In the summer of 1966, a group of American scientists were researching and examining the fossil remains found in a barren area of the United States. The expedition was headed by Don Crabtree, a noted scholar of prehistory and well known for his ability to make weapons and stone tools, using the same techniques as employed by primitive man. One night, the camp was attacked by a large and hungry brown bear, perhaps the most dangerous animal in the world. One of the men shot it with his rifle, and Crabtree suggested that the bear be skinned in the way that prehistoric men would have done it, using stone tools, and the skin be kept as a trophy. The hunters with them were convinced that the primitive flintstone knives would not be adequate, but Crabtree insisted. As he worked he was amazed at how well the tool did the job, and all the men were astonished when he finished the job in two hours. A man using a modern sharp steel knife could not possibly have done the job in the same time – one of the hunters said that the quickest he had ever seen a bear being skinned was at least three hours. Obviously our prehistoric ancestors knew how to make perfectly functional weapons from the very limited resources at their disposal.

MAN, THE KING OF THE ANIMALS
Why has man become the most successful of all animal species on the planet Earth? Gordon Childe, one of the great experts on prehistoric times, has given one satisfactory answer: 'Our species, man, in the widest sense, has succeeded in surviving and multiplying above all by bettering his properties for living. In other words, man has adapted himself to his environment and has even changed the environment to suit his needs.'

We have already seen how man has adapted himself to his environment. He was only able to do this by using his most precious gift – that of intelligence.

Basically man is naked, weak and defenceless; but he has used the Earth’s resources, including other animals, to provide for his needs.

He has done this by work, which is an uniquely human activity and which transforms the elements of natural environment and modifies them so basically as to create things which do not exist naturally – cutting blades, scrapers, fish hooks, needles, and other essential items of equipment.

As we will see now, hard work and the various techniques that were developed by prehistoric men were the driving forces which put into motion the material, social and cultural progress of man.
BASIC STONE

The fundamental raw material of primitive man was stone. It remained such until the discovery of metals more than half a million years later.

The qualities of stone are quite remarkable. It does not crack or shatter under stress, but by working it in various ways it can be split into sharp flakes. Stone may be worked in a regular and predictable way, so it is possible to turn a basic piece of stone into a usable tool.

The most important stones to prehistoric man were obsidian, quartzites and some granites - the most widely used of which was flint. From these stones able craftsmen were able to make various types of tools which some of them exchanged for other basic needs. Primitive bartering had begun.

One stone was used to chip flakes from another. The chipped piece was worked and carved on one side only, forming a sharp cutting edge. Thus, a crude knife was obtained. This was used for cutting and carving.

The piece of stone was then worked on both sides and on the edges. In this way, a large, almond-shaped tool was obtained, which had two cutting edges. It was used to cut, dig and to make holes in other objects.

With improved technique it became possible to use the sharp flakes which were carefully removed from the piece of stone. The flakes were worked on and refined into scrapers and arrow tips.

Using an animal bone as a hammer gave indirect impact which enabled prehistoric man to make long, sharp blades which were honed to perfection.

Stones were pulled up out of the mine in baskets, attached to primitive ropes. They were then taken to craftsmen who worked near the flint mines. The craftsmen worked the blocks into smaller blocks which were, in turn, sent to other craftsmen who refined them into the desired tools.

THE FIRST MINERS

In these distant times, men picked up flints here and there when they came upon them in stone heaps, or along the banks of a river or the shores of a lake. But eventually the organised extraction of flint became an industry.

These first miners would stake their claim in areas where they knew that there were supplies of flint. Then, using animal horns as picks, they would dig underground into the seam of the desired stone. Cave-ins were avoided by supporting the roofs of the tunnels with wooden poles, just as is done today in some parts of the world. Vertical wells let fresh air into the mine and the mined flint was hauled up to the ground in baskets.
Prehistoric hunters used their weapons to great effect. They hurled javelins with great accuracy and used axes with fashioned handles to despatch their prey.

FROM CHOPPER TO SPECIALISED TOOL
In order to survive, our stone-age ancestors equipped themselves with more and more efficient, and more efficiently manufactured, tools. The most significant changes in technological progress made during the Stone Age were:

700,000 years ago: the first tools were simply crude choppers made from slivers of stone. They satisfied many of the needs of everyday life.

300,000 years ago: Prehistoric man fashioned a primitive hand axe. It was pointed on one side and rounded on the other. For more than 100,000 years this was the most used tool and could be put to a variety of purposes. It was widely used throughout Africa, India and Europe.

100,000 - 50,000 years ago: Neanderthal men who were scattered around Europe, Africa and Asia, began to use specialised tools, rather than the multi-purpose handaxe. They made different tools to satisfy their various needs. Triangular-shaped sharp points were tied to poles to make javelins; blades were manufactured specially for carving, and making holes in wood, ivory, skins; long cutting blades were fashioned specially to strip bark from trees. In short, Stone Age man was gradually turning into a craftsman, developing the tools he needed as well as the technology to make them.

Homo sapiens took this one step further. Even more complex tools were produced by joining together two or more basic elements. For example, axe heads mounted on handles increased the strength and efficiency of the tool; a hook tied to the end of a piece of rope which, in turn, was tied to a pole, made an efficient fishing rod. Propellors were developed. These are launching devices for javelins, whereby the javelin is...
placed in a stick with a groove cut in it to hold the javelin. This created a long lever formed by the extended arm of the propulsor which made the javelin travel through the air more quickly and also, more accurately.

Not only remains of tools have been found. Stone flutes and whistles have been discovered which suggest that Stone Age men and women were the first musicians.

**THE FIRST TECHNICIAN**

All these technological advances caused important and significant changes in the social structure of Stone Age life.

Although men and women lived in groups of hunter-gatherers, each individual was self-sufficient in all that was necessary for his own survival. He hunted and shared in the kill with his companions, but he made his own tools and weapons. And then a new figure emerged—the specialist or technician. His main task was to prepare specialised tools for the others in the community.

He may have been someone who was unable to hunt and who worked on his own when the others were out, fashioning new axe-heads and javelins and propulsors for them to use. In return for these tools, the hunters would allow the toolmaker to share in the food that had been caught and killed. Eventually the hunters realised that, because the tool-maker spent all his time at his work, the tools that he made were much better made and more efficient than the ones that they could make for themselves.

As time passed the tool-makers, themselves, became specialised. Some would make only axe-heads while others would make javelins. Some would fashion sharp blades to be used for stripping and others would make the tools that the tool-makers themselves needed to work properly.

From a social point of view, this was the beginning of a technical division of work and the sub-division between labourers, such as gatherers and hunters, and the increasingly important specialised workers.

**THE SPECIALISED WORKER**

As we have seen, initially, every member of the clan had to provide for himself. But later, with the growth of technical knowledge and the increasing importance of the specialised worker, the community could support hunters and workers.

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*Prehistoric man found that hand grips increased the efficiency of his tools. He fastened them with vegetable cord or animal tendons after inserting them into special slots. They were then doubly secured with a vegetable-origin glue.*
An artist's impression of a Stone Age settlement. Man had developed the intelligence and the necessary technology to build raised houses above the surface of the water, and to carve primitive canoes from tree trunks which provided necessary transport across the water.

HOUSING DEVELOPMENTS
By slowly gaining supremacy over other animals, and through his working activities, man extended his control over the environment. But it was only when he began to construct houses for permanent settlement that man began to change the environment quite radically. Once he had decided that a particular spot would be ideal for him to live in, Stone Age man set about clearing away any great boulders that were in the way; he altered the course of streams to give himself a convenient source of fresh water; and he chopped down trees, both to clear space and to provide building materials for his houses. The greatest modification of the environment came when pile-dwellings were built, where several people lived together. This gradually led men to

FROM SHELTER TO HUT
The first shelters were simple branch-built constructions.

A central hole was dug for the hearth.

Then the shelter was dug into the ground.

Then part of the walls appeared above ground.

Eventually, the hut took on its familiar form.
gathering first into clans, then into tribes, and ultimately into nations.

NOT ONLY STONE
The words 'Stone Age' imply that the people who lived then used only stone to put their developing technical ideas into practice. But this is not true. They intelligently exploited every resource of the environment in which they lived.

They used clay and mud to cover the walls of their huts, which they had constructed, at first of woven branches and reeds, and later timber. The vegetable kingdom gave them wood which was probably the most commonly used material for everyday needs. It also gave them fibre which they twined into cords, as well as wicker and bamboo leaves which were used to make baskets and mats. Tree bark could be worked into pliable material suitable for attaching to wooden frameworks to make canoes. Bark could also be used to make thin garments.

The animal kingdom gave our ancestors not only food, but also the raw materials for other things. Bones, horns, and even animals' teeth could be fashioned into a variety of tools, and tendons were used to make strong bow cords. Animal fats were a valuable source of fuel for lanterns. In other words, the Stone Age could just as logically be called the Wood Age, the Horn Age, the Bone Age, and so on, but we call it the Stone Age because it was the intelligent use of stone that led man on the road to civilisation.

A reconstruction of a house built in France 30,000 years ago.

The illustrations here show how the house developed from a simple shelter to a complicated structure where a whole community could live.

Animal skins were used to cover walls, and horns as decoration in this dwelling of 35,600 years ago.

The importance of a central hearth can be seen in this model of house of 7,000 years ago.

A community shelter built in Germany around 5,000 years ago.

HEIRS AND DEBTORS
We have seen in this chapter how our ancestors were able to supply themselves with the implements necessary for their own survival and for gaining mastery over their environment. Hundreds of tools and instruments were involved in this and these have become part of our common heritage. They may seem simple, even trivial and commonplace to us, but we must consider how functional they really were in shape, size and construction. They were absolutely and perfectly adapted for the purposes for which they were invented and manufactured.

Proof of this extraordinary flair for invention on the part of our ancestors exists today in that almost all the prehistoric tools were no different from those that we use today.

A stone blade with a handle differs very little from a modern kitchen knife. The prehistoric hammer tool is substantially the same as our hammer today. The needle for sewing and the hook for fishing used thousands of years ago are practically identical to those used in modern times.

We must, therefore, consider ourselves not only the heirs but also the debtors of our Stone Age forefathers.

FIRE
An important step in the story of the development of man was his conquest of fire. Although it did not have a great technological significance until the Metal Ages, it made man's life much more pleasant as it gave him control of heat and warmth. There were various ways in which man made fire. These are illustrated below.

Rotating a bow-shaped drill on a piece of dry wood.

Striking one stone against another created a spark to light a fire.

Rubbing wood against wood.

Another method of rubbing wood against wood.

STONE AGE COOKING
What and how did our ancestors cook? One of their basic foods (and still one of ours) was meat which they roasted on a spit, or cooked on the embers of a fire, or even on slabs of red-hot stone. Looking at the evidence found in places where Stone Age man lived, even more sophisticated methods of cooking were used. Sometimes the meat was cooked in ovens dug into the ground. It was wrapped in animal skins or in the leaves of certain trees and placed in the oven. Embers were then placed around and over the hole. But not only meat was eaten. Vegetables, too, were an important part of Stone Age diet. Vegetable gathering was a job for women. In addition, our Stone Age ancestors also ate shell fish and roots, but even then, these delicacies must have been something of a luxury.

It is unlikely that their meals were eaten with any ceremony – food was something that was eaten in order to survive, not to enjoy with the same relish that we do today.