rise to a Mousterian culture. The handaxes of the Achaeulian time become smaller and of specific shape. In Spain, the Middle Palaeolithic is open to influences from both the North and the South. While the well finished levalloisian points at Devil’s Tower show, in all probability a French influence, the generalised diminutive nature of tools and the occurrence of the small flake cleavers (which Bordes terms as Vasconian) at Gorham’s cave show North African influence.

In other words, Northern and Southern limits of Western Europe represent convenient corridors of cultural flow from areas in the immediate neighbourhood. Unlike these, some extreme specialization of pre-existing traditions within and without the flake perfecting trend of this period appears in Southern France.

It is difficult to explain why it is so in Southern France only and not in other parts of Europe. It appears that South France—specially Dordogne district—with its unique geographical setting of low hills and streams has provided numerous caves and rock shelters for prehistoric men to have lived in this area for a much longer period. This has made possible for several traditions flourishing without change.

The other answer could be that Dordogne received relatively more attention from the prehistorians than other regions of Europe. Given this much attention to any other part of Europe or, at least in Western Europe, the above situation could occur anywhere and not specially to Dordogne. Be that as it may, we find that in early part of Würm, Dordogne evidences parallel existence of four traditions as described earlier.

In Italy, the Middle Palaeolithic culture, though predominantly based on pebbles, shows a strong levalloisean influence
right from the early part of Würm. From the Ligurian to the Adriatic coast, the levalloisian element is strongly evidenced. The core tools are more often shaped as choppers or discs than cordates or similar handaxes.

Quinzano, which probably dates to the last phase of Eemian, for instance, yields some beautiful levalloisian points with retouchings on the ventral surface as well. The side-scrappers in most of these sites show the fish-scale-like retouching recorded at La Quina and hence called as Quina technique by Bordes. Often on the basis of this, these sites have been called Charentian atypic or Charentian oriental.

In Apula (South Italy) some pebble based industries with levalloisian points and thin leaf points occur during Brörup interstadial and these types show a collective similarity with Greek Middle Palaeolithic.

In Central Europe, the Middle Palaeolithic culture appears to develop directly from the pre-existing flake industries of the region. However, not so common handaxes in this region during the Lower Palaeolithic period appear in many early Middle Palaeolithic levels. In many cases, these handaxes are comparable to French Micoquian. In others, they represent such individual characteristic of their own that archaeologists of this region have tried to coin specific type names like faustel (i.e., small hand tool), faustkeilschaber (i.e., handaxe-cum-side-scraper) etc. From some late levels few ovoids or even cordates are also claimed.

Both in North and South Germany middle to late Eemian sites with Middle Palaeolithic industries are noted. In the North, the site Lehringen, though poor in the stone tools, records strong levalloisian element with side-scrappers and even some pieces with partial ventral retouching. This site also yields the unique 2.5 metre long wooden (yew) lance with evidence of fire having been used to harden the point. In South Germany, at the same period, the levalloisian element is hardly or poorly represented. For instance, in Bockstein III several flat Micoquian type as also small Mousterian type handaxes occur with a flake component containing fine side-scrappers and Blattspitzen, but with no evidence of levalloisian technique.

Towards East along the Saale and its lower tributaries, Eemian
industries show a strong levalloise element associated with nuclei shaped as choppers. At Taubach and Weimer the flake types include side-scrappers and the convergent double denticulates called the _Tayacian points_ along with evidences of antlers having been used as picks or clubs. At Ehringsdorf, the flakes are better finished and such types as double points and even some shouldered points are found. No handaxes are known from these sites.

During the early Würm period North Germany continued to show the progressive development of levalloisean technique along with the occurrence of handaxes. Salzgitter-Lebenstedt with a radio-carbon date of 48,300 years yield, on the one hand, large lumps of flakes retouched with crude technique to form handaxes as big as 24 cm. long and 10 cm. broad. On the other hand, beautiful levalloisean points with retouch, side-scrappers retouched partially from the ventral surface as well as several mammoth rib points and worked antlers are also found. Obviously, it represents a late meeting point of the so called Micoquian of Central European kind with the Northern late Acheulian with its strong levalloise base.

Königsau along the Saale with a radio carbon date of 55,800 years yields flat handaxes retouched in advanced form (upper Acheulian in type) along with normal convex side-scrappers, levalloisean points, thick blade knives, burins and chopping tools. The finds from Karstein and Balver in the same region, do not deviate from this general picture.

In South Germany, during this period (i.e., early part of Würm) handaxes disappear completely. Instead discs or bifacially prepared thick ovoid flakes are recorded at some places (e.g., at Schülerlock). The tendency of thinning out flake tools at the same time appear to increase strongly. Numerous remarkably thin double points with controlled flake scars on both the surfaces are known from Mauern region. These special tool types are associated with levalloisean points, side-scrappers, knives and awis. Burins are not recorded.

In the same general neighbourhood there is at least one site known so far (Sesselfelsgrotte) which has yielded a large percentage of real microlithic flake tools associated with a minority of normal flake side-scrappers and thin bifacial stone fragments.
The significance of this "pygmalithen" as Prof. Freund, who is excavating the site, calls them is little understood so far. There are microlithic Middle Palaeolithic known from the Balkans and Hungary, but the German industries seem to be independently developed.

Towards the East, in Austria, the handaxes are still manufactured along with the Blattspitzen. The early Würm site of Gudenus cave yields several handaxes associated with side-scrapers, points and broken pieces of Blattspitzen. Some hollow pieces of long bones with holes pierced in them are found from one of the late Middle Palaeolithic sites in Austria (Salzhofen). These are taken to be one of the earliest occurrence of primitive flutes.

Further East, in Hungary, the diminutive tools, already evidenced in the Lower Palaeolithic period, continue to enter into the Middle Palaeolithic stage. The earliest Middle Palaeolithic in this country is noted from the Brörup-Amersfoort stage at two famous sites called Tata and Erd.

In Tata, pebbles are used to make several choppers, chopping tools, discs and some handaxes. Pebble flakes are used to shape side-scrapers, points, knives, borers and also a few burins. The average length of all these tools is about 3 cm. The Levalloisean technique, though not quite popular is evidenced in moderate degree.

Erd, which lies South of Tata yields an industry which varies considerably from Tata. For instance, handaxes are unknown at Erd, while chopper and chopping tools form almost five per cent of the industry. Though the Levalloisean flakes are known, they are not very significant in number. Most of the flakes are not shaped prior to giving them a working edge and as such the tool shapes are not standardised. The size of the tools range from 2-6 cm. in average and are in this regard closely comparable to the Tata industry.

Besides these there are some more sites known from this country, which show the same broad character of Middle Palaeolithic in the region. Contact with Western Europe and hence of the import of Mousterian in this region is not indicated. On the contrary, the indication of local evolution is more compelling.
Czechoslovakia is a transversely spreading country and covers a long area from Germany in the West to Ukrania and Rumania in the East. The countries lying across this stretch have, therefore, influenced Czechoslovakian culture differently at different parts. Palaeolithic succession, as such, is more Central Europoid in Bohemia and Moravia than in Slovakia. In Middle Palaeolithic period such differences are not so marked as in the later periods.

The North-West Slovakian site of Nove-Mesto, though very poor in tools, demonstrates the pattern of Palaeolithic succession as a test case for this region. A Russian phase with Clactonian tools is followed by an early Eemian bed containing levalloisian tools. This is followed by a short temperate phase immediately preceding the Würm onset. Of the few Middle Palaeolithic tools of this phase a 6 cm. long typical Mousterian point is worth mentioning. The following beds belonging to Würm yield Upper Palaeolithic industries.

The other Slovakian Middle Palaeolithic industries like those from Ganoce and Propst yield characteristic discs with faceted platforms and the usual side-scrappers, points and some retouched flakes. Cores do occur but they do not offer any specific prepared types. Moving westward in Moravia, we have the earliest Middle Palaeolithic represented by Kulna. Here in Eemian beds occur a rich industry containing handaxes and numerous handpoints. Besides these, of course, side-scrappers, points and retouched flakes continue. Generally speaking, the technique of finishing these types is delicate and refined but the levalloisian technique and the bifacial thinning technique witnessed earlier in this region is conspicuous by their absence.

Even at Sipka, a late surviving Middle Palaeolithic site from Moravia, the levalloisian element is absent although an emergence of Upper Palaeolithic from within this non-levalloisian Middle Palaeolithic is already indicated. As contrast to the above mentioned set of sites, at Byci Skala, another Moravian site, massive chopper/chopping tools and thick core scrapers are recorded from a Würm I deposit.

To sum up, for this Eastern region of Central Europe, we can assume that while Hungary was continuing with a pebble-based diminutive tradition, Czechoslovakia had developed a
Middle Palaeolithic version of the clactonian kind and normal flakes of large to medium size. Both bifacial retouching and levalloisian techniques are known but, their influence in either the Czechoslovakian or Hungarian Middle Palaeolithic is minimal. Furthermore, points are neither so typical nor that much frequent in this area.

The Palaeolithic sites in Yugoslavia are mainly concentrated around the Slovenian region. Here Crvena Stijena, a Würm I site, yields a Middle Palaeolithic industry in diminutive tools with virtually no trace of levalloisian element.

Down South in the Greek peninsula, there seems to be undoubted evidence of a connection with the West. For instance, at Kokkinopilos, in the Western region of the peninsula, a Middle Palaeolithic station belonging to Paudorf interstadial yields a large number of levalloisian flakes and some beautiful levallloisean points. Occasionally these points are carefully retouched to form typical Mousterian points. Besides these, some backed blade knives, burins and end-scrapers are also noted. Further, four beautifully prepared Blattspitzen found in this industry strongly recall the Mauern industry of Bavaria.

Another site called Asprochaliko in the same neighbourhood yields a completely different picture. Here it appears that an indigenous tradition of Middle Palaeolithic without preferring either the levalloisian technique or the Blattspitzen types flourished in an independent way. Both side-scrapers and points are prepared by retouching minimum necessary regions on the tool as a result of which the industry lacks a standardised shape and size of its tools. Further, in its upper levels it yields a diminutive cultural phase as well.

In Bulgaria an early Würm Middle Palaeolithic assemblage recorded at Bacho Kiro demonstrates a wide use of the levalloisean technique. Side-scrapers, points and retouched flakes are more standardised in shape and manner of retouch. Along with these occur a good number of pebble choppers and chopping tools.

From Rumania two well-known Palaeolithic sites are recorded. La Adam, in East Rumania, yields a Middle Palaeolithic industry from early Würm without any evidence of the levalloisean technique. Ohaba Ponor is the other site in the Western
hilly region. The Middle Palaeolithic industry from this site is dated to early Würm. Here some Amygdaloid handaxes recalling upper Acheulian types of France are recorded. However, as earlier, the levalloisian technique is not evidenced at this site as well.

In European Russia, the region lying North and North-east of the Black Sea, i.e., between River Volga in the North to River Kuban in the South, a series of Palaeolithic sites are known. Of these, Volgograd in the valley of the Volga yields an early Würm industry with many chopping tools and discoid cores but hardly any levalloisian flake. Along the Kuban Valley in the South Il’skaya and Achstyrskoya I both record Middle Palaeolithic industries belonging to early Würm and yielding high levalloisian element, some Blattspitzen and some handaxes.

Thus, we can say that the levalloisian tradition seems to be concentrated in the West and Eastern European Mousterian tool types, without perhaps anything to do with Central Europe beyond a physical similarity. This predominates more on the Northern plains of Caucasian mountains on the Eastern coast of Black sea than in the river valleys further North.

The Middle Palaeolithic industries from the Western regions of Soviet Union is best represented by Molodova group of sites in the Dniestr Valley. Here at Molodova I, levels 4 and 5 and at Molodova V, levels 11 and 12, Middle Palaeolithic industries with high degree of levalloisian perfection have been recorded. These industries appear to belong to an early part of Paudorf interstadial and have yielded several oval arrangements of mammoth bones on the living floor. Fire hearths and red ochre pieces along with stone tools are found within these ground plans. These have been interpreted as the evidence of habitation structures of the Middle Palaeolithic people.

The cultural characteristics recorded at these sites can be taken to represent either a Western extension of a Middle Palaeolithic tradition developed in South Russia (North of Black Sea) which consolidated on the Dniestr Valley and did not cross the Carpathians in the West or it could represent a completely local development of a Mousterian kind specific for this region.

Crimea, which seems to have been well populated during the
early and middle Würm, yields several Middle Palaeolithic sites. Here the levalloisian technique appears to have been not favoured at all. Bifacially worked thin points or Blattspitzen are not entirely unknown but these, as earlier, appear to be an intrusion or perhaps the result of completely local and independent experiments. Core bifaces like handaxes, hand-points and Tayac points are found consistently in these industries. For instance, Kiik-koba and Volchij Grot in South Crimea yield some cores shaped as Tayac points and handaxes with thin cross-section besides the major bulk of canted side-scrappers and some such Upper Palaeolithic types as end-scrappers, burins, borers, and backed knives.

At Starosel's, another site in Crimea, a small number of levvalloisian flakes are recorded with also some Blattspitzen types. Lack of proper dating possibility of these Crimean sites, however, make it difficult to comment on their relationship with the Dniestr, Kuban and Volga sites.

It will appear from the above distributional and cultural survey of Middle Palaeolithic that there are more unexplained features dangling in front of us than explainable ones. Concentration and perfection of the levallois technique is common in Western Europe and Eastern Europe predominantly. This feature is mainly associated with a generalised development of technique of almost all flake tools. Core tools accompanying them, if any, are always the finely executed cordes in the West and Tayac points or choppers in the East.

In addition, the Eastern limit of Europe invariably incorporates the bifacial leaf points of the German kind (and hence called Blattspitzen). If for a while the Eastern or the Russian Middle Palaeolithic can be assumed as an independent development, then, perhaps, the influence from Russia on the one hand and South-west France on the other would seem to meet in Moravia.

The metamorphosis of this cultural interplay, however, remains more or less confined in the north of 46° latitude. South of this limit a microlithisation without any influence of levallloise technique predominate the scene. If handaxes, levallloise points or Blattspitzen appear in this region, they can easily be made out as an intrusion. Blattspitzen seem to have evolved
during late Middle Palaeolithic almost on this latitude (46°N) and hence its influence below this line is most predominant. The fact that this specific tool type is found increasing in preference as one proceeds towards the East can be taken as a very good indicator of culture contact and perhaps also of culture migration.
CHAPTER FOUR

UPPER PALAEOLITHIC

I. INTRODUCTION

Towards the middle of the second interstadial of the last glacial (i.e., around 34,000 to 35,000 years ago during middle Paudorf) a new cultural period sets in Europe. This period is marked by an increase in blade tools which are invariably accompanied by a fairly good number of bone, antler or ivory tools. Also most of these non-lithic cultural material start having engravings done on them.

The skeletons associated with this culture are identified to be almost similar to the modern man and are, as such, designated to our own species viz., Homo sapien sapien. It is indicated that a culture similar to Upper Palaeolithic of Europe, if not its true originator, is known to be occurring earlier in certain Middle East regions. This has led many to trace a migration of Homo sapien sapien into Europe from outside.

There are also some claims that the earliest occurrence of true Upper Palaeolithic tool types within Europe is recorded from North Hungary and, hence, the honour of the emergence of the first culture of true Man should go to this region. So far no conclusive evidence to prove or disprove either of these theories is available because the authorities seem to be still arguing about the authenticity of the datings available for these sites.

However, as far as Europe is concerned, all authorities tend
to agree that there is little evidence of an indigenous evolution of some of the earliest Upper Palaeolithic traditions. The rest of the traditions could have evolved locally from the pre-existing traditions of Middle Palaeolithic.

South-west France is perhaps one of the classic areas of Palaeolithic successions and hence most of the traditions, like in earlier periods, are named after French sites. It need not necessarily signify an overemphasis on the role of France in human cultural history. On the contrary, its role could very well have been a marginal one. A recent critic writes—"It may even be that Western Europe was in fact a short dead-end during much of the Pleistocene that should be treated as a special, aberrant case rather than as a focus of human and stone evolution."

It is quite likely that a generalised culture tradition in the process of centuries of migration from the Middle East has eventually suffered various kinds of fissions and these branch-ed off variants are represented in their over-specialised manner by the time they reach the dead-end of land at South west France. However, since each of these traditions are better understood in type characteristics and chronological status in South-west France, we shall proceed to understand them first for definitional purpose. The interplay of these traditions at other regions of Europe should, therefore, not necessarily be taken as subsequent arrivals from France.

II. TRADITIONS

Till about the twenties of this century, Upper Palaeolithic in Europe was believed to have had three traditions viz., Aurignacian, Solutrean and Magdalenian in the chronological order. Today, all these traditions have a relevance to France only and some more traditions are identified from the rest of Europe. What was earlier thought to be Aurignacian in France is also split into two parallel traditions in this country. These are named Perigordian and Aurignacian.

i. Perigordian. In 1933, D. Peyrony declared that what was

earlier thought to be lower and upper Aurignacian, is in reality a tradition different from Aurignacian, and he named this as Perigordian. What was previously called middle Aurignacian was redefined as Aurignacian. Each of these two traditions were further divided into five stages in chronological order and with cultural distinctions.

In 1955, Sonneville-Bordes discarded Peyrony's Perigordian-II as singular and early form of mixed Aurignacian. In 1960, Sonneville-Bordes, further found that Perigordian-III identified by Peyrony at Laugerie-Haute beds B and B' were incorrect. In reality, his Perigordian-III was found overlying Perigordian-V at a nearby site called Abri Pataud, which was then being excavated by Movius. Therefore, what was Perigordian-III was then renamed by her as Perigordian-VI. Finally, another Perigordian stage, Perigordian-VII, was added by the Bordes on the basis of their fresh excavation at the same site.

Thus, today Perigordian succession in France is taken as Perigordian-I followed by Perigordian-IV, V, VI and VII. Since the succession of Laugerie-Haute is rather extensive and its parallel is not expected everywhere, these stages are grouped for convenience as "Lower" Perigordian and "Upper" Perigordian. Sometimes, these stages are also named after the common characteristic tool types for each of them. That is, Lower Perigordian is also called "Chatelperronean" and Upper Perigordian as "Gravettian". (Fig. 4: 1-2; Fig. 5: 8, 14, 15 and 22-23).

The Perigordian tradition is characterised by steep retouching on blade borders. These result in the Chatelperronean knives, Gravettian points, truncated blades and burins on truncation. Bone tools are rather poor in the entire Perigordian tradition.

Aurignacian: This tradition occurs broadly during the same period of time as Perigordian and is believed to have developed parallelly. Aurignacian stages, namely Aurignacian I, II, III and IV occur between Perig-I and Perig-IV. Aurignacian V, which is very poorly known, occurs after the Upper Perigordian beds.

The tool types of Aurignacian are marked by a kind of semi-abrupt retouchings on thick elongated blades, thus, resulting in what is known as a typical Aurignacian blade, strangled blade,
Dufour bladelet, etc., (Fig. 4: 5,6). Along with these develop a number of blade and core-end scrapers and busque burins (Fig. 4: 7, 9; Fig. 5: 21). This period also marks the emergence of a successive development of symmetrical ivory, bone and antler points with split, solid and bevelled base. (Fig. 4: 3; Fig. 5: 20,21).

iii. Solutrean. This tradition of Upper Palaeolithic in Europe is very much limited in both its distribution and duration. It survived in parts of Spain and South-west France for only 2,000 years. The main development of this tradition is noted during the end of post-Paudorf main glacial and it is over before the Oldest Dryas sets in.

This tradition is marked by the evolution of pressure flaking which enabled the prehistoric tool-maker to chisel the unwanted thickness of a flake by the same blows which prepared the working borders. In contrast, the Middle Palaeolithic thin or leaf points, which we called Blattspitzen in the earlier chapter, are thinned by separate flaking and then the borders are retouched in the side-scaper retouching manner to obtain the working edge (Fig. 5: 26, 27). This technique reached such a perfection in this period that even shouldered points or end-scapers were executed in this manner. Besides these characteristic types, this tradition is also marked by the emergence of thin-eyed bone needles (Fig. 6:3).

iv. Magdalenian. This tradition is marked by a decrease in the stone tools and a corresponding increase in the bone tools, which in the final stages culminate into harpoons (Fig. 6: 8). The stone tools include a variety of truncated blades and Micro-Gravettian points (Fig. 5:14), borers and burins. One of the characteristic burins from this tradition is called the "Parrot-beak" burin because of its flat beak-like appearance (Fig. 5:19).

The Magdalenian tradition has been divided into five stages according to the succession observed at the French sites. These are called Magd.-0, I, II, III and IV. The cultural features of these Magdalenian stages are markedly different from one another unlike the Perigordian and Aurignacian stages.

This has led many to believe that, perhaps, this final tradition of Palaeolithic is developed out of an interaction of earlier traditions. For instance, it will appear that Magd.-01 and
Magd.-I have some kind of relationship with Aurignacian, while Magd.-II seem to be very much related to the Perigordian. Magd.-III and IV seem to have emerged by the interaction of Magd.-0 and I on the one hand and Magd.-II on the other.

y. Szeletian: This tradition is named after a group of caves in North Hungary where a bifacially worked thin leaf point tradition is known to evolve from within the local Middle Palaeolithic base. It is believed that this might be taken to represent the earliest Upper Palaeolithic of this region and is broadly co-eval with Perigordian-I of South France. However, a true and developed Szeletian layer at this site is recorded only at the end of main Würm stadial (see Table on page 17).

Along with these leaf points are found numerous blades with abrupt retouch forming knives and Gravette points. (Solutrean of South France is rarely known to have any backed blades). Burins, borers and end-scrapers are also known to occur. Bone points and awls are also claimed from some of the Szeletian beds (Fig 6:1-4). At Hungary, this tradition had a very short survival period, but it appears that it moved Eastwards and even Southwards to influence the subsequent cultures of these neighbouring regions.

Vi. Olschewian. This tradition was enunciated on the basis of the cultural succession recorded at a cave site in Yugoslavia called Potocka on the Olschewa ranges on the border of Austria. Here, within the closing phase of Paudorf interstational, but later than early Szeletian date, occurs an industry of 5-8 cm long blades retouched along the borders and often ending in a kind of tanged butt. These are, mosly semi-abrupt retouchings and in a broad sense compare with the Aurignacian blades. Associated with these occur many carinated end-scrapers and a large number of rather long bone points with engravings. One of these even has an artificially prepared hole at the end.

The occurrence of these blade types coupled with the ornamented bone points was taken to indicate that Potocka industry represents a pre-Magdalenenian stage of culture, the like of which could be found distributed over a larger area including Moravia, Austria and Hungary. This was, hence, given the name Olschewian. It appears that chronologically it could be
taken to occur till the late Aurignacian in South-west France.

vii. Pavlovian. This tradition is named after an open-air Upper Palaeolithic site in the Moravian loess and is situated only few kilometres North of the North-east border of Austria. This tradition is believed to occur between main Würm stadial and the earliest phase of the succeeding interstadial. At many Czechoslovakian and Hungarian sites this is known to have been succeeded by either the Olschewian tradition (which succeeds Szeletian) or Szeletian, in case, the latter is absent.

This is characterised by medium-sized narrow blades which are abruptly retouched to form Gravette points. The ventral surface of these blades are retouched by flat flaking at both the pointed as also the butt end. Some of these points are also shouldered. Several small blades have been retouched to form awls of various kinds, while there are some relatively thicker pieces shaped into micro-burins. This industry can very well fit in a generalized East Gravettian, but its associated non-lithic component renders it a special characteristic.

The most significant of these is the large number of antlers shaped into the manner of a hoe—of the kind known from areas farther West and of a much later period in Hamburgian tradition, called Lyngby hoes (Fig. 6:19) after a Mesolithic site of Denmark. Besides these, there are a number of other bone and antler objects with ornamentation including a female figurine.

This combination of lithic and non-lithic characters of this culture was taken to indicate a Central European precursor of late Magdalenian type of Western Europe and hence named as a separate tradition. The assumption is that this could have influenced the development of Hamburgian around 13,000 to 11,500 years from today in the Northern flat-lands of Central Europe.

viii. Hamburgian. The tradition is named after a group of sites around Hamburg in West Germany. Of these, Stellmoor is an important site showing the development of this tradition. The Northern flat-land of Germany and, perhaps, extended up to Poland maintains a peculiar adaption of a group of traditions around the end of main Würm stadial. This, hitherto scarcely populated region, receives a large population from
Central Europe which may have even crossed the channel to inhabit parts of England. Of these groups of traditions, the Hamburgian is the oldest one and it flourishes mainly during the Oldest Dryas stage. The tradition is characterised by 10-4 cm. long blades which in some exceptional case can be as big as 13 cm. (nearly 5 inches).

The most significant tools prepared on these blades are a variety of points which are known popularly as Hamburgian points. These are produced by simply retouching a slanted border to meet the vertical border of the blade at one end and obtaining a similar slant to form the shoulder at the other end. Some borers, burins and end-scrapers occur along with these points. Besides these, a large number of antlers with their rammifications intact also accompany them. Many of the antlers show the evidence of using them as hoes, handles with stone tools inserted on them and also the “groove-and-splinter” technique of removing suitable pieces from the antlers to form needles, fishing hooks etc.

ix. *Federmesser*. This tradition should mean the “thin knife” tradition, if literally translated in English. As such, some have also called it the “penknife” tradition (Fig. 5:18). This is also known from the same general area as the Hamburgian—and chronologically speaking follows the latter.

It flourished during the Alleröd period (12,100-11,300 B.P.) and is theoretically taken to include several regional and coeval flat-land traditions. Bromme of Denmark, Swidrian of Poland and Creswellian of Great Britain fall within the general scope of this tradition. Here the blades are slightly smaller and narrower i.e. about 7-3 cm. in length. On these small end-scrapers, circular scrapers, borers and even some all-round retouched blades are produced.

The characteristic *Federmesser* or penknives are prepared, exactly in the manner of the Chetalperronean knives with the exception that these are much smaller and narrower. The backing of one of the borders of a blade is done in a convex manner so that the convex border meets the sharp border to give rise to the knife. The base of the knife at some instances may also be retouched. Many antler and bone tools also accompany this.
x. *Swiderian*. This tradition has already been mentioned under the *Federeisser* group. It is based on a site called Swidry Wielkie, near Warsaw in Poland. Numerous surface finds collected from this region could be broadly dated to Alleröd period on the basis of pollen analysis. This tradition is characterised by a large number of narrow and slender blades (9-6 cm) retouched in a semi-abrupt manner to obtain knives and points (Fig. 5: 25). Some of the points are double shouldered to obtain tangs. There are a large number of end-scrapers and burins found associated with these.

*Federeisser* or pen knives are not so frequent as in Germany. On the other hand, the antlers (although mostly collected from surface and hence a direct association is not demonstrable) claimed from this tradition are shaped into double-barbed harpoons in many cases.

xi. *Ahrensburgian*. This tradition is named after the site called Ahrensburg, near Hamburg, in North Germany. It occurs during the last Pleistocene cold spasm of *Younger Dryas* (11,300-10,200 B.P.). It is characterised by a variety of shoulder ed points produced on small blades by abrupt border retouchings. Along with these occur end-scrapers and burins in moderate frequency and a large number of antler tools including the characteristic hoes.

**III. CHARACTER AND DISTRIBUTION**

Upper Palaeolithic culture is relatively better known and better dated because of its “young” antiquity. Originating only around 35,000 years ago, it has slowly progressed through changing climates and finally got adjusted to post Pleistocene or modern climate by 10,000 B.P. (roughly). In other words, this is a cultural stage in man’s history, which stayed for merely 25,000 years—a figure which is hundred times lesser than the duration of Lower Palaeolithic and about four times lesser than the duration of Middle Palaeolithic.

In France, Lower Perigordian is often found mixed up with Mousterian tool types. These mixed industries are identified as Lower Perigordian only on the basis of the occurrence of back ed blade knives of the Chatelperronean or Audi knife variety.
Rest of the tools in such early Perigordian deposits (as for instance at Arcysur-cure) are basically Mousterian like. These beds are known to occur as early as Amersfoort- Brörup interstadial.

The Aurignacian tradition, on the other hand, at its earliest is noted around middle of Paudorf. There are also some instances of Aurignacian overlapping the final phases of Lower Perigordian, as will be demonstrated by the site Caminade in Dordogne. At the same time cases are known where a developed Mousterian is directly overlaid by a characteristic Aurignacian as in Isturitz.

The succession of various Perigordian and Aurignacian traditions are best demonstrated at La Ferrassie. Here, Lower Perigordian occurs during Paudorf. It is overlaid by a mixed industry of numerous side-scrapers and burins associated with several blades and bladelets with border retouchings. In the absence of typical Aurignacian type tools and because of the complete disappearance of Chetelperronean knives, this industry was termed “Aurignacian-0.”

The series of layers that follows include industries belonging to Aurignacian-I, II, III and IV. This whole succession is overlaid by three layers of Gravettian or Perigordian-Va, Vb, and Vc (Perig-Va is characterised by the presence of a kind of double shouldered point called Font-Robert point; Perig-Vb by the presence of truncated or abruptly retouched blades and finally Perig-Vc by the presence of a small multiple burin on truncation called Noailles burins).

At Laugeri-Haute, another site in Dordogne, Perig-IV, V VI and VII occur in a succession. These are overlaid by Aurignacian-V. Thus, Aurignacian-I to IV are always younger than Upper Perigordian (IV, V, VI, & VII). Whether these Upper Perigordian stages have had any relation with the Lower Perigordian is a tricky question.

Many argue that the Lower Perigordian is the result of an experimenting group which departed from the earlier Mousterian culture. Whether this tradition “waited in hiding” for as long as 15,000 years to emerge later as Upper Perigordian is a question to which no satisfactory answer can be given, though typological connections between the Lower and Upper
Perigordian are obvious.

The re-appearance of Aurignacian (as Aurignacian V) after the whole range of Upper Perigordian at La Ferrassie is equally enigmatic. However, since the latter phenomenon is rarely represented in other successions of France, its reoccurrence may be explained as a restricted phenomenon caused by some kind of an isolated development.

In Spain, a true Lower Perigordian or a true Aurignacian are both absent. Here, the earliest Upper Palaeolithic layers yield a Gravettian or Upper Perigordian industry, which is followed by a mixed industry referred to as Aurignacio-Solutrean. At some sites near the French border, Mousterian is directly overlaid by Aurignacian and then by Upper Perigordian. Thus, the Lower Perigordian is scarcely represented in this region. Further, the Aurignacian also does not maintain a succession which can be compared with the classic layers of La Ferrassie or Laugerie-Haute of France.

In England, the Creswell crags yield two stratified sites containing assemblages largely comparable to the French Perigordian in their individual typological characteristics. Though their dating appears to be not very certain, these are broadly believed to be belonging to a cold phase between Paudorf and Oldest Dryas. At the Pin Hole cave, the level identified as Upper Aurignacian according to our present definition is an Upper Perigordian industry.

At Mother Grundy’s Parlour, another Creswellian site, an Upper Perigordian level is described as comparable to their French counterpart. These Perigordian occurrences in England seem to demonstrate either a late entrance of Upper Palaeolithic men into this Island or perhaps a fairly long duration of Middle Palaeolithic continuation from its indigenous sources.

The earliest Upper Palaeolithic traditions in Central and Eastern Europe are not as abundantly represented as in Western Europe. In Switzerland, for instance, the earliest Upper Palaeolithic known so far is Magdalenian (Late). The group of blade and burin traditions, which occur roughly parallel to the 50° latitude produce many individual typological similarities with the French Aurignacian and Upper Perigordian. This has led to the designation of these industries with West European
cultural terms.

This need not be taken to mean any cultural correlation between these areas. This tendency among many Prehistorians of looking at Europe with the French scale of reference has eventually given room to many conflicting opinions. Looking at the industries as they stand, it can be said that the river valleys North of the Alpine region and East of Rhone show a two-fold division in their Upper Palaeolithic character.

A mixed Aurignacian, with Chatelperronean knives (Perig-I type tool of France) and split base bone points (Aurig-I type tool of France) constitutes the beginning, which is followed by a slender blade industry with Gravette points and shouldered points. This leads to a late Magdelanian in some cases while in others this directly gives rise to the Epi-Palaeolithic. Mobile art in the form of figurines and ornaments are quite common in these industries.

On a very broad level it can be said that the beginning of the Upper Palaeolithic in this region is noted around Paudorf interstadial and the end of the Gravettian is estimated around Allerød phase. The region lying East of Vienna and South of the Carpathians and perhaps also across it up to Don, Dniestr and Dniepr Valleys in the Soviet Union shows a strong influence of the thin leaf points, which appear to have directly evolved out of the local Middle Palaeolithic in Hungary. However, this earliest Upper Palaeolithic tradition at Hungary shows a fairly good association of French Aurignacian and Perigordian characteristics.

In Germany, the early Upper Palaeolithic sites are found mostly around the Southern river valleys. At Vogelherd, for instance, the Lower Aurignacian level yields few Mousterian like tools such as, points and side-scrapers. At Middle Aurignacian level such French Aurignacian types as the broad blades with all round scalar border retouch (Aurignacian blade), carinated end-scrapers and angle burins occur in good number. This is associated with split base bone points (French Aurignacian character) and some engraved bone and ivory figures depicting animals.

In the Upper Aurignacian at this site, today's Aurignacian and Perigordian types (in French sense of these terms) are
found together as a homogeneous industry. For instance, here, we get border retouched blades, end-scrappers—of them, some carinated, and a number of burins including some busque burins (all Aurignacian types). Along with this occurs several Gravette points and even some Blattspitzen.

In other words, we find that most of the German sites show an emergence of Upper Palaeolithic with a kind of true Aurignacian lithic culture mixed with varieties of regional expressions of art and ornamentation on the non-lithic objects. This emerges almost at the same time, if not a little earlier, as the Aurignacian onset in France. At Mauern, Ofnet, Wildscheuer (Steeden) and in many other sites the pattern is the same. In Austria, Willendorf represents a better and more clearly documented succession of the same pattern as in Germany.

Around the end of Paudorf, i.e., about 29,000 B.P., or, may be, a little earlier in most of these sites the Gravettian element occurs grafted within the main trend. This is so very characteristic and widely distributed phenomenon (of almost entire Central Europe) that many authors have given this a proper tradition name and called it *Aurignacio-Gravettian* or *Central European Aurignacian*.

The character of this Aurignacio-Gravettian is rather flexible and in many instances, some local and preceding traditions may get absorbed within it. Such a situation is best illustrated in Hungary. Here it may be worth our while to recall that Hungary from the emergence of culture has maintained a rather centripetal growth with relatively much lesser influence of the activities around her.

It is, therefore, not very surprising to note that at Szeleta, the earliest occurrence of Upper Palaeolithic should be in a completely different shape than elsewhere. Here, from as early as the beginning of Paudorf (radio carbon date of 41,700 B.P.), the Middle Palaeolithic people seem to have started their experimentation with the manufacture of bifacial thin points. By about 32,000 B.P., these points are fairly standardised and at instances even compare in their remarkable thinness with the Solutrean leaf points of France which occur after another 15,000 years. Along with these leaf points there are both Aurignacian and Perigordian tool types recorded.
Another site called Istalloskö, lying only 15 km. South of Szeleta, yields an interesting industry belonging to late Szele-
tian age. It seems that this site does not take to the local
trend in the country. Instead of Szeletian, here Upper Palaeo-
lithic emerges with the generalized Aurignacio-Gravettian cha-
acter. Associated with this occurs a large number of split base
bone points and numerous other fragments of bone tools.
Since split base bone points are taken to define the earliest
stage of Aurignacian in France, Istallosko was taken to sub-
stantiate the theory of French Aurignacian having originated
at least outside France, if not in Hungary.

It must be admitted that this site is of importance in tracing
out the origin and spread of split base bone points in Europe.
However, this need not be taken to designate this industry as
Aurignacian-I of Central Europe because of these points as
some authors seem to have recommended. For that matter,
Willendorf, Vogelherd and the other sites in Central Europe
counted so far are far more Aurignacid. Mount Henye yields
another of these early Upper Palaeolithic industries of Aurig-
nacian blades and stranded blades mixed with Chatelperronean
knives (28,700 B.P.)

In general, it will appear that Hungary does represent the
Aurignacio-Gravettian character and thus extend the Vogelhe-
rd-Willendorf axis. Szeleta and Istalloskö might be represent-
ing some local trends independent of the general tradition.
Further, both these new trends are much earlier in occurrence
than the Aurignacio-Gravettian tradition, which occur in Hun-
gary at a date even later than in Willendorf.

Across the Danube, in the North, the Moravian loess sedi-
ment yields another series of important early Upper Palaeoli-
thic sites. Predmost is one of these which yield an overwhelm-
ing number of mammoth bones besides a rich industry. Here,
overlying a Mousterian deposit dated to Amersfoort-Brörup
occurs the main cultural bed. The bulk of the industry con-
sists of blades retouched both in Aurignacian and also in Gra-
veltian manner.

A little over this layer occurs a bed containing numerous
Blattspitzen with a group of rather diminutive blade tools of
Gravettian types. The bone industry includes several points,
awls and wands besides ornament objects. A remarkable burial with a heap of 20 skulls of adults and children adds a significant character to the Predmost industry.

Seventy km. East of Predmost in the same Moravian loess occurs the site, Pavlov, with a radio carbon date of 24,850 B.P. Here, the ground plan of several possible huts with fire hearths in the centre of each of them is observed. The accumulation of heaps of heavy bones of large mammals around the boundary of these ground plans indicate their being used possibly as weights in stretching some kind of skin roof. The stone industry is mainly Gravettoid and is associated with several antler and bone objects, including ornamentation pieces, Lyngby hoes and one Venus figurine.

The same Moravian loess yields two more important early Upper Palaeolithic sites called Ostrava-Petrkovic and Pekarna. The former yields a Gravettian industry datable to Oldest Dryas and having Pavlovian characteristics in habitation structure. The tools, represent some Aurignacian blades and Blatts spitzen as well, unlike Pavlov. At Pekarna, the industry is Gravettian mainly although one or two Aurignacian types (like Basque burin) are also found. This site records no habitation structure, nor does it carry the antler hoes or Blatts spitzen.

A few kilometres West of Pavlov, the famous site Dolni Vestonice is recorded from the same Moravian loess area. Here, from the lowest limit the cultural materials represent a typical Aurignacio-Gravettian succession. The earliest layer is believed to be broadly belonging to the Oldest Dryas stage. The excavation reveals a large 14×9 metre ground plan of habitation with five fire hearths inside the area. The enclosed ground is littered with piles of mammoth bones and tusks. There are numerous bone, ivory and antler tools, pieces of ornament and a Venus statue made of mud and bone ash recorded. There is another interesting find of a human head engraved on a bone piece.

The site is clearly an extension of Vogelherd, Willendorf and Mount Henye in the Moravian zone, although Dolni Vestonice appears to be younger in age than the above three. This may, perhaps explain the absence of an initial Aurignacian dominant layer mixed with few Perigordian tools which is noted at the
other sites.

It is needless to observe that the almost contemporary site of Pavlov, inspite of its spatial proximity, does not show any influence of this neighbouring site. It will, therefore, seem that the Pavlovians had already chosen out their area of specialization as the North European territory.

Further East from Moravia and across South Etan, a cave called Jerzmanowice in Poland yields an extension of the Szel- etian around 36,540 B.P. The rest of the tools associated with this is mainly Gravettian with some side-scrappers, end-scrappers and backed knives. In the North-east corner of Poland (near its border with "White" Russia) the Mielnik group of open-air sites represent another Aurignacio-Gravettian industry without any North European adaptation (as in Pavlov) indicated or any Blattspitzen tool types associated.

In the Balkan region, the earliest occurrence of Upper Palaeolithic is not later than in Western and Central Europe. In Yugoslavia, the emergence of this culture is recorded around late Paudorf and is in the form of rather diminutive blades (5-1.5 cm) retouched into Gravettian types. It is believed that these micro-Gravettian knives and points compare very well with some of the early Upper Palaeolithic industries known from Sicily (rather than with Austria and Hungary).

In another Yugoslavian site called Potocka, which lies nearer to the Austrian border (than Crvena Stijena), the usual Aurignacio-Gravettian of Central Europe is more clearly evidenced. Although here too some tools are as small as 2-1 cm. in length, the majority of them are moderately long (8-5 cm.). The associated bone tools contain a large number of points, some of them carrying decorations engraved on them. The industry was felt to be nearer to Magdalenian in the richness of its bone tools, while at the same time essentially maintaining the Central European Gravettian features with an influence of the Balkans in its stone tools. Thus, it was taken to be representing a local tradition and named as Olschewian.

In Greece, Upper Palaeolithic sites known so far are from a rather late period. But there is no reason to doubt a late emergence of this cultural period in the Greek peninsula. May be, some more excavations are needed before we know for sure
the character of the early Upper Palaeolithic in Greece. Both the sites of Seidi and Kastrita yield the diminutive Gravettian types known from Yugoslavia.

In Eastern Europe, the Upper Palaeolithic character seems to be entirely independent of the Balkan trends. For instance, at La Adam cave (Rumania) a succession from Middle Palaeolithic onwards is found. The earliest Upper Palaeolithic level is taken to be belonging to Paudorf and yields an industry which is called middle Aurignacian with some amount of Szeletian influence.

Another group of open-air sites from Rumania at Ceahlau records a Lower Aurignacian industry from Paudorf beds. These and other sites from the region (Stanca Ripiceni, Latarie, Podiz and others) indicate primarily a predominance of Gravettoid industry with occasional Aurignacoid tool type associated with them. The Szeletian Blattspitzen, though, is invariably found in them from their earliest beds.

Thus, the Rumanian Upper Palaeolithic will appear to be poorly comparable to our earlier demonstrated Central European Aurignacio-Gravettian culture zone (Vogelherd, Willendorf, Mount Henye and Dolni Vestonice). It is hard to say, if this could be taken to mean that regions East of the Danube and North of the 45° latitude has received its Gravettian tool types and even standardised them from the modest and uncertain experiments started in the Rumanian region.

When seen in the light of the hypothesis of Aurignacian given by Müller-Beck* Gravettian origin from the Carpethian zone can comfortably explain the series of Aurignacio-Gravettian industries that flourish in the Central European region. This should not, obviously, be stretched to population migration theories because it will be more likely that the varieties within Aurignacio-Gravettian industries with occasional Szeletian or even Olshchewian grafting is more indicative of culture contact through indirect means.

Moving Eastwards, we observe again a flourishing of the typical Aurignacio-Gravettian of the varieties known from

Austrian-Moravian loess region. Kostienki, for instance, is an open-air site from the terraces of River Don. The earliest bases at this site is datable to Paudorf as elsewhere. Here, the Upper Palaeolithic emerges in a more Aurignacoid than Gravettoid form although in a mixed way. Such specific French Aurignacian types as Dufour bladelets, Aurignacian blades and carinated end-scrapers develop along with backed blades leading to Gravettian points. Ground plans for huts with post holes and multiple hearths have been recorded from this site.

In the predominantly Gravettian phase, a characteristic shouldered point called *Kostienki point* appears (Fig. 5:29). These are broad blades with flat retouches on the dorsal surface, extending to ventral surface as well in some cases. The shoulder is made by preparing a shallow notch shifted more towards the pointed end so that a broad and rather long tang is formed. Besides these, numerous ivory objects, ornaments and Venuses also characterise this industry.

Molodova in the Dniestr Valley yields almost a comparable Upper Palaeolithic succession with numerous hut structures and piles of elephant bones and tusks. The industry is classic Aurignacio-Gravettian but unlike in Kostienki the Molodovians consistently maintain *Blattspitzen* in their cultural succession.

Yet, there are some other sites from the same general neighbourhood (in Desna and Dniepr Valleys) where both Aurignacian and also Szeletian seem to have had no role to play. For instance, the open-air site of Mezin yields habitation structures with fire hearths in the manner of Kostienki and Molodova, but no bifacial leaf point nor any shouldered points of the Kostienki kind occur in them. This is a purely Gravettoid industry, belonging perhaps to late Paudorf, which gives rise to a micro-Gravette industry with profusion of bone, ivory and antler spear-heads, batons, needles with eyes and even fishing hooks. There are also some ivory figures of birds and red coloured lines drawn on flat bones made by this culture.

Moving Southwards, it is observed that Middle Palaeolithic in this region, specially in Crimea continues, perhaps, till about the end of the last stadial of Würm. The earliest Upper Palaeolithic appears with a heavy mixture of Middle
Palaeolithic side-scrapers and points. These are Upper Palaeolithic blades including both backed knives and Dufour types.

Finally, a late micro-Gravettian develops which after a short stay gives rise to the Mesolithic. The bifacial leaf points which were quite frequent in the Crimean Middle Palaeolithic falls entirely out of fashion in the Upper Palaeolithic of this region. In all probability, this region had become almost a _cul de sac_ after the Riss/Elster glacial.

The Solutrean tradition in a limited part of West Europe has been a matter of discussion for long. Different opinions have been expressed from time to time, but the questions have not yet been settled. The opinion that had earlier gained weight is that Szeletian from Hungary might have given rise to this tradition in South France. Presently, there is a tendency of this opinion again falling in disfavour, although the age of Szeletian agrees reasonably with Solutrean.

The total character of the Szeletian industry at a close look is found to be way apart from the total character of the Solutrean. On the other hand, the fact that Proto-Solutrean incorporates some Mousterian tools appears to hint at a local but synthetic development of this tradition. The synthetic nature of this tradition can be demonstrated by the fact of the incorporation of various Upper Palaeolithic types and techniques in a developed Solutrean tradition. Such a reasoning has to entertain the possibility of a great deal of inventive ability in the Solutrean folk.

The famous Solutrean site of Parpallo in North Spain, would, on the contrary, strongly suggest a North African import of typo-technological characters. Could it be, then, possible that Solutrean in Western Europe represents an African influence grafted within a late surviving Mousterian scattered along the mountains and valleys of the Franco-Spanish border which on reaching perfection in technique and consolidation of population size descended down to the river valleys of South France?

May be, within a short while they moved farther East towards the Rhone valley, when the disbanded Gravettians returned to Dordogne with their newly acquired knowledge which led to the formation of the Magdalenian. These
possibilities can never be proved and, hence, remain as merely conjectures.

The fact remains that Solutreans came as suddenly in Europe as they left. Further, their technological ability of stone fabrication had attained an unparalleled supremacy in the history of human culture. Beyond this, the Solutreans remain as enigmatic till today as they were earlier.

The development of Magdalenian culture in West Europe is best demonstrated by the succession at Laugerie-Haute. Here, overlying the final Solutrean beds occur three successive layers of an industry designated as Magdalenian-0 or Ancient Magdalenian. This industry records a remarkable decrease in Solutrean retouchings with a corresponding increase of raclettes or blunt scrapers—these are flat blades or flakes with abrupt retouching delivered in an allaround manner—and burins. Magdalenian-I, which follows this represents a high percentage of backed blades and bladelets. The frequency of raclettes also remain consistently high.

With Magdalenian-II and then Magdalenian-III, the stone tools decrease in number in relation to the number and variety of bone tools. Further, from this stage onwards the majority of the stone tools tend to be diminutive and also start incorporating typical Mesolithic tool types. At La Medeleine in Dordogne, the site after which this tradition was originally named, a series of Upper Magdalenian deposits are described. Here, the lowest level (Magd.-IV) records a complete Gravettian type stone industry associated with bone harpoons, batons, borers and numerous other pieces.

The harpoons which are single barbed in this stage show a progressive development till Magdalenian-VI. Breuil had originally identified two chronological stages within Magd.-VI and called them as VIa and VIb. Magdalenian-VI marks the emergence of harpoons with double row of barbs. These barbs are angular in Magd-VIa and become curved and stooping in Magd.-VIb.

It is also in this stage that a diminutive Chatelperronean point called Azilian point in France (the same as Federmesser in Central Europe) develops along with long shouldered points (called Magdalenian point) and parrot-beak burins.
Almost every conceivable piece of bone, antler, ivory or for that matter even flat stones when available are engraved in various designs all through the Magdalenian tradition. Many of these engravings are mere ornamental line designs but there are also some in which realistic representations of animals have been done.

It will be seen, therefore, that Magdalenian is really defined more on the basis of its non-lithic cultural features than the lithic counterpart unlike in the preceding traditions of Upper Palaeolithic. Consequently many surface finds of stone collections with an overall Gravettian character cannot easily be ascribed to the Magdalenian tradition. On the other hand, a similar surface collection of a rich bone/antler industry is very often ascribed to the Magdalenian tradition without any critical observation, if this happens to contain harpoons and art work. We must, therefore, be careful in looking at only the excavated Magdalenian sites.

In Spain, Parpallo and Castillo record a large succession of Magdalenian industries overlying the Solutrean. This Magdalenian industry does not vary from the French Magdalenian in any significant way.

In Central Europe the final Upper Palaeolithic is represented by few Upper and Late Magdalenian occurrences at some places. In most of the remaining regions the earlier observed Aurignacio-Gravettian finally leads to the Epi-Palaeolithic.

In Switzerland, during the Bölling period two Upper Magdalenian beds are recorded from Kasslerloch which yields various kinds of burins, end-scrappers, backed/truncated blade and bladelets and a large proportion of borers. The rich non-lithic component of the industry includes several spearheads with double and single bevelled bases and with blood draining grooves etched along their length (Fig. 6: 6,7). These are also covered with incised decorations. Harpoons with single and double row of barbs, batons, spear throwers (Fig. 6: 9 and others) and eyed needles are other bone implements from this site.

In South Germany, Munzingen and Teufelskuchen yield a Magdalenian industry from Bölling period. Here blades retouched to form knives and end-scrappers, truncated blades, borers
burins and some Azilian points are recorded along with several fragments of bone and ivory points, batons and ornaments. The absence of harpoons and microlithic tools was taken to indicate that these represent a Lower Magdalenian industry.

Petersfels is another site from the same general neighbourhood, but occurring much earlier than the above mentioned two sites. Here around the beginning of Oldest Dryas, an industry containing mainly of burins, end-scrapers and borers (accounting for 66 per cent of the assemblage) is recorded. A minority of small blade tools associated with these are recorded to be backed blades, truncated blades and Azilian points. Bone tools of Petersfels include nearly 150 bone needles with pierced eyes, several spear-heads with single or double bevelled ends and blood draining grooves on them, batons and pierced animal phalanges, which could be some kind of primitive flutes (Fig. 6:18). Along with these occur many ornaments and art objects including several stylized female representations.

Thus, in the South German and Switzerland region, Magdalenian with harpoons and without them are known to exist. There seems to have been already a group with flat blade knife-making proficiency developed during Younger Dryas around the Schwabish highlands. This should explain the attempt of a group of early Magdalenians separating out to develop the Federmesser trend, while the other continuing to evolve into the harpoon-making Upper Magdalenian.

In North Germany, two Magdalenian sites are known from within 50 km. of Bonn on the Western bank of the Rhine. At Andernach an early Alleröd deposit yields backed blades, Gravette points and knives, associated with harpoons, batons and eyed needles. The other site, called Gönnersdorf, is also situated within the same general area. Here, an open-air site datable to the Bölling period was recently discovered.

This represents the Northernmost and Westernmost extension of Magdalenian tradition known so far in Europe. The living floor is paved and the industry consists of a large percentage of 5-2 cm long backed blades. The rest consists of burins, end-scrapers and borers. The bone tools include bevelled spear-heads with blood draining grooves, eyed needles and several broken barbs of harpoons—but no harpoons.
The most important feature of this site is the discovery of at least 2,000 art objects the like of which is not known so far from East of Rhône and Rhine. These are engravings done on black slate slabs or fragments thereof and on ivory rods. The latter consists of ivory pieces with etched out bulges representing breasts. The engravings on slates also represent different female forms. Head or feet are not shown but trunks and hips are shown in profile in these representations. Sometimes, bold lines are drawn across the body.

Further East, Magdalenian in classical sense is not known. Pekarna, situated in Moravian highlands, yields a Magdalenian assemblage overlying a Gravettian group. This consists of 9-8 cm. long blades retouched to be used, perhaps, as knives, some end-scrapers, borers and retouched blade cores. The bone tools include antler and bone batons in large number, bevelled points, eyed needles and Lyngby hoes. Some harpoons with three rows of barbs form an interesting feature of this industry. Most of the bone tools are engraved and some of them depict quite realistic animal representations.

Another Magdalenian type industry is recorded from Maszycka in Krakau district in South Poland—the same district where the famous Jerzmanowice cave is situated. Here an assemblage of blades retouched to form end-scrapers, burins, and borers is found associated with bone, ivory and antler points from the final stadial of Würm. All these points are more or less rectangular in cross-section and are occasionally bevelled. Linear engravings are done in almost all these points. Actual cultural designation of the industry is problematic although Prof. Kozlowski* found it comparable to French Magdalenian III&IV.

The above will show that the Magdalenian tradition in Central Europe remained, more or less, concentrated in the North of the Alps. Here too, it had a short and unsuccessful stay. It appears that from as early as Alleröd period, peoples with different cultural traditions migrated and settled into pockets around the low marshy land with a profusion of melted-water lakes and streams in the North. In other words, the environment

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into which these groups settled necessitated a similar technological adaptation.

Bromme is one of these open-air sites coming from as far-North of Europe as the Island of Zeoland in Denmark. This industry is palynologically dated to Allerød period. It consists of medium-sized flint pieces shaped as shouldered points, end-scrapers, burins, blade knives and retouched blade cores. The specific feature of this industry is that it contains no microliths and has no backed element. The excavator opined that Bromme culture could have developed from a special kind of Aurignacian stem in Soviet Russia (Borshesvo II), which seems to have strongly influenced or got itself spread from England in the West to Poland in the East.

Though such a far-fetched hypothesis may not gain credence in an atmosphere of regional evolution theories, it is true that Bromme, records a delayed arrival of one of the Aurignacian stems from some external source. Eventually, these people got adapted to the special environment of Denmark which was then beginning to break into islands. This could have finally developed into the famous Lyngby complex in Holocene.

The northern lowland of Europe, which includes Belgium, Holland and North Germany, evidences the development of diverse traditions from an earlier period than in Denmark. Some among them (Rissen and Wehlen groups) demonstrate construction of habitation structures with stone slabs used to pave the ground. The tools accompanying these industries are predominantly Federmesser in type along with numerous antler points and awls. The Hamburgian is also another tradition of the same region.

It is, perhaps, the earliest of the late Upper Palaeolithic in North Europe. Here burins, borers and shouldered points are found prepared on fairly big blades. Antlers and tools made from them are many.

Finally, Ahrensburgian, which is younger than Federmesser group and perhaps the youngest of Palaeolithic culture developed. Here too, fairly large sized blades are used to prepare end-scrapers, burins and tanged points along with a profusion of antlers and tools made on them. Some stout but short harpoons with single as well as double row of barbs are also recorded.
Some fairly big hollow wooden pieces with bifurcated bases form one of the important finds from this tradition.

Swidrian, one of the local traditions of Poland, is believed to be belonging to a generalized Federmesser tradition, which finally influenced the formation of the Ahrensburgian tradition.

Thus, we see that this terminal Pleistocene industries show evidence of the influences it has received from areas farther South or, may be, South-east in its beginning. In the later stages, influences arriving from Denmark (may be Bromme was developing towards Lyngby in this region) can also be hinted.

The position of England during this stage of Late Palaeolithic development is almost comparable to Denmark. Later on, however, there might have been more migrations from both sides. The example of the industry from Hengistbury-head in South England amply supports such early migrations in the initial late Pleistocene colonization. The absence of awls and shouldered points in this industry might be indicative of a different trend of adaptation in England. Perhaps by Ahrensburgian time, the English Creswellian came back to the continent and influenced its late traditions. The cultural scene of Upper Palaeolithic Europe is schematised in Fig. 8 with possible areas of contact shown.

Finally, it should be mentioned that the termination of the Palaeolithic in Europe, inspite of its extreme heterogeneity in the preceding stages is marked by a considerable homogenization. Although, looking minutely, the individual traditions that have contributed to this process can be identified, this extremely complicated interplay of various trends is relieved by an environmental homogeneity demanding a degree of equality in the overall culture pattern. Hamburgian in Germany, Bromme in Denmark and Hengistbury-head in England are perhaps instances of the first migrant’s stages of adaptation.

It needs to be mentioned at the end that cave art and art objects (movable objects) form one of the most important cultural indicators for this period.

In the following chapter we will look into this aspect of Prehistoric culture very briefly.
I. INTRODUCTION

Art refers to human skill as opposed to nature. This skill can manifest itself in innumerable ways which can be given individual names depending on the channels of expression. Thus, music is as much an art as perhaps poetry, in so far as the broadest scope of the word, art, is concerned. It is, however, important to note that every piece of human skill does not necessarily become art. In order to distinguish this, we can call art as that which refers to creation for non-biological needs.

In other words, the human skill in tool manufacturing need not be included in the consideration of Prehistoric Art. It will, therefore, be safer to call Palaeolithic art as the Visual or Plastic art in contradistinction to the rest which is studied as Prehistoric Technology.

The earliest empirical evidence of such a skill in mankind is recorded from as early as the late Lower Palaeolithic cultural stage—some 3,00,000 to 2,00,000 years ago. In deciding about this evidence, we still have to make provision for the possibility of even an earlier antiquity for the Emergence of Art.

This is primarily because of our inability to distinguish human skill from activities of the non-human kind surviving at that time. This comprises of series of scratched lines found on the cave floors or the walls. Although it is known that cave
bears from Pleistocene period have been inhabiting these caves and they have the habit of sharpening their nails by periodic scratching on rock surfaces, it cannot be conclusively proved that human hand is not responsible for them.

Thus, to many art historians the series of scratched lines are the earliest evidence of human effort to create art—or his attempt of getting acquainted with his "canvas". Even if the latter possibility is not true nobody can deny that this habit of certain animals led man to see the possibility of himself repeating the process. In other words, whether these were man's first attempt to produce something for visual perception or the animals inspired man to produce, will remain a moot question forever.

In this regard birth of visual art remains as misty as the birth of litho-culture in human history. With the progression of time this skill of man soon starts becoming noticeable. These early attempts of man in trying to represent his environment shows an incredulous amount of maturity and knowledge of anatomical proportions. If these represent man's first attempt, one should expect a kind of result similar to that produced by a 5-8 year old school boy. That these are much better in kind, although crude in the technique of execution, leads us to believe that perhaps we are wrong in taking them as the earliest human attempt.

Many seek to explain this suddenness of maturity by hypothesising the possibility of man having long since perfected his ability by practising on wet sand or mud before taking up the "hard canvas". This would again indicate that Palaeolithic art may be much older than what is determinable from the empirical records.

Prehistoric art, as it is known today, was executed by our ancestors either on stones or bones. At times, mud, charcoal, shells, teeth and horn have also been used. Art work executed on such movable materials is designated as Home Art or Art mobilier. Distinct from this is the art executed on cave walls, called Cave Art or Art Parietal.

Besides engraving and painting, there are also numerous examples of modelling done with simple mud or bone ash mixed with it. These latter examples throw significant light on the
additional technological ability of the Prehistoric artist. It is important to appreciate that the skill required to represent an object by modelling is not of the same kind required to either paint or engrave.

It would, therefore, appear that the Palaeolithic men had a wide range of techniques of creating art and also they had reasonably mastered their techniques. They can rightly be called as the “Original Artists”.

Objects of art of Palaeolithic antiquity are numerous in kind and variety of representation. These in some form or other are found from almost all Upper Palaeolithic sites spread over entire Europe. Cave Art, however, does not demonstrate either such a wide range in variety or in geographical distribution. The latter is more or less restricted in Southern France and Northern Spain alone. Hence, Palaeolithic Cave Art is also referred to as Franco-Cantabrian Art by many.

Interest in Cave Art among scientists grew out of a layman’s discovery of the famous cave site of Spain called Altamira in 1880. Don Marcelino de Sautuola discovered the site when he was searching for his daughter, who because of her small size could manage to get through a narrow crevice into this cave and thus came face to face with the magnificent panels of Palaeolithic Art.*

Inspite of the Don’s claim of their prehistoric antiquity Edouard Harle in the same year rejected the possibility of Altamira being of Prehistoric date. A planned and extensive search for caves and rock shettlers followed this controversy. By the beginning of the present century the fire of enthusiasm had already broken out. In 1902 the first report of Les Cambarelles was published and since then more than 120 caves and rock shelters with Palaeolithic Art have been recorded.

Objects of Home Art, at the same time, were also being unearthed from almost every Upper Palaeolithic site. Szombathy’s discovery of the “Venus of Willendorf” came in 1884 and subsequently art objects were always specially looked for in the excavations. By the end of the first decade of this century

*At a recent function, this lady, now nearing her nineties, on being requested to retell her story of this spectacular discovery disappointed everybody as she could not remember anything.
eight monographs on cave paintings had already been published. In 1913, Reinach made a summary of Art from the Quaternary period. Finally, in 1952 Prof. Breuil published his classic work: *Quatre cents siecles d’art pariétal.* ("Four hundred centuries of Cave Art").

II HOME ART

The earliest evidences of Prehistoric art are the numerous necklaces and pendants and such other objects of personal adornment. An engraved rib from an Acheulian level at Pech-de l’Azé (France) forms the earliest evidence of art in Prehistory (3,000,000 B.P.). The engraving is in the form of a festooned serpentine figure. A flat circular bone from the Middle Palaeolithic site, Tata (Hungary) forms the earliest evidence of art from Central Europe. It is a circular bone of 21 mm. diameter and bears an engraved + sign on one of its surfaces. It could be a charm amulet or a totemic sign. (Tata is dated to around 50,000 B.P.).

Burnt clay, deer canine, shells and fish vertebrae were the other materials used for ornaments. With the increase of more direct evidences from early Gravettian onwards, it would seem that arm and leg bands as also necklaces may have been used.

In relatively later stages, these personal adornment objects show the highest degree of decoration engraved on them. For instance, the so-called Zoomorphic ivory locket from Pavlov (Czechoslovakia) (Fig. 7 : 2), five pieces of open-mouthed bangles or bands, 1 cm. in breadth with three holes pierced at both ends from Mezin (Soviet Union) (Fig. 7 : 3) and one ivory pin with flattened and pierced head from Kostienki (Soviet Union) are some such examples.

The decorations on these pieces show the control of hand and perfection in technique. The Mezin arm bands carry an interesting pattern with squares drawn in spiral continuation. At the joining portions these take the shape of chevron designs.

The female statuettes from Central and Eastern Europe during the same period indicates the definite use of ornaments. Burials unearthed further sustain the reality that jewellery was used by both the sexes, may be more by males than females if we go
by some specific evidences.

Numerous other home art objects are known from Upper Palaeolithic deposits. Vogelherd in West Germany yields some remarkable ivory models measuring between 7-4 cm. in length. The animals shaped are a horse, a mammoth, a reindeer, a panthar and a cave bear. A series of crosses engraved along the belly and the shoulder of the mammoth may indicate their specific use.

In 1954, Riek described two more of such art objects from the site. One of these is a pebble with a series of incison marks and an eye-like depression. This has been identified as representing the head of a cave bear.

Peterfels, another West German Upper Palaeolithic site, yields a number of batons with a single series of oblique or zigzag lines engraved along them. One of them carries a series of wild horse heads while in another two reindeer are engraved (Fig. 7: 4-6). One flat piece of coal carries a perfect engraving of a wild horse on it (Fig. 7: 4-6). Several other charcoal pieces have been rubbed into various anthropomomorphic forms. These plain bars of coal with a curve in the centre have been identified as "sitting silhouette" by specialists (Fig. 7: 6).

In Czechoslovakia, Pekarna yields engravings of animals and also some plant representation on antler and ivory. The most significant art objects found here include two engraved horse ribs. In one of these, two bulls are shown with heads bent and pressing against each other in a fighting posture while a third bull is shown charging from behind. The other rib shows a row of grazing horses approaching another row of horses from opposite direction.

Dolni Vestonice is another Czechoslovak site known for its art materials. Here, within a fire hearth several lumps of clay with some kind of art representation have been found along with a female statuette. This so called "Venus" deserves special mention because here, unlike most other "Venus" statuettes in Euro-Asia, the material used is mud mixed with bone ash and bone powder (Fig. 9: 1). The figure is 11.4 cm. long with a pair of pendulous breasts and has slits made for eyes. Deep furrows on the back side show the mid rib and flesh folds near the waist. Four small grooves are made on the top of the head.
which could have been used to fix ornaments.

The other small lumps of similar material found in this hearth represent several animal heads. An engraved human face of ivory forms another interesting find which led many to interpret facial paralysis of the individual (Fig. 9: 2). A mammoth statuette of sand-stone and several pieces of ivory lockets in the shape of a pair of breasts are the objects recorded from this site.

Similarly, a fork shaped bone piece and another elongated piece with a pair of hanging nodules at about a third of its length from top are taken to represent stylised figures (Fig. 9: 3, 4). Besides these art objects several coloured and pierced shells, pierced animal teeth, small ivory cylinders with ornamental engravings and flat bones with holes driven in at their corners form the various personal adornment objects.

In Western Europe, home art develops more noticeably around utilitarian objects during this period. The deeply carved antler points and rods from Isturitz (France) and the decorated end of a spear-thrower from Les Frères (France) are two examples of the superfine workmanship of the people. The Isturitz points are deeply curved in spiral and concentric grooves in such a manner that they look a miniature kind of some of the palae-Indian ceremonial poles (Fig. 9: 5).

The Les Trois Frères spear-thrower fragment shows two headless (or broken when recovered) animals (which were perhaps Ibex) sitting face to face on stretched hind legs, their body upright and fore limbs locked together in a posture of combat (Fig. 10: 1). The muscles as they are stretched in such a posture have not escaped the artist’s attention.

The engraving of a bull with a U-turned head and numerous other depictions on the antler pieces at La Madeleine indicates the tendency of decorating mainly tools in Western Europe. These kinds of decorations are not entirely unknown from Central Europe either. Kesslerloch (Switzerland) yields animal engravings in exactly French style on batons and spear-throwers. At Gönnersdorf (West Germany) the French style is adopted in representing a female “silhouette” although the medium no longer remains a tool, but, flat stones have been chosen for this. At La Ferrassie, several sex symbols are found
engraved along with some animal heads on a piece of flat stone.

The famous "masked men" on the batons-de-commandement at Abri Mége (France) are known widely for their possibility of distortions. These show a row of three vertical figures with snout and a pair of pointed ears representing the face, the body is shown with fur representation and for the legs a pair of human like legs slightly bent in the anterior direction is drawn (Fig. 10 : 2). Whether these represent masked men with furs covering their body in some kind of a ritual dance is difficult to prove, but cannot be ruled out.

It will, therefore, be not entirely untrue to state that these grotesque human representations seem to be more common in the home art of Western Europe. The rest of the objects depicted by the Prehistoric artists are kind of common in both these zones of Europe.

Another point of difference will appear to be the medium chosen in the two regions. True that engravings are found on points and needles in Central Europe as well but it can be easily seen that utilitarian objects were not so often chosen for art in this zone. Criss-cross lines or a vague outline of an animal here and there may be all that can be recorded on them. On the contrary, the carving out of stylized figures, animals or female forms are done with skill and imagination.

The female statuettes, on the other hand, are not too few from France. The maximum number of such representations till today is known from Eastern Europe of which Kostienki yields 49 finished and unfinished ones and Menzin yields 11 similar ones. The total number of such statuettes from whole of Euro-Asia known till today is 133. In Asiatic Russia, Malta yields about 18 such objects. As compared to these, Central Europe yields a total of only 9 statuettes—although some of them got special attention for a long time. Southern coastal Europe, by far, shows a larger number of these figures (14) than Central Europe. France has so far recorded a total of 16 such pieces.

It is, however, important to note that sites like Brasempouy (France), Willendorf (Austria), (Fig 10 : 3), Grimaldi (Italy) (Fig 10 : 5), Kostienki (Fig 10 : 4), Menzin and Malta (all in U.S.S.R.) show multiple occurrence of the statuettes and hence
can be considered archaeologically significant.

The style of representation in all the Palaeolithic female statuettes share the common feature of exaggeration of secondary sexual traits. Almost all these statuettes are devoid of feet although hands in many instances have been represented. Personal ornaments, at least in the form of a waist girdle, may not be denied in some instances. So far, only a single engraving at Laussel represents a male figure (Fig. 14 : 2) (which strictly speaking, is a part of parietal art), besides another female (Fig. 14.1).

The details of representation of these statuettes vary a great deal from site to site and also the material chosen for their execution. For instance, the unfinished statuettes of Willendorf (Austria) fail to show the exaggerated features because of its being worked on a flat ivory piece. The symbolic female representations, likewise, seem to have been inspired by the raw material and the possibilities on them. The Petersfels figures on charcoal and the stylized figures of Mezin may be some of the examples.

III. CAVE ART

Art work represented on cave walls, floors and ceilings are usually in the form of engravings, outline drawings or paintings. Mostly animals are represented singly or in group in various sizes. Such animals as bison, wild cow, woolly mammoth, reindeer, ibex or wild horse are the commonly represented ones. Sometimes, cave bear, a solitary wolf, cat, rhinoceros or lion head are also drawn. Fish, bird or human forms form the most rare kind represented. These are either drawn in profile or in the so called "twisted perspective" — in a three-quarter profile. In later stages, a third dimension to the figures is attempted by shading the contours. Similarly motion seems to have been depicted by the representation of multiple legs.

Besides these animal representations some abstract symbols called tectiforms, claviforms, or blazons are also found in almost every large cave site. It is difficult to interpret these signs but that these are attempts in communicating more than
objects or creatures seems to be quite certain.

In addition to these tectiforms many cave walls carry a series of hand impressions. When the hand is dipped in colour and pressed on the wall it leaves a positive impression. In some cases it seems the hand has been pressed against the wall and then colour has been sprayed over it—thus, leaving a negative or stenciled hand impression. Many of these hand impressions show mutilated fingers. This feature has led to theorization towards interpreting cave art. We will come back to the interpretations after a general survey of finds from the Franco-Cantabrian region which follows:

Les Combarelles is a cave within the limestone range in Dordogne which seems to have been created by an old river or stream originating from the heart of the mountain. The area created by this stream has formed the 200 metre long, 1.80 metre high and 1.20 metre broad twisting tunnel.

The paintings start occurring from about 73 metres from the opening of the cave. The total number of representations exceed a thousand forms which are mostly engraved and are superimposed. There are only two painted jobs among these. These are an outline of an animal and a hand impression in black paint besides a tectiform. The engraving are often covered with a smear of weathered lime which has been taken as a proof of their antiquity.

The engravings are divided into two groups on the basis of the depth and boldness of the engraved lines. The finely engraved lines on comparison with other known sites are taken to represent a late style (Middle Magdalenian) while the heavy engravings are taken to be of an earlier date (perhaps, late Perigordian). The figures identified include several reindeer, ibex, horse, bison, mammoth and some anthropomorphic designs. Some rather unusual representations of bear and lion have also been recorded. In average these figures measure between 60 to 90 cm. in length.

In one of the best panels a pair of mammoths is engraved in profile with their trunks curled round. Hatched lines have been drawn on head, leg and chest of the animal to represent the coat (Fig. 14: 3). In another panel, two grotesque human figures with peculiar animal-like features are shown with extended
bellies (Fig. 14: 4). Some commentators describe these as representations of a male following a pregnant female. Besides, these there are several delicately engraved horses with full details of mane and often superimposed by other animal forms.

Font-de-Gaume is another cave in the same region which has yielded famous evidences of Palaeolithic art. These start appearing from about 60 metres from the cave entrance. The more than 50 representations recorded from the cave are all identifiable—though one or two of them are now extremely faded. These include a series of mammoths, dark polychrome paintings of bison, reindeer, a woolly rhinoceros, some horses, ibex and a feline. Some of these representations, which are taken to be of a late Pleistocene period, are polychrome paintings with black, red and brown colour wash evenly spread to show body contours.

The art of the last period at Font-de Gaume is best known for its highly characteristic form and style. Among the various representations a panel representing some reindeer, bison and mammoths is worth noting. These are superimposed by two complete and four incomplete tent-shaped lined figures with colour and also engraved. Four of these signs are drawn on the body of the bison and the other two are separately drawn below the panel in empty space. The bison is drawn in polychrome and its body around the shoulder is colour washed (Fig. 11). On this washed surface occur outlines of a complete 'hut'.

The reindeer, which are best represented constitute the biggest figures in the panel. These are drawn facing each other. One of these is a female shown, kneeling on its forelegs, the other is a male shown with a bent head nuzzling or sniffing the head of the first reindeer (Fig. 11). Both these animals are first engraved and then a reddish-brown wash is given to fill the inside. Black colour is finally used to give the contour effect in the bodies. The antler of male is painted black while the horns of the female are painted red. The rest of the drawings in this cave are equally good although they represent different animals.

Lascaux is the finest of all cave-painting sites in France. This cave was accidentally discovered in 1940 by two laymen. Subsequently, Windels (1949) and Breuil (1952) reported the details
of the paintings with their respective interpretations of a possible evolution of styles. It is about 100 metres long with two axial galleries leading from it. The drawings seem to be most carefully spread in the main hall and its galleries. Surprisingly, there is practically no superimposition. The painted animals are rather large in proportion, sometimes as much as 5.5 metres in length.

The main chamber is decorated with polychrome paintings of bulls and some other animals. Among these also occurs the curious and much discussed painting of the so-called "unicorn with double horn" (Fig. 12). The main chamber tapers into a narrow 20 metre long passage. Here, several single horses and a frieze of a group of small horses have been drawn in polychrome. In one of these panels a group of six large horses and three cows are painted in black outline but with washes of red and black for cows and brown and black for horses filling the insides.

The animals are delicately drawn, but differ in their style from the animals of the main chamber. One of the cows is superimposed on the horses. Many broken lances are shown strewn around the animals and one of the cows is shown pierced by a lance-head. In another, a long bull is drawn with a menacing look. A feathered arrow or lance is drawn in front of its face.

Another passage out of the main chamber shows a large number of engraved stags. On the floor of a shaft (called "shaft of the dead man") from this chamber occurs a painting on a flat protuberant rock.

This painting shows an impaled bison standing with a human figure in a position of falling on his back facing the bison. The latter has its tail up with the hair of the body bristling. A spear is shown pierced through its hind quarters and some of its entrails hanging down from its belly. The human figure is schematically drawn with single straight lines representing the body outline, hands and legs. The head of the man is drawn like a bird's. The man has an erect phallus. A stick with a bird on it is shown on the ground by his side (Fig. 12).

Gargas is a cave site in the Pyrenees which has yielded the maximum number of hand prints in black and red colour.
(Total: 150). Most of the stencils are left-hand impressions and invariably show some of the fingers mutilated (Fig. 13:1).

Montespan is a small cave, situated near Gargas in the Pyrenees. This cave is famous for its clay models of animals. The most famous of these is the sculpture of a single headless bear measuring about 90 cm. in length. The animal is sitting with its forefeet stretched in front of it (Fig. 13:2). The claws of the right foot were well preserved when found. There is a deep hole in the neck. A bear skull with a hole in the neck was found lying on the foreground between the forefeet. It is surmised that the skull was inserted in the hole on the model and the body was covered with a bear skin for some kind of hunting ritual and/or practice.

In the Pyrenees lies another pair of interlocked caves called Les Trois Frères and d’Audoubert. Excavations at both these caves have revealed a late Upper Palaeolithic industry with stone and bone tools. The dart thrower with a pair of ibexes in combat, which has already been described in Home Art, forms a part of this assemblage.

One of the most referred works of art in this cave is found in an underground chamber reached through a vertical hole in the cave floor (nearly 3.5 metres below the floor). This is also called the “sanctuary” for the famous “sorcerer” engraved in it.

The sorcerer is about 90 cm. tall and has a human body, legs and a prominent phallus. The figure shows a queer mixture of human and animal features. It has a long tail, ears of cat, only one branch of antler on head, small eyes and a furry bearded mask (Fig.13:3). The legs are painted in red and the body is heavily outlined with red colour. The rest of the body is repeatedly engraved. This entire depiction is heavily superimposed by bison, ibex and horse engravings done with complete disregard of orientation. Another panel shows a wounded bear lying flat with thick lines protruding from the nostrils, mouth and body.

The other cave, d’Audoubert has yielded the famous pair of clay bas-reliefs of bison, each measuring about 61 cm. These clay models are done on a fallen stalagmite in a reclining angle. Only the dorsal side is modelled, the ventral side being the
rock. The front bison is a female, its eyes shown by depressions and its tail shown bent up (Fig. 15: 1). The other bison is probably a male with protuberant eyes. The execution of the details of the bodies shows a masterly craftsmanship.

There are some deep human heel marks also found near about these two clay models. These are taken as the imprints of children (because of the low ceiling over these impressions) who probably danced around on their heels as part of some kind of initiation ceremony. On the ground in the immediate neighbourhood some clay sausage-like models were found. These are taken to be representations of the human phallus, endorsing the view of initiation ritual.

Another long cave in the Pyrenees ranges in France called, Niaux, shows some rare and interesting paintings. These include several horses and bisons although the ibex, by far, forms the largest number. In one of the representations a bison with flaring nostrils has been produced on the floor by cutting clay. Three natural holes are formed in its body by water dripping from the ceiling. These holes have been carefully transformed into three arrow heads, as if pierced into the body of the animal. Another important painting represents a fish—rather a rare object in Palaeolithic art. (Fig. 15: 3,4).

In Spain, the Cantabrian ranges have yielded a large number of caves with Palaeolithic painting in them. Of these, till today the best example comes from the one that was first discovered—Altamira. This spectacular site is in the northern province of Santander. Cartailhac and Breuil (1906) were the first to report the details of the paintings in this cave.

This is a 280 metre long cave and the art—mostly executed in polychrome, compares well with the Font-de-Gaume style. A small scale excavation inside this cave (Breuil and Obermaier, 1935) revealed a Solutrean and a Magdalenian layer with numerous stone and bone tools. Besides the characteristic stone tools, these yield a large number of bevelled points with criss-cross engravings, spatulas, wands and decorated bone fragments. Among these, a bone piece with an engraved head of a doe appears to be remarkably comparable to a cave-wall engraving in Castillo—another cave-painting site within 20 km. distance from Altamira.
PALAEOLITHIC ART

Nearly ten metres beyond the entrance, the main cave passage leads into a low-roofed, closed hall. Here the ceiling is covered with polychrome paintings of 15 bisons—some standing and some sitting with their legs curled under them. The larger figures individually measure about 1.5 metres in length and are painted on large flat rock projecting from the roof of the hall.

The animals are painted in red and brown wash, with details of their mane, coats and legs emphasised with heavily-applied black paint and repeated engravings. This whole panel is taken to represent a single scene depicting a herd of bisons. The females are shown relaxing on the floor while the males appear to be guarding the group. In other parts of the ceiling in the same hall occur some red painted and stencilled hands, some possibly engraved human figures and a group of “rayed tectiforms”. A group of tectiforms drawn with the finger on the once wet mud-coating on the wall forms another interesting find (Fig.17).

Besides this cave, Spain has yielded perhaps as many cave-painting sites as France but they do not provide any additional information towards the “function” of art in the life of Prehistoric people. Candamo, Covalanas and Pindal are some of the sites with interesting and additional types of tectiforms and paintings of the animals.

Caves and rock shelters with Prehistoric art work is known to occur in other areas as well, but the authorities are almost in agreement about their being younger than Palaeolithic in antiquity. The Spanish Levant and the South-West Italian and Sicilian finds are believed to be of the Holocene period. Another group of paintings from the rock shelters in the Arctic regions of Euro-Asia is believed to be even later in antiquity.

To seek an interpretation of Palaeolithic art, one has to look into the home art objects as well and it can be seen, although in a broad sense, that the themes and styles of the two kinds of art do not vary significantly.

If we have the “masked men” on the batons at Abri-Mée (France) we have another kind of “masked man” from Les Trois Frères cave wall engravings. Similarly, if we have the female statuettes from Willendorf (Austria) and Dolni Vestonice
(Czechoslovakia), we have almost similar representation on the wall of the rock shelter in Laussel (France).

Likewise, the animal models from Vogelherd in no way show an additional type or style of animals known from the cave-wall paintings and engravings. The only difference of the two kinds of art, however, lies in the fact that while for home art some kind of a hint of the context of art can be found, for cave-art we have very little to go on.

IV. CHARACTERISTICS:

It can be observed that most of these sites represent large herbivorous mammals. Carnivores, birds and fishes occur in much smaller number. Human representations, by far, are the least occurring theme. Even when they occur, they are either extremely stylized or grotesque in features. Besides these occur the hand impressions and a variety of tectiforms. The art work is characterized by a high degree of superimpositions in most of the cases. The animals superimposed are sometimes drawn in complete disregard of the earlier work. In some cases, the superimposed figures use convenient parts of the earlier drawing or painting to complete the new one.

Another important characteristic of these works of art is that no notice of orientation of the object depicted is considered. That is, a horse drawn standing on a horizontal plane has a bovid superimposed with its legs vertically opposite those of the horse. The scales of representations are also completely arbitrary and do not conform to the real sizes of the animals. In other words, a small rhinoceros may be superimposed on a huge horse.

With few exceptions, the animals are represented in profile. They may be shown in their natural postures like standing, grazing, running or even sitting. Sometimes, a group of animals is represented in a herd. Some authorities find the drawing together of certain animals within the same panel as a deliberate feature, which may be culturally significant. Leroi-Gourhan (1965) feels that bovids and horses are always associated and further certain parts of the cave show strong associations with the representations of certain species more than others.
He always finds a bison in the central part of the gallery, far from the entrance of the cave, while a horse is found more frequently than others in another part of the cave.

Another important characteristic of Palaeolithic art is that it is usually found deep inside the cave where it is impossible to reach without crawling through steep ascending or descending crevices. To many, the reason why all good works of art are found deep inside the cave is that they are protected from withering away by continuous exposure to the sun and the external environment. However, many of these are not merely done far away from the cave-entrance but in narrow and low crevices where the artist could not have comfortably finished his work. That the artists should have chosen such inaccessible areas, according to some authorities, shows their desire to keep their work secret.

V. DATING

The exact dating of cave art is not possible because these works of prehistoric men are mere surface finds. Home art on the contrary has been broadly dated whenever they have been found in association with datable cultural horizons. Attempts towards dating, therefore, have been done mainly according to various styles of art. The broad periodizations of cave art are:

*Period I* is taken to include art forms occurring up to the end of developed Gravettian. These include mostly engraving of animals in rough profiles and also some tectiforms. The animals represented are shown with one leg instead of a pair in the front and hind quarters. The details of face and body are entirely absent.

*Period II* is taken to include figures from the last part of Gravettian to the early phase of the Solutrean. In this phase, paintings appear for the first time, although engravings continue. The animals are now shown with realistic outlines of neck, back and belly. The legs are also shown in realistic shape with occasional representation of knee joints and hoofs. The head and snout of these animals are still devoid of a great degree of detail. Many negative impressions are ascribed to this stage.

*Period III* includes the art from the developed Solutrean to
early Magdalenian (I and II). Here, the first attempts of representing such details as body contours occur. Hairy coats, mane and other similar details are attempted along with a better treatment of the figures. Most of these are achieved by filling in the relevant parts of the body with a colour wash. The engravings from this period are also well-developed. The lines are thin, sure and steady. The highest degree of abstraction in engravings is said to have been achieved at this stage. The so-called “trap” and “hut” signs of Lascaux and other sites are believed to be of this period.

Period IV: This period is further divided into three sub-periods.

Early: This includes the works of art from Magdalenian III & IV.

Late: In this stage art works of Magdalenian V & VI are included.

Outgoing: Finally in this stage art from the end of Magdalenian to the transition to the Mesolithic stage is included.

In Period IV, as a whole, the polychrome paintings have been developed. These are extremely realistic in their representations. Attempts to represent light-and-shade effect on the contours of the animal bodies appear highly developed. The animals are often shown in motion and they appear full of life. The hoofs and legs as also the heads and mane are represented in careful detail. The three different stages of this period are identified on the basis of the styles of mobile or home art found associated with the Magdalenian and the Epi-Palaeolithic assemblages.

The various stages of development of art demonstrate a reasonable degree of regional variation even within this small area of their occurrence—the Franco-Cantabrian region. In some caves, dots have been preferred to an outline, while in others natural rock bosses or protuberances have been used to represent the anatomical contours. Some caves show a preference for animals. A precise dating of these styles will perhaps never be possible. Whatever has been achieved is on indirect evidence of association and superimpositions.
VI. INTERPRETATION

What is more difficult in the study of cave art is to interpret its significance. In the absence of any clue to the knowledge of the ideas and attitudes of the people, one could only suggest that these paintings were done only for art's sake. A closer look at the amazing variety of representations with what seem to be unexplainable signs and their occurrence in the deep interior of the caves would rule out such an over-simplified explanation.

With the increase of ethnographic literature, archaeologists rushed to conclude that the life of Prehistoric people could be comparable to the primitives of today surviving at the lowest level of economy. This eventually led to the drawing of ethnographic parallels in non-economic spheres of life as well.

Thus, earlier workers on Prehistoric art such as Reinach (1913), Begouen (1912) and even Breuil (1906-1952) developed theories of hunting ritual, initiation, sympathetic magic, fertility and totemistic rituals to explain cave art.

These theories sought to explain that man painted (or engraved) because he had basic needs and also anxieties to meet. Thus, when a hunting ritual was done on an engraved animal figure in the cave the artist captured in actual hunting. Similarly, the initiation rites of youths in the presence of these hunting scenes by way of some kind of hunting practice gave an assurance to their manhood and to their need of being able to hunt successfully in future.

Sympathetic magic implied man's ability to kill an animal with certainty when it had been already injured through the magical injury done to its painting on the cave wall. Fertility, on the other hand, could be desired by drawing those animals which are believed to increase their numbers prolifically in wild life and thereby enabling the hunters to perpetually hunt these animals.

The totemistic theories are derived through the observation of the practices of some Australian aborigines who paint their totemic animals on secluded rock walls. Prehistorians, here, make an exception that while Australian aborigines do not hunt or eat their totem, the Prehistoric people need not have had
such a taboo, as indeed some modern primitives do not have either.

Ritualistic significance of all cave art should not be over emphasised. It is not scientific as it restricts other possible explanations. Ucko and Rosenfeld (1967), for instance, point out that the hand impressions which have been explained as connected with some kind of initiation rituals could also be signature of the artist. They could also have been done for simple amusement.

The search of an esoteric explanation for all works of Palaeolithic art prevented earlier workers from looking for other explanations. This being so, ethnographic records that give some evidence of art without any esoteric significance (Nadel, 1954; Macintosh 1952) are consciously or unconsciously disregarded.

The interpretation of Prehistoric art has oscillated between two mutually exclusive views. At the one extreme, it is art for art's sake and at the other end it is an esoteric ritual. Lamming (1962) accepts that part of Palaeolithic art work could have possibly no connection with rituals. The fact that in most of the sites or at least in the best-decorated caves, there has been no habitation debris prevents the acceptance of a non-ritualistic hypothesis. Marshack (1972) has recently demonstrated by microscopic study that many works were used ritually. This, he believes, is demonstrated by the fact that many figures were renewed periodically and signs were added to older figures.

At the same time it is unlikely to consider every piece of art as having been associated with one or other kind of ritual. It is true that all Palaeolithic art need not result from any singly directed cause (Reinach, 1913) and could occasionally include works of novices or children who did not necessarily share the cause. It is, however, difficult to prove the actual or correct motivation behind these art works.

The main hurdle towards a fault-proof interpretation lies in our ignorance about the manner in which the painted caves were used in the Prehistoric period. That the caves were seldom used for habitation indicates that the art work was not meant for visual pleasure. The practice of superimposing on the old
art works can be taken as a supplementery evidence against their being merely used for visual pleasure.

The theory of animal multiplication for constant supply of food as another interpretation will also appear to be improbable as many of the animals painted were rarely hunted in that period.

It would seem that these caves have been visited by many individuals and so, might have had some regular unknown activities in them. Whether such activities were for totem worship, initiation ceremony, magic hunting or fertility ceremony will perhaps never be known. The weight of evidence, however, definitely indicates its association with some kind of ceremonies —profane or esoteric or both.

The presence of tectiforms, wounded animals, masked men and other enigmatic combinations like the one in the “shaft of the dead man” at Lascaux can be taken to have some understanding of the mind of Prehistoric people. The involvement of the Prehistoric people with his physical environment is well established, but, that this involvement had possibly deeply affected his total emotional consciousness is indicated by art evidences. Therefore, today, we can easily dismiss such earlier thoughts which ascribed the paintings as casual products of idle hunters.

The dreams and perhaps also the nightmares of the Prehistoric man may have made him a part of the same emotional continuum which governed his physical environment. The consciousness of man developed through such a chain of experiences and observations that very soon fear and curiosity/desire formed his emotional framework as hunger and sex formed the motivating forces for his biological framework. The interaction of these two aspects in Prehistoric mind led him to execute art.

The Prehistoric man’s comfort or limited technology had not daunted him from his inner drive to create details for vividity in his depictions. There will hardly be any doubt of the fact that this overwhelming inner drive was the motivating force behind the cave paintings.

In a society which was basically hunting-gathering in economy, the artist should have been more concerned about his biological
needs than the need of mind. It must be, therefore, the work of a selected few skilled men, who, by way of their ability to recreate, had earned the power to influence their society. The society, on the other hand, shared the same fear and curiosity/desire forces in the mind of the artist which led him to create. This could have eventually led the Prehistoric art and their artists to occupy an important place in his society. That this important position was finally linked with economy cannot, also be denied.

In other words, "fear and curiosity/desire" can be taken as the basic motivating force which can successfully explain Prehistoric art. It is true that these forces can manifest themselves in varieties of ways including cults, rituals and magic but to isolate them for any specific functional role, at the present state of our knowledge will be a wrong start. In other words, analysis of Palaeolithic art should more correctly be the premise of a psychologist rather than that of an anthropologist or prehistorian.

There are some authorities who have attempted to solve the problem by a completely objective analysis of context and content. Leroi-Gourhan (1965) studied a total of 2,188 animal figures from 66 caves of France and Spain. He divided the animals into several types like horses in Group A, bison in Group B, deer, ibex and mammoth in Group C and bear, wild cat and rhinoceros in Group D. Further, male and female representations, which are at length explained as symbolically shown by drawing specific signs or even specific animals were divided into alpha (male) and beta (female) groups. The cavesites were then divided into several sections from the entrance to the end.

Finally, it was seen whether certain animal types are more often found associated and if so, whether there were any associations of specific animals or animal groups with different regions of the cave as well. The analysis yielded an assortment of associations of both types of animals and also sections of the cave. However, the reasons of such associations and also the reasons of art at all, remained still unanswered in this analysis.
CHAPTER SIX

MESOLITHIC

I. INTRODUCTION

When G. de Mortillet (1881) propounded the Palaeolithic succession scheme it was generally held that the Palaeolithic culture led directly to the Neolithic culture. Although, as early as 1851 Worsaae recorded microliths from heaps of putrefied shell refuse, commonly referred to as Kitchen Midden, from Denmark, the significance of these as representing a cultural transition from Palaeolithic to Neolithic was not realized. Piette (1887), with his discovery of the cave of Mas d'Azil from the Pyrenean region of France, for the first time demonstrated the evidence of a Mesolithic culture in stratified condition.

(Soon, the significance of numerous other surface collections made from various parts of Europe was realized. These tools and their associated finds were mostly found concentrated around river mouths, bogs and sea coasts. Strictly speaking, they are mostly open-air sites with the tools usually lying on the surface.)

However, the huge deposit of kitchen refuse, which is almost characteristically found associated with these sites render them a kind of in situ feature. That is, geologically speaking, the majority of the Mesolithic sites in Europe are known from the surface. This is not very different from what is observed in other parts of the world because Holocene deposits, in a geomorphological sense, is not very deep because of its relatively very small age compared to Pleistocene.
Unlike the Palaeolithic, the Mesolithic cannot be defined within a geo-chronological framework. This is because of the obvious reason that after the Pleistocene ends, the time-period up to the present is a single unit in our chronometer. Thus, cultural attributes in combination with a geo-chronological marker is used in defining this culture period. The Mesolithic is defined as that cultural period which occurs during the earliest part of Holocene and which is both free of Neolithic cultural elements and also precedes it. It appears that neither the geo-climatic changes marking the beginning of Holocene nor the characteristic Mesolithic cultural features appeared simultaneously all over. Nonetheless, in a very broad sense, the Mesolithic is taken to have survived from 8,000 to 3,000 B.C. in Europe.

Before we try to describe what is Mesolithic in cultural terms, it is important to understand the climatic changes that were slowly setting in Europe with the termination of the Pleistocene period. The ice of the glaciated region which was locking huge quantity of water on the land started melting and flowing into the sea. Water level of the sea in the Baltic coast rose at places by about 100 metres.

This caused several changes in the geography of North Europe where the phenomenon had been the strongest. Various land connections were submerged under the sea and isolated Islands were created. At the same time, huge expanses of land, so far covered under ice, were now opened up for expanding vegetation to cover. The earliest phase of Holocene is believed to have been still lingering with a little colder climate and thus maintaining an open-park, tundra area which was slowly getting populated with larger trees.

This period is termed as the Pre-boreal vegetation stage (Birch-Pine) in North Europe. The Boreal stage (Pine-Hazel) which sets in about 6,500 B.C., is marked by an increase in woodland varieties of trees. These vegetations soon cover up the areas recently released from the glaciated zones.

With this change in climate, animal life also underwent great alterations. The mammoth and the woolly rhinoceros seem to have already disappeared from Europe with the beginning of Pre-Boreal period. Wild reindeer and musk ox had been
migrating to the North with the shift of the snow-line. Finally, some of them could survive in the refuge of perennial snow zone till today. The horse and the red deer appear in this mixed forest around Boreal and by the subsequent phase called the Atlantic period (5500-3000 B.C.) these become profuse in the favourable spots.

These all-round changes in the environment, though slow in its process was rather drastic in nature when seen in the light of the changes of cultural habits that were demanded of man for his survival. Within about a period of 10 to 15 generations, fixed cultural habits, which were linked closer to environment in the Palaeolithic period were pressed for change. The fact that man did successfully adjust to his new environment and also flourished in number perhaps demonstrates his cultural potentiality and supremacy in the entire animal kingdom.

The foremost change in life-style that was forced upon him was to change a recently adopted food habit. During late Pleistocene, specially in such traditions of Northern Europe as Hamburgian and Ahrensburgian there is evidence of a distinct shift to specialized single species hunting. (In some cases, a single species accounts for nearly 99 per cent of the total animals killed). With the change of environment, fishing increased in the economy to compensate food-gathering and large game hunting that were curtailed. Such a change required a greater need of settled habits than what the Palaeolithic hunting and gathering economy demanded. Coupled with fishing, bird hunting also increased because of the increased availability of birds around water sources.

These two changes in basic hunting and hence the food habits were the main driving force for the Mesolithic people to change their tools and techniques. They soon realized that weight of the tools, which were advantageous in Palaeolithic hunting was actually a technological disadvantage in fishing and bird hunting.

Thus, the microliths, the advantage of which were not entirely unknown to the late Palaeolithic hunters, took over in Mesolithic as the main cultural type. These tiny, glassy, stone pieces were not only easy to manufacture once you master the fluting technique, but they were also good for economizing the
raw material. Properly attached to antlers or reeds and other similar organic handles they can be used to improvise a large number of real efficient tools. Arrows, harpoons, hooks, knives and host of other tools for specific functions could be improvised within few minutes with the planned attachment of these microliths.

The Upper Palaeolithic art, which was perhaps an indication of the leisure available in large game hunting and collecting food dwindled off to almost extinction during the Mesolithic period. Whether, this should be taken to indicate lack of leisure because of shifting to small animal hunting or a true elimination of this cultural attribute is difficult to say.

However, it may be discounted that a great deal of Mesolithic culture was really shaped with perishable materials and, may be, the art executed with such materials has not survived to give us any indication of this aspect of their culture. Finally, it must be added that inland Mesolithic settlements also yield fairly good evidence of heavy tool manufacture alongside the microliths. This would indicate their ability to fell trees and thus obtain clearing within the forest. May be they could also make dug-outs with these heavy tools for inland river transport used in fishing.

II. TRADITIONS

Mesolithic traditions developing around West Europe indicate some degree of relationship with the Upper Palaeolithic of the region. In the Central and Eastern region, however, such a relationship is not demonstrable, mainly because a generalized Epi-Palaeolithic had already consolidated in these regions before the onset of Holocene. This Epi-Palaeolithic had not only developed proficiency within its new environment, but also in all probability migrated towards the West and contributed in the formation of the Mesolithic traditions of the West.

In South and South-east Europe, the changes brought about in the environment with the onset of Holocene is not as well understood as in North Europe. There seems to be some indications of periods of high aridity at the beginning. The
discovery of farming in the Middle-East around the end of Boreal stage has caused such a rapid change and cultural contact in the whole of Danubian and South-eastern European Mesolithic that a clear-cut delimiting of Mesolithic in this area often poses a problem.

Generally, Prehistorians divide the cultures of this period into two group, viz., Ceramic and Aceramic. That is to say, those which could be more logically ascribed to Neolithic (ceramic) and Mesolithic (aceramic) cultures but lacks conclusive evidence.

We might, therefore, discuss the Mesolithic under the following traditions. Some of these, on the basis of more accurate dates of the termination of Pleistocene, now available from the Baltic region, have been pushed into the terminal Palaeolithic.

i. Azilian: This tradition, on radio carbon estimation, is taken to have commenced around 10,500 B.C. It appears that the slow change of climate towards Holocene was effecting the reindeer in South-west France. This must have led to slowly increasing frequency of migration to the North. This change necessitated the Magdalenians to adapt to small animal hunting and fishing. The new tradition emerging out of this metamorphosis on maturity takes the shape of Azilian. In due course, this seems to have moved Northwards towards the Atlantic Coast from its original homeland in South France.

The cultural material of Azilian, therefore, shows close relationship with Magdalenian on the one hand and an increasing microlithization on the other. There are numerous backed blades along with usual microliths like points, triangles and lunates known from this tradition. The famous Azilian points (called Federmesser in Germany and pen-knife in England) and some small rectangular end-scrapers recall the Upper Palaeolithic types in form and technique.

A broad and flat harpoon (Fig. 19:19) with an oval eye pierced at the base forms the most important non-lithic tool type. North of the river Garrone, the Azilian sites show a number of micro-burins but the harpoons become rare.

Overall, Azilian industries are characterised also by a variety of painted and engraved pebbles, the functions of which, till
to date, remain more or less enigmatic. The paintings are mainly horizontal bands of rather thick streaks, crosses and spots. The paint used is mainly red ocher.

In some instances, these paintings tend to represent stylised human forms as well (Fig. 19:20). These could be used for some trading or may be indicating some magico-religious activities but unless found in association with more direct evidence, no theory regarding the function of these pebbles could be accepted.

The Azilian kind of industries with an evidence of having relationship with East Gravettian and developing in East Europe with a centre around Crimea is often referred to as East Azilian. This facies of Azilian is usually rare in both the French characteristic—harpoons and also the painted pebbles.

ii Tardenoisean: The Azilians lived mostly in the cave mouths or rock shelters and are usually found in a definite stratigraphy overlying the Palaeolithic industries. In the case of Tardenoisean deposits such a clear and definite stratigraphical sequence is almost rare. This is the most widely distributed microlithic tradition in West Europe. It is broadly believed to be of the same age as Azilian.

A later phase of Tardenoisean showing change in tool type contents could, therefore, be more appropriately counted as Mesolithic. It is believed that this tradition could be derived out of the Capsian industries of North France, perhaps, with a contact of the Sauverterrian of the same region.

These are all coeval local traditions represented by a small number of sites. In cultural features, the Tardenoisean is characterised by the introduction of geometric microliths predominated by trapezes. (Fig. 19:8-18). Harpoons and painted pebbles of the Azilian are rarely known. The other tool types include micro-burins and backed blades.

iii Asturian: This is a tradition known from the Cantabrian coast of Spain and North Portugal and is believed to have succeeded the Azilian of South France. This tradition occurs both in caves and also on open coast-lands buried in huge deposits of sea shells. It is a very atypical Mesolithic tradition and consists of rather big to medium-sized pebbles shaped into picks, and end-scrapers with unifacial flakings. The cultural
significance of this tradition within West European Mesolithic is not yet fully understood.

iv Sauveterranean: In South France around 8,000 B.C. a site called Saveterre-La Lemance shows the emergence of a full-fledged Mesolithic culture. This was formerly identified as Lower Tardenoisan. It seems to have spread to the North to Belgium, Holland, and even in England. In the East, some German sites and even some Swiss and Czechoslovakian areas seem to have had contact with this culture. This tradition is characterised by notched blades, which could be broken to form micro-burins, truncated blades, small blades retouched all around to form single or double points, triangular points, lunates, trapezes, borers and end-scrapers. It is largely believed that Sauveterranean may be representing a late Upper Palaeolithic derivative within Holocene.

v Larnian: This is a localized tradition named after the famous site of Larne in North Ireland. It shows the least influence of inland Mesolithic traditions. Basically, it has a clear Upper Palaeolithic ancestry. The tools consist of backed blades, end-scrapers, points, borers and burins. There are also some heavier tools incorporated in this tradition, perhaps during a later period. These include heavy flakes, choppers and picks.

vii Maglamosean: This tradition is named after big bog found in South Jutland in Denmark. It is known to have emerged in North Europe around 6,800 B.C. and may have survived well into the fifth millennium B.C. It represents pygmy end-scrapers, picks and backed blades with notched shoulders besides several microliths—except trapezes. The non-lithic component is very rich and contains several harpoons (with single row of barbs), fish hooks, eyed needles and varieties of other antler pieces. Some of the remarkable finds include antlers with stone tools hafted on them. Several adzes with well finished borders form another interesting feature. Since the earliest Maglamosian (also referred to as Proto-Maglamosian) is known to have occurred even in Pre-Boreal period, it could be quite likely that this represents yet another late Upper Palaeolithic survival within the Holocene period.

vii Kitchen-Midden: This is a tradition which is not only found around the Maglamosian area but is also more or less of
the same antiquity. This is so named because of its association with huge shell heaps. The Kitchen-Midden, though co-eval with the Maglamosean, does not yield the beautiful harpoons and bone points known in the latter. Further, in this tradition axes seemed to be preferred instead of adzes. Some of the Kitchen-Midden sites also yield ill-made and ill-fired pottery, hitherto not known in the other Mesolithic industries of the region. Trapezes, Lunates and other microlithic types are found in abundance. This tradition, like the Maglamosean, also yields a large number of antler tools but none of them warrant its relationship with the latter.

viii. Champignian: This tradition, mostly concentrated around North Europe, belongs to a period of around 6,000 B.C. to 4,000 B.C. The most significant feature of this tradition is recorded in the practice of pit-dwellings—convenient holes dug into the ground where men and women lived in the shelter of the walls of this hole. The cultural remains of Champignian is recovered from these pits. The tools mainly include medium to large-sized flaked axes, picks and small transverse arrowheads along with microlithic awls, scrapers and blades.

ix. Erthöll: This is a late and mature Mesolithic tradition of North Europe and occurs around 4,000 to 2,500 B.C. In stratified sites, in some instances, this is found overlying a Maglamosean industry. In typology also, this shows a close relationship with Maglamosean. There are several core axes and adzes made and the microlithic element is almost exclusively represented by trapezes. Burins and end-scrapers are the other stone tools found occasionally. Pierced antlers, points and adzes on antlers form the non-lithic tool types.

The most significant among the finds is a bone comb and some complete hand-made and ill-fired pottery. These include a lipless, point-based globular jar and flat dish with convex rim (Fig. 19: 1-7). The latter finds will indicate some kind of contact with a nascent Neolithic community in the neighbourhood (Funnel Beaker culture).

III. CHARACTER AND DISTRIBUTION

Mesolithic culture in West Europe shows maximum
divergence and also longer duration when compared with East Europe or Balkan states. This is specially because, on the one hand, it represents the Westernmost land limit of the continent and on the other that the early Holocene episode of land formation and submerging of North Europe influenced this region to a considerable extent. The Magdalenians, who were changing into Azilian, had for a considerable time remained in South France. The changes in the North and Central France were relatively faster. Here, the Tardenoisesans could consolidate on a larger area and hence could develop more varied experience to cope with the environmental change.

These Tardenoisesans in a short time expand over the Azilian area as well and develop a uniform Azilo-Tardenoisean tradition. This amalgamated tradition eventually discards the small and symmetrical harpoons and the painted pebbles of the Azilians. That the Tardenoisean did not develop from their Upper Palaeolithic predecessors alone is demonstrative in its similarity with the Capsian and Sauvetterrian of France.

Thus, there is no doubt that while Azilian had an autochthonous origin in South France Tardenoisean was developing through a metamorphosis of some short-staying local traditions of the North. The typical Azilian points were not the contribution of the Azilians but a legacy they had brought over from Palaeolithic culture. The North European Epi-Palaeolithic had also carried this tool types and both may have had a common ancestry. In early Holocene, the flat-land traditions of Epi-Palaeolithic stage start flourishing and expanding and in the process enter North France. Thus, North France Tardenoisean develops the Azilian in the initial phase.

Such traditions represented by few sites like the Obanian in Scotland or the Larnian of Ireland are believed to have some similarity with Azilian types. It would be more logical to take it as an extension of the English Creswellian into Holocene than visualize an expansion of the Azilians. So far, there is very little evidence to show if Azilians could reach Holocene in pure form. Even if, they did so, they could not have expanded much before amalgmating with the Tardenoiseans.

In North Spain, the Asturian tradition seems to be a local adaptation in the forest habitat. This, would specially appear
to be so because in East Spain and also in the rest of Spanish flat-lands and river valleys the Epi-Gravettian of the Grimaldian kind was smoothly changing over to the Mesolithic economy, with increasing microlithisation.

The mature Tardenoisians of West Europe seem to have moved in all directions and incorporated changes wherever they came in contact with the already extant local cultures. As far as in the East as Ukrania in Soviet Union is known to have recorded the Tardenoisan impact. That in the Central Europe and East Europe, the Epi-Palaeolithic Swidrian had already a good hold is demonstrated by the amalgamated Tardenoisio-Swidrian industries recorded from these areas. The Kunda culture of this region may have resulted out of this early Mesolithic phase. By this time these North European traditions had incorporated a fair proportion of large pebble choppers, picks and at places even antler tools.

The Norwegian Komsa and Fosna tradition represents an arctic adaptation of the late Palaeolithic extension within Mesolithic like the Sauveterrians for the flat-lands of France. Evidently, these demonstrate very little contact with the microlithic traditions of the neighbourhood.

Further South, in the Danubian and Carpethian region, there is hardly any proper Mesolithic culture identifiable. It is the Epi-Gramaldian type, which meets a full-fledged Neolithic migration from further East at a time when Tardenoisan was just consolidating in the North.

Around 6,000 B.C. North Europe witnesses the emergence of a number of distinct traditions. Of these, the Maglamoisean and the Ertböll are the two most predominant ones. As contrast to these two progressive traditions, which show development through time and space, Campignian and Kitchen-Midden are two other extremely divergent but local traditions which survive in restricted regions within the North European coast-land.

In Denmark, the symbiosis of the tanged group of traditions of Central Europe gave rise to another progressive culture named Lyngby tradition. Maglamoisean, had apparently developed in Denmark and South Sweden. It is believed that it has an independent origin traceable to probably early Holocene. During the period of Azilo-Tardenoisan expansion,
Maglamotoan seem to have remained restricted merely to Denmark and Sweden.

It is only during the subsequent period that the Maglamotoan started expanding. In the final degree of expansion they seem to have even exceeded the Azilo-Tardenoisean extent. Maglamotoan is known from North-east Yorkshire in Great Britain in the West over North Germany, East Baltic, Poland and White Russia to Urals in the East. The *Kunda* culture in the East Baltic region, it is believed, had a considerable contribution of the Maglamotoan tradition—perhaps, transplanted over the Terdenoisio-Swidrian.

Starr Carr is one of the most famous excavated sites belonging to this tradition. At Starr Carr, besides the usual triangles, lunates, burin, backed blades and end-scrapers, a large number of pointed antlers worked into several kinds of barbs all along their length (single row) form an interesting feature (Fig. 18:1-5). It is also at this site that the first evidence of a domesticated dog was claimed (There are some authorities who on examination of the canine skull have expressed their doubt about it being a domesticated species).

From the continent Maglamotoan has yielded some very well finished Axes on flint (Fig 18:9-10). Shouldered points of the Azilo-Tardenoiseans are either absent or rare in this tradition. Maglamotoan occupies almost the middle position in the duration of Mesolithic in Europe. At many places, like in Great Britain, it is believed to have continued till the Atlantic phase (5,000-3,000 B.C.) and finally gave rise to the Neolithic culture.

In Central Europe, the Ertebölle tradition takes over from the Maglamotoan and continues to finally give rise to the Neolithic of the region. This final Mesolithic phase shows definite evidences of Maglamotoan contact or contribution to its origin in some of the stone tools at least. With its centre at Denmark, this tradition is found to be occurring usually in the huge mounds of shells and bones popularly called Kitchen-Middens in prehistory. The blade end-scrapers are better made (when compared with Maglamotoan) and the trapezes are much more elongated (and hence more appropriately called transverse arrow-heads) in this tradition. Backed blades, lunates and triangles form the other microliths.
The most important find of this tradition is the 45 cm. high earthen pot prepared by coil technique and with finger pressed decoration at the rim in some cases. The presence of pottery and the absence of the variety of hunting harpoons make the tracing of the origin of Erzböll entirely from Maglamosean a problem.

Since cultural material of comparable types are known from a comparatively earlier date from the Dnieper valley and Crimea in the Soviet Union, it may be tentatively surmised that the main contributing force of Erzböll reached Denmark from these Eastern centres through the route of White Russia and Prussia.

The Central region of Europe (mainly France and parts of Germany) during this phase continue with Campignean culture.

Finally, it must be added that Man in Mesolithic cultural period, although belonged basically to a hunting and gathering group, he had already changed his mode of hunting to such an extent that his entire way of living had to be drastically changed. Fishing and bird hunting requires relatively lesser dependence on group co-operation and hence almost every member in a hoard could hunt individually. The maintenance of a smaller group brings about closer interpersonal relationship within the group and also the knowledge of independent collateral groups. The lack of risk for both life and booty in small scale hunting brings about tolerance and harmony between two groups.

This may have laid the foundation of exogamy as a social institution for the natal groups. It is difficult to deny exogamy in Palaeolithic period as well, although at this level, at least logically, there is more likelihood of the beginning of this fixed norm shared by all present human races.

There are more direct evidences, in the form of some rock paintings—for instance at Cogul in Spain—of the beginning of clothing used during this period. Whether these were textiles prepared out of wild cotton is difficult to demonstrate until a much later date. These were for women in the from of bell shaped wraps which extended from the waist to the ankle or a little short of it. The upper body used to be naked but covered
with ornaments in the arms and neck. The men are mostly shown as completely naked.

Another important development demonstrable was the invention of the bow. Although, so far we have no direct evidence to prove this except through rock paintings—for instance, the war scene depicted in Les Dogues in Spain. It is also seen from these paintings that inter-group wars must have been a frequent occurrence and also that these were fought mainly with bows and arrows.

In short, with his first leap into the advanced technology of efficient missile invention, Man also performed the "duty" of maintaining his population size by killing his own people on a large scale. May be, this is the rule of nature which goes hand in hand with advancement of technology. Who knows?
CHAPTER SEVEN

EPILOGUE

What rings the humanizing force in the evolving hominids is a question which has so far not been satisfactorily answered. Although in the urgency of objectivity, empirical data have been collected on endocranial impressions and various relations of behaviour with neurological changes have been demonstrated. Nonetheless, whether behaviour brings about changes in neurological details or it is the reverse, remains unanswered. The normal assumption, however, is that physiological changes in man are caused by the pressure of changing environment and these changes in turn release the ability to change behaviour. That is, if the earliest ancestors of man did not have to leave the tall trees where he was happily brachiating, he would not have been caught up with the chain of changes which culminates in the modern man.

Whether a stage of neurological change was already prepared in our earliest ancestors or it came only after he adapted to the earth and thus caused the erect posture, which in turn led to the hands being freed, foramen magnum shifted and the brain developing in appropriate directions—causing the culture-making ability, is difficult to ascertain.

I call this book on prehistory as The Emergence of Culture in Europe on the basis of the assumption that there really was a kind of emergence as far as archaeological evidences go. Speaking at a philosophical level, there may not have been any such emergence in human culture in the real sense of the term.
Culture is something of an ever-emerging process of which we have been able to make a reasonable comprehension within our frame of pre-defined scale. Obviously, the title of the book is wrong when looked at from this standpoint. But alas, we cannot prove that we are wrong. This is because one of the basic dictums of the modern world which forms the foundation of our civilization is to look for proof for every phenomenon. In other words, we will have to call the first tangible evidence of human workmanship as the proof of the emergence of culture.

From the various evidences we have gone into in the preceding chapters we are reasonably certain that man—even in his remote *erectus* stage—was not wandering about aimlessly in small groups. True, that we have such sites as Vallonnet and Montiers, which indicate a very small group with probably minimum activity, if the total number of artefacts recovered are any indication of the total activity.

Yet, we also have such evidences as Terra Amata, Clacton-on Sea and Bilzingsleben (though it may be of a later date), which not only indicate a greater activity but also the ability of constructing dwelling structures, the ability to live harmoniously in a large group, the knowledge of fire and using a larger variety of environment than is otherwise demonstrable from remains elsewhere.

In other words, here we seem to be already dealing with a culture in full swing and that too as early as 200,000 to 300,000 years ago.

That man has inherited the ability to develop the minimum normative behaviour required for living in a group is well demonstrated by primate ethological studies. Ethnography, on the contrary demonstrates that this inheritance of group living has been given symbolic ascriptions by man. A Prehistorian naturally seeks to find out that stage in the process of humanizing where man has added his symbolisation into group living and thus mark the emergence of *human* society. The large number of hut remains at Terra Amata may be merely able to demonstrate that man need not have wandered aimlessly in the Lower Palaeolithic period as earlier commentators thought.

The evidence of group hunting at the Sierra ranges in Spain almost decidedly hints at the possibility of a language developed
enough to plan the hunting of wild elephants in hundreds. It is but obvious that such planning required the knowledge of seasonal migrating habit of wild animals. Further, to be able to catch them at the narrow crevice at an altitude shows the possibility of a more advanced communication media than what can be allowed in the lower primates. The possibility of some kind of mystic symbolism cannot also be entirely ruled out when the scratches on bones at some of the Lower Palaeolithic sites are considered.

In other words, that culture evolved with all the attributes that sustain it from as early as its time of emergence has to be entertained as a strong possibility. This need not, however, be taken to negate the possibility of wandering groups existing at the same time in almost as primeval a stage as the lower primates.

After all, man is even today known to have lived as an animal in case of extreme conditions—like survivors in an air crash or shipwreck marooned in inhospitable regions and cut off from civilization or for that matter war fugitives, spies and guerrilla fighters. May be, it is this group of marginal survivors who keep up the trend of change through migrations and hence, leading to fresher adaptation to new eco-systems.

The large period of time (nearly 8,00,000 to 9,00,000 years) through which the Lower Palaeolithic authors remained unchanged is archaeologically significant. This is specially because within this long stretch of time, Europe had twice (if not more, if the various stadials and interstadials of Mindel and Riss are disregarded for a while) experienced extreme cold and hot climates. The stresses on the eco-system and hence on man’s way of living during these climatic extremes were by no means less. Neither was man’s technological ability that much advanced as to cope with these extremes without changing his lifestyle.

In other words, if, inspite of this, man did not change his culture to any significant degree, it would only imply that the need of man during this period was in such a minimal level that he could always survive with minor adjustments and migrations. Consequently, it would appear that the human population must have been significantly low in comparison to wild life even in extreme conditions. The real stress on culture,
therefore, will appear only with reaching a population level, which can just about balance the minimum ecological potentiality.

It is important to realize that the optimum food potentiality of our environment will reach the day when we will be able to convert inorganic nitrogen salts into organic proteins. New technology gets maximum favour when existing technology fails to adequately meet the requirements.

Consequently, in prehistoric methodology the, adoption of a new technology (it is not merely discovering a technique because the potentiality of a new technique is best realized when it is adopted) can be taken as an indicator of ecological pressure. The Levalloise technique, in this regard, serves as the first evidence of such a pressure in South-east England and North Europe. In South France, or for that matter, in South Germany even if this technique was known, its dispensibility hints at the relatively lesser pressure of the environment. Alternately, it could also indicate the shifting of emphasis on non-lithic material, but such a possibility for other areas can not be also denied. It appears that the open riverine plains like Thames, Somme, Dnieper, Don and Dniestr are some of the areas where such pressures were more acute.

During Middle Palaeolithic stage, experimentation to evolve a better technology becomes a common feature even in those areas like Slovakia and Slovenia, where Levalloisean technique was not popular. A large number of new types start occurring. These can obviously be taken as indication of man’s penetrating hitherto unexplored aspects of his environment. Alternately, they could also be demonstrating man’s attempt at increasing his production within the known environment. Whichever be the actuality both tend to indicate the increasing pressure on survival.

It is in this phase that we start finding direct evidence of his emotions and his mind. The latter is indicated in various cults he practises including his funeral goods. The association of phenomena and their rationalization with successes and failures of life are inbuilt factors of a society or group under pressure. (The increasing dependence of the Western society on star foretelling against both scientific and Christian sanction can be cited
as one of the examples in the contemporary context). Middle Palaeolithic culture shows some direct evidence of the presence (here again we avoid to use the word *emergence*) of such reasonings in the prehistoric mind).

Perhaps, such reasonings do not take the shape of a complicated ritual until the Upper Palaeolithic period. It is also in this period that we find man to be most migratory in his urgency to seek an ecological balance with his needs. Fission and fusion must have been a natural consequence of this. Man attempts to settle for fairly good time in areas of his choice (Molodova settlements with numerous hearths) and moves out again when the population becomes too big for the area.

In the Upper Palaeolithic period, a break-through is witnessed in technology. For the first time, bones seem to have been extensively used as raw material for tools as often as fuel for fire. This change immediately opens an entirely new range of possibilities in types. The harpoons, bone points, blood-running-grooves on antlers and fishing hooks are some of the evidences of this remarkable leap in technology.

However, that such an advancement in technology did not completely wipe out the usual insecurities of a group completely dependent on uncontrolled environment, is evidenced by the fact of the burst of symbolic art in this period.

Fortunately, the ending of the climatic extremes at the end of Pleistocene allowed the Upper Palaeolithic population to meet their ever increasing population pressure on the environment which started changing favourably at this point.

This, however, called for drastic changes in life style but man had already learnt to adjust on environmental demands. That he could successfully adjust to this totally changed face of the earth is well demonstrated by the presence of our civilization.

In the Mesolithic period, man learnt to break up into smaller groups and concentrate on the hunting and trapping of selected animals. He has already realized the potentiality of certain areas or regions in his neighbourhood where he could regularly visit to bring his animal and vegetable food. Sea shells came as a very secured regular supply and so did varieties of roots and tubers which were suitably harvested. Man had already “domicicated” plants in real sense. The tool kit from this period
indicates how the *mass* is dropped in favour of *efficiency*. Effective planning and mastering of fluting technique soon changed him into a good hunter with projectiles.

When looked back at the Lower Palaeolithic tools from this juncture, the Mesolithic tools appear much simpler to produce and yet much less clumsy. The division of small bands and also the increase in number of such bands must have for the first time brought in the element of possession and avarice in man. It is quite likely that he had to often indulge in inter-group fights over a patch of coast-land or clump of bush with a large food potential (for the right to harvest). His symbolic art disappears completely and perhaps gets more complex with values and unseen controls ascribed to individuals or objects of the environment.

Security in food supply and also the advantages of a surplus may have led man to give birth to the earliest capitalistic step—procuring the right over people/objects in order to derive power over others. This power is so far visualized only as economic advantage but may well have been the root of the present problems between countries and within a country between “have” and “have-not” in our civilization. The study of prehistory can clearly demonstrate the causative relationship of group behaviour in our society.

Man faces the crisis of existence from the day of his emergence out of the brachiating stage. At each stage, his struggle is limited towards controlling the uncontrollable. In the process he has long surpassed the environmental hurdles and some 10,000 to 8,000 years ago, he has unconsciously entered into the field of controlling his fellow members of the species, nationalism, ethnocentrism, racism and finally ideologies have been erected to establish or define economic units. These divisions have never played the fair game of equally dividing the environmental resources. Hence, the cultural progression of these small human units took to different trends depending on the environment within which they grew.

Consequently, Europe had to strive for newer technologies in more urgent a way than most of Asia or Africa had to. The absence of advanced technology in the latter regions kept them as most vulnerable to colonization by the countries with better
technology and less of food variety within their environment. Colonization convinces the colonizers that it is the technology which is the "Lamp of Alladin" and hence technology for the quest of food alone was rejected as a myopic stance of our ancestors.

One need not develop methods to grow rice and banana in a region where they do not grow. One needs developing technology to colonize countries where they grow. With this realization started the race of technology of warfare and by the time this book goes to print, Europe may well be fitted with rocket-heads of Neutron bombs which kill by radiation. (This specific instance is of the enmity of two contestants for friendship with countries of lesser technology). Therefore, through the supremacy of technology and display of power, man has started buying off better regions (in modern dictionary called variedly as friendship or alliance).

One can naturally ask, where will all this lead man. A prehistorian can only see a very alarming future. This is primarily because prehistory establishes the man-environment equation. Uncontrolled environment for raw exploitation of food will perhaps be totally eliminated from this planet before long. This will deprive trillions of both supra and sub-microscopic insect colonies of their host environment. These will perish by million causing harmful disequilibrium in the organic cycle.

Yet millions more will seek a hostage within man-made environment (agricultural crop or man himself in the manner Daphne du Maurier forsees in her short story called "Birds").

Either way, man will loose. On the top of it, war technology will help man cripple his population with incurable chromosomal aberrations.

A prehistorian can, therefore, see the terrible possibility of man exterminating his own spices with the same technology which enabled him to come out of his most trying days in the past.

A slightly optimistic stand is taken by some futurologists who feel that man will be capable of creating a new environment with his technology and thus maintain his equilibrium. Only the future historians will be able to take stock of this situation. At the moment it will appear that we should already start the count down.
GLOSSARY OF IMPORTANT PALAEOLITHIC SITES

LOWER AND MIDDLE PALAEOLITHIC

1. Abbeville (Somme Valley)
   Situated in the upper middle terrace (iii) of the Somme valley succession. Known from 1875 but methodically excavated by Breuil in 1939.
   Faunal Remains indicate the Cromerian period. On comparative stratigraphical grounds ascribed to the early part of Mindel/Riss interglacial.
   Cultural Remains: 2000 to 3000 bifacial implements. The tools are patinated. Handaxes are massive, non-symmetrical, wavy edged and rough. Flakes are thick and carry little retouchings.

2. St. Acheul (Somme Valley)
   Stratigraphic occurrence of a lower to middle Acheulian industry from the lowest deposit onwards of the lower middle terrace.
   Dating not very precise, but taken to belong to middle to end phases of Mindel/Riss interglacial.
   Cultural Remains: In the lowest level, atypical handaxes and flake implements. Subsequent deposits yield typical form of Acheulian handaxes including lanceolates, ovates and cordates. Flakes are prepared by levalloisian technique and include a variety of scrapers. Denticulates and burins are also recorded.
   Final Acheulian assemblage yields lanceolates, triangulates
and cordates. Flake tools include discs, scrapers, denticulates, burins and notches.

3. Achstyskaja I (Soviet Union)
   Cave site north east of Black Sea. First excavated by Zamjatin in 1938.
   Seven layers are identified. The third, fifth and sixth layers yield Mousterian industries. The sixth layer from the top is ascribed to early Würm.
   Cultural Remains: The bulk of the tools is a variety of symmetrical side scrapers with extensive border retouchings. Thin points are shaped out of levalloisean flakes. Backed knives, end scrapers are also known. Some bifacially worked handaxes, without much retouchings, and discoidals also occur.
   No typical points, burins and borers.
   Fire hearths are also recorded.

4. La Adam (Rumania)
   Cave site along the river Casimcea, described by Samson and Radulescu (1959).
   The Middle Palaeolithic layers are ascribed to early Würm.
   Cultural Remains: The Middle Palaeolithic industry is termed as late Mousterian and includes flakes and flake cores. Tool types: side scrapers, points and scraper-cum-points. No specific attempts to prepare pre-designed shapes are demonstrated.
   Also fire hearths.

5. Asprochaliko (Greece)
   22 metre long rock shelter along Louros, described by Higgs and Vita-Finzi (1966).
   Two groups of industries, Mousterian and Micro-Mousterian, are identified. One available radiocarbon date is 39,900 B.P.
   Cultural Remains: Discoid cores, scrapers, straight, convex and concave side scrapers and some end scrapers are the general types identified. Levalloise flakes are rare. No Blattspitzen. Retouching on flakes are similar to those of Kokkinopilos. (No. 21).
   Also several fire hearths.
6. **Balver Caves (W. Germany)**
   Cave site known from 1844, reported by Günther in 1966. Lower levels yield Lower Palaeolithic industries. The Middle Palaeolithic industry from this site is termed as Balver IV and is dated to Würm I or to the beginning of Würm I/II interstadial.

   Cultural Remains: Several side scrapers with curved borders on bladish flakes. Points are symmetrical and are retouched on both borders. Flat squares or rectangular flakes with all four sides retouched into scraping edges are also known. No handaxes. There seems to be an emphasis on points.

7. **Bilzingsleben (E. Germany)**
   An open air site in Halle District being excavated by Mania D.

   Ascribed to Holstein.

   Cultural Remains: Numerous flakes and cores, some antler picks and deliberately split bones. Charred bones are recorded but no direct evidence of hearths is so far known.

   Skull bones of *Homo erectus* is found in association with the tools.

8. **Bockstein (W. Germany)**
   A group of five sites (rock shelters and caves) along the Lone Valley. The entire Bockstein material was published in 1969 (Wetzel and Bosinski).

   The industry is classified in Bockstein I to VII. Bockstein III belongs to middle period of Eeminn, and is called the Micoquan. Bockstein IV and V is designated as Mousterian while Bockstein VI and VII as Upper Palaeolithic.

   Cultural Remains: A total of 2791 artifacts are described as Bockstein III. Nearly a fourth form finished tools. Tool types are Micoquian handaxes, triangular almond shaped handaxes, Bockstein knives, bifacially worked side scrapers, Blattspitzen.

   Small number of bones and antlers are also found.

9. **Clacton-on-Sea (Thames Valley)**
   Situated in the exposed channel beds of the Thames in eastern Sussex, first reported in 1898, subsequently excavated by

Ascribed to the later half of Hoxne interglacial.

Cultural Remains: Flake tools are struck both by stone hammer and also by anvil technique. The flakes carry a prominent bulb of percussion and a high flake angle. Evidence of secondary retouchings. Tool types are hollow scrapers and pointed tools.

Core tools are choppers and chopping tools.

A fragment of wooden spear 33 cm long, slightly curved and rather thick. Some bone pieces are also described.

10. Combe Grenal (Dordogne Valley, France)

A cave site with more than 10 metres cultural debri having 64 cultural levels. Excavated by F. Bordes (1972). The period of occupation extends from end phase of Riss to Würm-II. The lowest layer is Upper Acheulian and the topmost four layers yield Mousterian of Acheulian Tradition. The inbetween layers contain all the four facies of Mousterian in such a manner that no pattern of succession is identifiable.

Special features: A 20.6 cm. long, 3.8 cm. in diameter posthole and a roughly circular pit—probably a burial of a newborn, to explain the absence of bone.

11. Crvena Stijena (Yugoslavia)

Rock shelter facing the valley of Trebisnica, excavated by Benac and Brodar (1958).

The lowest 8 layers are attributed to the advance of Würm I.

Cultural Remains: The bulk of the industry consists of side scrapers of various kinds, prepared on flakes, points, scraper-cum-points, and blades. The scrapers are mostly convex side scrapers. The points are prepared on triangular flakes. One micro handaxe, 3 cm. long is a special feature. Generally the size of the tools are small (2 to 4 cm long). Levalloise technique is rare.

12. Devil’s Tower (England)

Rock shelter in Gibraltar excavated by Garrod (1928), seven layers counted from surface. The lowest layer is dated to Würm I.
Cultural Remains: Layer 1 yields a large number of animal bones, broken and burnt. Fragments of charcoal were also found. Very few flakes.

Layer 2 has larger number of implements, bones and charcoal. Layer 3 record, a well marked hearth. A large number of implements but few finished tools. Probably this is the working floor of the group. Occurrence of a number of sea shells and a shark tooth. Layer 4 yields bones and stones and a skull of 5 year old male child (La Chappelle type). Layer 5 has some small hearths and animal bones. Layer 6 records sea worn pebbles. Layer 7 is raised sea beach.

Altogether 500 stone implements are known. Tool types are side scrapers, blades with marginal retouchings, discoid cores, levalloisean points, few burins, curved points of Abri-Audi type and some well finished end scrapers. No handaxes.

13. Ehringsdorf, Weimer and Taubach (E. Germany)

Riverine site near the town of Weimer. Among others Behm-Blanke describes the finds (1960).

A generalised stratigraphy gives 8 layers. Layer one is ascribed to Riss, 3rd and 4th to Eeminn, 6th to 8th covers the period from Würm I to Würm II.

Cultural Remains: The Mousterian industry is described from the Eemian deposits. Taubach has given some human teeth and Ehringsdorf some skeleton parts of Homo sapiens Neanderthalensis. Mousterian assemblage is associated with fire hearths.

Tool types: Convex and angled side scrapers and curved knife mostly prepared on levalloisean flakes.

The other types include denticulates, trapezoid chopper like flakes, high backed side scrapers, awls, notches some ‘Tayacian’ type points and some antlers.

Ehringsdorf represents a developed form of Mousterian though occurring at an earlier period. Tool types of Ehringsdorf include large number of double points, side scrapers, and typical levalloisean points. Some points have a tanged butt end. The points echo Aurignacian and Solutrean types.
14. Erd (Hungary)

Open air site covering an area of 214 sq.metres, south-west of Budapest. Report published by Gabori-Csank ('68).

First ascribed to Brörup/Amersfoot stages. Radiocarbon dates give much younger age.

Cultural Remains: The lower archaeological level yields only 15 finished tools. Types: convex, canted, transverse side scrapers, chopping tool.

The upper archaeological level gives variety of side scrapers, a limace, flakes are not retouched, points, discs, levalloisean retouched flakes, denticulates, serveral chopper/chopping tools.

Some bone and antler pieces with apparent shaping.

Charentian facie of Eastern Mousterian.

15. Ganovce (Czechoslovakia)

Open air site in north west Slovakia. A description of the site come from Vlcek (1949).

The Middle Palaeolithic industry is recorded from the upper travertine deposit which is dated to a temperate phase preceding Würm I (Brörup-Amersfoot).

Cultural Remains: Large number of side scrapers, points, notches and denticulates. In general the industry shows an overallcrudeness of technique which could be attributed to the hard raw material-quartz.

An endocranial cast of 'Eastern Neanderthals' was found in association with the Mousterian assemblage.

16. Gorham's Cave (Spain)

Cave site on the shore of Gibraltar. Full scale excavation in 1948 (Waechter).

Nearly 21 layers have been identified. The four levels of Mousterian occur in layers 6 to 14. Layers 6 & 7 are dated to Würm II and the rest to Würm I.

Cultural Remains: The uppermost layer (6th) yields two small burins, large number of side scrapers on normal as well as Levalloisean flakes. Also occur long blades, points, end scrapers and notches.

The rest three Mousterian levels are uniform and consist of
shapeless tool pieces. Levalloise technique is present. Finished tool types are side scrapers, points, small blades. Retouching of the edges along the bulbar surfaces.

17. **Gudenus Cave (Austria)**

Cave site along the Danube valley first reported by Hacker in 1884.

Two archaeological horizons are identified. The upper horizon is designated as Magdalenian and the lower horizon associated with Mousterian assemblage is datable to Würm I.

Cultural Remains: Handaxes, ovoid, cordiform, flat predominate. These are similar to the Acheulian type. Besides handaxes, there are side scrapers on triangular flakes, cutters, symmetrical points, bladish flakes.

Gudenus is taken to be a late survival of an Acheulio-Mousterian stem of Central European Lower Palaeolithic.

18. **I'pskaya (Soviet Union)**

Open air site around Black Sea coast. Klein (1967) reports the summary of the finds in English.

Two cultural levels are identified. The lower level attributed to the terminal phase of Eeminn and the upper level to Brörup-Amersfoot.

Cultural Remains: Both levels show a high frequency of levalloisean elements and bifacially worked points. Tool types: various kinds of scrapers, levalloisean flakes, discoidal cores, miniature handaxes, some Blattspitzen. The upper level contains many hand-point, Blattspitzen, some primitive burins, blades, prismatic cores.

19. **Karstein Caves (W. Germany)**

Two caves and several rock shelters on the Eifel range. Discovered in 1880 and excavated by Rademacher in 1911.

8 different layers and three industries. Karstein I industry is dated to the beginning of Würm.

Cultural Remains: Layer 4 from below yields large number of typically Mousterian implements. Tool types are broad triangular flatish points with plano convex retouchings, broad side scrapers, points, smaller knives, high backed side scrapers,
double side scrapers, double points, denticulates, notches and awls. Retouchings are of a different kind than the French Mousteri-an. There seems to be a preference for working on large flakes.

20. Kiik-koba (Soviet Union)
   Rock shelter in south Crimea, an English summary of the finds by A. Golomshtok (1938).
   On typological grounds the occupation of the rock shelter may be put anywhere between the beginning to almost 2/3 of Würm. Two groups of industries identified.
   Cultural Remains: The lower group has side scrapers, points prepared by partial retouching of the convenient border of any flake, some bifacially worked cores, handaxes. Also some partially charred bones.
   The upper group yields canted side scrapers, convex, straight, concave side scrapers, points, burins, end scrapers. The points are described as Tayac points. Levalloise flake virtually absent. Longitudinally split bones are also found.
   Evidence of Neanderthal burials.

21. Kokkinopilos (Greece)
   A stretch of open air sites in the valley of the river Louros. Higgs (1964) describes the finds.
   The earliest industries of the site could be dated to a period before Würm II.
   Cultural Remains: The Middle Palaeolithic tools include straight, convex and concave side scrapers, prepared on flakes. Blattspitzen, some blades, Mousteri-an cores. Evidence of developed Levalloise technique. One handaxe.

22. Konigsau (E. Germany)
   Open air site on the lake Aschesleben. Mania and Toepfer have edited the findings of this site (1973).
   The cultural layers called Königsau A, B, C are described from layers 8, 11 and 14 from below. Königsau A has a radio-carbon date of 55, 800 B.P.
   Cultural Remains: Königsau A: 1485 artifacts are described of which 1357 are flakes. Tools types: Small and broad flat
handaxes, retouched with long symmetrical flake scars; side scrapers on thick flakes with convex or double straight working edge. There is a tendency to retouch the ventral surface.

Königsau B: 93% of artifacts are flakes. Backed blades and levalloisian points are more frequent and comparable to French Mousterian types. Borers are also present. No handaxes and burins. Side scrapers are rare.

Königsau C: Handaxe, side scrapers in high frequency, and burins are present. Discoid type scrapers present in B are absent. Backed knives are scarce.

Besides stone artifacts, some wooden and resin pieces probably used for hafting stone tools.

Königsau A and C is taken to belong to “Central European Micoquian” tradition, while B seems to be a “variant of the Mousterian without bifacial working”.

23. Kulna Cave (Czechoslovakia)

Cave site in the Carpathian ranges. First reported in 1880. A recent report is by Valoch et. al. (1969).

The earliest depositions at Kulna are ascribed to a warm period before the final glaciation.

Cultural Remains: The Middle Palaeolithic layer is the lowest layer. It has yielded flake tools, side scrapers and points of various types similar to the ‘Tayacian’ of France. Absence of Levalloisian technique. In the subsequent layer is found a typically Mousteroid industry. Tool types: late Acheulian handaxes of Micoquian type, triangular hand points, side scrapers, discs and some borers.

24. Lehringen (W. Germany)

Open air site by the river Aller. Reported by Jacob-Friesen in 1956.

It is placed to a warm Riss/Würm interglacial stage.

Cultural Remains: Nearly 25 flint tools, all small flake tools (less than 7 cm in length) showing evidence of levalloisian technique. Tool types are mostly side scrapers with steep retouchings.

2.5 metre long yew wooden lance, end pointed and hardened by heating.
25. Mauern Caves (W. Germany)

A chain of four caves along the valley of Welheimer. First excavated in 1937 and later described by both Bohmers (1951) and Zott (1955).

10 different layers have been identified, most of which are sterile. The earliest industry is dated to the closing stage of Würm I.

Cultural Remains: Mauern I is typical Moustierian industry with large number of side scrapers, convex side scrapers, crudely finished points, some levalloise points and bladish flakes, and denticulates.

Mauern II contains large number of double points extensively retouched along the working edges. Besides these Blattspitzen, side scrapers, knives and some awls also occur.

26. La Micoque (France)

Rock shelter on Vezere known from 1895, excavated by Peyrony (1938).

Fourteen strata with six industrial levels are identified. The lowest three deposits are described as “Tayacian”, while the next two deposits are “Mousterian” and “Micoquian”. Tayacian levels ascribed to late Riss while Mousterian and Micoquian to early Würm.

Cultural Remains: Tayacian is a flake industry, and contains side scrapers minimally retouched, and various irregularly shaped flakes. Some cores are retouched towards a pointed end and small handaxes.

Mousterian levels contain side scrapers and points and few cordiform handaxes.

Micoquian industry is represented by cordates, triangles and typical Micoquian handaxes, and flake tools of the type occurring in Mousterian industry.

Prof. Bordes thinks that level 1 could probably belong to Mindel and levels 2, 3, 4, 5 definitely to Riss and level 6 to Würm.

27. Molodova (Soviet Union)

Open air site on the terrace of Dniestr river. Kard’l summarises the finds (1963).
There are several Palaeolithic sites. Middle Palaeolithic occupation in Molodova is attributed to Brörup interstadial.

Cultural Remains: The Middle Palaeolithic tools from this site include *levallois flakes*, *typical levalloisean points*, *simple convex side scrapers*, *backed knives*, *notches and denticulates*, *atypical burins, discoids*. There are also some bone pieces with apparent marks of use. Several fire hearths in an oval arrangement of mammoth bones indicate habitational structure, earliest in this region.

28. **Le Moustier (France)**

Two rock shelters on the banks of Vezere; known since the last century, significantly excavated by Peyrony (1930) and Bourgon (1957).

Earliest deposits seem to belong to early stadials of Würm. 8 depositional layers have been identified.

Cultural Remains: Lowest level consists of a variety of flakes shaped into triangular points, side scrapers and discs. The next fertile layer yields an industry of flakes with bifacially trimmed cordiform handaxes. The succeeding layer yields a number of cordiform axes flake points, side scrapers and knives. The last Middle Palaeolithic layer gives flake blades, convex side scrapers and unretouched flakes. There is also evidence of fire hearths.

The lowest level represents a typical Mousterian or Ferrassie Mousterian. The next assemblage was described as Quina type and finally the one immediately below the Upper Palaeolithic is described as Mousterian of Acheulian Tradition (Mellars, 1969).

29. **Nove Mesto (Czechoslovakia)**

Open air site in West Slovakia, worked in detail by Kukla et al. in 1961.

Nineteen layers with two cultural complexes identified. The lower complex, derive from the lower eight layers and the upper complex from layers 3 to 8 form the surface. This site preserves geo-chronological succession along with cultural remains from as early as Clactonian through Levalloisean, Mousterian, Szeletian to Gravettian. The Mousterian layer is
ascribed to the peak period of Eeminn interglacial.

Cultural Remains: The Mousterian tools are neither large nor varied. One important piece is a 6 cm. long Mousterian point with an extra-ordinary high curved back.

30. **Ohaba-Ponor (Rumania)**

Cave site in the locality of Hunedoara, described by Nicolaescu-Plopsor (1955).

Middle Palaeolithic industry is described from five layers and is ascribed to the cold phase of Würm I.

Cultural Remains: The industry described is mostly on flint and quartzite material and are found along with bone remains and ash dumped in the fire hearths.

Tool types: 2 Amygdaloid handaxes, elongated flake cutters, side scrapers and points (in plenty). The retouchings are slanting and are along the working borders. The points are on assymetrical triangular flakes.

Also found some phalanges of *Homo sapien Neanderthalensis*.

31. **Pinhole (England)**

Cave site in Derbyshire. Excavated by Armstrong (1931).

There are 7 stratigraphic layers of which layers 7, 5 and 3 yield Mousterian industries. They cover the time span of late Eemian interglacial to Würm III.

Cultural Remains: Mousterian 1 (layer 7) consists of both rough and well finished handaxes and some flakes similar to Clactonian and Tayacian industries. Mousterian 2 is “Typical” and includes variety of side scrapers and points.

Mousterian 3 apart from usual tool types, also has some bone implements identified as “bull Roarers”.

32. **Propst (Prepostska) Cave (Czechoslovakia)**

Cave site known as Bojnico I is situated in the city of Bojnico where two more Palaeolithic sites are found. Reported by various authors.

The site is dated to a period after Würm maximum was over.

Cultural Remains: Large collection of stone tools, flakes and
some bone pieces which were used as anvils.

Tool types: Typical Mousterian points, retouched triangular flakes, bladish flakes, side scrapers and discoid flakes and some irregular flakes.

The artifacts are quite big (8 to 10 cm. long) and are extensively retouched. Most representative of Middle Palaeolithic of Slovakia.

33. Quinzano (Italy)

Open air site near Verona excavated by Zorzi and Pasa (1944-1945).

7 Deposits are described by the authors. The third layer from the bottom yields Mousterian industry and is ascribed to the later half of Eemian.

Cultural Remains: A number of symmetrical points on levalloisean flakes with bifacial as well as unifacial retouchings, side scrapers retouched in the manner of Quina. Typical core scrapers are absent.

This industry is comparable to French Charentian of Quina facies.

34. Salzgitter-Lebenstedt (W. Germany)

Open air site excavated by Tode (1953).

Dated to Würm I. C14 date 48,3000±200 B.P.

Cultural Remains: 200 finished tools. Tool types are: flake handaxes with unifacial retouchings, triangular and oval handaxes. These often have small side scraper like secondary retouchings along the border. Besides these, bifacially worked side scrapers, points, levalloisean points, elongated bladish flakes. Also some ‘Clactonian flakes’. One antler pick, 10 points on mammoth ribs, and a small barbed bone point.

35. Salzofen Cave (Austria)

Cave site on the Totem ranges of the Alps, excavated by Ehrenberg (1958/59) and also described by Maria Mottl (1950).

Date controversial. First ascribed to Eemian now taken to belong to Würm I/II interstadial.

Cultural Remains: Lithic industry, few flakes and a core, is not significant. Tool types: side scraper-cum-point (the only
finished tool). Numerous bone pieces with deliberate shapings. Some appear to be points while others have been bored at one or two places along the length. Probably some kind of flute. Salzofen has been explained as a hunting station for some ritualistic cult.

36. Schuerloch (W. Germany)
Cave site along the Altmühl river. Excavated by Birkner (1916) and later by Zotz (1951).

Four layers have been indentified. The topmost layer is Holocene soil. Earliest Mousterian occurring layer second from the bottom is ascribed to the first stadial of Würm.

Cultural Remains: The industry constituted by large sized levalloise flakes with retouchings mostly on the dorsal surfaces. Tool types are: convex, angled side scrapers, points, awls, thick ovoid flakes.

Some blades of varied length are known. These are taken to belong to Aurignacian industry which has got mixed with the Mousterian assemblage through some process or other.

37. Sesselfelsgrotte (W. Germany)
Cave site along the river Altmühl being excavated by Freund. 8 identifiable layers are mentioned. The lower layers indicate an early Würm age.

Cultural Remains: The tool types from layer G, the lowest layer, include a number of finely shaped side scrapers similar to Quina side scrapers. Flattish flakes in the form of bifaces or thin side scrapers are also recorded. No Blattspitzen. Occurring along Mousterian types are tiny microliths. The entire industry is more or less diminutive in nature.

38. Sipka (Czechoslovakia)
Cave site in the North Moravian region, first reported by Maska and later described by Kukla (1954).

The Middle Palaeolithic industries come from layers 6 to 8 and are dated to early Würm. In all there are 15 layers. Apart from Mousterian finds, we have a group of Gravettian finds and another of Magdalenian finds.

Cultural Remains: 400 finished tools are described from the
Mousterian layers. Most of the artifacts are flakes, which are without any faceted striking platform and have a flake angle of more than 1000.

Tool types: Side scrapers, points, denticulates, notches, un-retouched cores. Side scrapers are prepared on irregular pieces of flakes with steep retouching along the border.

39. Starosel’e (Soviet Union)


Age remains undecided.

Cultural Remains: More than 1200 finished tools are known. Tool types: small number of levalloisean flakes, mousterian points, side scrapers, end scrapers, burins, borers, backed knives, notches, denticulates. Bifaces comparable to Blatspitzen also occur. Side scrapers constitute more than 60% of the assemblage.

A skeleton of 18-19 month old child near the shelter. The skeleton shows remarkable similarity with modern man.

40. Swanscombe (Thames Valley)

Groups of sites in 39 metre high terrace along the stretch of Thames from Greenhithe to Galley Hill. Known from 1885, recent excavations by Wymer and Wymer (1961, 1964).

Six depositary layers. Lowest ascribed to Hoxnian and the upper dated to early Riss glacial.

Cultural Remains: Lower gravel industry is composed of choppers on pebble and/or on cores and handaxes or proto-handaxes. flakes are few and unspecialised.

Layers C and D abound in handaxes of the Acheulian type. Size small. Skillfully flaked and delicately finished. Working predominantly round the heavy butt end.

Flakes are both retouched and unretouched. Broad edged side scrapers. Claims of bone shaping and fire making have been made.

Layer E yields pointed handaxes, cordates, ovates and cleavers. Flakes are well retouched, Levalloisean flakes are also described in smaller number. The typological character of swanscombe has been summarised as a typical Middle Acheulian industry.
41 Tata (Hungary)

The site lies north-west of Budapest, known for a long time, full report published by Vértes in 1964.

Culture bearing deposit on the basis of different methods is ascribed to early Würm (Brörup/Amersfoot period).

Culture Remains: The stone artifacts include a majority of side scrapers, racloir convergent and points, retouched levalloisean flakes, denticulates, knives, borers, burins, some handaxes, chopper and chopping tools. Side scrapers on flint nodules with convergent flaking on the working edge and minimum of retouching are special feature (Tata side scraper).

Pebble tools constitute nearly 59% of total industry. The average size of the tools is 3 cm.

Some long bones with marginal shapings, mammoth teeth and heavy bones are also known. A small circular bone piece with flat surface, 2.1 cm in diameter and bearing an engraved right angled+ sign on one surface. A charm? or amulet? Some lumps of ochre are also known.

42. Terra Amata (France)

Open air site situated in the French Riviera in Nice excavated by de Lumley (1966).

8 identifiable layers have been exposed and ascribed to time span from early Mindel to Eemian.

Cultural Remains: 2 typological groups of tools.
(1) Core tools: choppers, and chopping tools without much retouching. (2) Flake tools: choppers, chopping tools, side scrapers (canted and usual). Extensive retouchings, points, bifaces, proto limace, cleaver are other tool types. Some choppers resemble handaxes in shape.

Ground plan of several huts measuring 8-15 metres in length, and 4-6 metres in breadth. Some holes 30 cm. in diameter, taken as post-holes to support roof.

Fire places in the huts around which some peculiar depressions taken as impressions of wooden utensils.

A deep footprint 24 cm long, height of man estimated to be 1.56 metres.

Some red ochre colour found among the objects.
43. Torralba-Ambrona (Spain)

Twin sites. Known from 1907, but systematically excavated by Howell and Freeman from 1961 to 1963.

Eleven sedimentation units with several sub-phases grouped as lower, middle and upper complexes. The lower complex is ascribed to Mindel/Elster (Prof. Bordes: early Riss).

Situated at a height of 1,115 metres above sea level. No water in the plateau. A steep valley cuts into the lime stone. Enormous debri of animal bones, mostly elephants. A settlement of hunter community.

Cultural Remains: A high percentage of handaxes and cleavers. Flakes are not retouched. Core rare. Side scrapers less frequent. Other tool types are end scrapers, retouched blades, borers and some burins.

Cleavers outnumber handaxes.
Ratio of flake tools to bifaces is 3:1.

Deliberate chipping is evidenced in some bones and a few wooden pieces as well.

Several pieces of charcoal, charred wood and bones are also recorded.

44. Valonet (France)

Cave site excavated by de Lumley et al. in 1959 and 1962.

Evidence of marine transgression, correlated to Sicilian transgression. On the basis of fauna it is dated to post Villafranchian period (Chatine). Now, it is ascribed to early Mindel age.

Cultural remains constitute of flakes, pebbles, with minimum flaking. Tool types, 2 medium sized quartzite choppers and some retouched flakes (scrapers?). Some long bones (deliberate shaping?).

45. Vertesszollos (Hungary)

The site lies 50 km. north-west of Budapest and was excavated by Kretzoi and Vértes during 1963-1965.

There is a 15 m. thick deposit of two series of travertine. The lower series is dated to an interstadian of Mindel while the second series is dated to Mindel II.

Cultural Remains: Four occupational levels have been
described. Very little difference in the lithic industry of these levels. Tools are remarkably small in size, maximum length of a tool being 62 mm., average length being 24 mm. Types described are tiny chopping tools, elongated flake tools, with unfaceted striking platforms and obtuse flake angle.

Large number of side scrapers, notched and denticulated flakes and borers and some burins are also known.

No evidence of any influence of Acheulian or Levalloisean.

Also some animal bones, some of them burnt, and some traces of hearth.

*Homo erectus* tooth and a fragment of occipital bone is also found in association.

46. **Volchij Grot (Soviet Union)**


No reasonably accurate dating is possible.

Cultural Remains: Three cultural layers are identified. The lower layer yielded the first Mousterian tool; handaxe and hand points. The middle layer abounds in artifacts. The upper layer is taken to be a transitional stage to Upper Palaeolithic with high number of blades and burins.

Tool types, straight and convex side scrapers dominate. Of interest is a single piece of bifacial and alternately retouched side scraper.

Small duration occupation centre for wandering people of Crimean Highlands during Middle Palaeolithic.

47. **Volgograd or Suchaja Macetka (Soviet Union)**

Open air site in the valley of Volga, excavated by Zamyatnyn (1961).

The Mousterian culture bearing level could be ascribed to early Würm.

Cultural Remains: Nearly 300 finished tools and some flakes. Side scrapers and points predominate. These are usually prepared on flakes with triangular cross section. Cores are discoidal. A few burins. Some foliates are also described. These appear to be similar to Blattspitzen. Notches, denticulates, and 2 chopping tools are also known.
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A hearth and some red ochre pieces are also recorded.

Upper Palaeolithic:

47. La Adam (Rumania)
   Cave site along the valley of Casimcea. Described by Samson and Radulescu (1959).
   The Upper Palaeolithic finds belong to Würm II-Würm III.
   The stone industry from the lower layer is described as middle Aurignacian with Szletian influence while the overlying assemblage is taken to be East Gravettian. This upper layer yields skeletal remains of a Homo sapiens.
   The Aurignacian industry yields some fire hearths, various kinds of blades retouched to form points, end scrapers and knives, some burins, notches.
   The East Gravettian industry shows a decreasing size in the tools and increasing backed elements and some Gravette points.

48. Aherensburg (Germany).
   See Stelmoor (No. 87).

49. Andernach (W. Germany)
   The tool types include Gravette points and knives, small bladelets and end scrapers. Burins are numerous and mostly of dihedral angle burin type. The bone implements include points with circular cross section, two harpoons with single row of barbs, eyed needles, and an interesting piece of antler with the head shaped like a bird's.
   The industry is termed as late Magdalenian and ascribed to the early phase of Alleröd.

50. Bromme (Denmark)
   Open air site in the valley of the river Tude, A. Mathiassen excavated the site in 1946.
   3 layers identified and broadly ascribed to Alleröd.
   The main layer yields a number of flint pieces and bones. The tool types: Shouldered points, end scrapers, burins, blade
knives, borers and some rabots. Shouldered points characterise the industry and are 4-11 cm long. Dihedral angle burins are numerous.

The excavator believes that the Bromme industry lies on the direct line of development leading to the Lyngby culture.

51. Caminade East (France)

Rock shelter in the Dordogne district. Sonneville-Bordes excavated the site in 1970.

Six layers of Upper Palaeolithic culture are identified and are ascribed to Würm III and the short warm phases in the glacial period.

The lower layer G is basically early Aurignacian I and contains a large number of end scrapers, dihedral and burin-on-truncation in high frequency, retouched blades, strangled blades, awls, notches and denticulates. A few bone points with split base are also known.

The next higher layer F carries tools of G, with the difference that more aurignacian blades occur as well as typical split based points. Another noticeable difference is the absence of Chattelperonian knives found in layer G.

The culture status of layer E cannot be determined because of the small number of tools.

Layer D-2 inferior and superior, are designated to Aurignacian II as they contain an overwhelming number of busk burins. Other tool types are end scrapers, carinated or nosed, Aurignacian blades, borers, notches, denticulates, dufour blades. Strangled blades are absent. Bone tools are rare. Some bones of birds, and long bones (needles?) are known.

Besides the flint tools, some choppers and chopping tools are also known.

52. Castillo Cave (Spain)

Cave site along the river Rio Pas. Reported by Obermaier in 1924.

A succession of 25 deposits is recorded. They yield a series of Acheulian, Mousterian, Aurignacian, Solutrean, Magdalenian and Azilian industries.

Aurignacian layer carries such characteristic types as
carinated end scrapers and bone points. A lower jaw of juvenile *Homo sapiens* is associated with this layer.

The Solutrean industry has a number of simple laurel leaves and plain faced points.

Magdalenian deposits show a large number of bone tools with engravings on them.

Cave art is present.

53. Ceahlau (Rumania)

Open air site on the terrace of the small river Bistrita in north Rumania. Nicolaescu-Plopsor et al. report the results of their investigations.

Cultural deposits are levelled against the latter part of Paudorf to the end of final stadial of Würm.

Cultural succession according to the authors consists of four stages of Gravettian, and three stages of Aurignacian.

Pre-Gravettian, Gravettian inferior and superior, and final Gravettian industries are marked by an increase in the backed and unretouched blades. In the final stage a typical Gravette point is identified. Burins, bec-de-flute, end scrapers are other tool types.

The inferior, middle and superior Aurignacian industries yield retouched blades with end scrapers at one of their ends, side scrapers, various types of burins.

Fire hearths are described from most of the layers.

Another industry termed as Swidrian is also reported.

It contains a good percentage of nuclei, end scrapers, few burins, retouched blades, backed pieces, notches and tanged points.

54. Creswell Crags (England)

Cave sites in Derbyshire known from 1875 and excavation report in 1925 by Armstrong.

*Pinhole Cave:* On a broad basis, the Upper Palaeolithic strata are ascribed to a period from Paudorf or Oldest Dryas.

Two Industries: Proto Solutrean and Upper Aurignacian.

The Upper Aurignacian contains shouldered points, Gravette Points, end scrapers, backed blades similar to Chattelperronian points. Font—Robert points are common in the middle
layer. Noailles burins are also present.
A reindeer rib (21.5 cm) carries an engraved human figure. The single line of engraving shows pronounced genitals. The style agrees with French Aurignacian.

Mother Grundy’s Parlour: Rock shelter, four different layers are identified. Broadly coeval with Pinhole Cave.

I Base: Contains engravings, bone tools and flint implements of ‘Aurignacian facies’. A roughly circular fire hearth, 23 cm deep, with ashes, charred bones and flint implements is worth mentioning.

II Lower Middle: Stone tools are of flint believed to have been imported from somewhere else. Retouched backed blades and points of various types predominate. Burins are infrequent. Shouldered point resembling French Solutrean type in character. Several antler pieces, antler wand, bevelled lance point with engravings are described.

III Middle layer: yields very few tools.

IV Upper Middle: Flakes and flint implements of Azilian and early Tardenoisian culture abound.

55. Crvena Stijena (Yugoslavia)
Rock shelter on the South-west coastal region. Brodar and others worked on the site (1958).
Six Upper Palaeolithic layers are identified and these span the period from Würm I/II to nearly the end of Würm.
The lowest layer shows relatively bigger tools as compared to the upper layers. Finished tools represent retouched blades, to form of knives, denticulates, notches, end—scrapers. Some bone awls and wands are also described. Several pierced shells and colour pieces are found sporadically in all these layers.
Brodar feels that Crvena Stijena compares with Castello cave of Sicily.

56. Dolni Vestonice or Unterwesternitz (Czechoslovakia)
Open air site in Moravia along the river Dyje. Absolon in 1938, and Klim a in 1963 excavated the site.
The lowest layer is ascribed to Würm I/II.
A huge fire burning place of semi—circular shape, 35 sq. metre
is exposed. Another find is 14 x 6 metre ground plan of habitation structure. Five small hearths were found in the hut. Two different burials with funeral objects are reported.

The stone industry is dominated by dihedral angle burin. Backed blades and bladelets are numerous. End—scrapers, carinated and nosed variety, borers, long blades, some of which carry Aurignacian retouch is recorded.

Bone awls, points, spatulate and wands are the bone tools.

The character of Dolni Vestonice is taken to be Gravetian.

The Venus of Dolni Vestonice is well known. It is a 11.4 cm. long statuette, with pendulous breasts, and two slits for the eyes, without hands, the mid rib and flesh folds are shown at the back by deep furrows. No genital is shown. The material of the statuette is mud mixed with bone ash and dust and baked.

Anthropomorphic face engravings are seen on ivory. A mammoth statuette of sand stone and several pieces of ivory lockets in the shape of a pair of breasts are other interesting objects.

57. Federmesser Groups of South Germany

Gustav Riek (1957) grouped 3 late Palaeolithic sites from Stuttgart region (along river Brenz) as Federmesser in kind. These are: Barenfelsgrotte, Spitalhohle and Klingenfelsschutzdach. These share the common feature of backed blades, bee-de-flute, micro-burins with Tardenoisean kind of micro-liths.

58. La Ferrasie (France)

Rock shelter in Dordogne district. Known from the end of the last century, a detailed study was made by Peyrony in 1934. Fresh interpretations have been offered later.

In all seventeen layers have been identified and numbered from bottom, with alphabetical letters.

The tools from the layer A include some flakes with nonspecific border retouch, side scrapers, points and some cordiform handaxes. It has been designated Mousterian by Peyrony and Denticulate tradition by Bordes. This layer belongs to
Würm I/II.

Layers, B, C, D belong to Würm II. Contains finely retouched side scrapers, points, discs, knives, awls and burins. Bordes calls this Charentian of Ferrassie facie (C).

Two adult and four child skeletons are also found in C.

D yields smaller and more finely retouched tools of the type found in C. Some bone pieces (points?) are also found.

Layer E ascribed to Würm II/III gives cultural remains classified as Lower Perigordian mixed with Mousterian assemblage of D.

Layers for E- to M ascribed to Würm III.

E- sees the disappearance of Chatelperronean points and lingering of Mousterian side scrapers, end scrapers on the end of blades and burins along with some thin bladelets with border nibbling. Few bone and ivory points are also found. The cultural designation is Aurignacian “O”.

F marks the beginning of Aurignacian I. Jasper replaces flint. Typical blades and strangled blades are common.

Baton with hole on one end, small needles, curved bones pierced teeth are non lithic tools. A small stone slab with deep depression (oil lamp?), another with black colour bands running obliquely across the surface, yet another antler piece with female representation, fire hearths are of special interest.

Layer H yields Aurignacian II while H- and H- yield Aurignacian III and IV respectively. Generally Aurignacian tool types. Two oval shaped coloured baked clay pebbles and curved bones forming a composite bow are worth special mention. Busque burins, solid based points appear. Several engravings on stones and antlers characterise the group.

Layers J, K, L are ascribed to Perigordian Va, Vb, Vc. Characteristic Aurignacian are absent. Gravettian point. Font- Robert Points are severally known. K has truncated blades, while L has Noailles burins. Bone tools are common, shell, teeth and other personal ornaments are also abundant.

59. Gonnerrsdorf (W. Germany)

A river site along the eastern bank of Rhine. Bosinski published his work on the site (1970).

The cultural deposit is ascribed to early Alleröd. Radiocarbon
date places the site at a younger date.

The cultural tradition seems to be Magdalenian.

The excavation revealed an area paved with slate slabs, probably semi circular in boundary. Several fire hearths and reddish colouring material are reported.

The tool types are predominantly backed blades and burins. End—scrapers and borers are also known.

The bone industry is rather poor. Of interest is 24 cm long wand of antler with D cross section.

The art objects recovered from the site are very rich and are unique amidst German Upper Palaeolithic finds. As many as 2000 engraved pieces are reported.

The figures on bone material are extremely stylised representation of females. These are elongated rods with rounded or pointed ends, with curved out bulges suggestive of breasts. The engravings on slate represent more than 150 female forms. These show only trunk and hips in profile. Animal engravings are often superimposed. The forms of mammoth, wooly rhinoceros, horse and bison heads are comparable to the Franco-Cantabrian forms.

60. Hamburg (W. Germany)

See Stelmoor (No. 87).

61. Hengistburg head (England)

Open air site situated at the confluence of Stour and Avon river in Dorset region. Mace (1959) describes the site. Dated on typological features of the assemblage. Believed to fit in the typological gap between Hamburgian and Ahrensburgian traditions.

Backed blade forms the largest tool type. No microliths are found. Burins and end-scrapers are non-standardised and borers are virtually absent. Only one shouldered point known.

62. Istallosko Cave (Hungary)

Cave site near the city of Erlau. Excavated by Vértess during 1947-51.

Ten different identifiable layers are reported of which the lowest layers are culture bearing. It is attributable to the
middle of Paudorf.

The lower culture layer is designated as Aurignacian I. Tool types are: Blades with border retouchings, pointed blades, round scrapers, bone points with split base and wands of different make are recorded. Some pierced phalanges and bone pieces are known.

The industry from the upper culture layer yields a large number of stone tools and is designated as Aurignacian II of Hungary. Tool types: Several retouched and unretouched blades, some of which are similar to Chatelperronean knife points, end scrapers, backed blades, borers, burins, bone and antler points, pierced phalanges, awls.

63. Isturitz (France)

Cave site near the Spanish border in the Pyrenees. Rene de Saint-Perier (1930, '36, '50) and Emmanuele (1928) reports the finds.

The cultural succession at the site extends uninterrupted from Moustarian to Azilian. Oldest date is early Würm.

Aurignacian, Gravettian, Solutrean and Magdalenian traditions are well represented although no Laugerie-Haute manner of phase divisions were attempted. The most important finds from this site are the art objects on ivory, many small pieces of modelled animal heads and several cylindrical antler points with deep spiral grooves engraved on them. Most of these art objects are associated with the Magdalenian layers.

64. Jerzmanowice (Poland)

Cave site situated on the Carpethian foot hills. Kozlowski first excavated the site (1924).

There are six identifiable strata. Radiocarbon date is 36,540±126 B.P. i.e., around the early Paudorf.

The lower layers bear culture material and yield fire hearths with charcoal strewn around them.

Tool types: flat retouched bifaces, similar to Blattspitzen, side scrapers, end scrapers, and some Gravettian points, burins, stone plaques, massive blades. The manner of retouching resemble typical Aurignacian blades.

Culture is variously designated as Magdalenian or Szletian.
65. Kastrista Cave (Greece)

Cave site in the south eastern end of Ionian lake on the Pindus ranges. Higgs et al. (1967) report the findings.

There are indications that the cave was occupied for the latter part of the Würm II stadial. C-14 dates are 20,800±810 B.P. and 13,400±210 B.P.

Fire hearths and charcoal concentrations are recorded.

Tool types: backed blade points, blade end scrapers, stengled blades, angle burins.

Some bone points are recorded. Several pierced animal teeth, lumps of ochre and haematite, slabs of sand stone and some pebble hammer stones are other finds.

66. Kesslerloch (Switzerland)

A small rock shelter situated in Schaffhausen. Merk (1875) did the excavation. Sonneville-Bordes has reviewed the material (1963).

Four deposits are identified. The middle layers yield a Magdalenian industry. The culture is ascribed to Bölling interstadial.

Various kinds of burins predominate the stone industry. These are made on blade ends and are mostly bec-de-flute and carinated. Multiple and micro—borers are numerous.

Several spear heads bevelled based and with ‘blood draining grooves’ are known. Criss-cross engravings. Eyed needles, wands, baton-de-commandment. Naturalistic forms of wild horse and reindeer are engraved. Small ornaments like lockets of ivory, amber, animal teeth and shells and some red colouring material are reported.

67. Kostienki-I or Poliakov Station (Soviet Union)

An open air habitation site in the village of Kostienki. Extensive work has been done on the site by Zamiatnin (1922) and Efiminko (1958).

Five cultural layers are identified. The upper most layer is ascribed to Würm II/III and the lowest to Würm I.

Layer V (Lowest): yields a ground structure of an oval hut and a fire hearth. The tool types include thick carinated end scrapers, round thumbnail scrapers and side scrapers. Thin
triangular points with slightly concave base are characteristic.

Layers IV, III and II show an increase in number and varieties of blade tools. The types of tools continue to be the same as in layer V. Typical Aurignacian kind retouch appears.

Layer I yields the largest and the most significant cultural remains of the site. A huge tray-shaped habitation structure with nine fire hearths within it. Some pits and post-holes are reported. The most characteristic tool types is a series of single shouldered points with flat retouchings on both surfaces. Besides these, several backed blades, dihedral angle burins and bec-de-flute and end scrapers are described.

Several ivory pieces, one perforated antler and other art objects are reported. The decoration are criss-cross. Some perforated chalk limestone weights and sexual symbols carved in small pieces are also found.

Five complete and seven incomplete venuses made on ivory or limestone are of interest. The venus figures are smooth, with pendulous breasts, hands on the belly, exaggerated behind, incomplete hands and feet.

The Kostienski-I culture shows an affinity to Aurignacian in the early stages, and represents in its later phase, Eastern Gravettian.

68. Laugerie-Haute (France)

A 180 metre long 35 metre deep rock shelter in Dordogne district. First excavated by Peyrony (1938) and later by Bordes (1958).

Forty-two archaeological levels have been identified. The rock shelter is believed to have been inhabited from Paudorf inter-stadial through the rest of Pleistocene.

The layers are numbered from top.

Layers 42, 40, 38 contain Perigordian IV and VI. A large number of backed blades, bladelets, triangular in form and abruptly retouched. End scrapers on blade end are also common. Multiple angled burin and simple angled burin are known. Few bone tools.

Layer 36 termed Proto Magdalenian or Perigordian VII.

End scrapers become rare, while burins abound, long blades,
awls, notches and denticulates are known. Bone tools, points and baton-de-commandment are noted.

Layers 34, 33 yield a small assemblage or retouched Aurignacian blades, some carinated end—scrapers and a fragment of a dwarf bone point with bevelled base. Cultural status is Aurignacian V.

Layer 31 is designated as Solutrean inferior. End—scrapers predominate. Burin on truncation are frequent. Characteristic Solutrean retouch is evidenced.

The industry from layers 30, 29 are designated as Solutrean middle. End scrapers are most frequent. Borers and piercing tools increase in frequency. Dihedral angle burins are common. Plain faced points and laurel leaves are varied and numerous. A smooth and rounded biconical ivory piece besides some fragments of other bone pieces are also known.

The tools recovered from 28, 27, 25 are classified as Solutrean superior. Leaf points occur in highest frequency. Awls and Burins are fairly common. Notches, denticulates are also known. Points with oblique grooves at the butt end and eyed needles are the bone tools.

Layers 23, 22, 21 together constitute Final Solutrean. End scrapers show further decrease, borers abound. Burins predominate, dihedral angle burin on truncation being most common. Leaf points are smaller and narrower and yield very beautiful Solutrean leaves. Some fragments of bone points with horizontal engravings are also described.

Layers 20, 19, 18 are grouped under Magdalenian “O”. The tools show an increase in raclettes and burins. Occurrence of transverse burins are characteristic. Awls are found in the same frequency as in Solutrean.

Layers 16, 14, 12, 10 form Magdalenian I. The group has been further subdivided into Ia, Ib and Ic. Increasing frequency of raclettes differentiate the group. Transverse burins are common. Multiple awls, backed blades and a specific blade called esquillées are also known.

The bone component of the Magdalenian I industry consist of number of fragments of fabricators, points and wands with incised marks of decoration.

Layers 8, 6, 4 are grouped together as Magdalenian II.
Backed blades, microlithic triangles and scalene points become abundant. Notches and Denticulates are known. Borers are quite characteristic. Bone points and fragments of other bone artifacts are associated with this industry.

Layers 2 and 1 are designated as Magdalenian III. Backed blades and microliths are abundant. Awls, burins, end-scrapers, raclettes and esquillées are nearly of the same frequency as in the previous group. Bone industry is abundant in points and needles.

69. La Madeleine (France)

Rock shelter in Dordogne. Type site. Comprehensive account by Capitan and Peyrony in 1928.

Three layers of Upper Palaeolithic industries. Ascribed to Bölling or the Allerød period.

The lowest layers is taken to be Magdalenian IV. Numerous burins, awls, obliquely blunted and shouldered micro blades and raclettes, are the common tool types. Backed blades and shouldered bladelets are numerous. An irregular thick stone with a cavity in the centre has been described as Prehistoric lamp. The bone tools include a number of harpoons, incipient and dull headed barbs, bevelled bone points, baton-de-commandment. Several animal teeth with holes and similar stone slabs are recorded (decorative ornaments). Some red and black natural colour lumps are described. Several fine, animal and anthropomorphic figures on antler pieces. Worth mentioning is the bison in profile with head looking towards the tail.

The industry from the middle layer is regarded as Magdalenian V. Besides the lithic tools of the earliest group Micro Gravette points and the elongated points appear. Double bevelled points, batons and spear throwers are the bone tools. Stylised engravings on them.

The upper layer corresponds to Magdalenian VIa of Breuil. Parrot-beaked burins and varieties of Magdalenian points are frequent. Azilian point is found. Double rowed barbed harpoons are characteristics. Shells with holes, baton-de-commandment, and antler wands are known. A phlange bone with a hole on the body is described as a whistle.
70. Maszycka Cave (Poland)

Cave site in the district of Krakaw. First reported around 1883, the site was later excavated by Kozlowski in 1962.

The Upper Palaeolithic layer is designated to Würm II of Central Europe.

Tool types: retouched blades, flakes, end-scrapers, dihedral angle burins, burin on truncation, bec-de-flute burins, short borers. Bone tools comprise bone points with single bevelled base, with deep groove along the ventral surface. These carry geometric decorations.

The industry is comparable to Magdalenian.

71. Mauern or Weinberghohlen (W. Germany)

Inter connected caves in Neuburg. Bohmers (1951) and Zott (1955) record their investigations.

The industries from the site are variously designated as late Aurignacian (Zott) and lower Magdalenian (Bohmers), a period immediately after Würm I.

No particular distinction is noticed between the two industries except that the Magdalenian industry is replete with microlithic types. Tool types in general are: Burins of several kinds, Gravette points, end-scrapers, borers, bladelets.

Bone industry yields several wands and spear heads. Engravings of animals, and a female with exaggerated breasts and hips. An important find is the limestone statuette (7 × 4 cm.), covered with red colour, a human figure. A bulge with deep furrow and extension of the body was interpreted as phallus and a valva. Possibly an attempt to represent hermaphrodite.

72. Mezin (Soviet Union) Open

Open air site situated on the river Desna. Hancar (1961) summarises the researches on Mezin.

Two cultural layers are identified. Both layers uncover habitation structures. Mezin is dated as early Magdalenian belonging to Würm III.

The upper layer yields a probably cone shaped hut structure with fire hearths, ashes and charcoal, while the lower layer yields a lens shaped hut plan.

Cultural remains from both layers consist of prismatic and
discoid nuclei, blades, bone tools. The tool types: various types of burins, end-scrapers, borers, eyed bone needles, spear heads, batons, open mouthed arm bands are significant ornaments. These are engraved with chevron designs. Several ivory models of birds without heads, with wings spread or folded, bearing double-lined geometric designs are of special interest.

73. Mielnik (Poland)

Three open air sites named as Mielnik I, II and III are described from bank of the river Bug. Szmit (1929) describes the finds in a summary report.

The period of the culture is indicated to be succeeding Würm II and extending up to Oldest Dryas.

Tool types: variety of end-scrapers on the ends of fluted cores, flakes and blades, dihedral angle burins, narrow diminutive prismatic burins, shouldered blades, raclette like implements.

The industry is compared to Perigordian but the validity of such a parallel for Poland is questioned.

74. Molodova (Soviet Union)

Described in Middle Palaeolithic sites. (No. 27).

Layers X—II counted from bottom give an Upper Palaeolithic succession. The time period seems to be from the beginning of Paudorf to the end of Wurm II.

Layer X: A ground plan with twelve fire hearths is reported. The tool types: dihedral angle burins, end scrapers, some combination tools—end scrapers with burin.

The most beautiful tools are points. Flat broad blades formed into double points with leaf convex borders. Some micro-Gravettte points are also described.

Layer IX: Ground plan of hut structures and nine fire hearths. Tool types: multiple blow dihedral angle burins, bec-de-flute, end scrapers, some micro-blades and discoid cores.

Layer VIII: Nine fire hearths are reported. Blades in this assemblage are better retouched. Bec-de-flute dihedral angle burins with single blow, double burins, double end-scrapers are the tool types. Some bone objects are also known.

Layer VII: A tent like construction is believed to have
existed. Thirty one fire hearths are reported. Burins are mostly prepared on the manner of Aurignacian. Dihedral angle burin, bec-de-flutes, some Gravettian blades are the usual tool types. Bone tools include some baton-de-commandment, bone points. Stylised engravings are on the bone tools.

Layer VI: An oval ground structure, a total of twenty five fire hearths are reported. Various kinds of burins, particularly ‘Supenevo burins’, end-scrapers, bone awls and points are noted.

Layer V: Thirteen fire hearths are reported. An increase in blades is noted. Besides, burins, end-scrapers, some Gravettian retouched blades are recorded. Bone tools include awls, points and some cutting tools.

Layer IV: Apart from the lithic tool types of earlier layer, it records a flute with opening on the shaft on the narrower end. The mouth end is broader and the entire length of the flute is hollow and is of uniform cross section.

Layer III: A habitation structure and 16 fire hearths are described. Tools do not show much difference from earlier assemblages. Some Gravette points are noted. Long ivory points with circular depressions, bone awls, flat bone plate, and a stylised human form constitute the bone tools.

Layer II: Some evidence of habitation structure and eleven fire hearths are reported. Blades predominate the lithic assemblage. Burins of various types, end-scrapers, Gravettian blades are described.

The non-lithic component include some bone awls, an antler shaped into a flute, some antler handles.

Molodova offers a unique knowledge of cultural succession and renders the understanding of East Gravettian development in this area much easier and comprehensive.

75. Mount Henye (Hungary)

Open air site on the hillock of Mount Henye. Vértes excavated the site in 1963.

The radiocarbon age for the cultural deposit is found to be 28,700±300 B.P.

The predominant tool types of this industry are end-scrapers and burins, made on unretouched blade ends. End-scrapers are oblique edged, fan shaped, carinated. A gradation is noted
from robots to heavy burins. Dihedral angle burins on blade ends with truncation are characteristic. Core burins are special to this industry. Truncated and retouched blades are numerous. Also recorded some chopping tools, grind stones, and amulets, flat triangular or crescent-shaped stones.

A fire hearth and several charcoal pieces are found. The culture is called the Eastern Gravettian tradition, and is characterised by few microlithic types and several gigantolithic forms.

76. Munzingen (W.Germany)

Open air site South-west of Freiburg. One of the recent studies is by Sonneville-Bordes (1968).

The age of the culture bearing layer belongs to the Bölling period.

End-scrappers of various types, burins, mostly dihedral angle burins on truncation, retouched or truncated blades, borers, denticulates and notches are the tool types. The bone tools include some baton-de-commandment, several split bones, single bevelled based points with occasional "blood draining grooves".

77. Oftnet Caves (W.Germany)

Two caves sites situated in Nordlingen in Bavaria. Schmidt excavated the site (1912).

Nine different layers have been identified. Early and late Aurignacian, early Solurtrtean and late Magdalenian are traditions identified.

Several elongated big and small blades, knife blades similar to Chatelperronean are known. Aurignacian blades, some suggestion of strangling are seen.

Backed bladelets, burins, end-scrappers, some Blattspitzen are the Magdalenian tool types.

Split base point, is described among bone tools.

78. Ostrava-Petrkovic or Ostrau Petershofen (Czechoslovakia)

Open air site along the river Oder. Klima reports the main finds (1957).

The cultural layer is dated to Wurm II/III.
Three ground plans, on concave surface are with fire hearths. No post-hole is reported.

Stone tool types: 5-8 cm long blades with all round retouching reminiscent of Aurignacian blades, some Blattspitzen, shouldered points, Chatelperronean knives, end-scrapers and several kinds of burins. Some microlithic forms of bladelets are known.

The industry appears to be Moravian Gravettian tradition.

79. Parpallo (Spain)

Cave situated in the Valencia region. Pericot excavated the site in 1942.

Nine occupational layers containing Gravettian to Magdalenian industries are described. The industrial succession shows remarkable similarity with Laugeri-Haute succession.

The lowest layer yields an industry with numerous Gravette points and backed blades. Dihedral angle burin on truncation, end-scrapers, long retouched blades and some bone points are common.

Next three layers yield lower, middle, upper Solutrean. Solutrean inferior is characterised by small double points, plain faced points, micro-gravette, some end-scrapers, burins and double bone points are the tool types. Middle Solutrean contains thin leaf points, mostly only half finished, and retouched along the border only. End-scrapers on flat flakes, burins on truncation, blades and bladelets, notches and denticulates are known. Bone tools are crude and pointed.

Solutrean upper is characterised by small to medium sized arrow heads. Different from the French Solutrean. Single shouldered points and end-scrapers, burins, borers and denticulates are known. Bevelled double bone points are common.

The next layer is termed as Solutro-Aurignacian level. The Solutrean layers yield one *Homo sapiens* skull and several small stone slabs with animal figures drawn in colour.

Layers VI to IX yield Magdalenian I to IV.

Magdalenian I contains several end-scrapers, flat squat and short. Transverse burins are rare, dihedral angle burin predominate. Engraved, double bevelled based points occur.

Magdalenian II records diminutive circular thumb nail
scrapers, angle burins, end-scrapers, raclettes denticulates and notches. Some eyed needles and double points accompany.

Magdalenian III yields microlithic forms. Bone tools are largely points but more extensively engraved, with abstract designs.

Magdalenian IV has strong microlithic blade tool types. Appearance of harpoons with single row of barbs. Abstract line drawings on bone tools.

80. Pavlov (Czechoslovakia)

Open air site in Moravia. Klima excavated the site (1952-1957).

Radiocarbon analysis gives the date of 22, 900±800 B.P.

A total of 93,000 artifacts are recorded from the site. The tool types include: Gravette points, retouched bladelets of all kinds, several retouched microlithic blades. Ventral surface retouching is quite common. The industry is identified as "Eastern Gravettian".

A ground plan of thirteenth huts—oval, pentagonal, and kidney shaped, with hearth remains in the central region, possibly mud lower walls is a significant find.

Several antlers shaped into typical Lyngby hoes, points, awls and wands are the bone tools.

Among the art objects, occur a female form and several animal figures in ivory. A number of small terracotas of mammoth, rhinoceros, horses head, etc. are also found. Strewn among the floor objects are several pieces of natural colouring matter. Several ivory objects with big holes are taken to be ornaments. One such piece is shaped like a worm. Ivory rings are known. The decoration generally are linear.

81. Pekarna or Backofen hohle (Czechoslovakia)

Cave site along the river Ochoz. Absolon and Czizak (1926) report their excavation.

Layers 1-2 (counted from below) yields Gravettian and the layers 3-4 yield Magdalenian traditions. Tentatively the deposit is identified as belonging to the beginning of Würm III.

The Gravettian group includes numerous blades, retouched in the Aurignacian manner, end-scrapers, burins and Gravette
points.

The Magdalenian cultural level yields long retouched blades. End-scrapers and pointed borers are other types.

Flint tools embedded in antler pieces provide evidence of hafting in Upper Palaeolithic.

Antler and bone batons, lance points, eyed needles, a harpoon with triple row of barbs constitute bone tools.

The art forms on bone tools include engraved animal figures and plant representation. The most significant art objects are two engraved horse ribs. In one of these two bulls are shown with heads bent and pressed against each other in a fighting pose. The other rib shows a row of grazing horses.

82. Peterfels (W. Germany)

Cave site west of Boden lake. Peters excavated the site in 1927. Sonneville-Bordes reviewed the tool types.

The culture bearing layer belongs to Wurm III/IV of the French system.

Burins predominate the collection. Dihedral angle burin on oblique truncation, bec-de-flute are the varieties. End-scrapers on flat blade ends are the other types. Triangles du Peterfels, triangular backed blades are specific to the site.

Bone tools are needles with eyes, spear heads, etc.

Ornaments such as pierced shells, teeth, amber pieces, stylised statuette of female representation, charcoal pieces, with engravings are worth mentioning.

83. Potocka Cave (Yugoslavia)

Cave site on the Olscheva ranges at a height of 1700 meters from sea level. Brodar excavated the site in 1928.

On comparative evidences the stratigraphy appears to belong to the Paudorf interstadal but later than the early Szeletian in Hungary.

Many retouched blades are known. Few carinated, high nose, end-scrapers, burins, borers and rabots are also described. Finished tools are rare.

Nearly 81 bone points, a prototype of an eyed needle, are noted. The culture is pre-Magdalenian. Bayer names it "Olschweian".
84. Predmost (Czechoslovakia)

Open air site near the city of Prerau in Moravia. Zotz and Freund report a detailed summary of the work done on the site. The lower most cultural lever is taken to represent Brörup-Amersfoot interstadial.

The main culture bearing level is divided into middle and upper Aurignacian (Gravettian?) on the basis of difference in patination. Most tools are blade and include burins, end scrapers, retouched pointed blades showing typical Aurignacian technique. Core or thick flakes are often worked into rabots or keeled scrapers. A large number of flakes with ventral surface retouch characterise this assemblage, and are similar to Gravette points. Many bone points and wands are with engravings, especially of linear or "wheat-stock" designs. Several statuettes of elephants and anthropomorphic forms are found. A burial heap of twenty skeletons, showing fire usage and ritual is reported.

A Solutrean cultural level occurs above the Aurignacian level. It contains numerous Blattspitzen of Central Europe.

Another group of dimunitive tools occurring in the next higher layer is ascribed to Magdalenian. The tool types are blade points with ventral retouchings, Gravettian bladelets, simple and multiple awls and retouched blade knives.

The cultural ascription of the industries is disputed. It can be said that Predmost represents a Central European Mousterian developing into Aurignacio-Gravettian. The Solutrean probably is a derivative of the Hungarian Szeletian.

85. Seidi Cave (Greece)

Cave site in the southern peninsular region of Greece. Schmidt published a detailed account of the excavation in 1965.

The culture bearing layer indicates Paudorf period.

Blades of various sizes and shapes constitute the majority of the tools. Some typical Gravette points and micro-Gravette bladelets are described. End-scarpers on blades and cores, side scrapers, burins, borers, notches and denticulates are the other types.

The predominance of backed blade and the occurrence of
shouldered points present the Gravattoic character of this site.

86. Stanca Ripiceni (Rumania)

Cave site situated in the north eastern Rumanian region along the river Prutul. Morosan (1935) reports the findings from the site.

Seven identifiable layers are described. Of these four yield cultural remains. The layers are counted from the bottom. Layer I is taken to have been formed during the early part of Paudorf.

Layer I: contains a large number of worked blade tools, some retouched fluted cores and nodules. The types are rabot, end-scrapers, burins and knives. The burins are either dihedral angle burins or bec-de-flutes. Two Noailles burins are significant. Some bone awls are reported. The industry is designated as Upper Aurignacian.

Layer III: Several core end-scrapers, blade end-scrapers, carinated and nosed end-scrapers, backed blades, Gravette points, bec-de-flute, angle burins, some bone awls and antler hoes are recorded. The assemblage is taken to belong to upper Gravettian stage.

Layer V: Tool types: end-scrapers, burins and Blattspitzen, core tools similar to layer III and bone awls and antler hoes. The cultural designation is early Solutrean.

Layer VII: Mostly blade tools; end-scrapers, burins, denticulates, micro-Gravette points, triangles, micro-burins are the tool types. The microliths are steeply retouched and include triangles and truncated geometric pieces. No significant bone tools. The culture is designated as a late Magdalenian in spite of the absence of bone tools.

87. Stelmoor (W. Germany)

Site situated around 20 km. north of Hamburg and reported by schwabedissen in 1954.

Two industries, Hamburgian and Ahrenburgian, are identified and ascribed to Alleröd to Younger Dryas period.

The Hamburgian industry records 50% of unretouched blades, long and big. End-scrapers, burins, zinken and some typical Hamburgian shouldered points are the tool types.
Antlers are numerous and are characteristic for the “groove-and-split” method, further retouched in some cases to accommodate flint points.

Ahrensburgian layer (overlies the Hamburgian) yields blades with little retouch and some are truncated in the manner of French Magdalenian. Burins on truncation are many. Microliths are also described. Antler tools carry “groove-and-split” shaped as hoe. Harpoons with both single or double row are also known.

88 Swidry Wielkie (Poland)

Surface collections first reported by Sawicki (1933/36) and later by Kozlowski (1936).

Pollen analysis of in-situ finds indicate the Alleröd stage.

The Swidrian is characterised by a large number of narrow and slender retouched blades. Tool types: scrapers, rabots, some shouldered points, end-scrapers, burins mostly of the dihedral angle type and borers. Blades in some cases show ventral surface retouchings.

Bone implements include numerous lance points, and harpoons, spatulate, with very little engravings.

89. Szleta Cave (Hungary)

Cave site along the upper Theiss in the north east high lands of Hungary. Gabori summarises the finds (1953).

The cultural layer is described as Wurm I/II. C-14 dates give much older time.

The early Szeletian level yields eighty two Blattspitzen, which are rather crude and look like handaxes. Several thinner, symmetrical tools with relatively flatter retouchings are recorded.

The layer termed as ‘developed Szeletian’ yields bifacial pieces some of which are typical thin Blattspitzen along with blades burins and borers. One Gravette point and only one piece of bone tool is known.

Szeleta is the type site of the bifacially designed leaf points of Hungary believed to have evolved from Hungarian Mousterian.
90. Teufelskuchen (W. Germany)
   Cave site near Freiburg. Excavated by Zotz and reviewed by Sonneville-Bordes in 1968.
   The cultural layer is ascribed to a milder climate within late glacial stage.
   There is general decrease in the frequency of both end scrapers and burins in comparison with Munzingen industry. End-scrapers on blades, dihedral angle burin and borers are the tool types. Backed blades and bladelets constitute the major bulk of the collection. Microlithic blade tools are highly symmetrical.
   Bone tool types are several small needles, points, and a baton-de-commandment, pierced shells. Two fire hearths encircled by stone are also reported.

91. Vogelherd (W. Germany)
   A big cave site on the Lone valley. Riek reports the finding (1934).
   The layers yielding Aurignacian and Magdalenian industries are ascribed to the last phase of Würm.
   The Aurignacian industry is treated in three groups. The lower Aurignacian group is not very rich and contains some Mousterian types like hand-points, side scrapers, points and scrapers and two bone points.
   The middle Aurignacian industry is rich and gives several keeled or carinated end-scrapers, small blade end-scrapers, typical Aurignacian blades, points, double points, burins. The most frequent are the blade knives. Long bone points, and ivory pieces with striations, shells with engravings, two curved ivory pieces (pendants) are well known.
   The upper Aurignacian industry yields maximum number of tools. The tool types are Aurignacian blades, blade knives, end scrapers, burins of several kinds, five Blattspitzen and nineteen Gravettian points. Few bone points, several small bone awls, and a short reindeer phalange with a hole near one of its ends form the bone assemblage. Bone and ivory models (7-9 cm in length) are in stylised forms of bison, cave lion and mammoth. Possible evidence of partial burial.
   An assemblage of twenty eight finished tools is designated as
lower Magdalenian. The upper Magdalenian industry is represented by 80% long and broad blades. End-scrapers, burins-angle and polyhedral are the other types. The bone tools have several points with longitudinal grooves having single or double bases.

92. Wildscheuer (W. Germany)

Cave site in Hessen province near Limburg. Narr (1855) summarises the finds.

Three different layers are identified and they span the time from the closing half of Paudorf to the period preceding Alleröd.

The lowest layer is considered to be Aurignacian industry and contains a large variety of blades some of which show Aurignacian retouch. Besides, end-scrapers, burins, dihedral angle, bec-de-flute are described. The bone tools include wands. A flat oval ivory piece with a small hole at one is of interest.

The middle layer is termed Gravattoid-Aurignacian. This yields a large number of blades and blade tool with semi abrupt and abrupt retouchings. Backed blades, typical Gravette points and Gravette knives, burins are the other types.

The bone tools include a broken ivory point, ivory needles with bevelled base and several wands. Some carry engraving of curved lines or zig-zag designs.

The top layer is considered to be Gravettian. Blades are seldom retouched. Narrower blades are either backed by abrupt retouching or worked into points. Dihedral angle burins, end scrapers, borers are the other types.

The bone industry includes an ivory rod with double beveling, bone and ivory pieces with engraved lines.

93. Willendorf (Austria)

Seven open air sites along Danube near the village of Willendorf. Early excavation by Szombathy (1884). Subsequent work by Felgenhauer (1956-1957).

Broadly the chronological succession of Willendorf falls within the Paudorf interstadial.

Nine layers are identified and numbered from the bottom.
Layers 2-4 are grouped as Aurignacian and layers 5-9 are termed Gravettian.

The Aurignacian industry includes typically retouched flakes and blades to form points, end-scarpers, keeled or carinated end-scarpers. Bone tools are rare. Layer 4 contains some burins, majority of keeled and nosed end-scarpers, and 'Krems points'.

Gravettian layers show an increase in the number and variety of burins. Gravette points and Aurignacian blade occur. Besides these, an increase in number and variety of bone tools, especially awls and wands mark this off as Gravettian tradition. Of special interest is a shouldered point with ventral retouch along the broad and elongated tang, called Willendorf point.

A female statuette of limestone which is popularly known as the 'Venus of Willendorf' is discovered. The Venus is 11 cm. long fat and short female. The breasts and thighs are extremely exaggerated, the hands are shown resting on the upper part of the breasts. Legs taper down and end a little beyond the knee. The face is blank and the head is engraved with wavy lines. The naval and genital triangle are well defined. Besides this two more 'Venuses' of ivory which are less perfectly finished are also reported.
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Fig. 1: Lower Palaeolithic.
Abbevillian handaxes (1-3); Acheulian handaxes (4, 8, 13); Acheulian flake tools (6, 7, 12); Clactonian core and flake types (5, 9, 10, 11, 14-16); Clactonian wooden spearhead (17).
Fig. 2: Middle Palaeolithic.

Cordiform (1); Convex side scraper (2); Convergent scraper (3); Moustarian point (4, 5); Denticulate (6); Burin (7); Backed Knives on blade (8, 9); Note that no. 9, already shows a tendency towards evolving into the lower Perigordian type fossil (Chatelperronnean Knife).


Fig. 3: Possible cultural zones in Middle Palaeolithic of Europe.
Fig. 4: Upper Palaeolithic.
Abri Audi point (1); Chatelaperone Knife (2); Split base bone point (3); Flat bone point without split (4); Aurignacian blade (5); Strangled blade (6); Keeled end scraper (7); Splitter (8); Nose scraper (9); A burin and a Rabot (10); Blattspitzen (11, 12); side scraper (13).
Fig. 5: Upper Palaeolithic.
Geometric microliths (1-4); Denticulated blade (5); Backed blade (6); Round (end) scraper (7); Noailles burin (8); Splitter (9); Varieties of boring tools (10-13); Micro-gravette (14); Shouldered point (15); Blade end scraper (16); Partially backed blade (17); Federmesser (18); Parrot beak burin (9); Bec-de-flute or Axial Burin (20); Basque burin (21); Gravette point (22-23); End scraper-cum-Burin (24); Swidrian shouldered point (25); Solutrean leaf points (26-27); Kostienki point (29); Double burin (30).
Fig. 6: Upper Palaeolithic

Bone awl (1-4); Eyed needle (3); Bone points with blood running groove (6, 7); Harpoon (8); Spear thrower (9); Whistle (18); Lyngby hoe (19). Rest are some of the ornaments and other usual upper Palaeolithic bone finds.

Fig. 7: Home Art Objects.
Fig. 8: Upper Palaeolithic traditions in Central and Eastern Europe spread through time and space as against the same in Western Europe.
Fig. 9: 1. Female statuette from Dolni Vestonice; 2. The ivory head of a paralytic face from Dolni Vestonice; 3-4. Stylized representations on ivory from Dolni Vestonice; 5. Ivory rods from Isturitz.
Fig. 10: Home Art Objects.
1. Engraved animals on a dart thrower from Les-Trois-Freres; 2. Engraving of masked men in furs found on a Baton de-commandement from Abri Mege; 3. Female figurine from Willendorf; 4. Female figurine from Kostienki; 5. Three views of female figurine from Grimaldi.
Fig. 11: Cave Painting.

1-7. Paintings and engravings from Font-de-Gaume cave.

Fig. 12: Cave Paintings.
Fig. 13: Cave Paintings.
Fig. 14: Cave Paintings.
1. The lady with a horn at Laussel; 2. A male engraving at Laussel; 3-4. Other engravings at Les Combarelles.
Fig. 15: Cave Paintings.

1. Bisons modelled in clay at Tuc d'Audoubert; 3-4. Paintings and engravings from Niaux.

Fig. 16: Cave Paintings.
1-4. Polycrome paintings from Altamira.

Fig. 17: Tectiforms from various cave sites.
1. Le-Combaralles; 2-4. Altamira; 5. Font-de-Gaume.
Fig. 18: Mesolithic.
Maglumosean bone tools (1-8); Maglumosean Stone Axe and pick (9-10).
Fig. 19: Mesolithic.

Ertbolle tradition objects (1-7); Geometric microliths (8-18); Azilian harpoon and painted pebbles (19-20).

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