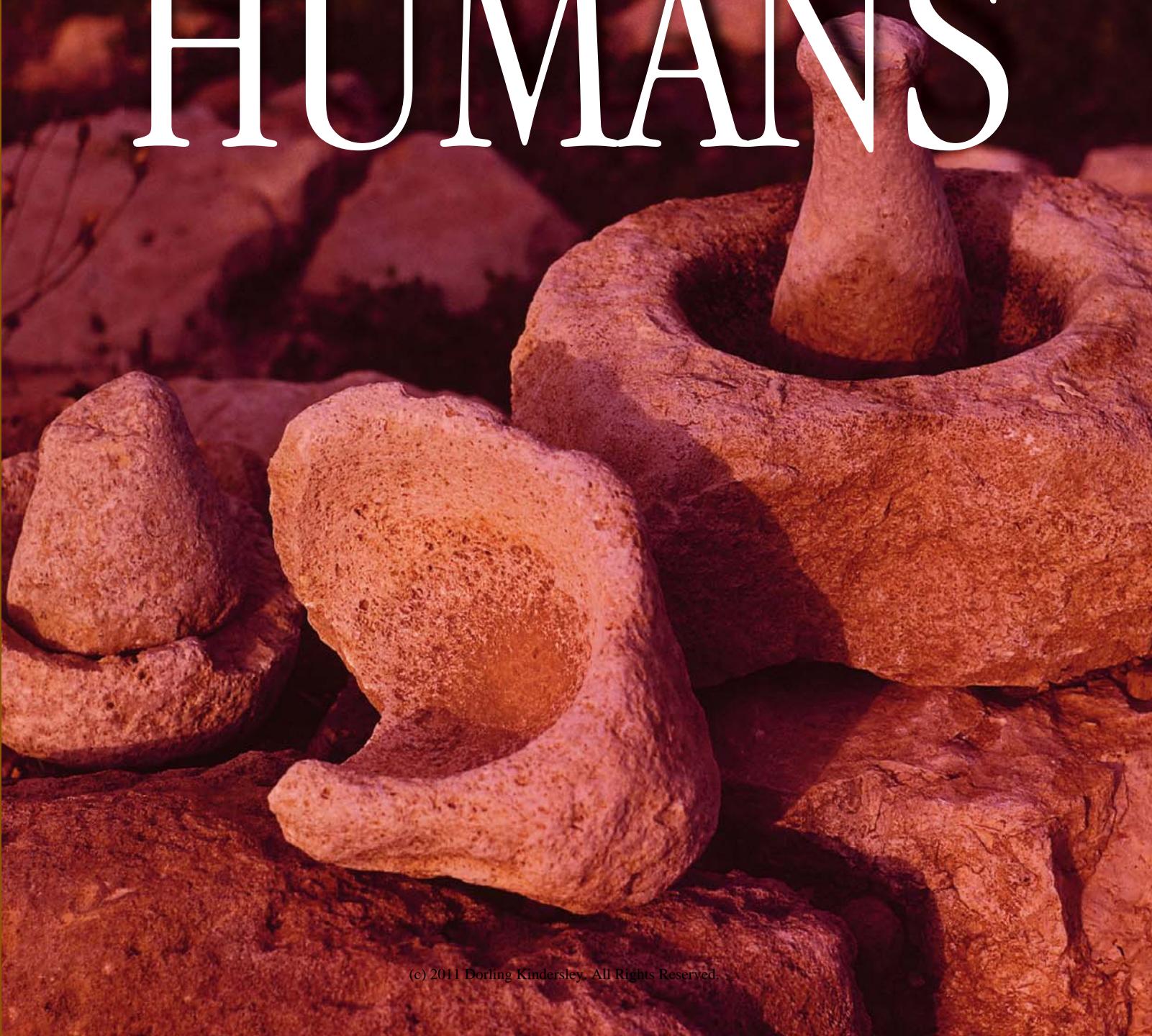




Eyewitness



EARLY HUMANS



Eyewitness Early Humans





Sword, late Bronze Age, c. 950 B.C.



Digging stick (Stone-Age weight with modern shaft)

Flint Dagger, Stone Age, c. 2000 B.C.



Flint fire starter and iron pyrites, Stone Age



Coins, Iron Age, c. 50 B.C.–A.D. 50



Pottery beaker, c. 2200 B.C.

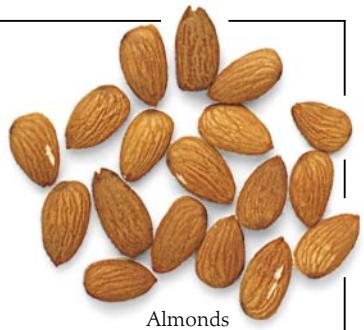
Terret ring, Iron Age, c. 150 B.C.–A.D. 50



Pottery sherd, c. 4000 B.C.



Peruvian mummified hand



Eyewitness Early Humans



Flint handaxe, Stone Age,
c. 200,000 B.C.



Comb, Amazon rain forest



Fire and fire stones



Arrows, as
used c. 6000 B.C.



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Plumed comb,
Papua New Guinea



Antler harpoon point



Antler comb for preparing
animal hides



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Soay sheep's wool
on spindle



Flint arrowheads,
c. 2000 B.C.



Iron-Age bronze
bracelet, c. 50 B.C.

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Human or ape?



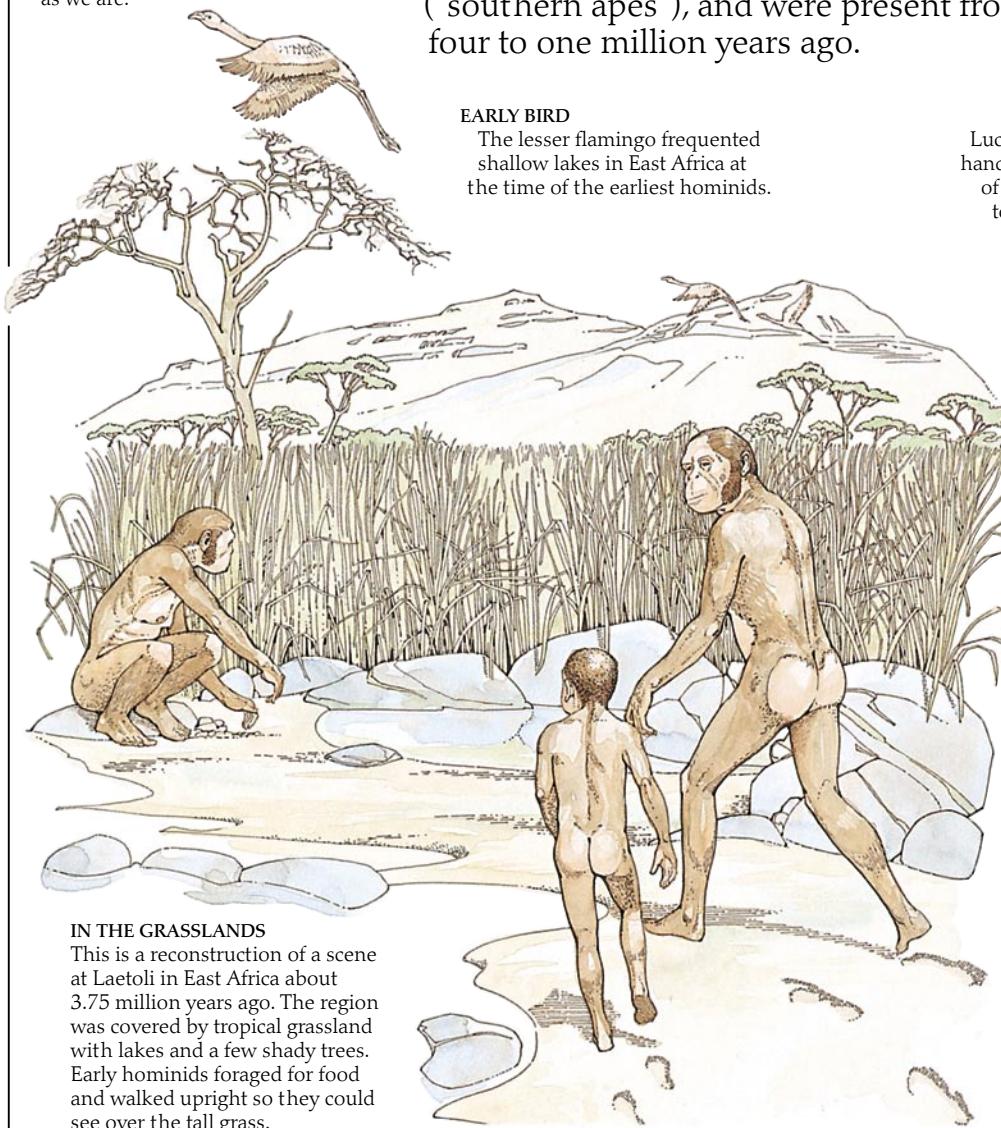
The smallest species of australopithecine, shown here with a modern woman, was the size of an upright chimpanzee. Other species were as tall as we are.

IN AFRICA around ten million years ago, the climate was changing and grassland was replacing forest. To make use of this new environment, the early apes started to spend more time on the ground. They foraged for plants and scavenged animal remains, and this encouraged cooperation, communication, and increased intelligence. By around six million years ago, the ape family had split into two distinct branches, the one that led to chimpanzees, and the one that led to humans. Members of this human branch are usually known as the *Hominidae* or hominids; some experts prefer to call them hominins. Hominids are distinguished from their more apelike ancestors by their bigger brains, different teeth, and upright walking (which left their hands free for other tasks). One of the earliest known groups to exhibit these features are called australopithecines ("southern apes"), and were present from four to one million years ago.



OUT OF AFRICA

Australopithecines have been found only in E. and S. Africa. It is not clear whether humans first evolved in the area, or whether the fossils are just best preserved there.



IN THE GRASSLANDS

This is a reconstruction of a scene at Laetoli in East Africa about 3.75 million years ago. The region was covered by tropical grassland with lakes and a few shady trees. Early hominids foraged for food and walked upright so they could see over the tall grass.

EARLY BIRD

The lesser flamingo frequented shallow lakes in East Africa at the time of the earliest hominids.

ARMS AND HANDS

Lucy walked upright, so her hands were freer than those of apes. She did not make tools, but probably used convenient stones for some tasks.

FOOTPRINTS IN THE ASH

In 1976, the footprints of two australopithecines, an adult and a child walking side by side, were found on this site. They had walked over freshly laid volcanic ash, which had then hardened. A third australopithecine also seems to have walked in the adult's footprints.



"LUCY"

In 1974, the oldest and most complete australopithecine skeleton found so far was excavated (dug up) in Ethiopia (East Africa). It was named "Lucy", after the Beatles' song "Lucy in the sky with Diamonds", which was playing in the excavators' camp at the time.

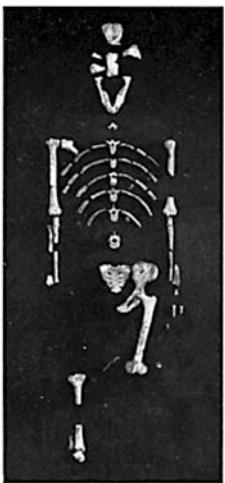
OLDEST SKULL

The australopithecines had a rather apelike head, with a low forehead, a large eyebrow ridge, a flat nose, and a jutting jaw. However, their muzzles were much shorter than those of the apes and their teeth were arranged differently. This, and a number of other factors, makes them closer to humans than apes.



POWERFUL JAW

The australopithecine jaw was more like a human's than an ape's, but was far more powerful than ours and held bigger teeth.



HISTORIC MEETING

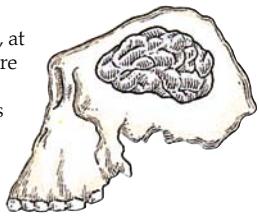
Two of the great names in the study of early hominids meet to discuss problems. Raymond Dart (left) found the first australopithecine in 1924. Richard Leakey (right) continues the research of his father and mother in East Africa (see page 10).



Forty percent of Lucy's bones were recovered.

GROWING BRAIN

Australopithecines' brains, at 400–500 cc in volume, were little bigger than those of gorillas. However, in terms of brain-to-body ratio, they were slightly larger than those of modern apes.



Brain size of a robust australopithecine, one of the larger species



Modern humans have a brain capacity of around 1400 cc. The brain-to-body ratio is high, and the forebrain, the seat of reason, is exceptionally large.

Low, flattened forehead

Large brow ridge

Standing

The comparisons below between human and gorilla bones show how we can tell whether they walked upright or on all fours.



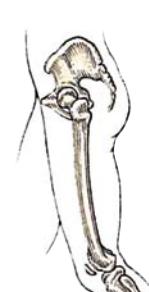
HUMAN NECK
The human head is balanced on the top of the backbone.



GORILLA NECK
The backbone of a gorilla meets its head at an angle.



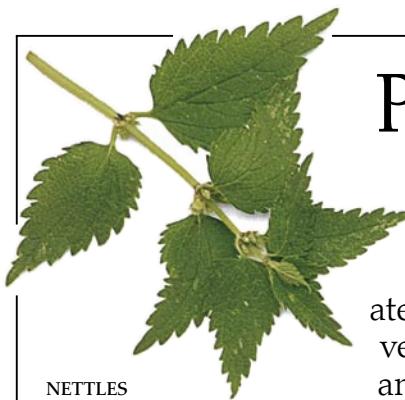
HUMAN AND GORILLA FEET
The gorilla's big toe sticks out at an angle and is used for grasping. In humans, the big toe is aligned with the others.



HUMAN AND GORILLA HIPS
Humans have a broad, short pelvis for upright walking; gorillas have a long, narrow pelvis.



Prehistoric food



NETTLES

The young leaves of nettles were made into a soup. Nettle juice was used in cheese making.

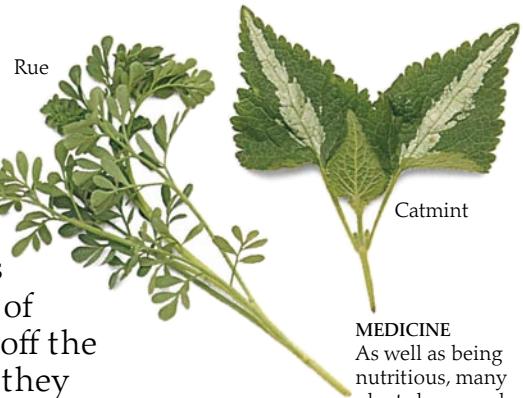
ALTHOUGH WE DO NOT KNOW exactly what the earliest people ate, prehistoric people clearly had a very close relationship with the animals and plants around them. For thousands of years they lived as hunter-gatherers, living off the game that they hunted and the plants that they gathered. Through experience they learned what they could eat, and even which plants could treat illnesses. The prehistoric diet was surprisingly varied and included many plants we now think of as weeds. After people started to grow crops (see pages 30-31), nutritious wild foods were still eaten. These foods could only be preserved by drying, salting, or pickling, so the seasons had a strong effect on what was eaten. Another difference from our diet was that there were few sweeteners, except for honey.



An imaginative reconstruction of Stone Age hunter-gatherers preparing and cooking food



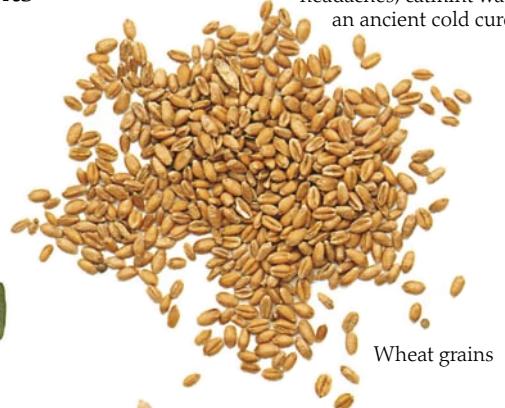
Hazel twig



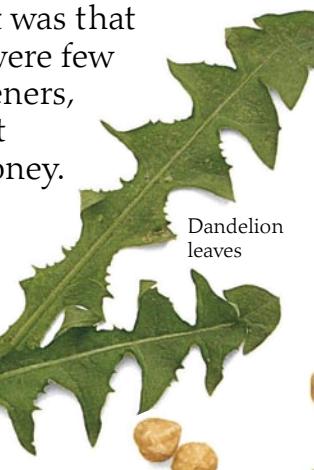
Rue

Catmint

MEDICINE As well as being nutritious, many plants have medicinal properties that have been put to use for thousands of years. The leaves of rue were used for headaches; catmint was an ancient cold cure.



Wheat grains



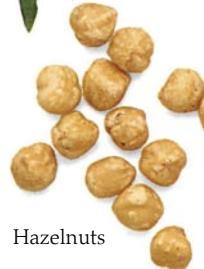
Dandelion leaves



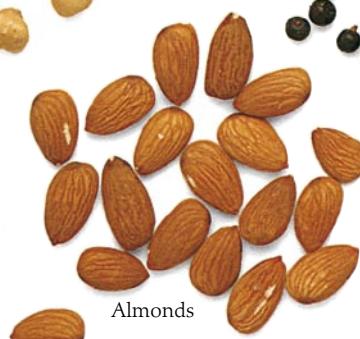
Sunflower seeds



Juniper berries



Hazelnuts

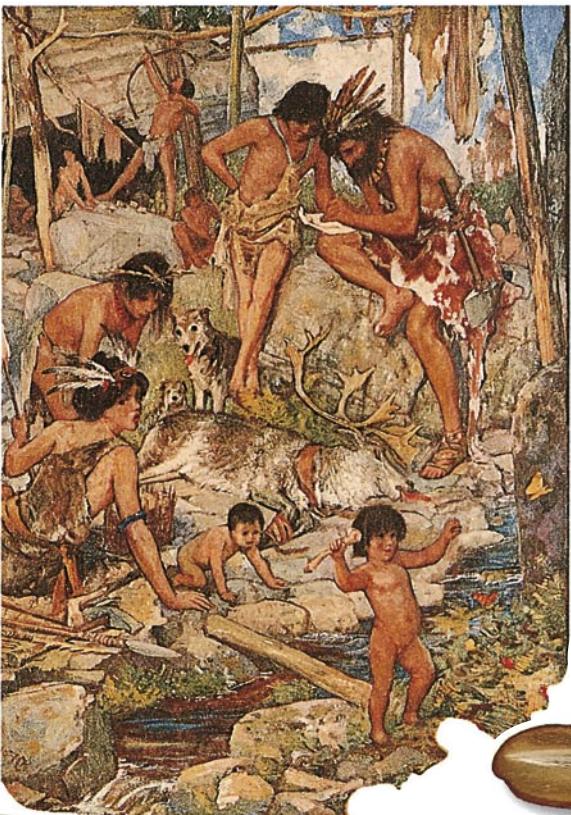


Almonds

FROM THE WOODS Woodlands yielded an abundant supply of wild nuts and berries, which are excellent sources of nutrition and can easily be stored. Hazelnuts in particular seem to have been stored for the winter, and fruit could be preserved in the form of jam. In the Near East, wheat grains were first collected wild, and then cultivated. Juniper berries made a tasty spice.

FOODS FOR THE FAMILY

As far as we know from recent societies, prehistoric hunter-gatherers benefited from a very broad diet, and each member of the family played his or her part in providing food. The men hunted wild animals, such as the stag shown here. The bulk of the food, however, was often gathered by the women and children. This consisted of such items as plants, eggs, nuts, and perhaps fish.



Quails' eggs



SALMON
From at least 10,000 B.C., people used large spears to catch salmon in the rivers of Europe.



Black cumin



Basil



HERBS

In prehistoric times, as now, herbs were often gathered to flavor food.

Peppercorns



Sage



Fenugreek

Mustard



HUNTING
This cave painting shows men hunting giant elk.

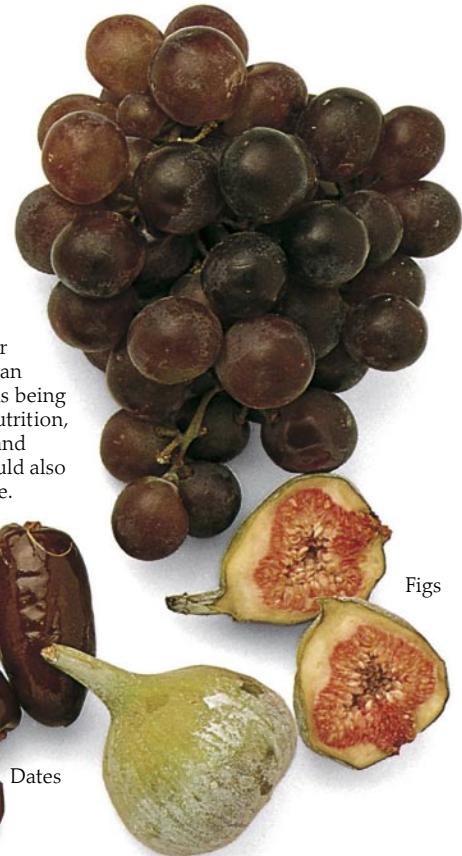
COOKING MEAT

This is a reconstruction of one ancient method of cooking meat. The meat was wrapped in a piece of leather and secured with a twig. This was put into a pot of water brought to boiling point by dropping in red-hot stones which had been heated in a fire (pp. 16-17). The more usual method of cooking meat was by putting it on a spit and grilling or roasting it over the glowing embers of a fire. Roasting was also done in a pit lined with heated stones.



FRUIT

Fruit was an important food for early Mediterranean peoples. As well as being a rich source of nutrition, it could be dried and stored. Grapes could also be made into wine.



Figs

Dates

SPICE OF LIFE

Besides salt, which was used more to preserve food than to flavor it, a variety of seasonings and spices have a long history. Some, such as coriander, were also prized because they are good for the digestive system.



Seals were good food sources for northern peoples.

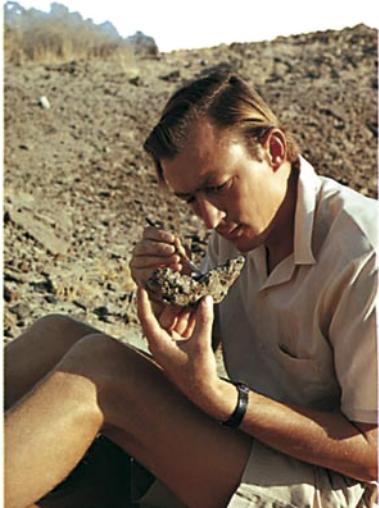
The toolmakers

ABOUT 2.4 MILLION YEARS AGO one of the australopithecine species gave rise to a new type of hominid, the genus *Homo*. Compared with *Australopithecus*, *Homo* had a bigger brain, a more human-looking face, and hip bones that were better adapted to walking upright and giving birth to babies with large heads. The earliest known species of the genus *Homo* could make tools and was therefore named *Homo habilis* ("handy man"). Toolmaking involves using memory, planning ahead, and working out abstract problems; it marks the beginning of our use of culture to help us adapt to our surroundings – a uniquely human ability. The early toolmakers probably also used some primitive form of communication to pass on knowledge. They seem to have used their tools to cut meat and smash open bones for marrow. They may possibly have hunted animals, but it is more likely that they scavenged abandoned carcasses, and that plants were still their major source of food. There is evidence that they also made small, round huts to shelter in – the earliest buildings in the world. They lived in East Africa, and related groups may have lived in South Africa and Southeast Asia.



PEBBLE TOOL

There is a great difference between using tools and manufacturing them. Chimpanzees may select certain items and change them for use as tools, but humans are the only animals to use one set of tools to make other tools. This pebble tool comes from Olduvai Gorge in Tanzania (East Africa).

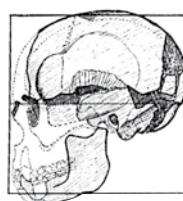


THE LEAKY FAMILY

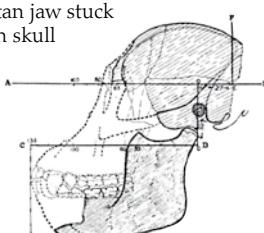
The Leakey family has been involved in research in East Africa for nearly sixty years. In 1960, years of patient work paid off for Louis Leakey and his wife Mary when they found and named the first *Homo habilis*. Their son, Richard, pictured here, has continued their work in Ethiopia, finding many more hominid remains.

The Piltdown forgery

Earlier this century, scientists were looking for a "missing link" between humans and apes. Between 1912 and 1915 amateur archaeologist Charles Dawson, and later Sir Arthur Smith Woodward of the British Museum, found a human skull with an ape's jaw in a gravel pit at Piltdown, England, together with bones of extinct animals. For years "Piltdown man" was accepted until 1953, when it was shown to be an elaborate forgery. Who carried out the hoax is still uncertain.



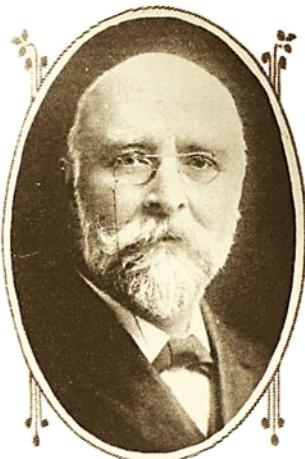
The Piltdown skull was made from an orangutan jaw stuck to a human skull



Orangutan skull



This old drawing of an orangutan stresses its human-like characteristics.

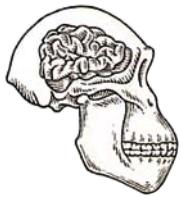


Sir Arthur Smith Woodward of the British Museum.

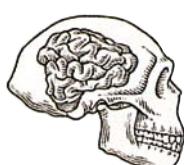


PILTDOWN RECONSTRUCTION

So eager were scientists to find a missing link that many accepted the genuineness of Piltdown man immediately, and a number of reconstructions such as this one were soon made.



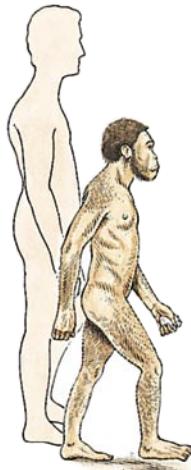
Australopithecine brain



H. habilis's brain



Modern human brain



SIZE AND SHAPE

Comparison between *Homo habilis* and modern people shows that they were much smaller (about 4 ft 6 in/1.5 m tall), and almost certainly much hairier. Their feet seem to have been fully adapted for upright walking, like our own.



THE SKULL

Homo habilis had a more rounded head than the australopithecines, and a face that was smaller, longer, and narrower. The jaw was lighter, the teeth were slightly smaller, and the curve of the tooth row was more like a human's. This is a cast of a skull from Olduvai Gorge.



AT HOME WITH THE TOOLMAKERS

This reconstruction of a scene about 1.8 million years ago is based on excavations at Olduvai Gorge in Tanzania. The camp has been carefully sited near a lake where animals gather. In the foreground a group of *Homo habilis* is constructing a shelter of branches kept in place by stones. Stone tools are being manufactured, and bones from meat scavenged from carcasses lie scattered about. In the background another group is about to kill an African buffalo.

Flintworking

THE FIRST TOOL-MAKING HUMAN, *Homo habilis*, made simple pebble tools from various types of rock (see pages 10-11). Later, in Europe, people found that flint was the most suitable material, and flint tools half a million years old have been found. Flint's most useful property is that regular flakes come off when it is chipped. The angle and size of the flakes can be controlled by careful chipping, and so a variety of sizes and shapes can be made. Because it is a little like glass, flint holds a very sharp edge that can be resharpened by further flaking when it is blunt. Flint is widespread and abundant, though in many cases it has to be mined from the chalk in which it occurs. The earliest tools were the flint flakes and cores used by *Homo habilis*. The flakes could be used to make finer tools and weapons, such as knives and arrowheads. Handaxes came later, with *Homo erectus* (see page 14-15).



FIRST IN ENGLAND
This handaxe is about a quarter of a million years old. It comes from Swanscombe, one of the oldest sites in England, where the earliest British human skull has been found.



HAMMERSTONE
A pebble hammer like this was the simplest tool used for flintworking. The unworked flint was struck with the hammer, and large, thick flakes came away.



ANTLER HAMMER
A light bone or antler hammer was used for chipping off smaller, thinner pieces of flint.

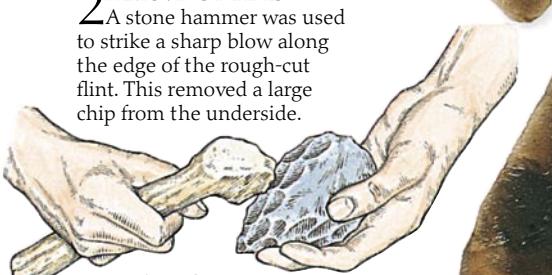
Rounded end used as hammer head

CORE
A flint lump, or core, was often just the right shape for a simple tool.



Flint flake

2 REMOVING FLAKES
A stone hammer was used to strike a sharp blow along the edge of the rough-cut flint. This removed a large chip from the underside.



3 FINISHING
The axe was trimmed by striking it along its edge with a bone hammer.



FLINT FLAKES
Long, thin blades such as these are made by preparing a flat platform on a core and striking the outside rim vertically with a bone hammer.

CUTTING TOOL

Some of the earliest stone tools in the world are handaxes. This one, which is about 200,000 years old, comes from Egypt. It fits neatly into the hand, and the pointed end would have been used for cutting plants and skins.



Modern “flints”

When Europeans began to colonize Australia in the 1700s, they brought with them the trappings of their industrial society. The Australian natives soon came into contact with a variety of western products. They quickly found that materials as diverse as bottle glass and telegraph insulators could be even more accurately flaked than flint. They used all of their most ancient skills to make beautiful lanceheads and arrowheads from these unusual and colorful substances.



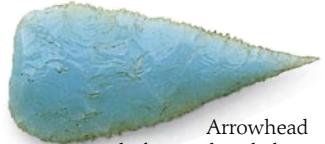
Lancehead
made from
ceramic plate



Lancehead
made from beer-bottle glass



Arrowhead made
from telegraph
insulator

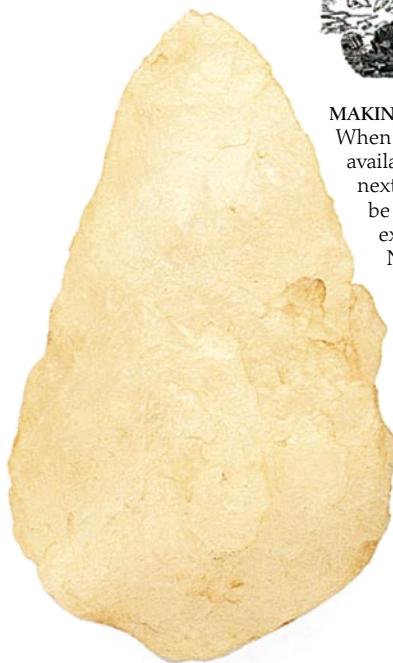


Arrowhead
made from colored glass



FLINT WORKERS right

This nineteenth-century illustration shows numerous flint tools being made and used.



MAKING DO

When flint was not available locally, the next best thing had to be used. This example from Nubia, Egypt, is made of quartz.



*Oval shape indicates
this was probably
an axe
or cleaver*



CHOPPER

This oval-shaped handaxe comes from Warren Hill in Suffolk, England.

HANDAXE FROM EGYPT

Dating from a period before humans had fully evolved, this well-shaped handaxe was found in a desert area west of Thebes in Egypt.

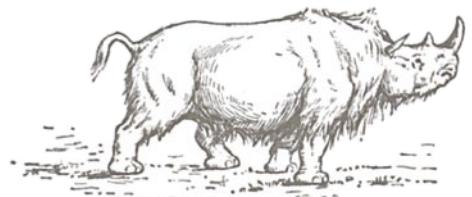
Moving northwards

BETWEEN ABOUT 1.8 million and 200,000 years ago lived the species *Homo erectus*. They had bigger brains and bodies than *Homo habilis*, and some were probably as tall and as heavy as ourselves. They were also much more advanced than *Homo habilis* – they had more varied tools and may even have known how to use fire. Fire would have provided a focus for the family group, kept people warm, and been used for cooking. In addition, it could have been used for scaring predators or hunting game – animals could have been driven into traps using fire. With these skills, and the increased brain power that goes with them, *Homo erectus* ranged far beyond Africa into Europe and Asia, where most of their fossils have in fact been found. In these environments, the harshest of which would have been Ice Age Europe, *Homo erectus* gradually adapted to local conditions. Over a million years, they evolved differently in different parts of the world, but the fossils still share enough general characteristics to show clearly that they are ancestors of ours.



THE SPREAD OF *HOMO ERECTUS*

Although *Homo erectus* probably started life in Africa, remains have been found in places as far away as China and Java. They colonized these areas by making short outward migrations into new territory away from each generation's family base.



WOOLLY RHINOCEROS

Homo erectus survived until well into the Ice Age, when, in Europe, colder conditions came and went at intervals of several thousand years (pp. 18–19). Adapted to this climate, the woolly rhinoceros was one of the large mammals that *Homo erectus* may have hunted.

Stick held in hand

FIRE STICKS

The earliest hominids might have made occasional use of natural fires caused by lightning, but *Homo erectus* seems to have been the first to create fire deliberately. A simple wooden tool like this would have been used to make fire.

Groove to take stick

Wooden hearth

FIRE MAKERS

This scene shows a band of *Homo erectus* people in front of the cave they are using for shelter. On the right a male is starting to make a handaxe by removing flakes from a flint core with a hammerstone (p. 12). The female next to him is kindling a fire in a hearth surrounded by stones to shelter it from the wind. The people in the background are using handaxes to butcher a large mammal they have hunted. The meat will then be cooked over the open fire.

A MORE HUMAN HEAD

The skull of *Homo erectus* has several features that make it look more human than that of *Homo habilis*. The brain is larger, ranging from 750 to 1250 cc in volume (compared with an average of 1,400 cc for modern humans). The teeth are smaller than those of *Homo habilis*. But the skull of *Homo erectus* is still different from a modern skull in many ways. It is very thick, with a sloping forehead and a large eyebrow ridge; there is a relatively massive jaw, flat face, and no chin; and the large jaw and teeth needed strong muscles to keep the head upright – these were attached to a bony bump at the back of the head.



Charred remains found in East Africa hint that *Homo erectus* may have had fire as long as 1.4 million years ago, but scientists are not sure about this. Some of the best evidence that *H. erectus* had fire comes from a cave called Zhoukoudian near Beijing, China. Inside, many *H. erectus* remains were found, dating back 360,000 years. A deep layer of ash suggested prolonged use of fire, as did large lumps of charcoal (right) and burned bone from animals that had been killed and eaten (above).

A NEW TYPE OF TOOL

The handaxe was the distinctive new type of tool produced by *Homo erectus*. The broad end was held in the fist, and the axe was used for cutting meat or digging up edible roots. Handaxes spread over the Old World and remained in use for about one and a half million years.





FIRE IN THE ICE AGE

This is a reconstruction of fire making in a cave during one of the Ice Ages about 200,000 years ago. A simple fire drill is being rapidly rotated over a piece of dry timber.

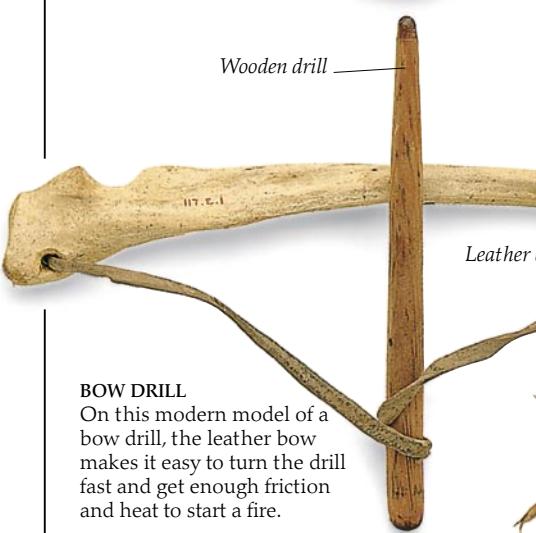
The coming of fire

FIRE WAS ONE OF THE MOST IMPORTANT DISCOVERIES ever made by ancient people. It not only enabled them to keep warm when the temperature was very much colder than it is today, but was also useful in keeping wild animals away, roasting meat, and hardening the tips of wooden spears. Prehistoric people also sometimes deliberately set fire to forests to clear the ground, making hunting and agriculture easier. Before they learned to make fire, people probably used accidental fires caused by lightning. The great step forward was made when they found out how to make fire for themselves, perhaps by rubbing two sticks together extremely quickly to create a spark. Experts are not sure when humans first discovered how to start fires, but evidence from

France and China suggests that *Homo erectus* was using fire about 400,000 years ago. Because fires were so difficult to start, people tried to keep them burning continuously, rather than relighting them.



Wooden mouthpiece to hold drill in place



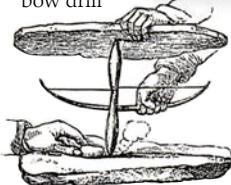
BOW DRILL

On this modern model of a bow drill, the leather bow makes it easy to turn the drill fast and get enough friction and heat to start a fire.



Holes where drill has been used

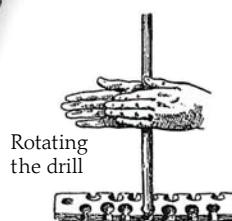
Using a bow drill



Wooden hearth

FIRE DRILL

This simple fire drill from Akamba, Kenya, shows the basic principle of generating heat by turning the drill to create friction so the wood underneath begins to burn.



Rotating the drill

AROUND THE HEARTH

In the sort of fire produced by the earliest fire makers, the tinder ignited by the fire drill was added to a heap of dry grass and small sticks. Larger pieces were added once the fire was alight. A circle of large stones helped to protect it from drafts.



TWO DRY STICKS?

In the Stone Age, people started fires using brushwood and the spark produced when they struck against a mineral called iron pyrite (fool's gold). Perhaps they found this out by accident while making stone tools. This method would have been far easier than rubbing together dry sticks, as shown here.



AFRICAN FIRE MAKING
Much of our knowledge of early fire-making techniques comes from studies of early African tools such as the simple wooden drill.



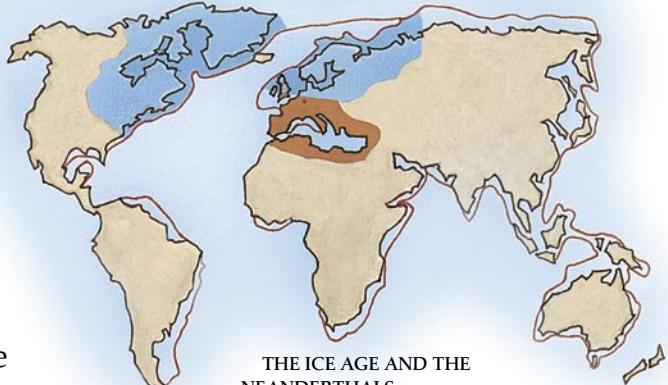
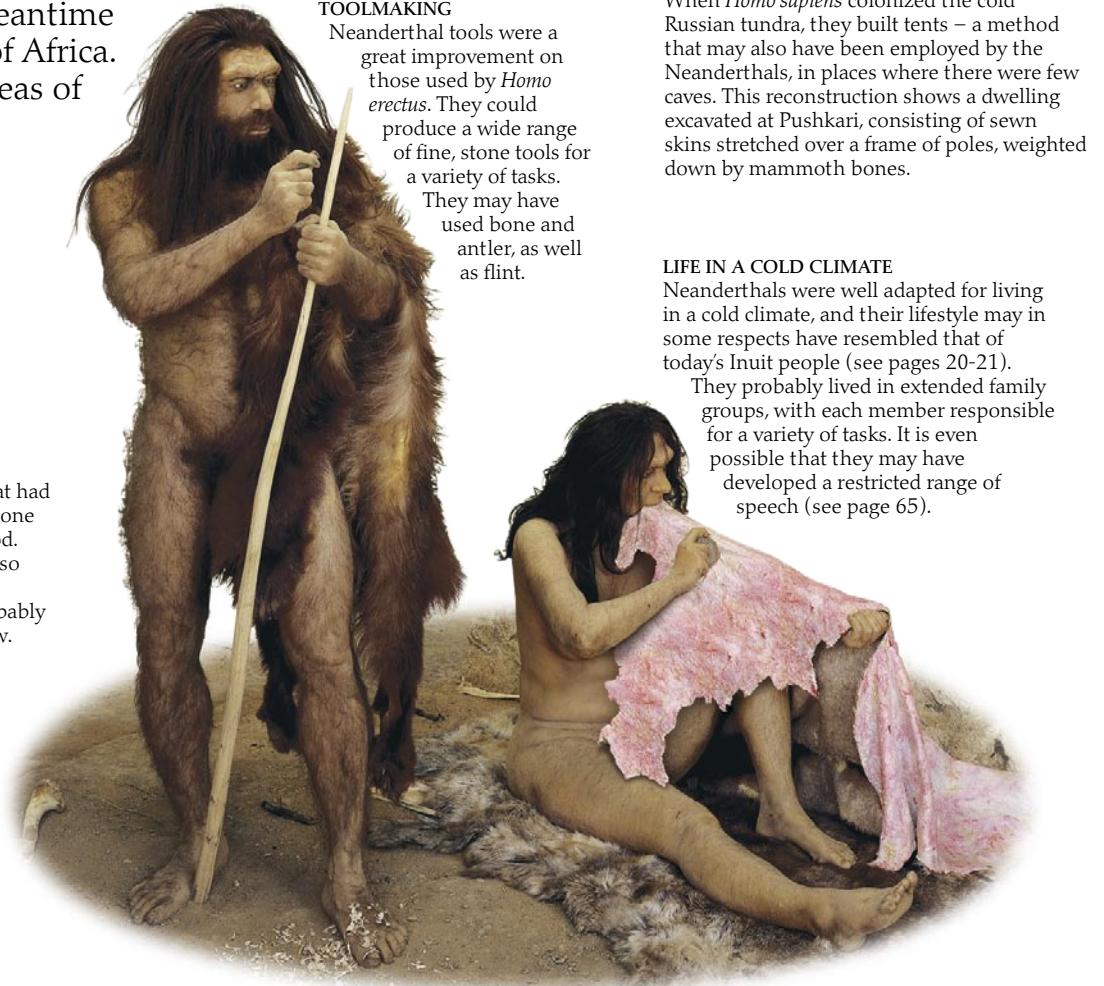
Life in the Ice Age

THE "ICE AGE" consisted of several alternate cold and warm periods, each lasting tens of thousands of years. During some of these periods the climate was actually warmer than it is today, and only for parts of the period was there extensive ice coverage of northern Europe. The *Homo erectus* people were the first to live in this area, probably only in the warm periods. By 250,000 years ago, people were slowly adapting to living in the cold periods, and by 120,000 years ago, a distinct human species – *Homo neanderthalensis* – can be recognized. Although close cousins of modern humans, Neanderthals looked very different. They had short, stocky bodies and were very muscular – even the children. They had large heads, huge projecting noses, and deep-set eyes under a prominent brow ridge. Neanderthals show the first stirrings of humanity: they cared for the disabled, buried their dead carefully, and probably had some sort of religion. They were abruptly replaced about 35,000 years ago by fully modern people, *Homo sapiens*, who had been evolving in the meantime in the warmer climate of Africa. They colonized huge areas of the world at this time, including Europe in its final icy phase, and even Australia.

CAVE CULTURE

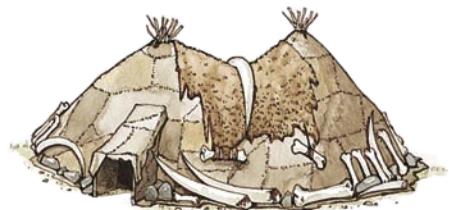
The Neanderthals lived in caves that had cozy hearths. They had advanced stone tools for hunting and preparing food. They buried their dead, and they also made simple ornaments, such as pendants with holes for string, probably made from a length of animal sinew.

THE NEANDERTHAL WARDROBE
Neanderthals were probably the first humans to wear clothes much of the time, to protect themselves from the cold. When making clothes, they would begin by stretching out an animal hide such as a deerskin, and use flint tools to scrape it clean of fat and sinew. After tanning, they would sew the hide into the required shape.



THE ICE AGE AND THE NEANDERTHALS

This map shows the maximum extent of the ice sheets (blue), and the land exposed by the consequent lowering of the sea level. The spread of Neanderthals over a period of 60,000 years is indicated in brown, and the red dot shows the Neander Valley in Germany, where the first find was made in 1856.



HOME ON THE TUNDRA

When *Homo sapiens* colonized the cold Russian tundra, they built tents – a method that may also have been employed by the Neanderthals, in places where there were few caves. This reconstruction shows a dwelling excavated at Pushkari, consisting of sewn skins stretched over a frame of poles, weighted down by mammoth bones.

LIFE IN A COLD CLIMATE

Neanderthals were well adapted for living in a cold climate, and their lifestyle may in some respects have resembled that of today's Inuit people (see pages 20–21).

They probably lived in extended family groups, with each member responsible for a variety of tasks. It is even possible that they may have developed a restricted range of speech (see page 65).

NEANDERTHAL SKULL

The classic Neanderthal skull is easily recognized. It has a lower, flatter crown and bulges more at the back and sides than a modern person's skull. The receding chin, larger cheeks, and very prominent brow ridge are also typical. Brain capacity was at least as large as that of modern humans and possibly larger.



SCRAPER

By the time of the Neanderthals, people were able to make a wide variety of stone tools and weapons, using flakes struck from a prepared core (p. 12). This is a flint scraper for preparing skins.



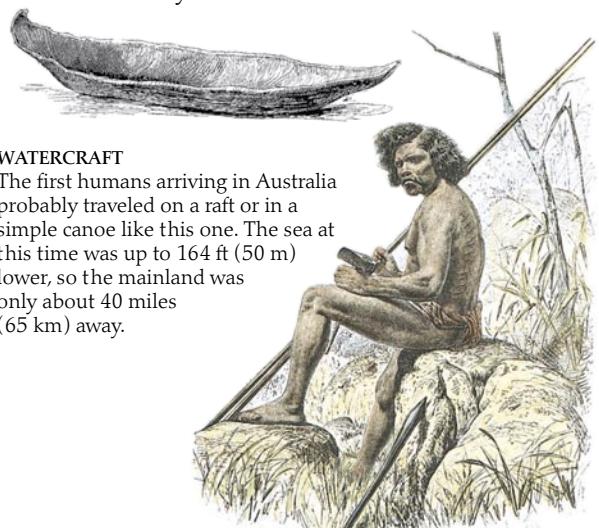
THE NEANDERTHALS' IMAGE

Neanderthals have long been portrayed as primitive savages, as in the artwork above. However, despite their formidable appearance, they were sophisticated people who used fire, made clothes, and managed to survive in the freezing climate of Ice Age Europe.

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The first Australians

Experts think humans arrived in Australia around 65,000 years ago, although Aboriginal people believe they came from the land and have been in Australia forever. The earliest human remains found are those of fully modern people, *Homo sapiens*, who may have come from the islands of Southeast Asia. Some later skulls show older traits, so a mixture of groups may have colonized the area.



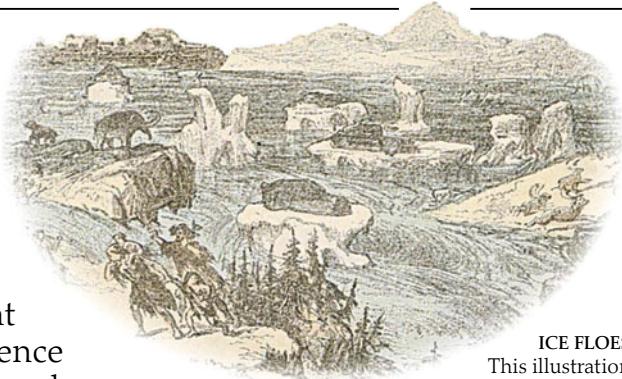
WATERCRAFT

The first humans arriving in Australia probably traveled on a raft or in a simple canoe like this one. The sea at this time was up to 164 ft (50 m) lower, so the mainland was only about 40 miles (65 km) away.

Australian Aborigine

Ice Age hunters

FEW REMAINS SURVIVE FROM THE ICE AGE (two million to 15,000 years ago) except some stone and bone objects made by the hunters of the period. We have some idea what these peoples' clothes and houses might have looked like (pp. 18-19), but we have no direct evidence of their way of life. However, by studying more recent people from a similar climate, we can learn a great deal about what life must have been like in the Ice Age. The Inuit (whom we used to call Eskimos) live along the coasts of Greenland and North America and have survived for thousands of years in a landscape where even the sea is frozen solid for much of the year. Although they have adopted many of the useful trappings of western society, until the last century the Inuit way of life must have been very close to that of hunter-fishers during the Ice Age.



ICE FLOES

This illustration gives an impression of the Arctic landscape, with its icebergs and snowy hills with sparse vegetation.



IN PURSUIT OF FOOD above

Throughout their history, the Inuit have hunted different animals of sea, river, and land. Traditionally, they net or spear spawning fish, and bring down caribou with arrows. They also hunt seals, walrus, and whales, either by spearing them through holes in the ice or by throwing harpoons at them from boats. They use two main types of skin-covered boat – the kayak, which is covered much like a modern kayak, and the umiak, which is open-topped and much larger. Sometimes a small fleet manages to kill a large whale, as in the bone engraving above.



ARROW STRAIGHTENER

Straight arrows are essential for accurate shooting. This straightener is in the form of a kneeling caribou.



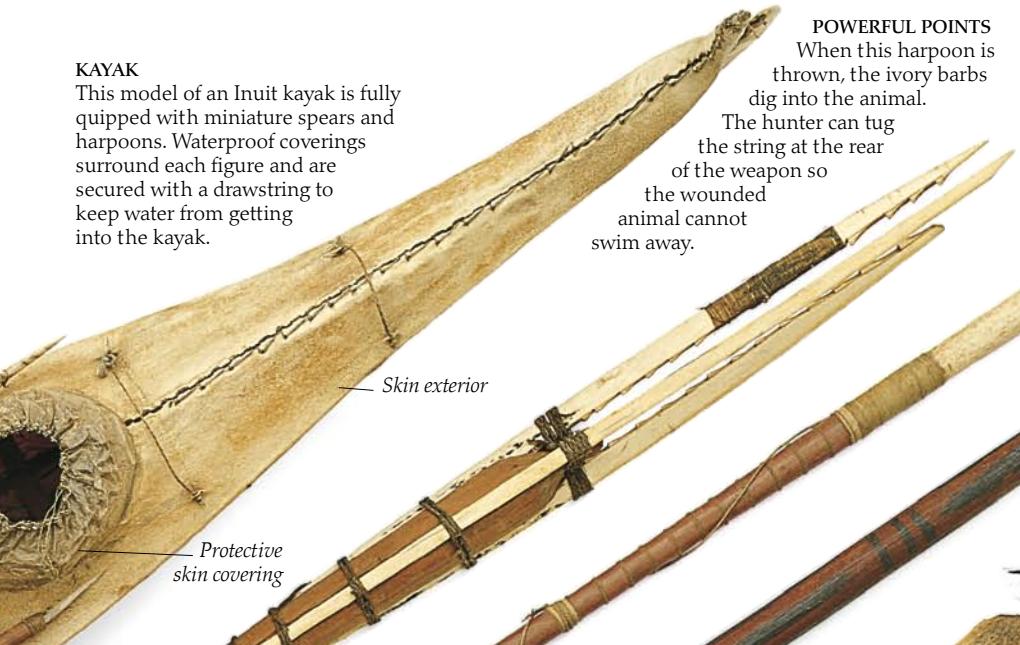
Wooden shaft over
6 ft (2 m) long
(c) 2011 Dorling Kindersley. All Rights Reserved.

INUIT ARSENAL
Harpoons and spears are used by the Inuit for hunting from boats; arrows are for use on land.



KAYAK

This model of an Inuit kayak is fully quipped with miniature spears and harpoons. Waterproof coverings surround each figure and are secured with a drawstring to keep water from getting into the kayak.



Skin exterior

Protective skin covering

Ivory harpoon head

WHALER'S WEAPON
Large harpoons such as this are hurled from boats at walruses or even whales. The bladder keeps the harpoon afloat if it misses the target, so that the hunter can retrieve it.

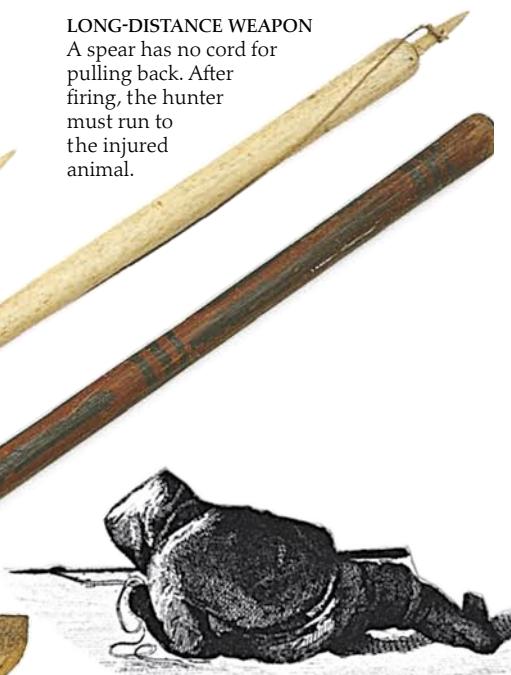
Skin line

Hunting scene

POWERFUL POINTS
When this harpoon is thrown, the ivory barbs dig into the animal. The hunter can tug the string at the rear of the weapon so the wounded animal cannot swim away.

LONG-DISTANCE WEAPON

A spear has no cord for pulling back. After firing, the hunter must run to the injured animal.



LYING IN WAIT

When the sea is frozen, the Inuit hunt seals through the ice. The seals have to come to holes in the ice in order to breathe, so the hunters wait until a seal appears at the surface.



SNOW KNIVES

These two knives were made for cutting blocks of snow for igloo making. They are richly engraved with different scenes showing animals, hunters, and houses.

Thin viewing slits to eliminate glare



GOGGLES

These protect the wearer from the glare of the snow.



CARVING

The Inuit have a strong tradition of carving. Here a craftsman is engraving a piece of ivory with a knife.

BONE KNIVES

The Inuit are careful not to waste any part of the animals they hunt. Bone is used for tools and weapons. The one on the left has animal gut twined around the handle to give a better grip.



Modern humans



PAINTED HAND

About 20,000 years ago in cave at Pech-Merle in France, someone produced this "negative" hand by placing his or her hand on the wall and painting over it. The hand, the part of us that makes and uses tools and is used for signaling, is a powerful symbol.

MOST EXPERTS BELIEVE that the species to which we belong, *Homo sapiens*, evolved in Africa, some time between 200,000 and 100,000 years ago. By 30,000 years ago, *H.sapiens* had spread to all parts of the world apart from the Americas; by at least 11,000 years ago, every continent apart from Antarctica was populated. *Homo sapiens* had more tools than their predecessors, including a wide variety of stone blades and tools made of bone, wood, and ivory. They lived in larger settlements and there was more contact between villages and tribes. Communication through the spoken word and through art, engravings, sculpture, and music became a vital part of human life. Later human developments (farming, civilization, huge

population growth, industry, and control over nature) have occurred in the relatively short period of 10,000 years.

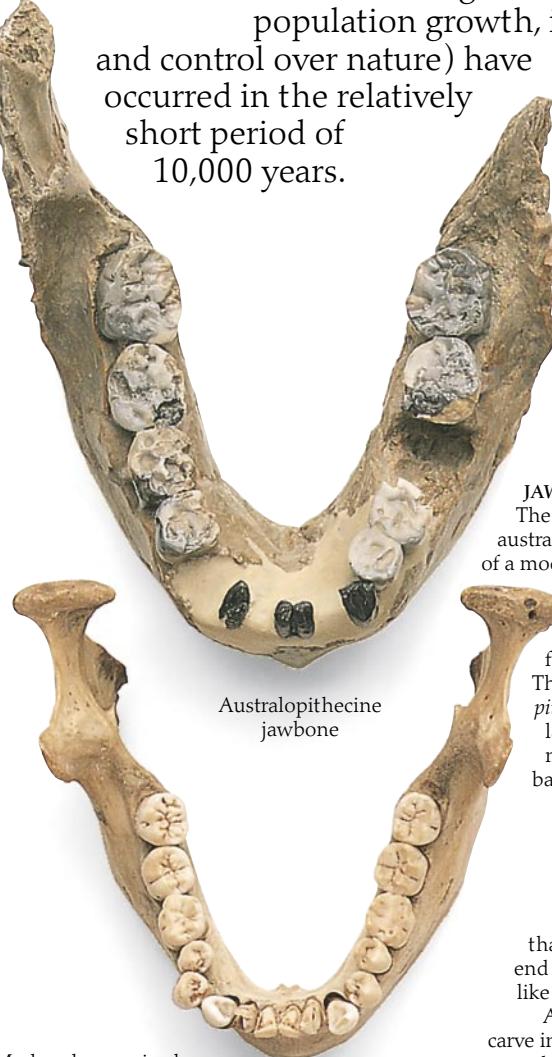


"Venus" figurine in stone from Willendorf, Austria



Stylized female figure from Corsica, c. 3500 B.C.

WORKS OF ART
Although the Neanderthals were the first to show some artistic sense by scratching simple designs on bones, it was not until the arrival of *Homo sapiens* that painting and sculpture developed fully.

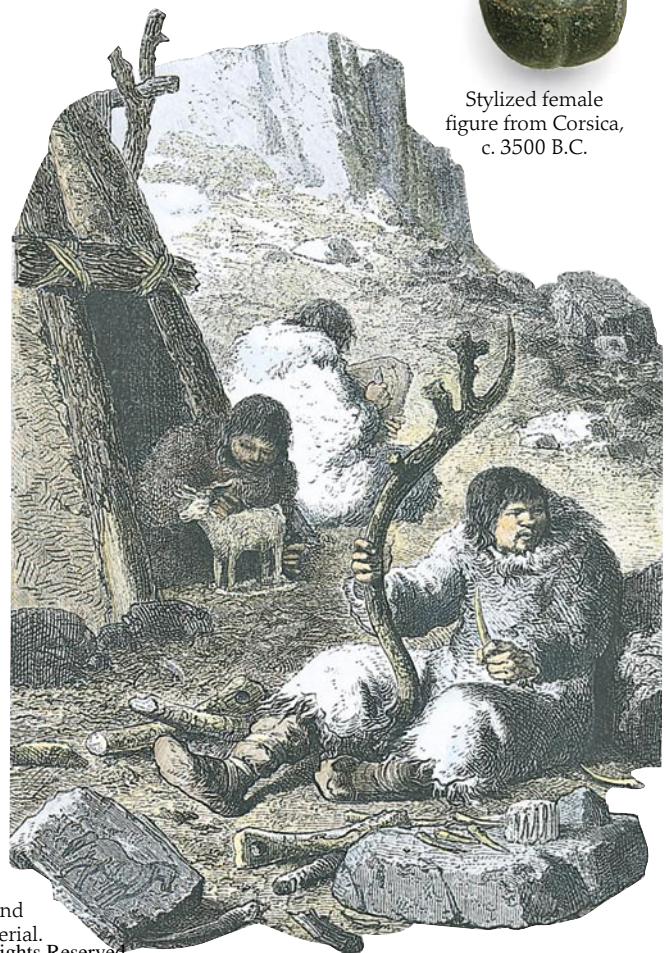


JAWS
The jawbones of an australopithecine and of a modern person, separated by up to three million years, are shown for comparison. The jaw of *Australopithecus* is much larger and has much bigger back teeth.

Modern human jawbone

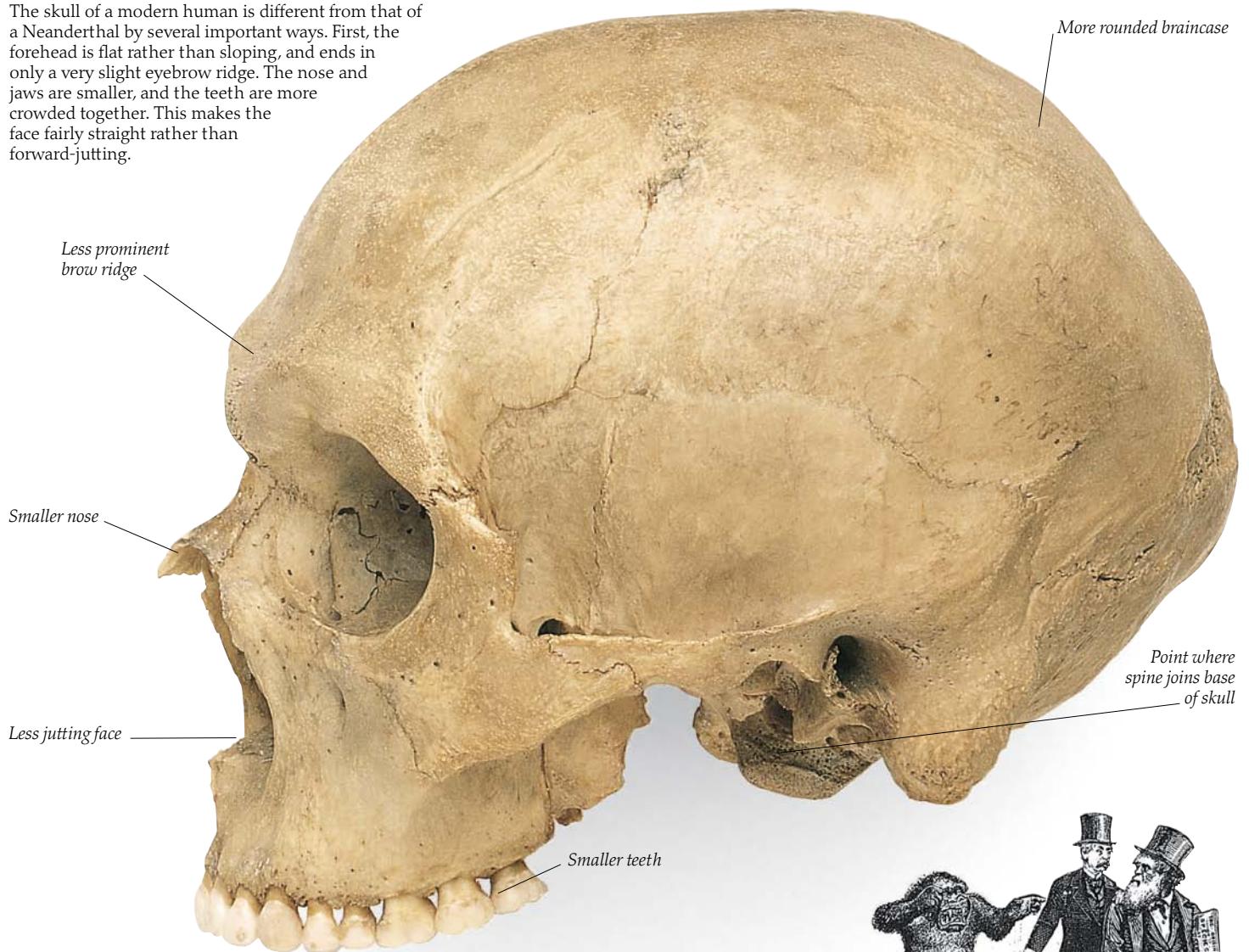
CARVERS
Nineteenth-century illustrators imagined that the sculptors of the end of the Ice Age looked like modern Inuit people. Although they did not carve images exactly like the ones shown here, they would certainly have dressed in furs and used deer antlers as a material.

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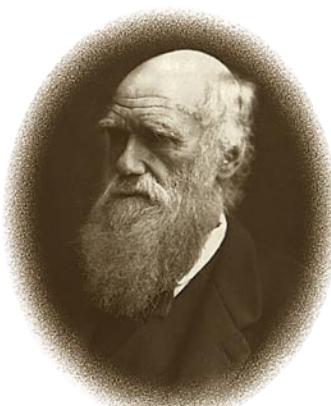
FINALLY - US!

The skull of a modern human is different from that of a Neanderthal by several important ways. First, the forehead is flat rather than sloping, and ends in only a very slight eyebrow ridge. The nose and jaws are smaller, and the teeth are more crowded together. This makes the face fairly straight rather than forward-jutting.

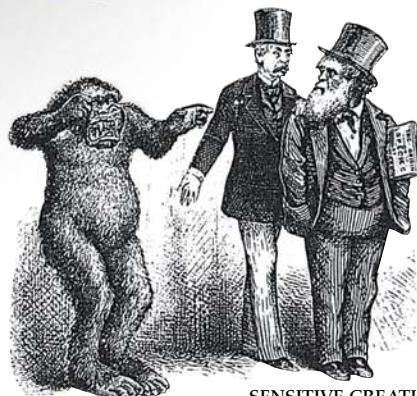


Evolution

The skulls below show a classic view of the evolution of humanity from the apes, as suggested by Darwin and his followers. In reality, the story is more complicated, because there are large gaps in the fossil record. For example, we are not descended from present-day gorillas or chimpanzees, because they have been evolving, too. But apes and modern people do share some ancestors. In addition, there has not been a smooth progress, but a series of fits and starts, with many species around at the same time, some surviving, others becoming extinct.

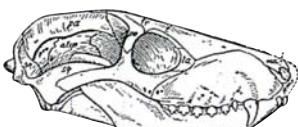


Charles Darwin (1809-82) first publicized the idea of evolution.

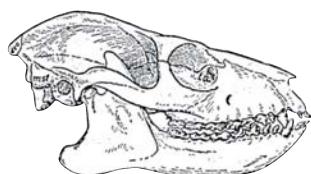


SENSITIVE CREATURE

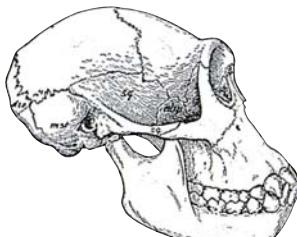
In this 19th-century cartoon, the offended gorilla is pointing to Darwin and saying "That Man wants to claim my pedigree. He says he is one of my descendants."



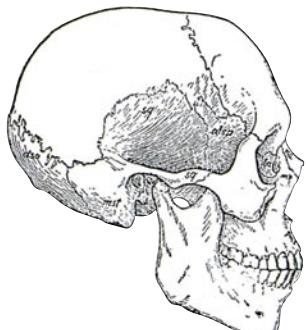
Skull of primitive reptile
(230-195 million years old)



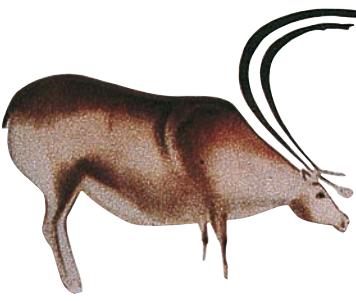
Skull of mammal (54-16 million years old)



Skull of modern chimpanzee



Skull of modern man



MASTERPIECE OF CAVE ART
This painting is in a cave at Altamira, Spain.

SOME OF THE EARLIEST WORKS OF ART were created around 30,000 years ago, during the last Ice Age. Because the making of art is peculiar to humankind, we can say with confidence that by this period the creators of such works were truly human. These early works of art take two main forms. The most famous are the vivid paintings of animals that cover the walls and roofs of caves, such as those at Lascaux in France and Altamira in Spain. The other, less well-known, type consists of small sculptures and relief carvings of animals and female figures. These have also been found in caves, but they occur in large numbers in open-air sites in eastern Europe. Decoration became popular again when pottery was invented.

The first artists



From the cave of
Mas d'Azil, France

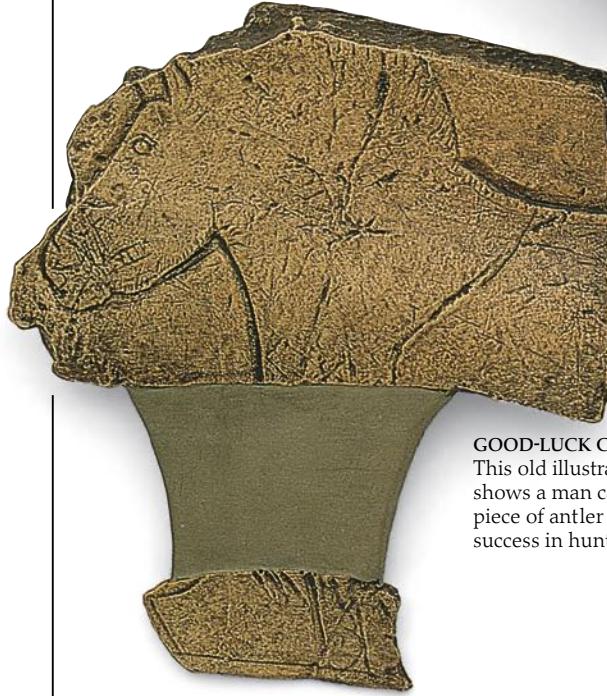
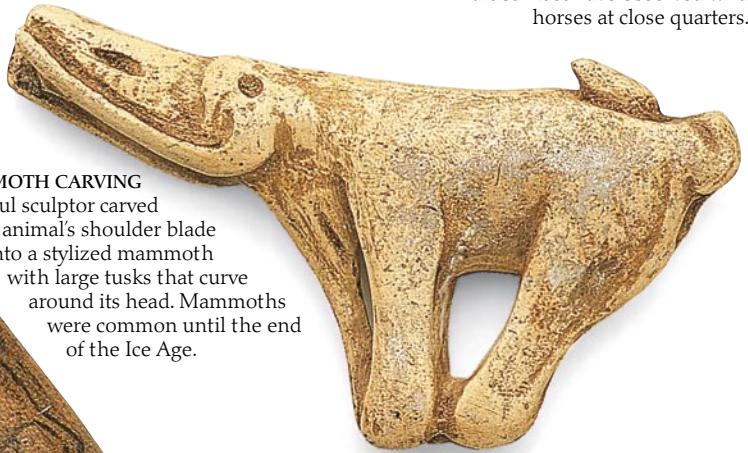


HORSES' HEADS
The accuracy of these carvings shows that the artist must have observed wild horses at close quarters.

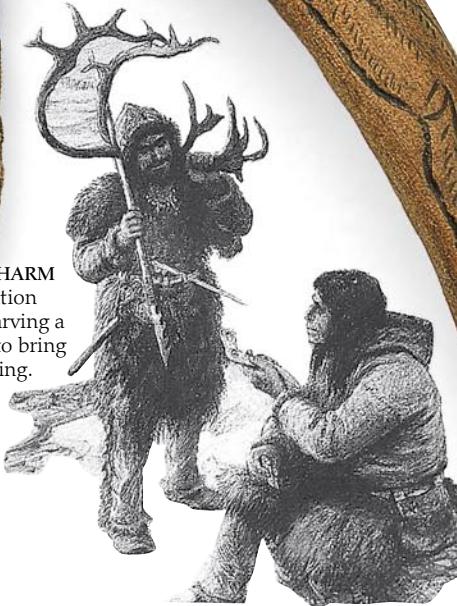


IN HOT PURSUIT right
The earliest artists carved pictures of the wild animals they hunted for food. This one is engraved on bone and shows a bison being followed by a human figure. It is from Laugerie Basse, France.

MAMMOTH CARVING
A skilful sculptor carved this animal's shoulder blade into a stylized mammoth with large tusks that curve around its head. Mammoths were common until the end of the Ice Age.



GOOD-LUCK CHARM
This old illustration shows a man carving a piece of antler to bring success in hunting.

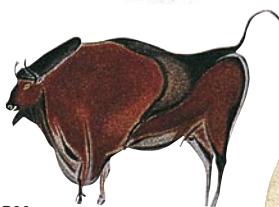


HUNTER'S QUARRY
A stag and four chamois are carved on this piece of bone. Similar to goats, chamois are still found in Europe.

HORSE'S HEAD
This engraving on bone was found in a cave at Laugerie Basse, France.

MAKING THE COLORS right

In this reconstruction, an artist is grinding up a pigment to make paint. Early artists used earth colors such as ochres, and pigments made from other naturally occurring minerals.



BISON

This is another painting from the famous Spanish cave at Altamira.

Found at the site of
Lespugue, France



MYSTERIOUS FIGURES

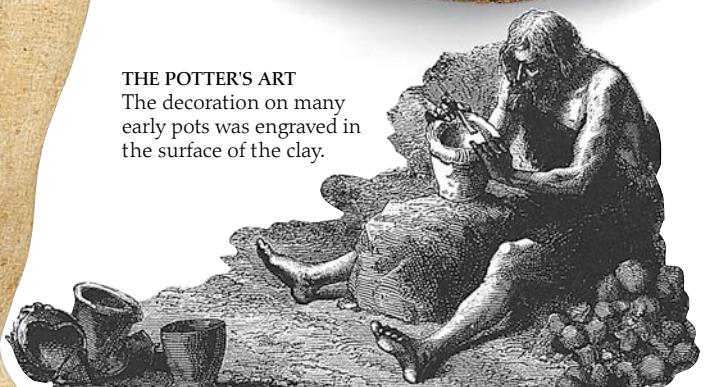
These so-called "Venus figurines" have been found across Europe, from Spain to Russia, and date from around 25,000 to 15,000 BC. They are always faceless and heavily pregnant. They seem to show the importance placed on reproduction and fertility.

From Brno,
Czechoslovakia

Marble figurine from
Melos, Greece, c. 2500–
2000 B.C.

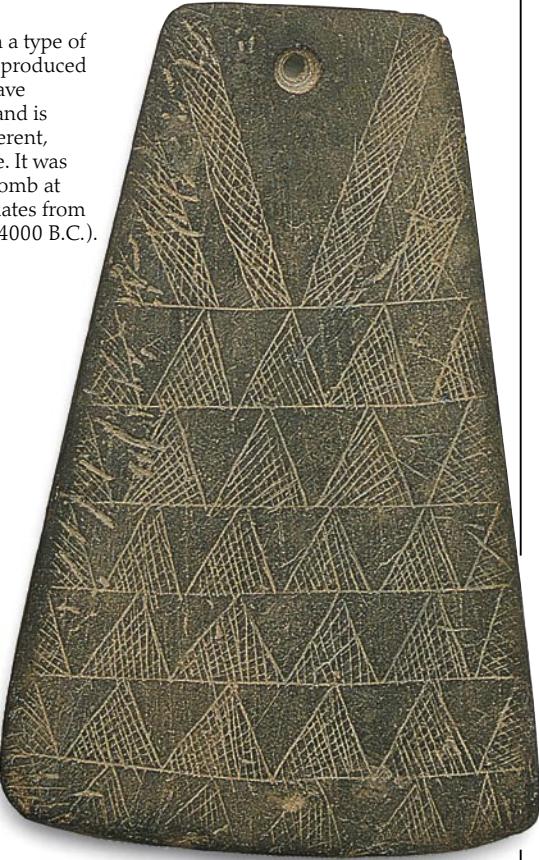


THE POTTER'S ART
The decoration on many early pots was engraved in the surface of the clay.



PATTERNEDED PLAQUE

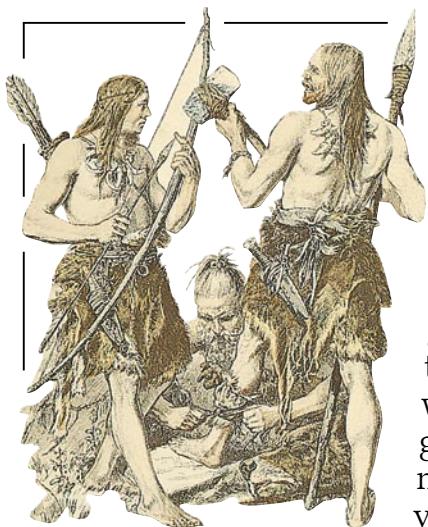
This plaque, made from a type of stone called schist, was produced over 4,000 years after cave painting had died out, and is engraved in a quite different, abstract, geometric style. It was found in a large stone tomb at Alentjo, Portugal, and dates from the New Stone Age (c. 4000 B.C.).



PAINTED POTTERY

As well as being useful, pottery can also be strikingly painted and engraved. This example is about 6,000 years old and comes from Rumania.





STONE AGE HUNTERS

Both spears and bows and arrows were used to hunt for food in the Stone Age.

Hunting and gathering

FOR NINETY-FIVE PER CENT of their time on earth, humans have survived by hunting animals and gathering plants for food. During the Ice Age, people in Europe were probably hunting big game such as the woolly mammoth. About 75,000 years ago, people on the coast of South Africa were catching seals and penguins; and 40,000 years ago

the first Australians may have been hunting now-extinct giant kangaroos. Throughout the prehistoric period, it is likely that most of the hunter-gatherers' food came from plants, nuts, fruits, and shellfish, because these could be gathered with little effort. Their remains do not survive as well as bones, however, so they are not often found on archaeological sites. But the discovery of flint spear- and arrowheads suggests that early peoples had also evolved sophisticated hunting methods.



HARPOON POINT

This point is made of antler and is about 10,000 years old.

Antler is easily made into harpoons like these

FISHING TACKLE above

Found near London, this harpoon would have been used for spearing fish from a sandbank at the river's edge. It dates from c. 8000 B.C.

SIMPLE BUT DEADLY above and below

Two halves of a reproduction of a middle Stone Age arrow. The bow and arrow were developed to hunt the shy forest animals from a distance.

FLINT ARROW

Arrows like this were used about 8,000 years ago. The head was stuck in place with birch resin glue.

Flight of duck feathers

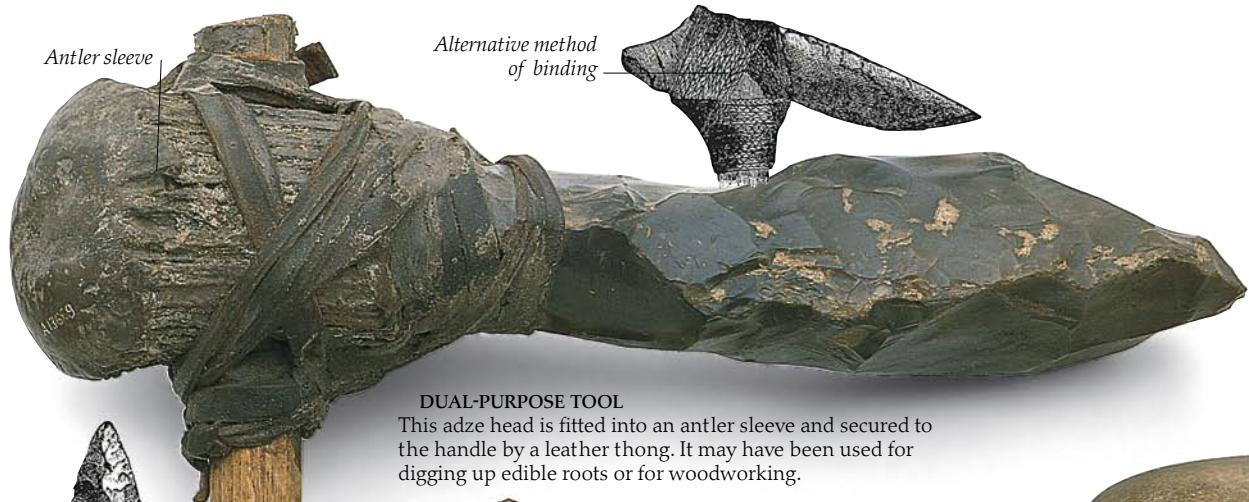
Fire-hardened wooden point

Reproduction wooden shaft

Flints glued in groove cut in shaft

Reproduction shaft

DIGGER
In their search for wild food, early hunters and gatherers would weight a stick and use it to dig up edible roots and grubs.



FINEST FLINTS
In the early Bronze Age, a variety of finely worked flint arrowheads were produced. Some were shaped ornately.



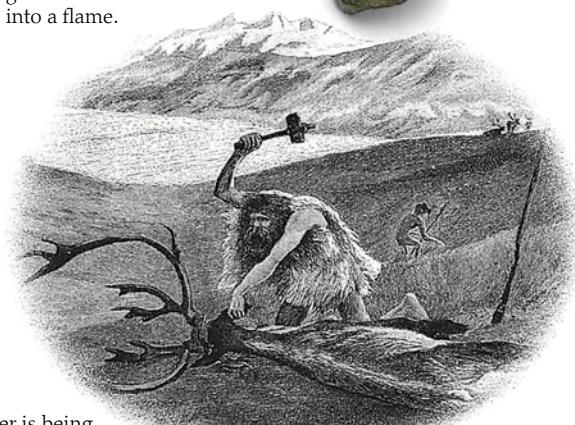
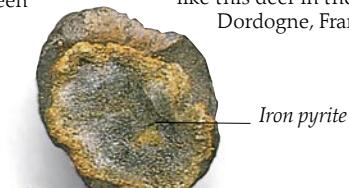
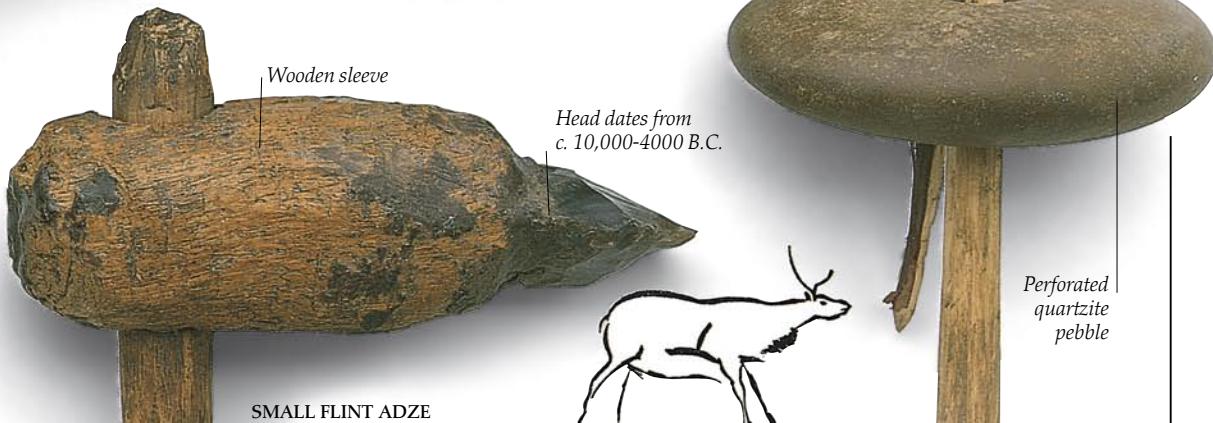
Traditional shape



Missing shaft



Incurved design



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Wedge to prevent movement

Perforated quartzite pebble

Modern wooden stick

Hunters of the desert

IN THE KALAHARI DESERT of southern Africa live a group of people known as the San, or Bushmen, one of the few peoples who still live by hunting animals and gathering wild plants. Although they inhabit a very different environment from the Inuit hunters (pp. 20-21), their way of life can also help us to understand hunter-gatherers of the past. As usual among hunter-gatherer peoples, the San women gather the edible roots and nuts that provide the bulk of the diet, while the men add to the food supply by hunting animals. Antelope are a favourite target for the San bowmen, and smaller animals are trapped with nooses and snares.



READY FOR THE CHASE
Some African peoples use large, metal-tipped spears for hunting. These are more powerful than the San's small bow.

STRAIGHTENER
This grooved stone is heated and pressed along a fresh reed to form a straight arrowshaft.



THE POWER OF POISON
Some of these arrows have metal tips, but many have detachable poison quill-tips. The poison, made from beetle larvae, works slowly - hunters often have to follow the animals until they die.



DIVINING KIT

This contains charms made from parts of antelope, including the horn, hoof, and foot-bones. The hunter uses them to "divine" when to hunt.



Bow is about
2 ft (60 cm) long

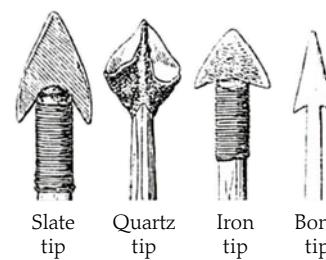
Spare arrow tip

Wooden shaft without tip

Poison quill-tipped arrow

Poison quill-tipped arrow

Metal-tipped arrow



Slate tip

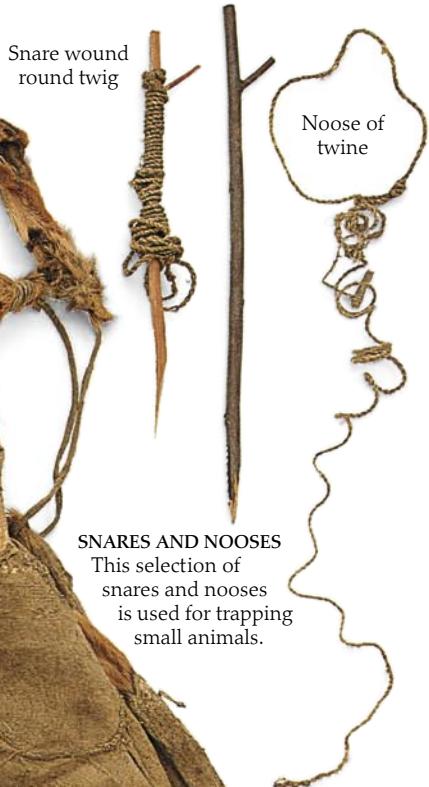
Quartz tip

Iron tip

Bone tip



Metal-tipped arrow



CARRYING BAG
This bag is used for carrying equipment such as snares, and the small animals caught in them.

ON THE RETREAT
Like the Bushmen, Zulu warriors of southeast Africa sometimes used their long metal spears for fighting.



Tilling the soil

HUMANITY'S GREATEST-EVER ADVANCEMENT, farming first began in the Near East around 10,000 B.C. and spread throughout Europe during the next six thousand years. It also developed independently in America, the Far East, and other areas of world. The ability to grow plants and raise animals meant that people could control their sources of food rather than rely only on hunting and gathering. Farming enabled people to stay in one place all the year round and to fill a greater number of mouths. As a result the population increased and towns began to develop.

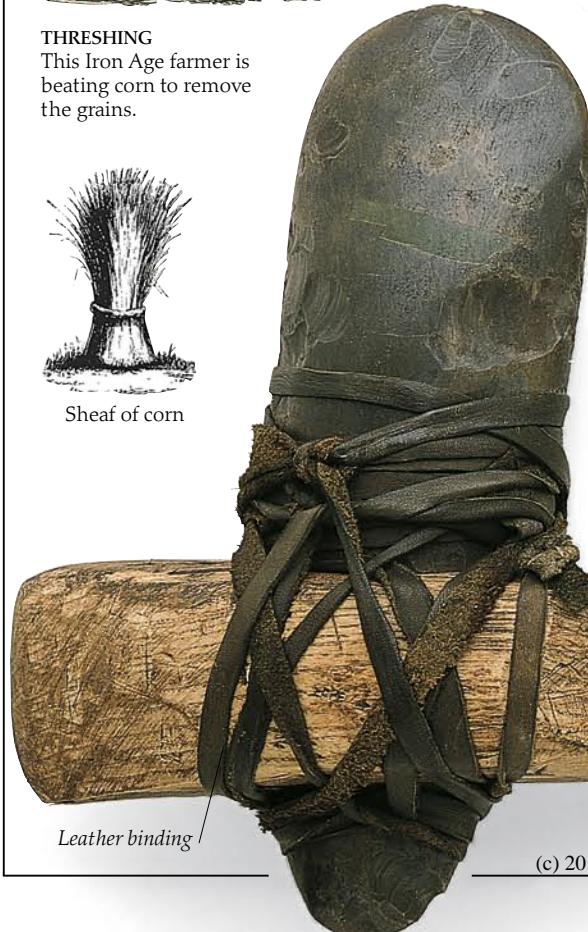


THRESHING

This Iron Age farmer is beating corn to remove the grains.



Sheaf of corn



Leather binding

CLEARING THE GROUND

In the forested areas of Europe, pioneer farmers used axes like this one to clear areas of land for their fields.

THE FIRST HARVEST
This variety, Einkorn wheat, grows wild in Turkey and Iran, where it was first cultivated.

BACKBREAKING TASK
Cereal crops were harvested with sickles until the coming of the combine harvester in the early part of this century. These three examples represent the three "ages" of prehistory - stone, bronze, and iron.

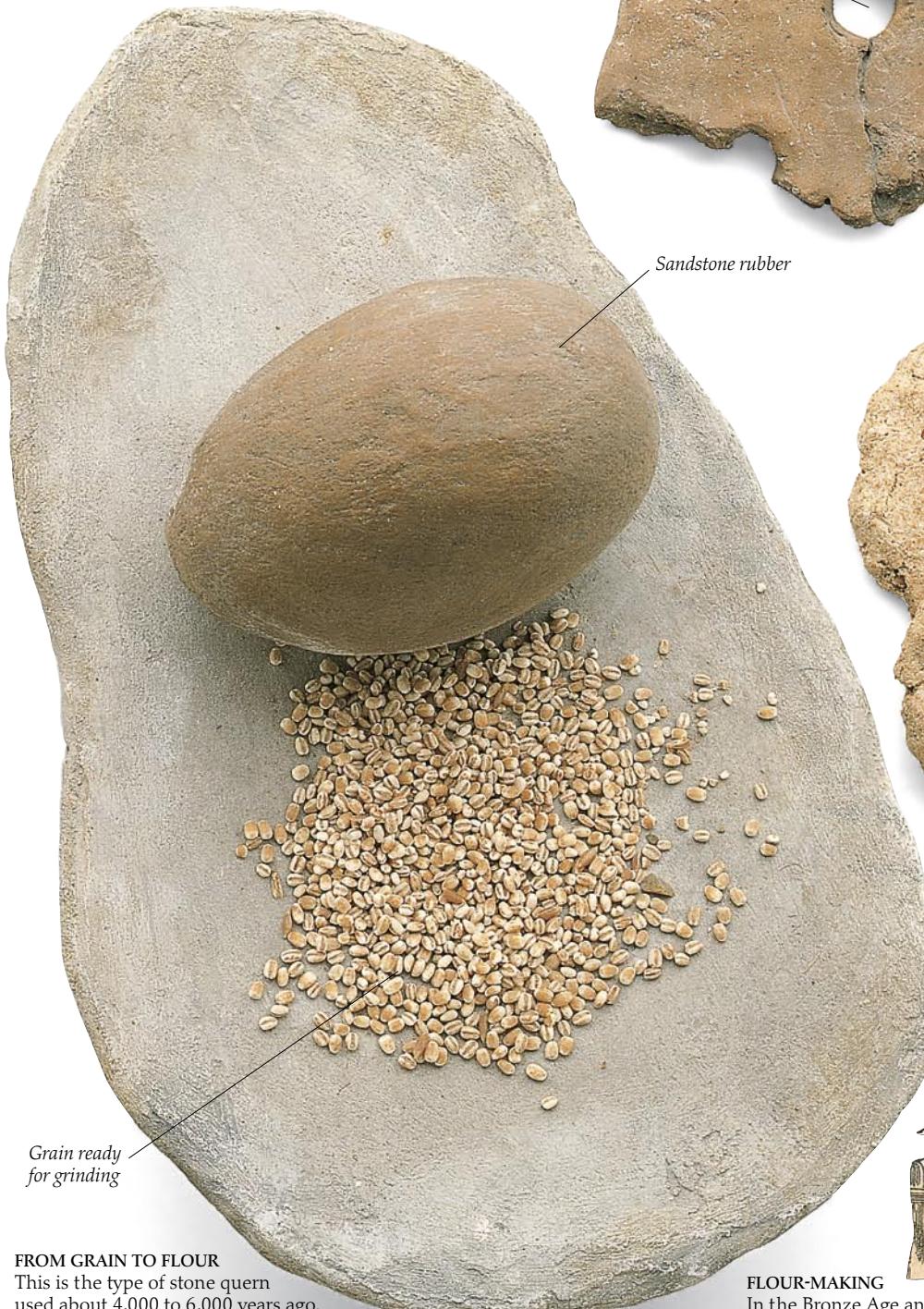
Holes were probably
for ventilation



CLAY PLAQUE

Perforated baked clay plaques,
like this one from about
1000 B.C. may have acted as
ventilators for bread ovens.

Sandstone rubber



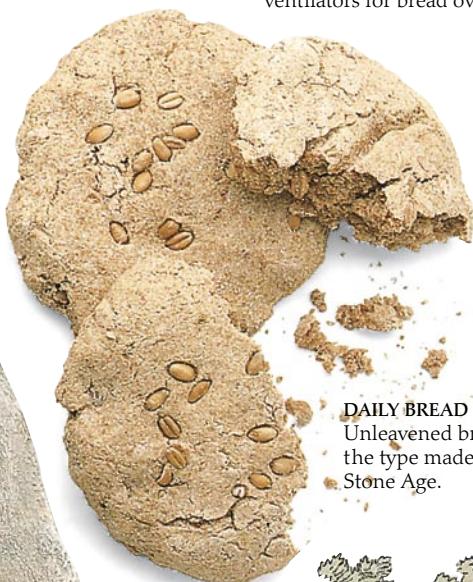
Grain ready
for grinding

FROM GRAIN TO FLOUR

This is the type of stone quern
used about 4,000 to 6,000 years ago.
Grain is placed on the flat surface of the
quern and ground into flour with the stone "rubber" on top.

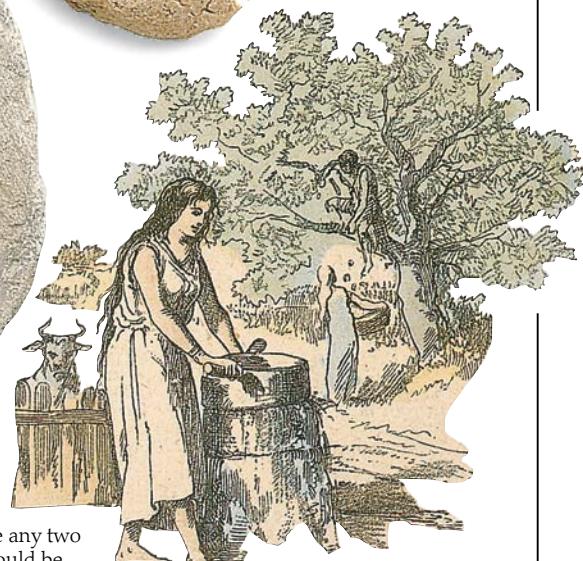
FLOUR-MAKING

In the Bronze Age any two
large flat stones could be
used as querns for grinding corn.



DAILY BREAD

Unleavened bread of
the type made in the
Stone Age.



Clothing and fabrics

THE PEOPLE OF THE ICE AGE were probably the first to wear clothes. They would almost certainly have needed more than their hair to keep warm in the cold conditions, and so they made clothing from the skins and furs of the animals they hunted for food. Stretched and cured, these skins would have provided a very warm covering, and may have been used for shelters as well. The first woollen textiles were probably made in the Near East, where sheep were first domesticated, in the late Stone Age. Spinning and weaving slowly became more popular until, by the Iron Age, quite sophisticated looms were used to weave fine fabrics. Dyes were also used from the Stone Age onwards, and these, together with body decoration (pp. 34-35), allowed ancient people to present a bright appearance.



Antler combs



SCRAPER
When an animal skin had been cut away from the body, a scraper was used to remove excess fat and tissue.



FLINT KNIVES
These disc-shaped knives were used to trim the skin from the animal's body and cut it to shape.



SKIN PREPARATION
There are three stages in making leather. First the hide is cleaned and excess hair is removed with combs (top); next it is "tanned" to preserve it; finally it is decorated and treated, so that the leather is the correct thickness and will not dry out.

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AWLS
Once it has been cured and tanned, the leather can be cut into the necessary shapes. These pointed bone tools, called awls, are used to make holes along the edges of the strips of skins so that they can be sewn together.

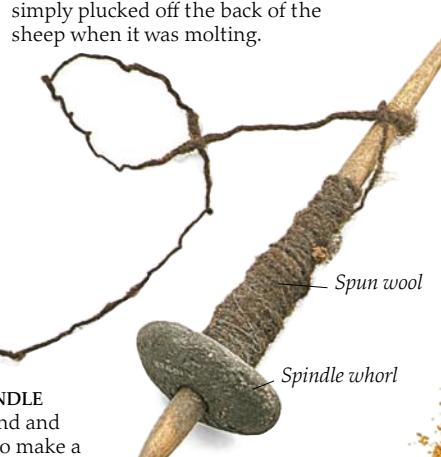


STRETCHING AND SCRAPING
The first major process in preparing a hide for wearing is to stretch it tightly across a frame. This is to prevent it from shrinking and warping. Flint scrapers are then used to clean up the inner surface of the skin, and to make it flexible. This 19th-century engraving shows some Stone Age cave dwellers scraping a stretched bear skin.



RAW WOOL

In ancient times the raw wool was simply plucked off the back of the sheep when it was molting.

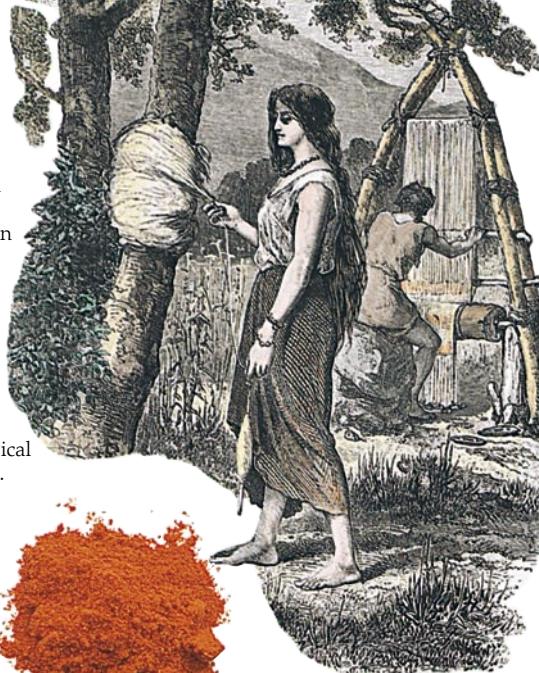


SPINDEL

The raw wool is twisted round and round the wooden spindle to make a single thread. The clay spindle whorl on the end provides a weight to help the spinning motion.

SPINNING AND WEAVING

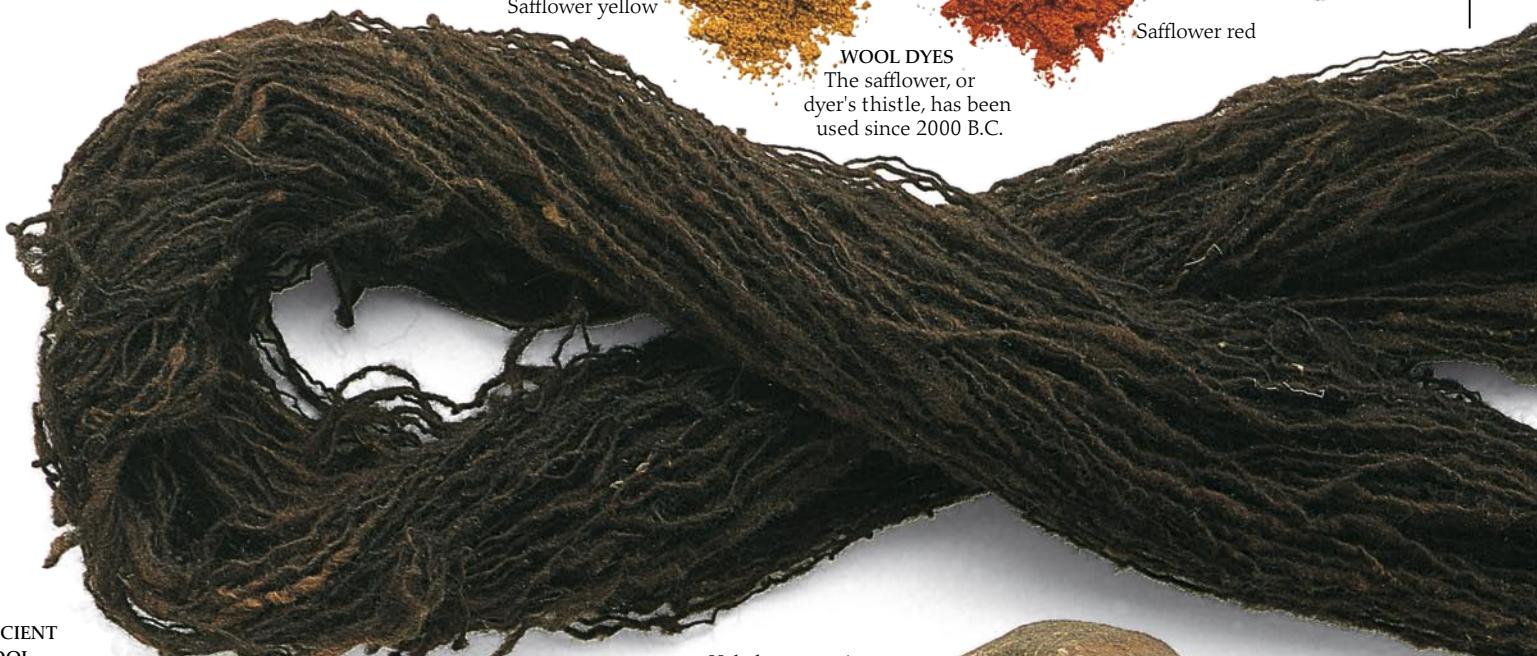
This old engraving shows two of the main processes in wool production. The woman in the foreground is spinning the raw wool on the tree into a single thread by twining it round a spindle in her left hand. The man in the background is using a loom to weave the vertical and horizontal threads.



Safflower yellow

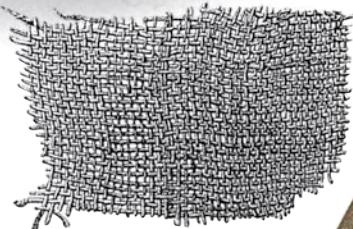


Safflower red

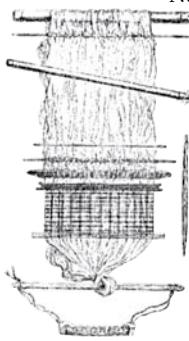


ANCIENT WOOL

This wool comes from a species of wild sheep which now lives only on the Isle of Soay in the Hebrides islands, off Scotland. It gives us a good idea of what ancient wool looked like. The brown color is quite natural. This wool was spun into a single thread and is now ready to be knitted or woven into a garment or a container.



Neolithic textile



LOOM

The loom, first invented in the late Stone Age, made it possible to produce woven fabrics for the first time. The frame stretches the vertical woollen threads, and a shuttle is used to weave the horizontal threads in between them.



Bone shuttle



Clay loomweight for stretching threads



THE POWER OF PAINTING
Native American medicine men sometimes used elaborate body painting for ceremonies.

Skin deep

IN THE PAST, most people decorated their bodies much more than we do in the West today. Tomb paintings, sculptures, and preserved bodies give us some idea of the kinds of ornament used by peoples of the past, and we can glean more information from looking at recent non-Western cultures. The types of decoration used range from tattooing and body-painting to elaborate hairstyling and the wearing of jewellery by both men and women.

SEEING RED
Red pigment (rouge), kept in this box from southern New Guinea, may be applied just to the face or all over the body.

UNLIKELY PERFUME
Ambergris comes from the intestines of sperm whales. It is strong-smelling and was used as a basis for scents in the islands of the South Pacific.

FOR BAD BREATH
The resin from a type of spruce tree, frankincense was used to sweeten the breath.



Ground pigments

FACE PAINT
This lump of red face paint and the seed pods from which it was made come from Gran Chaco, South America.



Spoon and spatula for preparing kohl for use as makeup



HAIR COMB
People of the Amazon rain forest used decorated combs like this.

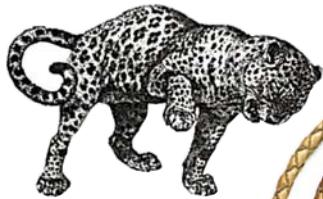


EYE MAKE-UP
These blocks were ground into a power called kohl. Kohl was used for darkening the skin around the eyes.



BLACK AND BEAUTIFUL
This carved coconut contains noti, a mixture for blackening the teeth. It comes from the Solomon Islands.

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LEOPARD

As well as being dangerous animals, predators such as leopards were seen in some societies as sources of strength.



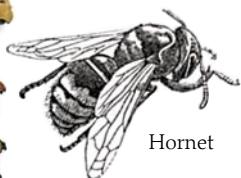
LEOPARD-CLAW NECKLACE
As well as being decorative, this necklace from Nigeria would have been thought to have a magical power.

In many cultures, feathers have long been a popular form of adornment



Each section is made up of one hornet's body

INSECT NECKLACE
Made from the bodies of over a hundred hornets, this necklace is from the Naga Hills, Burma.



Hornet

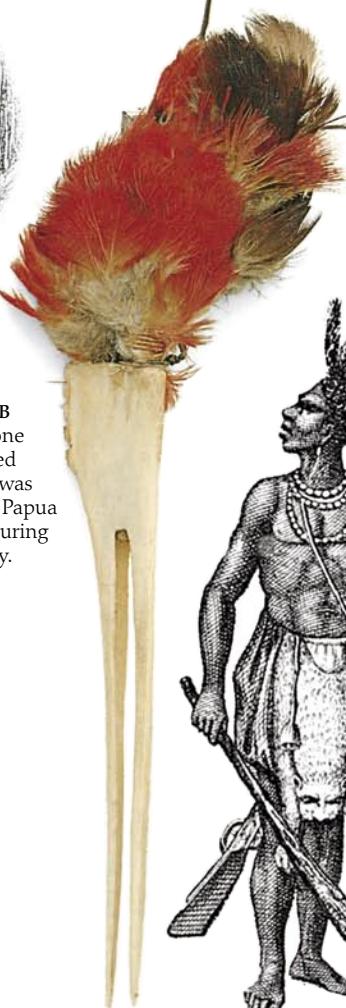


PENDANT
This pendant was worn by Aborigines in central Australia.



DRESSED TO KILL
A hunter of 10,000 years ago wearing a necklace of animal teeth and several armlets.

PLUMED COMB
This simple bone comb, decorated with feathers, was collected from Papua New Guinea during the last century.



African tribesman with feathered headdress

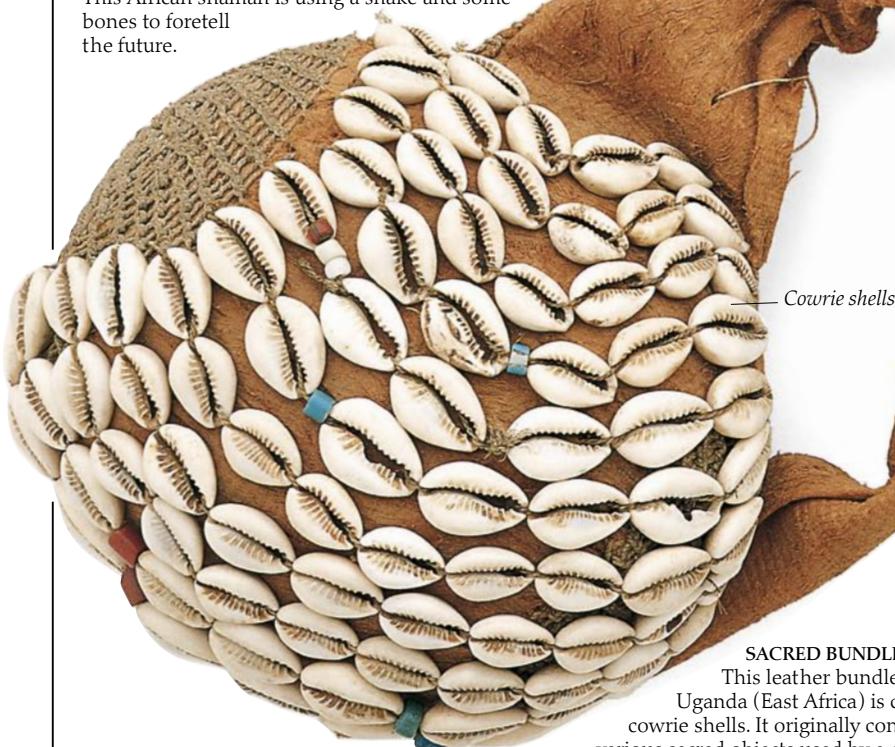
Magic

AMONG SMALL-SCALE, non-scientific societies, magic and witchcraft are an essential part of everyday life. In such a world it is natural to believe that misfortunes such as illness and accidents are caused by powers which take the form of spirits. It is also understandable that people believe that they must consult the spirits in order to find out why some evil has occurred, and what can be done to remedy it. Sometimes it is the job of a particular person - known as a shaman, diviner, or witch doctor - to do this. Usually some sort of offering will need to be made or a ritual performed. Charms are also often worn to protect the wearer from evil. It is likely that the very earliest humans practised magic, using

it to tell them the best times and places to hunt and the best ways to cure illnesses, but little evidence survives. Most of the objects shown here are therefore from recent societies.



This African shaman is using a snake and some bones to foretell the future.



SACRED BUNDLE
This leather bundle from Uganda (East Africa) is covered with cowrie shells. It originally contained various sacred objects used by a diviner.
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THE DEVIL'S DANCE

This shaman is performing the devil's dance, a religious ceremony of the west coast of Africa. Elaborate costumes, made to look like animals or birds, are a common feature of such ceremonies.

FOR FERTILITY

These objects, made of a substance called faience, are Egyptian fertility symbols.



CHARMS right and below

In ancient societies it was a common practice to wear charms (sometimes called amulets) to guard against harm. These took many shapes, but were often worn around the wrist, like the charm bracelets of today.



Cowrie-shell charm from the Mojave-Apache Indians



Bead bracelet from northern India

POWERFUL POPPY

The narcotic effects of opium poppy seeds have been known for thousands of years. In some societies witch doctors used drugs like this to produce trances.



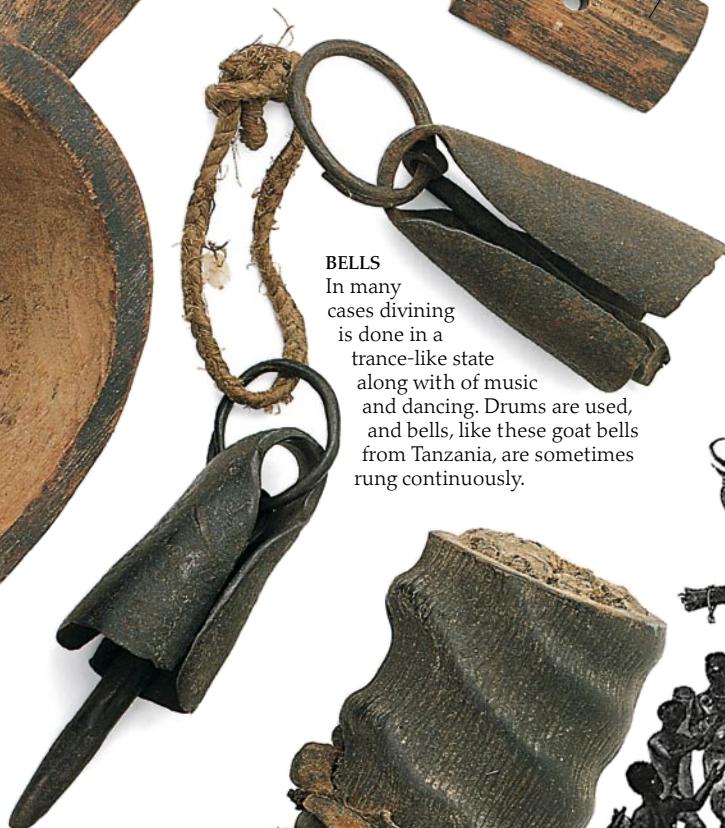
DIVINING BOWL

Divining bowls help people learn causes of misfortune. This one from Tanzania was filled with water. Objects were then floated on the surface and the shaman figured out the meaning of their movements.

Piece of wood that was floated on the water in the divining bowl

BELLS

In many cases divining is done in a trance-like state along with music and dancing. Drums are used, and bells, like these goat bells from Tanzania, are sometimes rung continuously.



Nutshells

FOR GOOD HEALTH

This little red figure is made up of a combination of wood, bone, leather, cloth, and nuts. It was used among the Nte'va people of central Africa to "watch one's body" in other words, to protect a person from illness.



DIRECT LINE TO THE SPIRITS

Diviners communicate with a spirit in different ways. Some read messages, some become possessed by the spirit itself, and some speak directly to it through sacred objects like this antelope horn from central Africa.

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A huge stilt-walking figure in the Apono giant dance



FISH CHARM

This amulet was worn around the neck as a charm against evil spirits. It was collected in Papua New Guinea and is in the form of a local snapping fish inside a basket.



Death and burial

SINCE THE FIRST Neanderthal burials about 60,000 years ago (see page 18), most people have disposed of their dead formally – by burial, cremation, or mummification. For most of them, death was not the end of their existence, but one stage in a journey. Death has often been seen as the time when the spirit leaves the body to live elsewhere – in heaven, in the landscape, in a tomb, or simply in the household. So in ancient societies, as now, death was looked on as an important stage in a person's existence, and was marked with ceremonies. The treatment of the dead varied greatly from society to society, and was often a complicated procedure. In some ancient societies, a funeral pyre was built and the dead person cremated with sacrificial victims. The bones might then be housed in a burial chamber with rich offerings to accompany the individual in the afterlife. Because such burials were performed deliberately, they are often very well preserved. By study of burial remains, archaeologists can tell quite a lot about the treatment of the dead in a particular ancient society, and deduce something about the living society, too.

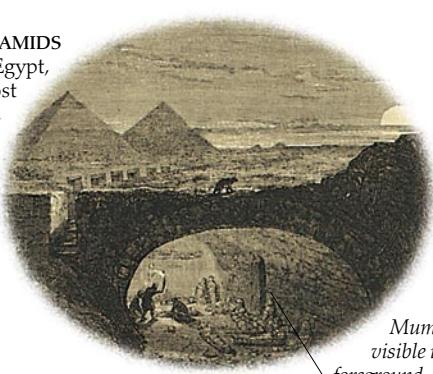


AN EARLY BURIAL

This reconstruction shows the burial of a woman in front of a cave at Les Eyzies, France. The site dates from around 12,000–9000 B.C.

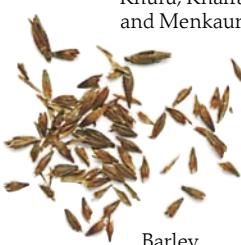


The entrance to a chambered tomb, the Cairn of Dowth, Ireland



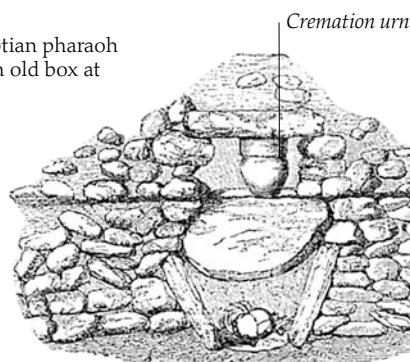
HOUSES OF THE DEAD

"Megoliths" is the name given to a group of monuments consisting of huge slabs of stone. Some of them seem never to have housed human remains, but were simply monuments, while others contained the remains of dozens of jumbled-up skeletons. These examples are around five thousand years old.



FOOD FOR THE DEAD

These seeds from the burial of the Egyptian pharaoh Tutankhamun were recently found in an old box at Kew Gardens, England. They had been recovered during excavation and sent for analysis, but lay forgotten for 46 years. They are the remains of food offerings, and tell us much about the plants and diet available at the time.



BURIAL MOUND

This engraving shows a skeleton from c. 2000 B.C. buried in a chamber covered by a stone slab. Above it, a cremation in an urn has been buried at a later date.

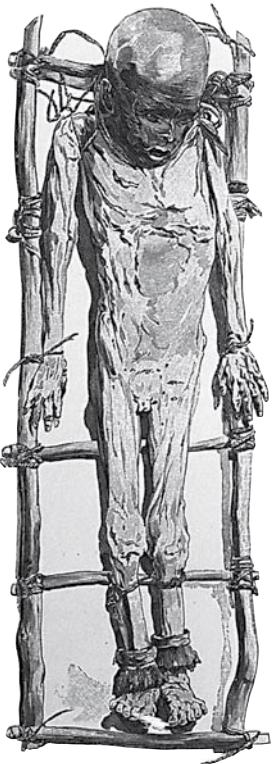


A megalith consisting of six uprights and a covering slab, at Gaulstown, Ireland



This type of pot was often used both in the home and in cremations.

Mummification



PERUVIAN CHILD

The body of this Peruvian child was tied to a wooden frame and left to dry in the hot, arid climate. The result was an extremely well-preserved corpse.



Brittle, paper-like
facial skin

MUMMY BUNDLE

This head, and its remaining hand (left) come from a sacrificial burial in Peru. Grave-goods found with the burial included a basketwork bag and a perfectly preserved stick of maize. The dry conditions have preserved the skin on most of the face.



Fingernails

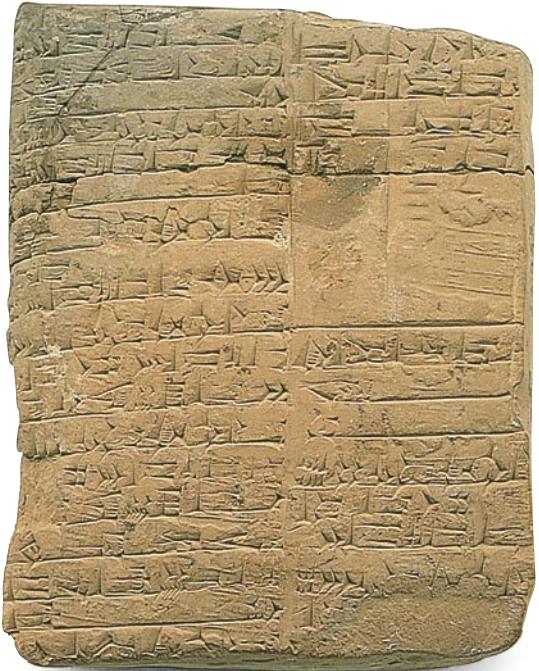
LEFT ARM

This arm and hand are in an even better state of preservation than the rest of the body. The fingernails and the individual's fingerprints can be seen.

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Ancient writing

THE FIRST WRITING gradually developed in Mesopotamia (in part of modern Iraq) and was used to record trading deals. At first, pictures of the objects being exchanged were simply drawn on tokens; later, symbols were used to represent ideas. By about 3500 B.C., the actual sounds of speech (either whole words or syllables) were written down on clay tablets using a stylus. This type of script is known as cuneiform. The idea of writing spread around the Old World, and by about 1000 B.C. the Phoenicians had invented an alphabet. Writing was also independently invented in other places. In China it first appears engraved on bones to record military affairs and the deeds of kings. In Central America, the Maya used hieroglyphs, most of which have only recently been "translated," to make astronomical records and to list royal dynasties. In all these ancient societies writing was restricted to the upper classes because it was a source of knowledge and power.



CUNEIFORM TABLET

The earliest form of writing, known as cuneiform, consists of signs made by pressing a wedge-ended stylus into a slab of wet clay. This is an account tablet from Mesopotamia, dating from c. 3400 B.C.



FOUNDATION STONE

This four-thousand-year-old brick cone, from the famous Sumerian city of Ur, was placed in a mudbrick wall to record the foundation of a building.

Cuneiform signs made with a wedge-ended stylus



Impression

Seal



Impression

Seal



CYLINDER SEAL

This was used in early Mesopotamia to seal documents. Cylinder seals bore the name of their owner, and were simply rolled over the moist clay of a tablet to make a distinctive impression. This one is over 5,000 years old.

BOAR SEAL left

Seals were made from a variety of stones, some of them precious, and had a number of different forms. This one, dating from about 3400 B.C., takes the form of a wild boar.



Seal



Impression

BULL SEAL right

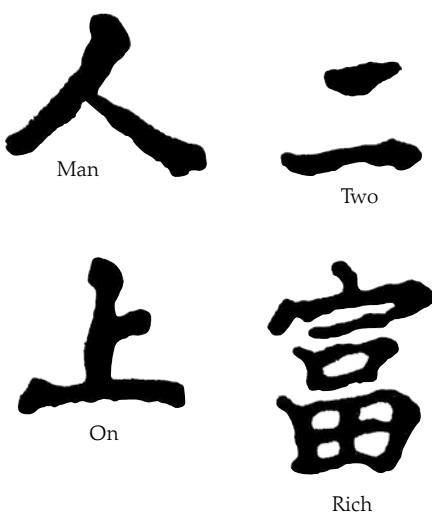
The great Indus civilization of northern India and Pakistan reached its peak between 2300 and 1750 B.C. Like the Sumerians, the Indus people also used a form of writing, and recorded trading deals with seals. This stone seal, showing a bull, is typical of the period.

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Mayan characters

MAYAN TOMB SLAB above
The writing on this stone relief identifies it as showing the ruler "Shield Jaguar" with his wife, Lady Xoc, kneeling before him and ritually drawing blood from her tongue.



CHINESE CHARACTERS above

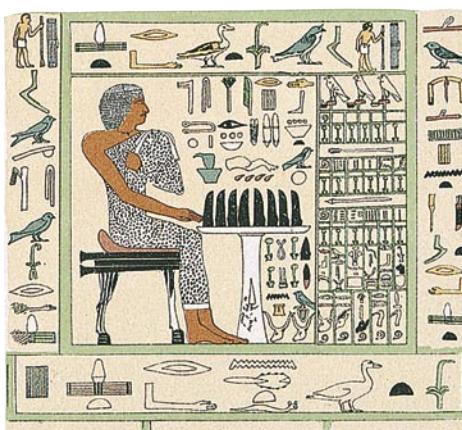
The Chinese script is the oldest writing still in use in the world. In the Bronze Age Shang period a form was used from around 1300 B.C. which is still recognizably related to modern Chinese. In 221 B.C. the Ch'in state brought in a standard script to replace all the regional variations that had developed, and this is still used today.

Writing in Egypt

The idea of writing probably travelled to Egypt from western Asia, but the script itself was invented locally. Three basic kinds were used. The official script used for inscriptions was hieroglyphic; for writing on papyrus with pens, priests used a form called hieratic; a simpler kind, called demotic, was for everyday use.



SCRIBES AT WORK above
Armies of scribes were vital to the functioning of ancient Egypt's complex society. They ensured that records were kept, business conducted, and taxes collected.

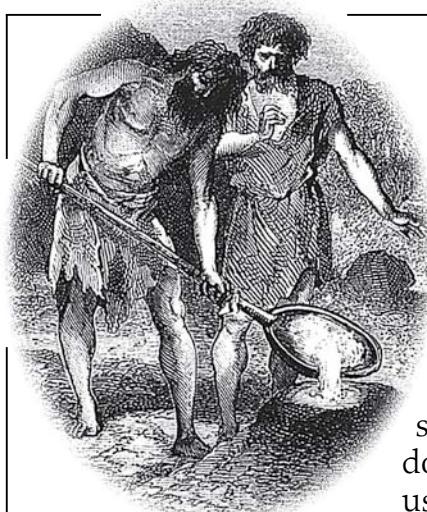


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HIEROGLYPHICS left
Hieroglyphic is a kind of script where the symbols stand for parts of words. It was developed about 3000 B.C. and, unlike cuneiform, was used for historical records, and on tombs and temples.



PAPYRUS above
Early paper was made from this reed.



MELTING DOWN THE ORE

Copper and tin, the usual ingredients of bronze, occur as ores which have to be mined from the earth. In order to obtain the metal, the ore is heated to a high temperature to melt the metal and separate it from the rock. This process is known as smelting. To produce bronze, solid copper and tin ingots are melted together to form a bronze ingot. This in turn can be remelted and poured into a mold.

Bronzeworking

BRONZE IS A MIXTURE of copper and tin. Its use became widespread in Europe around 2000 B.C. Copper had been used to make metal objects before this date, but these were usually only ornamental as copper and tin are too soft to make useful tools or weapons. By adding 10 percent tin to the copper, a far harder alloy could be produced, and one which could be cast in many different shapes. It could take a sharp edge and be resharpened or melted down and recast when it was worn. These qualities made it a very useful metal. Most bronze objects (from swords to brooches, knives to pins) were made by casting - pouring the molten metal into a mold and allowing it to cool and set. Sheet-metal items such as shields were hammered into shape. While stone is abundant locally, copper ores are not common in Europe, and tin is rare, so the shift to bronze brought widespread social changes. Prospectors and miners appeared, long-distance trade in metal ingots developed, and central trading areas came into being. Control of the trade was a great source of power, and large fortified settlements grew up which dominated the trade routes and served as centers of manufacturing.

A PRECIOUS METAL

The liquid bronze was poured into the mold. The skill required to cast objects in this way, together with the specialist equipment needed, made bronze items particularly valuable. People had to be prepared to barter with the bronzerworker to obtain the things they wanted.



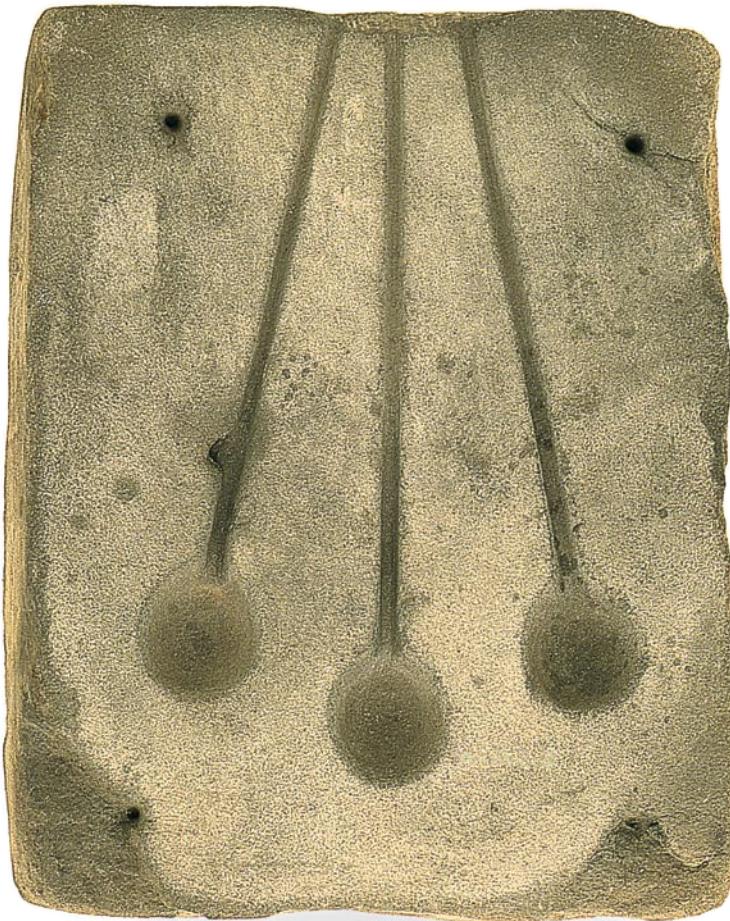
BRONZE DEBRIS

When copper and tin ores are melted together, the resulting alloy is collected in the bottom of the melting pot in bowl-shaped ingots. The debris on the left shows part of the outline of one of these.



Long blade for "slashing" action





STONE MOLD

This is one section of a two-piece mold used for casting round-headed pins. When the two halves were joined together, molten bronze was poured in through holes at the pointed end of each pin. This mould is from Mörisen, Switzerland, and dates from c. 1000 B.C.



PINS

Bronzeworkers were capable of producing quite elaborately decorated objects, as these pins from Switzerland show. The different types of patterns on pins like this can give archaeologists useful clues to the origins of bronze items and the people who made them.



END PRODUCT

This is the type of bronze pin that would have been produced using the stone mold shown.



READY FOR RECYCLING
These axes, dating from c. 750 B.C., are damaged. They may have formed part of the stock-in-trade of a bronzedworker, ready to melt down and recycle.

MOMENT OF TRUTH

These bronzedworkers are casting swords whose handles are similar to the one shown below. The person in the foreground is examining a sword to check that it is free of flaws. The mold used in this process has an extra channel to pour the metal through. When the cast had set and the mold was opened up, the excess bronze found in this channel was removed. Extra metal where the two halves of the mold joined together was also removed or smoothed down.



Decorated hilt

TWO SWORDS

These swords would have been cast using the methods shown on this page. The upper sword is from Avignon, France, and the lower is from Denmark. The Danish sword has been cleaned to show its original gold color; the French sword has the dull, aged color of most ancient bronze objects.

The beauties of bronze



Bronze Age pin,
fashionable after 2000 B.C.

BRONZE TOOLS AND WEAPONS are not much sharper than flint ones, so the original reason for developing bronzeworking around 2000 B.C. probably to do with social status. When it is new, bronze is a shiny gold color and can be richly decorated. It soon became a valuable substance, and one which was ideally suited for showing a person's wealth and power. When it was first invented it was popular among the upper classes for ornamental objects such as jewelry. It was also used to make tools and weapons, which themselves were often impressively decorated. When iron became widespread in Europe, around 750 B.C., it was used for the heavier tools and weapons, thus freeing the bronzeworkers to concentrate on producing luxury items and decorative objects, like jewelry, ornaments, and horse harness decorations.



RICHES OF THE CELTS

The chariots of the aristocratic Celtic horsemen of the late Iron Age (c. 100 B.C.-A.D. 100) were decorated with fine metalwork. Here, red enamel highlights the pattern.



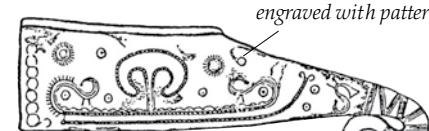
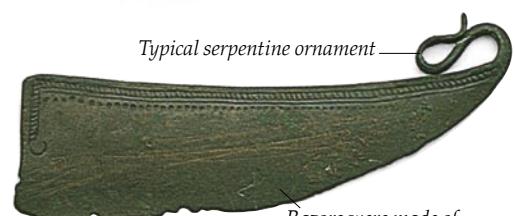
HORSEMANSHIP
In the late Bronze Age the use of horses became widespread.



BRIDLE SIDEPIECE
This part of a horse harness was found in Cambridge, England.



TWEEZERS
Like today, tweezers were probably used in the Bronze Age for pulling out hairs.



FOR USE AND ORNAMENT
These elegant razors were found in Denmark. Human bodies, preserved in the peat in the same area, were clean shaven; people no doubt used razors similar to these.



WHAT ARE THEY DOING?

This mysterious engraving is taken from the design on a bronze vessel found in the Tyrol, Austria.



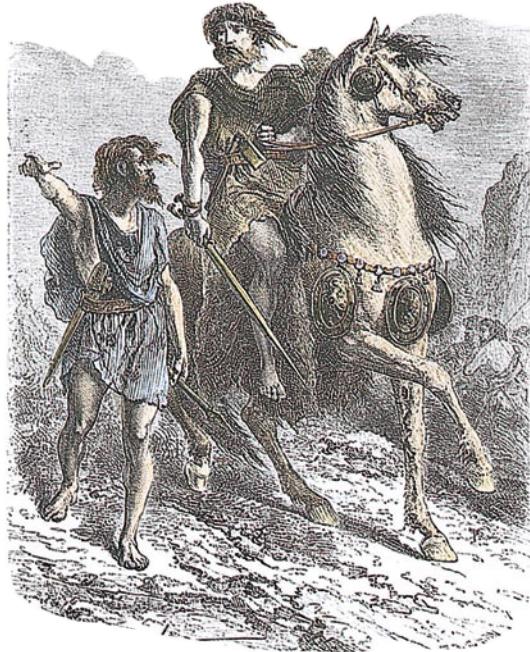
PENDANT
This beaten bronze pendant was probably suspended on a chain worn around the neck. The type of simple bronze chain in use at this time is shown on the opposite page.



A Bronze Age warrior

THROUGHOUT THE WESTERN WORLD a more obviously warlike society was evolving around 2,200-700 B.C., the time of the Bronze Age in Europe. This period gives us our first evidence of individual armed combat and of societies in which the warrior and his skills were valued. The weapons used were spears, for attacking enemies at a distance, and swords and axes, proving that hand-to-hand fighting took place. The high position of warriors during the Bronze Age is shown by the richness of their personal

ornaments (which included jewelry such as bangles and pins with large ornate heads) and the elaborate decoration on some of their weapons.



THE FIRST KNIGHTS
Horseback riding became widespread in the late Bronze Age, and men used slashing swords for fighting.



FOR FOOD OR FIGHTING?

Small knives, like this one from Switzerland, were probably used for cutting food rather than as weapons.

STATUS SYMBOLS
Spears were symbols of the warrior in the Bronze Age, and were often very ornate.

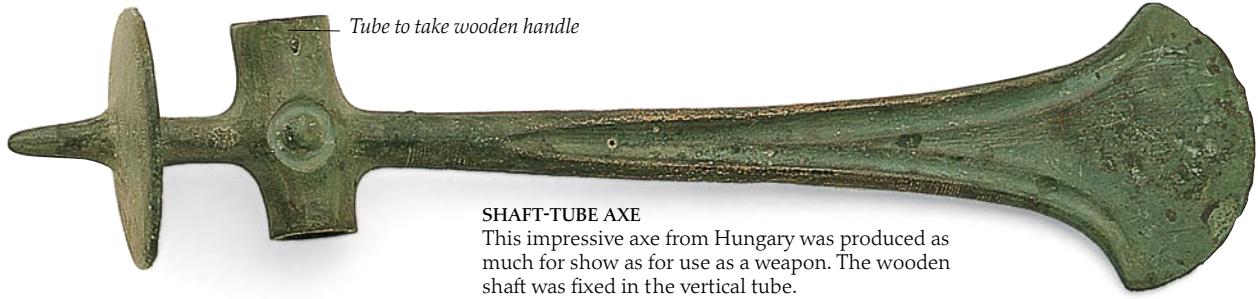


LIGHTWEIGHT SPEAR
This small spear tip is from Amiens, France. The spear would have been thrown at the enemy like a javelin.

CEREMONIAL SPEARHEAD

Together with its wooden shaft, this massive socketed spearhead from Hungary would have made a weapon over 6 ft (2m) long. It was almost certainly for ceremonial use rather than for battle.





SHAFT-TUBE AXE

This impressive axe from Hungary was produced as much for show as for use as a weapon. The wooden shaft was fixed in the vertical tube.



WORKING WEAPON

Found in Hungary, this more practical decorated axe head dates from 2000–1000 B.C.

INTO BATTLE

A Bronze Age warrior was equipped with spears and slashing swords, like the one shown at the bottom of the page. A helmet, shield, and stout leather garments provided some protection from the enemy.



Hole for rein

REINING THEM IN

This terret (loop) was attached to the pole of a cart or chariot. The reins all passed through it, making for easier control by the driver. This bronze terret was found in Switzerland.



Socket for wooden shaft



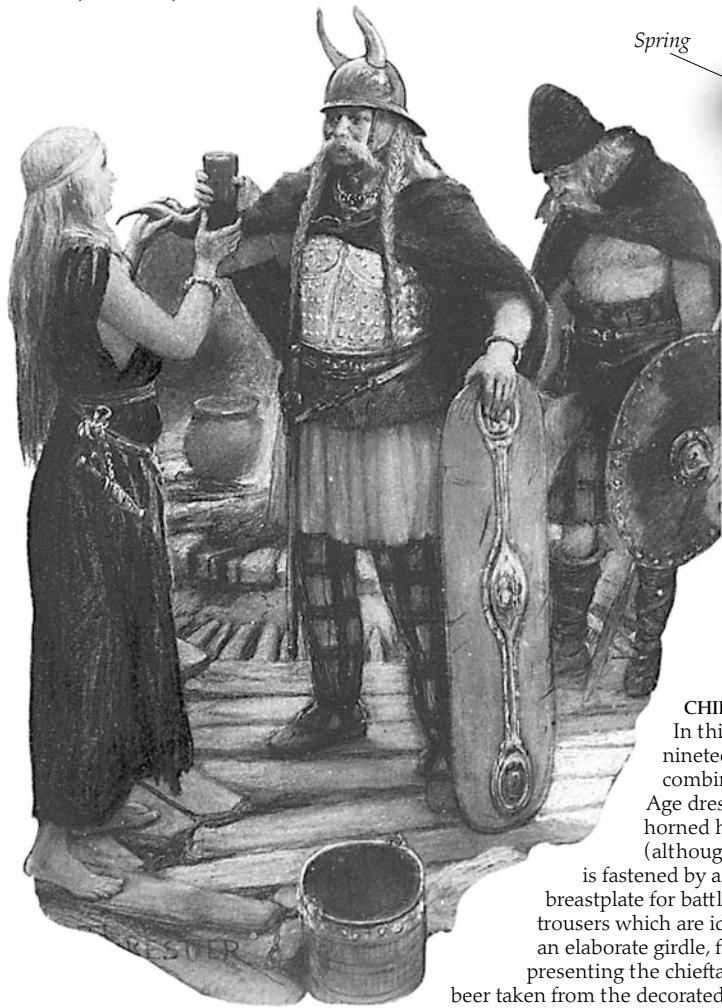
Swords had a sharp point, even though they were not normally used for stabbing

TRUSTY SWORD

From the Bronze Age onward, the sword was the most important weapon. This sword from Denmark originally would have been kept in a leather or wooden sheath. The surface of the metal would have been a shiny gold color.

Iron-Age finery

SOME OF THE FINEST decorated personal items of the Iron Age are made of bronze, because iron was reserved for heavy tools and weapons. Unlike iron, bronze could be cast into complex shapes and be highly decorated. Classical writers report that the Celts of Iron Age Europe were fond of adornment, including body painting, elaborate hairstyles, and jewelry (pp. 34-35). A characteristic ornament was a silver neck ring called a torque (p. 45), symbolic of high social rank. Some fighting men went into battle naked except for their torque, trusting in its protective power. Over their trousers and tunics men and women wore woollen cloaks fastened with brooches, sometimes of elaborate design. In graves, it is usually only these that survive to indicate the sort of clothing that was worn. The upper classes would adorn their horses with fine harnesses covered with disks, studs, and bells.



CHIEFTAIN

In this rather romantic engraving, the nineteenth-century illustrator has tried to combine all the elements known about Iron Age dress into one picture. The chieftain has a horned helmet and a bushy mustache (although pigtails are not reported!). His cloak is fastened by a brooch, and he is wearing a shiny breastplate for battle. Under his short tunic he wears trousers which are ideal for riding a horse. The woman has an elaborate girdle, from which a dagger hangs. She is presenting the chieftain with a drinking horn filled with beer taken from the decorated pail in the foreground.



SPECTACLE-BROOCH

This type of brooch is so called because of its shape. It is made from a single twisted piece of wire and would have had a pin at the back. It is from Carinthia in Austria and dates from between 1000 and 800 B.C.



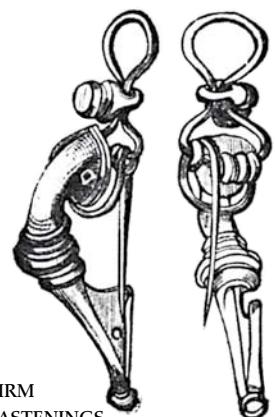
SAFETY PIN

Brooches were the prehistoric versions of safety pins. They were used in exactly the same way as they are today, for joining clothes together. This Hungarian brooch dates from c. 50 B.C.



A MARK OF RANK

A composite bow made up of glass disks makes this an especially striking brooch. It would have been quite a rarity and was probably worn by someone of high rank. It is from Italy, and dates from between 800 and 700 B.C.



FIRM

FASTENINGS

Two more examples from northern Europe show the skill that Iron Age metalworkers could focus on these simple fasteners. The strong, sprung pins themselves are clearly visible.



FOLLOWING THE PATTERN

This bronze pendant with enameled decoration is from a Saxon burial slightly later than the other objects on this page. But the curves and circles used in its decoration show how this style of art continued to be used in northern Europe.



FOR MEN AND WOMEN

Bracelets like this were commonly worn on the arms - probably by both male and female members of the household. This one was found near Cambridge, England, and was made c. 50 B.C. Its delicate pattern would have been more striking when it was new.



Decorated back of mirror



FAIREST OF THEM ALL

Some of the most beautiful objects that have survived from the Iron Age are mirrors. This one is decorated in the distinctive, swirling style of Celtic art. The back is shown in the photograph; the other side would be highly polished to give a reflection. Mirrors like this are rare and no doubt belonged to the wealthiest families.



A CLEAN SHAVE

This razor, now about 2500 years old, is less ornate than some of the razors of the Bronze Age (pp. 44-45) but it is highly functional: it would have been just as sharp as any modern straight razor. It comes from Cambridge, England.



WELL SHOD
Iron Age horse-shoes are sometimes found. Their form is similar to those in use today.



BOAR HUNT

Iron horseshoes similar to the one above can be seen in this old engraving. The fine trappings that decorate the horses of the huntsmen are also clearly shown. The large disks are made of bronze and are known as phalerae. In the Iron Age the boar was hunted for sport as well as for its meat.



BOG PEOPLE

Bodies preserved in the airless conditions of European peat bogs give us a glimpse of the actual people of the Iron Age. Tollund Man, discovered in Denmark, dates from about 210 B.C.

Life in the Iron Age

THE FIRST REALLY SKILLED IRONWORKERS were the Hittites, who lived in what is now central Turkey. They perfected the techniques of smelting ore and making iron objects around 1500 B.C. The Hittites guarded the secrets of ironworking carefully, but when their empire was overthrown their knowledge spread across Europe, where the Iron Age began around 1100 B.C. By this time, Europe was quite densely settled with small farming communities. Although the society as a whole was ruled by a warrior class (pp. 52–53), life for the majority of people consisted of an unending round of farming activities, basically unchanged for generations. Settlements were still mainly family-based, and even small children played a full part in daily work. Many iron objects (especially tools) have survived from this period, as well as a large amount of pottery, and decorative objects made of bronze.



STATUS SYMBOL?

In the last hundred years before the Roman invasion of Britain, wealthy people developed a taste for fine pottery. Beakers like this one were imported from Europe in large numbers.

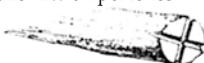


This smaller decorated pot was found in a British Iron Age burial mound.



INSTANT PATTERNS

Later Saxon potters made similar shaped pots to those of the Iron Age, but decorated them with punches.



Punch for cross pattern



Punch for circle pattern



BRONZE BOWL

In the Iron Age many of the more decorative and high-status objects were in fact made of bronze, a material that looked shiny and could be engraved with detailed patterns. Fine bronze imported tableware like this bowl was highly prized by many upper-class families in northern Europe, who were eager to adopt Mediterranean customs.

IRON TOOLS

The introduction of iron into Europe provided an ideal material for making sturdy tools and weapons; iron was also more widely available than the tin and copper needed to make bronze. Unfortunately, iron corrodes (rots away) much more quickly than bronze, so most of the items that have survived are in poorer condition than bronze objects of the same period.

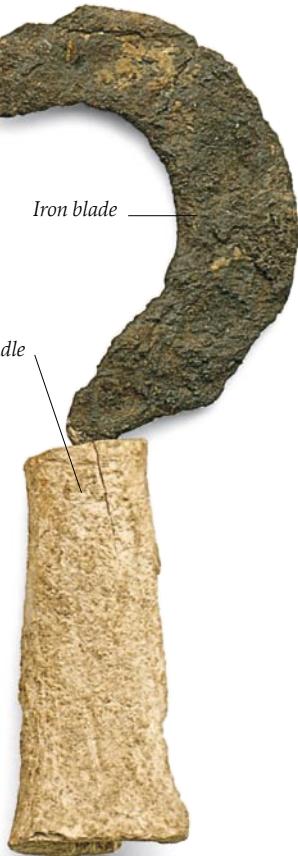
KNIFE

This small iron-bladed knife has a handle made of antler. Although the blade is corroded, the handle is very well preserved because of favorable soil conditions.



HARVESTER

This reaping hook has the same sickle-shaped design that was used for gathering hay or crops throughout the prehistoric period (pp. 30-31). This example has an antler handle.



CUTTER

A wooden handle made this iron saw almost as easy to use as its modern counterpart.



TONGS

Iron was worked by beating it into shape while it was red hot. The metal was held in large tongs, like these from Norfolk, England.



FORGING AHEAD

In this old engraving of blacksmiths at work, the method of shaping a piece of hot metal by hammering it is clearly shown. In the background, more iron is being heated in a furnace.

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Men of iron



LANCE HEAD
This unusually shaped object is made of wrought iron.



HEAD IN HAND
The handle of this dagger is shaped like a human figure. It dates from 100 B.C.-A.D. 100.



LETHAL LONDONER
This is a fine early dagger from c. 500 B.C., found in the Thames River, London.



SHINY SHEATH
Made from thin sheets of bronze riveted together, this sheath has a birch-bark lining.

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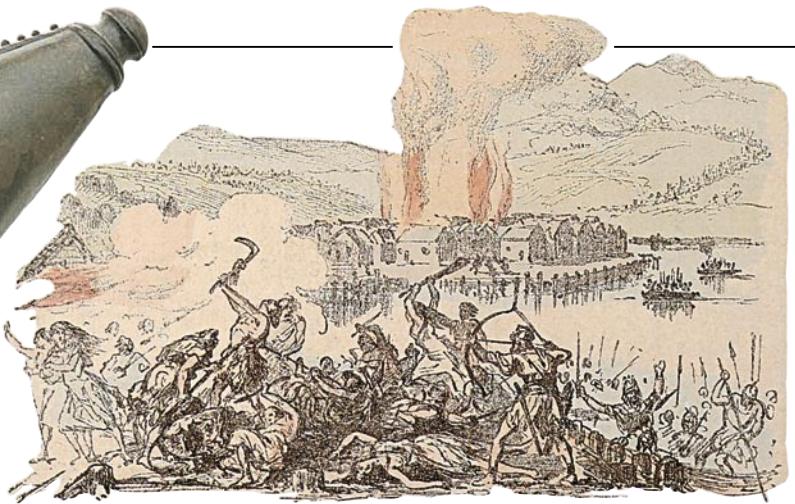
WE KNOW ABOUT the Celtic-speaking peoples who lived north of the Alps from about 500 B.C. through the reports of Greek and Roman historians. They describe barbarian people with customs quite different from their own, such as human sacrifice and head-hunting. These tribes were ruled by warriors, who placed a high value on their heroic lifestyle, which included feasting and drinking, reciting poetry, singing, horseback riding, and, of course, skill in battle. The Celts were as concerned with scaring their enemies as with actually fighting them. We know this because of the fearsome appearance of their arms, armor, and other possessions.



A nineteenth-century illustration of a Celtic warrior chief in battle

HELMET FOR A HERO

This bronze helmet would have belonged to a high-ranking warrior, and was probably for display rather than battle.



19th-century illustration of Iron Age warfare

Hollow horn
made of riveted
sheet bronze

Loops for
fastening leather
interior



Diameter of tan-
kard is about
7 in (175 mm)

Oak lining



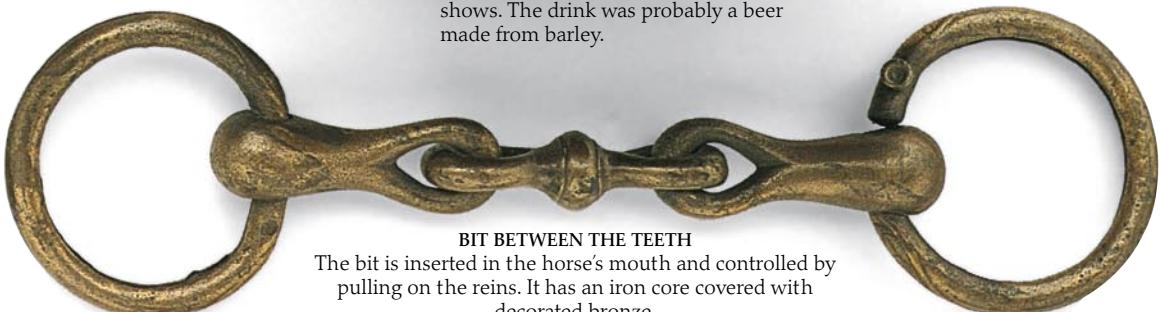
AXLE HUB

This decoration was attached to the axle of a light chariot of the type used against the Roman army invading Britain.



BRONZE TERRET

This was fixed to the yoke of a chariot (p. 47).



BIT BETWEEN THE TEETH

The bit is inserted in the horse's mouth and controlled by pulling on the reins. It has an iron core covered with decorated bronze.



IRON SWORD below

This sword would have had a decorated sheath of leather or wood. It dates from c. 150 B.C.-A.D. 50.

Hilt (handle) would have been
covered in wood, bone, or leather

Ancient China

FOR THOUSANDS OF YEARS, Chinese civilization evolved with little or no contact with the Western world, and the Chinese made several independent inventions, such as farming and writing. The first stone-using agricultural communities were followed by a variety of societies, most of which survived by farming a range of crops including rice and millet. True civilization dates from c. 1500 B.C. with the Bronze Age Shang Dynasty.

At this time China was a loose group of states which were gradually joined together.

Between 500 and 200 B.C., the two principal states, Ch'u and Ch'in, battled for power.

Under the victorious Ch'in and the later Han (206 B.C.-A.D. 220) an empire of 60 million people prospered. The Great Wall was built, and standard systems of writing, laws, and taxes were created.



CHINESE NOBLEMEN
These men belonged to the court of Emperor Tscheu-Sin, c. 1150 B.C.



RARE AND DEADLY *above*
The halberd is a weapon mounted at right-angles on a tall wooden shaft, kind of like a 15th century pike. This halberd of white jade is over 3,000 years old. It was probably both for battle and for ceremonial use, especially for sacrifices.



RITUAL HALBERD
This sacrificial halberd is a good example of the superb bronzeworking of the Shang Dynasty (1523-1027 B.C.). This skill arose from local roots, although there was also some outside influence from the West. With its ornate patterns, this halberd would have played an important role in rituals, for both human and animal sacrifices.



Stone mattock



Polished stone axe from Shansi, northern China
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STONE TOOLS

Like their counterparts in Europe, the first Chinese farmers had to clear forests with stone axes and till the soil with mattocks (pickaxes). Both of these tools have similar shapes the world over. In China, however, they were used to cultivate different crops - millet in the north and rice in the south.

BRONZE AXE

This is the head of a ritual axe known as a *yüeh*, which was used for beheading humans at sacrifices made at funerals. These axes are often very highly decorated. The holes make the head easier to bind to the wooden shaft.



Cutting edge



Cutting edge

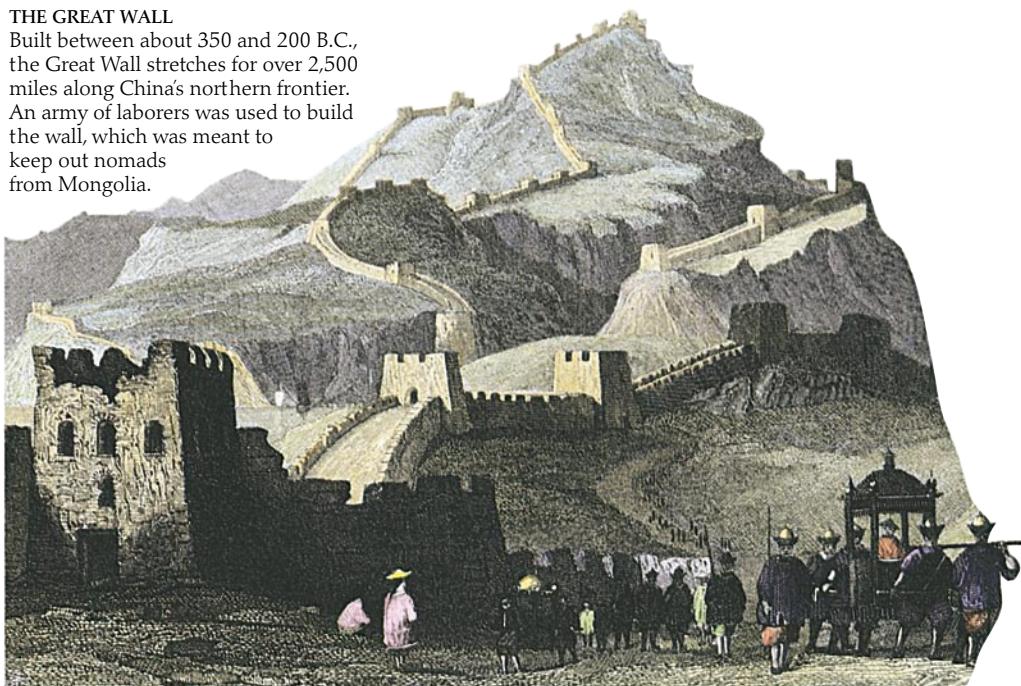
BRONZE HALBERD BLADE

The halberd was the chief weapon in ancient Chinese society. This rather simple example was used for combat. Like the other bronze halberds shown here, this one comes from the Shang dynasty (16th to 11th centuries B.C.).



THE GREAT WALL

Built between about 350 and 200 B.C., the Great Wall stretches for over 2,500 miles along China's northern frontier. An army of laborers was used to build the wall, which was meant to keep out nomads from Mongolia.



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TERRACOTTA WARRIOR

From 246-210 B.C., over 700,000 workers labored over the tomb of one of China's greatest emperors, Qin Shi Huang Di. It is guarded by an army of over 7,500 terracotta warriors such as this, each one different.



GOD OF RICHES

This relief shows the goddess Demeter and her son Plutus, the god of riches in Greek mythology.

cattle or perforated stones, might be given for payments of a social kind, such as compensation for a person killed, or in exchange for a woman taken as a bride. Even after standard coinage was developed about 2,500 years ago, this social use of money continued; many examples shown here come from recent societies.



Rice



TRADE IN RICE

As well as using coinage, the Chinese used food, especially rice, to pay for different kinds of goods.



CHINESE CURRENCY
In China, coinage was invented quite independently of the Western world, but later, in the fifth century B.C.

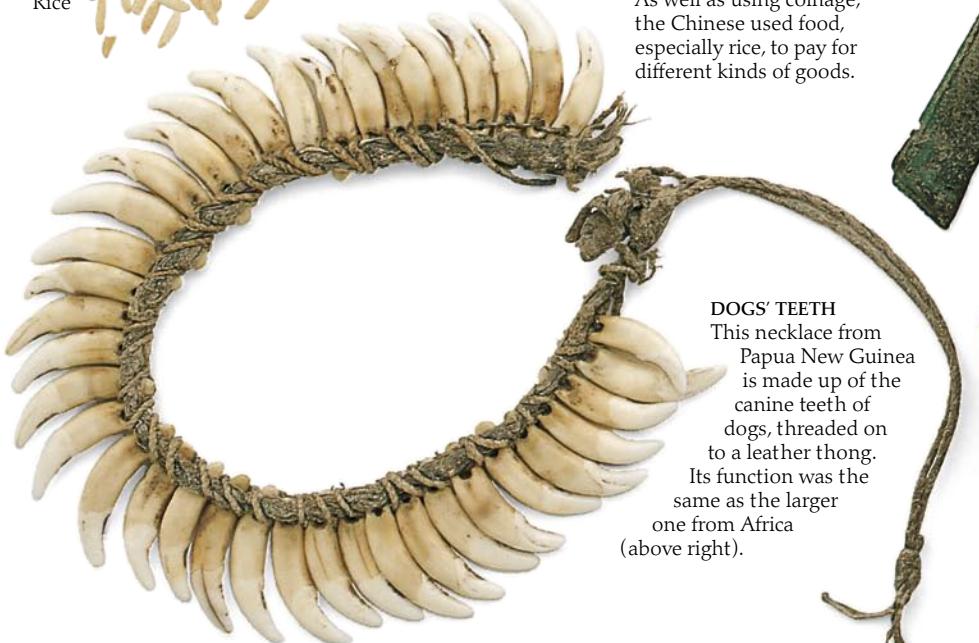
The first coins looked like tiny knives; later ones were round.

Knife shape is common in early Chinese currency



FOR CARRYING CASH

Cowrie shells have been used as money since prehistoric times. This wickerwork purse for carrying them comes from the Congo, central Africa.



DOGS' TEETH

This necklace from Papua New Guinea is made up of the canine teeth of dogs, threaded on to a leather thong. Its function was the same as the larger one from Africa (above right).





STONE NECKLACE

This is not simply an item of personal jewelry: the beads were also used to make payments. This necklace, from Ghana (Africa), is made of perforated quartz pebbles.

GAMBLING COUNTERS
Gambling is as old as money itself, and so gambling counters have a long history. These decorated porcelain counters are from Hong Kong and are nearly 2,000 years old.

Quartz pebbles



Cowrie shells
from India

TOO BIG FOR THE POCKET
In the Naya hills of Tibet, high up in the Himalayas, metal disks like this were used as currency. Known as *laya*, this particular example is rather small, and had half the value of the more usual large size.

Disk is about 9 in (23 cm) in diameter



MONEY STONE
From Yap Island, north of New Guinea, limestone disks known as *fei* were used as currency.



GREEK COIN
This coin is from Aegina, Greece. The turtle is the symbol of the city.

Central Americans



WHISTLE

This whistle is made of pottery. It comes from Guatemala and is thought to represent a stylized bird.



POTTERY

This piece of decorated pottery, dating to around A.D. 500, comes from Teotihuacán, at the time the largest city in Mexico.



CALENDAR STONE

The calendar was of great importance in the daily life of the Aztecs. Each day had its own good or evil tidings, and each month its special ceremonies. There were two different years, of 260 and 365 days, both based on a 20-day cycle.



STONE HEAD

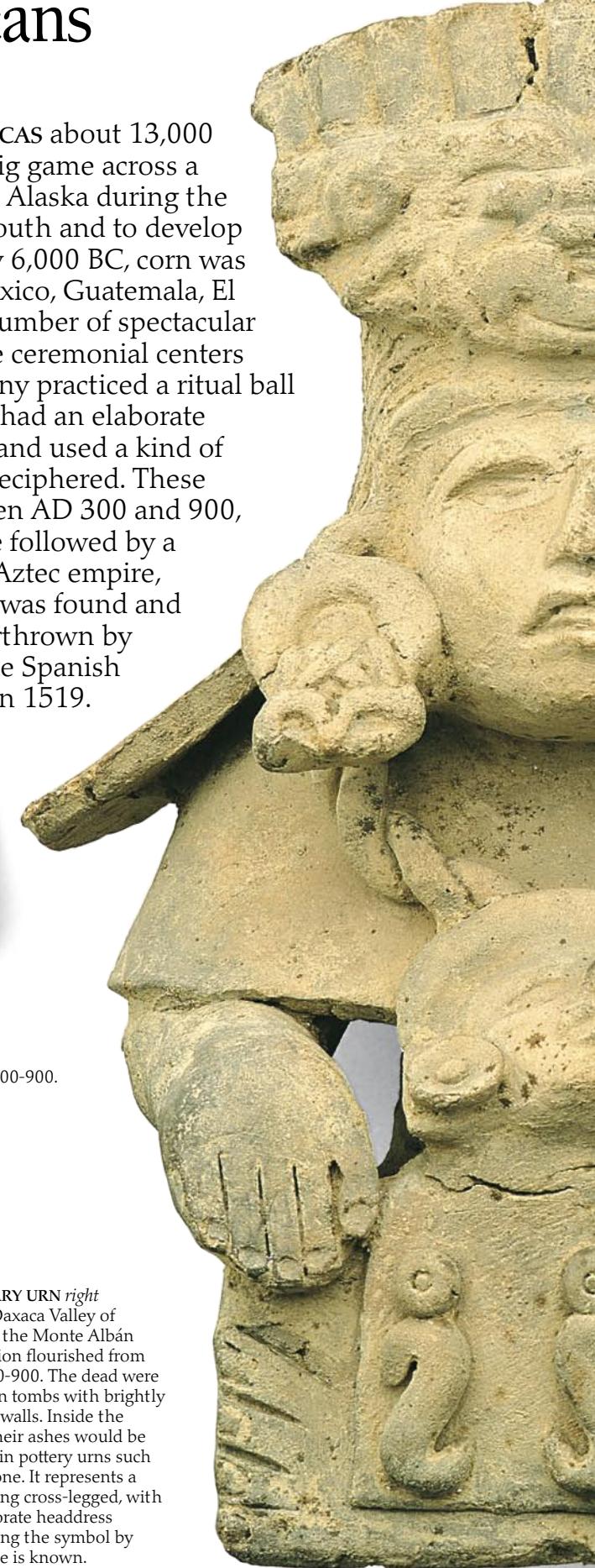
From Seibal in Guatemala, this sandstone head may have decorated a temple. It dates from the Classic period, A.D. 300-900.



TEMPLE CARVINGS

This is a typical example of Classic period temple sculpture, showing animals, people, symbolic twisted serpents, and images of gods. It comes from a temple at Xochicalco.

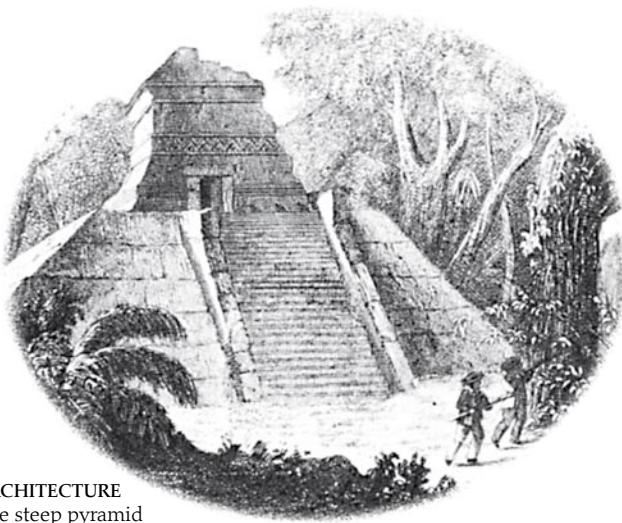
FUNERARY URN right
In the Oaxaca Valley of Mexico, the Monte Albán civilization flourished from A.D. 300-900. The dead were buried in tombs with brightly painted walls. Inside the tomb, their ashes would be housed in pottery urns such as this one. It represents a god sitting cross-legged, with an elaborate headdress containing the symbol by which he is known.





GREENSTONE MASK

The earliest Mexican civilization was that of the Olmecs, who occupied the Gulf coast. The Olmecs are particularly well-known for their stone carving. This greenstone mask is a typical product of their art style during the years 300 B.C.-A.D. 300.



ARCHITECTURE

The steep pyramid temples are some of the most impressive features of early Central American civilizations. This old engraving shows one that has been found in the depths of the jungle at Tuzapan.



Sharp,
pointed
end

Edge shows
flintworking
of great skill

MAYAN "ECCENTRIC"

This unusual flint is known as an "eccentric" because its exact purpose is not known. Placed in graves as offerings, such objects were probably prized because of the great skill required to create their strange and intricate shapes.

North Americans



INDIAN WARFARE
Warfare formed an important part of the life of the Plains Indians.

SINCE THE TIME OF COLUMBUS, Europeans have called the original inhabitants of North America "Indians." The name is misleading, since these people had no national identity. They lived in areas as diverse as the Arctic and the deserts of the southwest, and differed greatly in their lifestyles. In the north, the Cree hunted moose and caribou. Tribes such as the Huron and Iroquois in the northeast and the Apache in the southwest were farmers, while those in the northwest relied on fishing. Most of the objects shown here come from the tribes of the great central plains. Before the Europeans arrived, some cultivated the fertile lands along rivers and streams; others hunted bison during the summer. After European contact, they took easily to horses and used them to help in their hunting. The huge herds of bison then became more important to Plains Indians – they could eat their meat, make their hides into clothes and wigwams, and use their bones and horns to make tools. Although they survived attempts by white settlers to wipe them out, few native Americans now follow a traditional lifestyle. But most are very proud of their ancestry.



THE PLAINS COMMUNITY
While the men hunted, the Plains Indian women stayed in the temporary wigwam camps. They prepared food, carried out domestic tasks such as weaving, and raised the children.

CHIEF'S HEADDRESS
Yellow Calf, the last chief of the Arapaho tribe of Plains Indians, was the owner of this headdress. It is decorated with fur and feathers.



Digging up the past

ARCHAEOLOGY PROVIDES our only means of studying most early people, as written records have only been available for a fraction of our time on earth. Modern archaeology is a far cry from its old image of hunting for treasure in lost cities. Today the archaeologist employs a whole battery of scientific techniques to help detect, excavate, and analyze the remains of ancient societies. He or she is most likely to be interested in small pieces of pottery or fragments of insects, plants, or animals, because of the information these can give about everyday life. Although archaeology is often thought of as excavation, the story only begins there. Once a "dig" is over a great deal of time is spent analyzing the material recovered, and preparing it for publication. When it is published, the notes, finds, and samples are displayed or stored in a museum.



CAST OF THOUSANDS

Giovanni Belzoni was one of the first to bring Egyptian relics to the West. However, he was a shameless treasure hunter who also destroyed much important material.



TROWEL AND GLOVES

The trowel is the main tool used for excavation. Gloves may be used to handle delicate finds after digging.



WORKING ON SITE
Unlike the careless treasure-hunting of the past, modern excavation involves the meticulous vertical and horizontal recording of all features of a site. This is the excavation of an early hominid in Sterkfontein, South Africa.



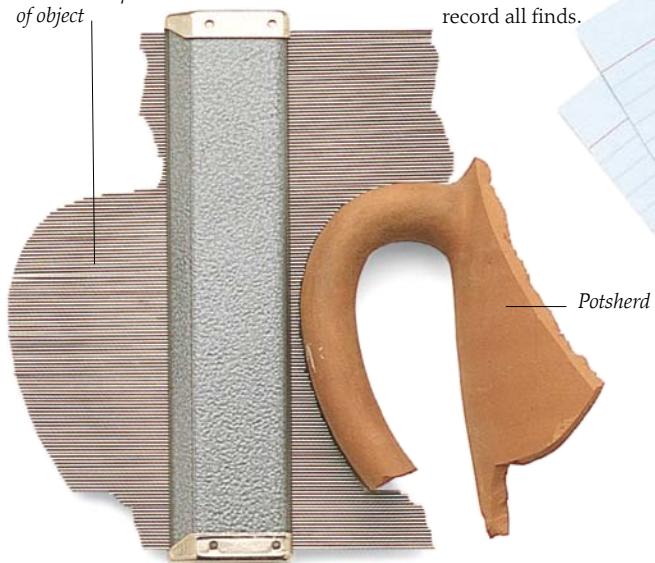
PHOTOGRAPHIC SCALES
Photographs form a vital part of the records of an excavation. These scales are essential for judging the size of the subject being photographed.



CLEANING
For items needing careful cleaning on site, a variety of instruments, such as these brushes, might be used.

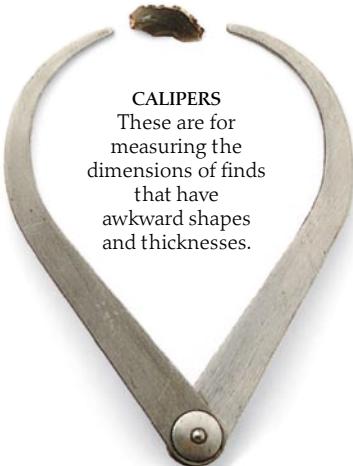


*Individual pins
trace out shape
of object*

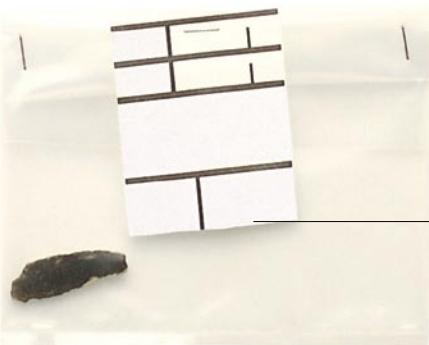


INDEX CARDS
These can be used to record all finds.

CALIPERS
These are for
measuring the
dimensions of finds
that have
awkward shapes
and thicknesses.



SIZE AND SHAPE
An important part of the post-excavation process is the recording and dating of the finds, such as this sherd of pottery. A profile gauge can be used to trace the outlines of curved or irregularly shaped items.



BAGGING A FIND
All individual finds and samples are kept in separate plastic bags. The label records the site name and the exact setting of the find.



MEASUREMENT

Precise measurement is essential in archaeology. Here, an anthropologist is measuring a skull fragment from an early hominid called *Australopithecus boisei*. Tiny differences in skull shape can show where it fits in the evolutionary pattern.



The tape measure is just one of the many measuring devices used in modern archaeology.
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Did you know?

AMAZING FACTS



Ruins of a Neolithic house at Skara Brae

Skara Brae is a Neolithic village on Mainland, one of the Orkney Islands in Scotland. It lay buried under sand for 4,350 years until a storm revealed it in 1851. Even the furniture in the huts was made from stone slabs – then, as now, few trees grew on Orkney.

Experts argue about exactly when the dog became man's best friend. Wild wolves probably began to hang around human settlements from 15,000 years ago. These animals gradually became smaller and more at ease with people. They acted as guard dogs and helped early people hunt. In return, they received leftover scraps of food.



Wolf

The Nabta megaliths were recently discovered in the Egyptian Sahara. The circle of stones is astronomically aligned, although no one is sure of its exact purpose. It dates to between 4500 and 4000 BCE – making it 1,000 years older than the circle at Stonehenge in Wiltshire, England.

Czech anthropologists have found Ice Age clay fragments that show impressions of clothes worn by women 25,000 years ago. Rather than wrapping up in furs and hides, it seems likely that women wove their own textiles, using plant fibers. Experts think that Ice Age outfits included skirts, belts, and bandeaux (cloth wound around the upper body).

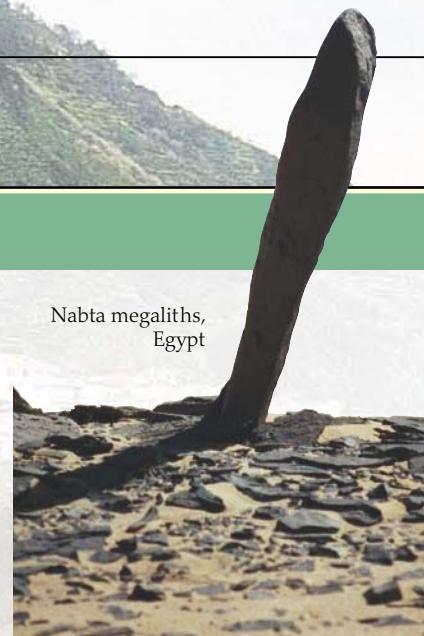
The Maya were drinking hot chocolate as long as 2,600 years ago. Scientists have found cocoa residue in a spouted pot discovered at Colha, Belize. The Maya liked unusual flavorings in their cocoa drinks – corn, honey, and even chili pepper!

Evidence of two early hominids was found in a cave in South Africa in 2000. The jaw and skull belong to a male and female *Australopithecus robustus*, who lived 1.5 to 2 million years ago. The fossils were found close together, as if they were kissing. They have been nicknamed Orpheus and Eurydice, after a pair of mythical Greek lovers.

In 1998, remains were found in Portugal of a boy who had both Neanderthal and Cro-Magnon features. The 24,500-year-old skeleton was found near Leiria, north of Lisbon. It was the first evidence that the two human species interbred. That means that some Neanderthal genes may survive in modern Europeans.

The Stone Age is sometimes called the "Acheulean age." The term comes from the village of Saint-Acheul in northern France. It was here that amateur archaeologist Jacques Boucher De Perthes discovered flint hand axes and other Ice Age tools in the 1830s. At the time, the idea of a Stone Age culture was almost unbelievable, and went against the teachings of the Church.

Nabta megaliths, Egypt



Cro-Magnons are named after a cave in the Dordogne, France. In the 1860s, French geologist Louis Lartet found skeletons of prehistoric people there. The bones belonged to *Homo sapiens* and were between 10,000 and 35,000 years old.

Until recently, scientists thought that *Homo erectus* disappeared around 200,000 years ago. However, fossil finds suggest that *Homo erectus* may have survived on Java until 50,000 years ago, which means the species might have been present at the same time as *Homo sapiens*.

The earliest evidence of trepanning is the 7,000-year-old fossilized skeleton of a man found at Ensisheim, in Alsace, France. He had two holes in the skull. One had completely healed; the other, which was a massive eight square inches (57 square cm), had only partially healed.

Record Breakers

OLDEST SPEARS

The earliest known specialized hunting weapons are the four 400,000-year-old spears found in 1997 at Schöningen, Germany.

OLDEST TOOL USER

The jaw of an early human was discovered at Hadar, Ethiopia, in 1994, near stone tools. Dated to around 2.33 mya, it is the earliest find of tools and human bones together.

EARLIEST MUSICAL INSTRUMENT

In 1995 a Neanderthal flute, made from the leg bone of a bear, was discovered in a cave near Idrja in Slovenia. It was 45,000 years old and had four different notes.

LARGEST MOUNDS

One of the Cahokia Mounds in Illinois is nearly 100 ft (30 m) high and 975 ft (300 m) long. In England, Silbury Hill is 130 ft (40 m) high, and covers 5 acres (2 ha).

OLDEST TATTOOS

A 5,300-year-old "iceman", discovered frozen in the Alps, was found to have 57 tattoos in various places on his body.

QUESTIONS AND ANSWERS



One of the Easter Island statues

A The remote Pacific island of Rapa Nui, also known as Easter Island, boasts hundreds of prehistoric statues. Most of the statues, or *moai*, are huge human figures that stand on platforms called *ahu*. They were carved between CE 1000 and 1500. Experts think that at least 800 of the statues were made and that they probably represented ancestor gods. The remains of 400 can still be seen in and around the island's quarry, Rano Raraku. One unfinished statue is over 66 ft (20 m) long. It has been christened "El Gigante" and would have weighed as much as 270 tons. All that is known about the culture that produced the statues is that a handful of Polynesian seafarers colonized the island around CE 400 and that, by the time European explorers discovered the island in the 1700s, the population was in decline.

Q Who was the Iceman?

A "Otzi" is probably the world's most famous ice mummy, and also one of the oldest, dating back 5,200 years. The body of this 40-year-old Stone Age man was discovered by two German hikers on the border of Austria and Italy in 1991. Along with Otzi's frozen corpse there were more than 70 objects, including a copper ax, a flint dagger, a bow, arrows, and a quiver – the personal belongings he was carrying when he died. There are no signs that Otzi was killed in a ritual sacrifice, like some ice mummies. It looks as though he was caught in a freak snowstorm, high in the mountains, and starved or froze to death. Thanks to the freezing conditions, even Otzi's clothing has been beautifully preserved. He was wearing a grass cape and special snowshoes that had thick bearskin soles. Several tattoos were found on Otzi's body, positioned over swollen arthritic joints. Experts think that tattooing may have been used as a kind of magic charm, to cure the pains of arthritis.

A careful examination of the remains of Otzi the Iceman

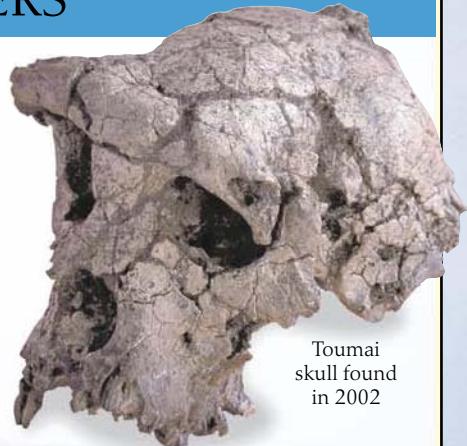
Q What area has the most prehistoric statues?

A The remote Pacific island of Rapa Nui, also known as Easter Island, boasts hundreds of prehistoric statues. Most of the statues, or *moai*, are huge human figures that stand on platforms called *ahu*. They were carved between CE 1000

and 1500. Experts think that at least 800 of the statues were made and that they probably represented ancestor gods. The remains of 400 can still be seen in and around the island's quarry, Rano Raraku. One unfinished statue is over 66 ft (20 m) long. It has been christened "El Gigante" and would have weighed as much as 270 tons. All that is known about the culture that produced the statues is that a handful of Polynesian seafarers colonized the island around CE 400 and that, by the time European explorers discovered the island in the 1700s, the population was in decline.

Q What is the earliest fossil evidence of a hominid?

A In 2002, French palaeontologist Michel Brunet announced that he had discovered bones belonging to our oldest ancestor, a seven-million-year-old hominid nicknamed Toumai. The bones were found in the Djurab desert in Chad, Africa. However, many scientists doubt Toumai was a hominid because there is no evidence that it walked upright. They think it is more likely that Toumai was an ape. The earliest undisputed hominid evidence was found in Ethiopia between 1997 and 2001. It consists of various bones belonging to *Ardipithecus ramidus*, a hominid that lived between 5.2 and 5.8 million years ago.



Toumai skull found in 2002

Q Where are the world's oldest cave paintings?

A The world's oldest paintings were discovered at Chauvet-Pont-d'Arc, in the Ardeche region of France in 1994. Three cave-explorers – Jean-Marie Chauvet, Eliette Brunel, and Christian Hillaire – discovered the paintings in a network of chambers set into the cliffs. The Chauvet paintings were made around 31,000 years ago, earlier than any other cave art discovered so far. They show hundreds of figures, including 47 rhinos, 36 lions, and several bears. It seems likely that the cave art was religious in some way, perhaps depicting important myths.



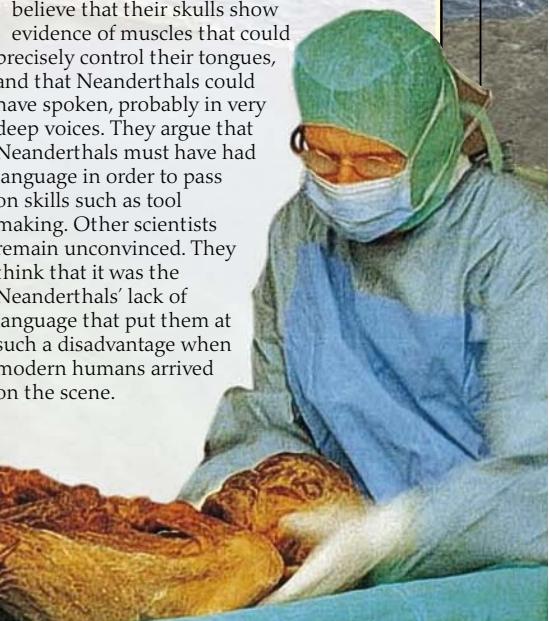
Stone Age rock art, discovered on a cave wall in France

Q Who was nicknamed the "Father of Prehistory"?

A French priest Henri Breuil (1877–1961) is known as the Father of Prehistory because he dedicated his life to the study of prehistoric cave art. In 1901 he found paintings at Combarelles and Font-de-Gaume in the Dordogne. He went on to become an authority in the field, writing more than 600 articles and books. He was one of the first people to see the paintings found at Lascaux in 1940, and also discovered evidence that humans had lived in the caves.

Q Could Neanderthals talk?

A Scientists cannot agree on whether Neanderthals could talk. Some believe that their skulls show evidence of muscles that could precisely control their tongues, and that Neanderthals could have spoken, probably in very deep voices. They argue that Neanderthals must have had language in order to pass on skills such as tool making. Other scientists remain unconvinced. They think that it was the Neanderthals' lack of language that put them at such a disadvantage when modern humans arrived on the scene.



Who's who?

NEW FOSSIL DISCOVERIES add to our knowledge of early hominids all the time. Each new find, australopithecine or human, moves scientists a step closer to creating an accurate picture and chronology of our ancestors.

AUSTRALOPITHECUS AFARENSIS

3.8–3.0 MILLION YEARS AGO (MYA)



LUCY'S CLAN

Most of our knowledge of *Australopithecus afarensis* is based on the "Lucy" skeleton found at Hadar, Ethiopia. The species was smaller than modern humans – about 3 feet 3 inches (1 m) tall – but their hips and limbs suggest that they walked upright.

AUSTRALOPITHECUS BOISEI

2.3–1.2 MYA

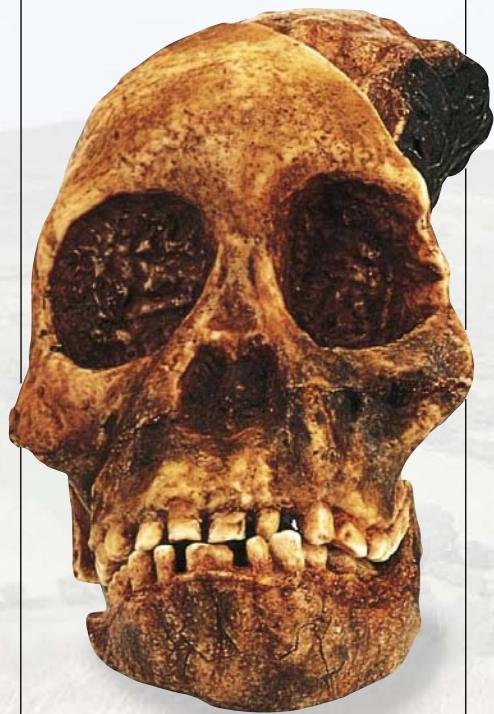


ROBUST VEGETARIAN

Unlike *afarensis*, *boisei* belongs to the group of "robust" australopithecines that had sturdier skulls and larger teeth. *Australopithecus boisei* may have used their large molars for grinding through a vegetarian diet.

AUSTRALOPITHECUS AFRICANUS

3.0–2.0 MYA



THE TAUNG CHILD

Australopithecus africanus was about the same height and build as Lucy. Most evidence is based on a child's skull (above) from Taung, South Africa. Holes in the skull suggest the Taung child was killed by an eagle.

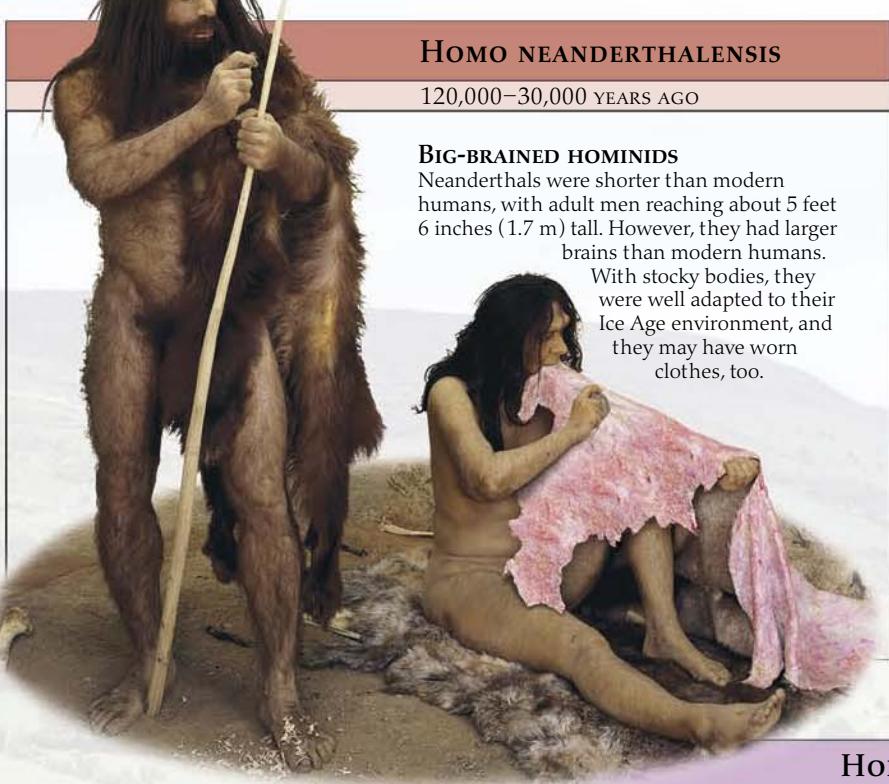
HOMO SAPIENS

0.1 MYA–PRESENT



CRO-MAGNON HUNTER

Modern humans, *Homo sapiens*, originated in Africa. The Cro-Magnons were a European group. Less stocky than Neanderthals, they used tools, wore complex clothes, and even created art on the walls of the caves they used for shelter.



HOMO NEANDERTHALENSIS

120,000–30,000 YEARS AGO

BIG-BRAINED HOMINIDS

Neanderthals were shorter than modern humans, with adult men reaching about 5 feet 6 inches (1.7 m) tall. However, they had larger brains than modern humans.

With stocky bodies, they were well adapted to their Ice Age environment, and they may have worn clothes, too.

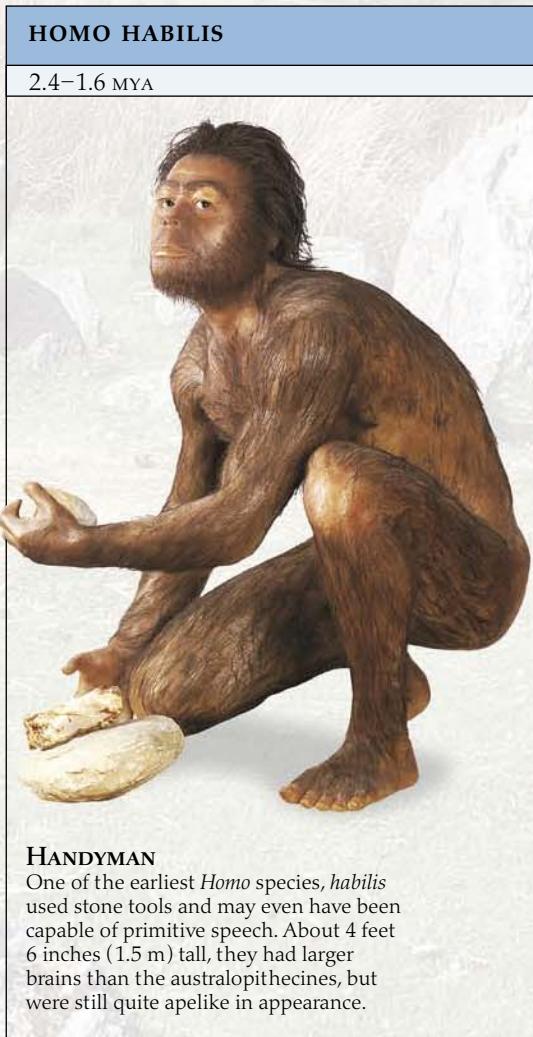
HOMO ERECTUS

1.6–0.2 MYA



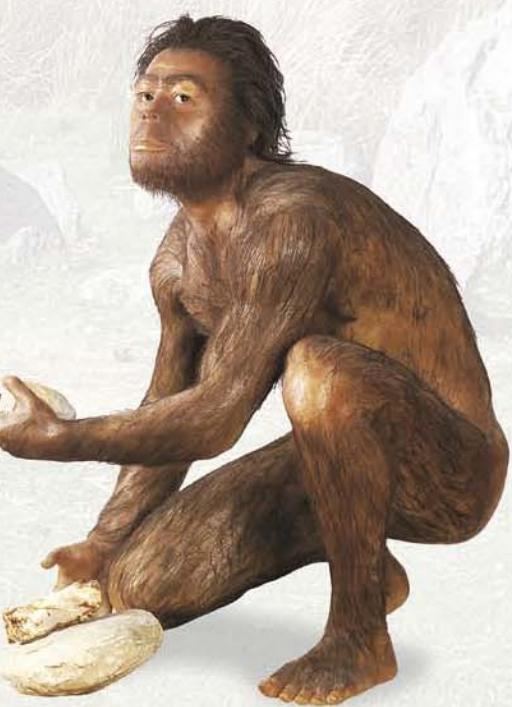
OUT OF AFRICA

Homo erectus ("upright person") was present in the Far East from about 1.6 mya. Fossils found on the remote Southeast Asian island of Flores suggest that *Homo erectus* built boats and traveled across the seas.



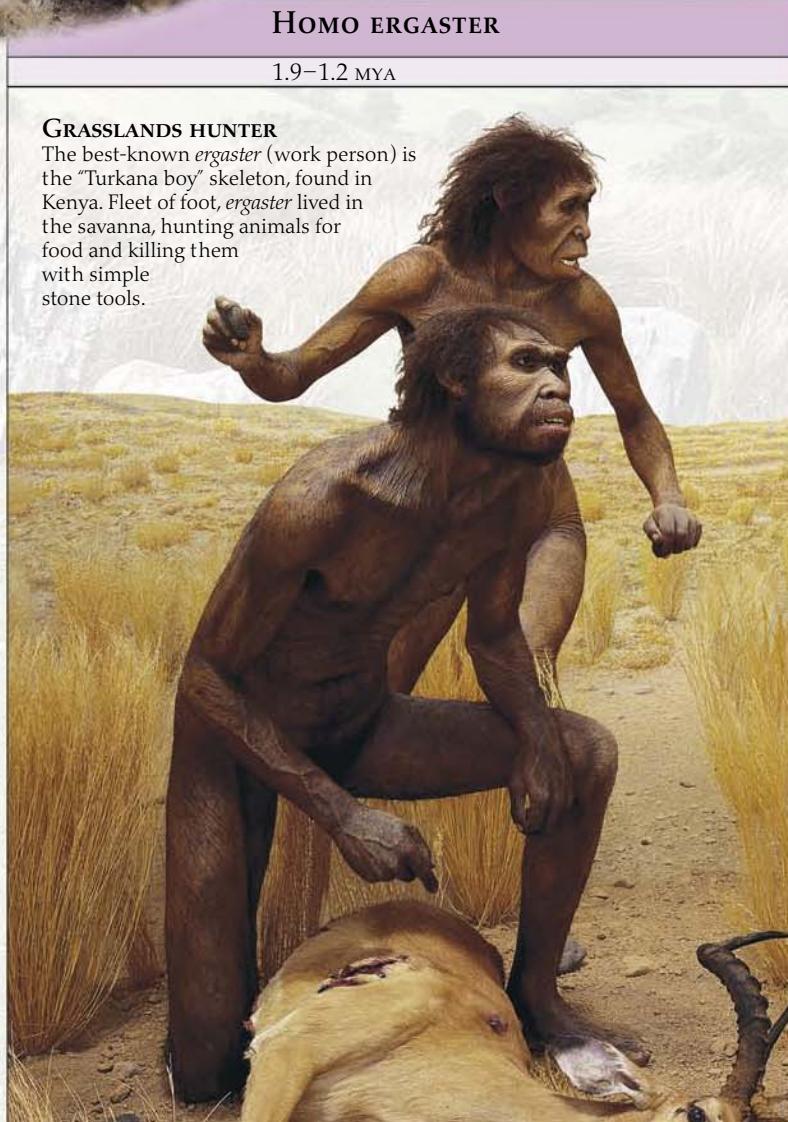
HOMO HABILIS

2.4–1.6 MYA



HANDYMAN

One of the earliest *Homo* species, *habilis* used stone tools and may even have been capable of primitive speech. About 4 feet 6 inches (1.5 m) tall, they had larger brains than the australopithecines, but were still quite apelike in appearance.



HOMO ERGASTER

1.9–1.2 MYA

GRASSLANDS HUNTER

The best-known *ergaster* (work person) is the "Turkana boy" skeleton, found in Kenya. Fleet of foot, *ergaster* lived in the savanna, hunting animals for food and killing them with simple stone tools.

Find out more



Animal
hide

THESE ARE MANY ways that you can find out more about our earliest ancestors. Books are a good source of information, and there is lots of useful data on the Internet as well. Also look for television documentaries about excavations, prehistory, or early civilizations. Museums are full of interesting ancient artifacts; visit them to see human skulls, reconstructions, and items such as clothes, tools, and figurines. Finally, in some areas there is evidence set down in the landscape, itself, in the form of ancient mounds and standing stones.



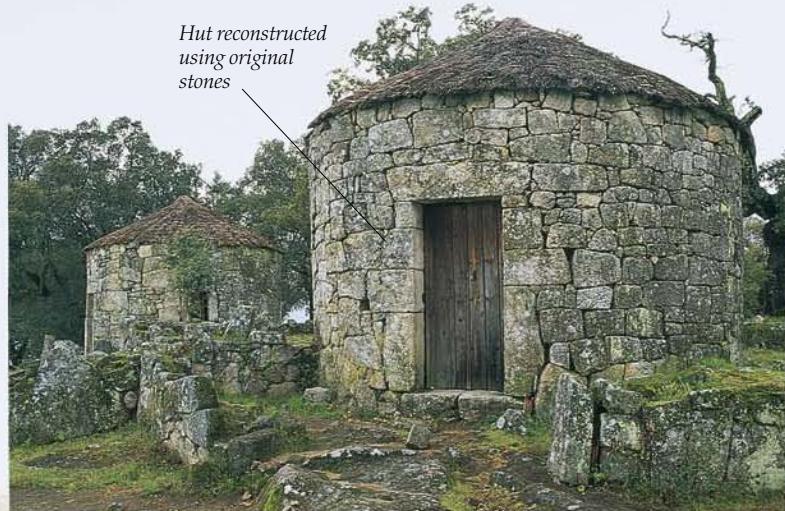
STONE AGE CAPERS
The movie *The Flintstones* (1994), inspired by the popular cartoon, offered a humorous look at the Stone Age. Of course, movies like this say more about our modern world and technologies than they do about the past – but that doesn't stop them from being entertaining.

MENHIRS IN CARNAC, FRANCE

At Carnac, in southern Brittany, you can see more than 3,000 ancient monuments, arranged in circles and avenues. Most are upright standing stones, or menhirs. Stone Age tribes erected them 6,000 years ago. Over the years, many fell over, but in the 1930s a local enthusiast, Zacharie Le Rouzic, started a campaign to restore them to their original positions.



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IRON AGE HUTS, PORTUGAL

If you are lucky enough to go to northern Portugal, visit Citania de Briteiros – a large Celtic hill settlement not far from the city of Braga. The site includes the ruins of more than 150 stone huts, a few of which have been rebuilt. The region was once a Celtic stronghold, and the ancient city was still active when Portugal became part of the Roman Empire.

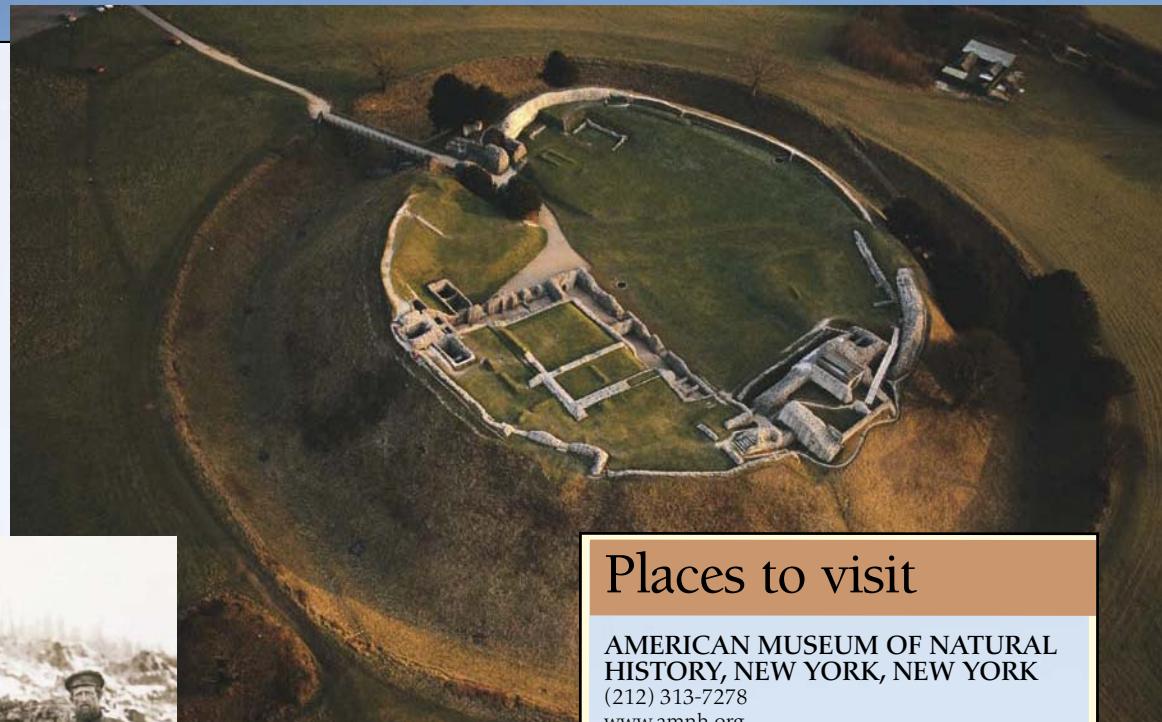
USEFUL WEB SITES

- Origins of Humankind site with reviews, news, and links: www.versiontech.com/origins
- Human Evolution site, with timelines and hominid descriptions: emuseum.mnsu.edu/biology/humanevolution/index.shtml
- British Museum collections from Prehistory and Early Europe www.thebritishmuseum.ac.uk/pee/peehome.html
- The Hudson Museum, with fascinating online exhibits: www.umaine.edu/hudsonmuseum/
- The official site for the Lascaux cave paintings: www.culture.fr/culture/arcnat/lascaux/en/

These Menhir are made of granite

AN AERIAL VIEW

The remains of Old Sarum hill fort near Salisbury, in Wiltshire, can be seen best from the air. The outer defensive walls probably date back to the Bronze Age, around 1000 BCE. In the Iron Age, the inner rampart was constructed. The settlement was later used by the Romans, who renamed it Sorviudunum, and later still by the Saxons, Danes, and Normans.



Mammoth's flesh preserved in the icy Siberian tundra



MAMMOTH DISCOVERIES

We know, from finds in the Russian Ukraine, that *Homo sapiens* sometimes used mammoth bones as a framework for their animal-skin tents. The photo above shows the first major discovery of a complete mammoth. Its 44,000-year-old corpse was found on the bank of the River Berezovka, Siberia, in 1900. The mammoth skeleton can still be seen today, on display at the museum of the Zoological Institute in St. Petersburg, Russia.



Decorative studs of opaque red glass

THE BATTERSEA SHIELD

You can see this Iron Age shield, which was found in the River Thames, on display in the British Museum. It dates to between 350 and 50 bc. Made from a thin sheet of bronze and measuring just 1 ft (78 cm) long, it would not have afforded much protection in battle. It is more likely that it was a ceremonial shield, possibly thrown into the river as an offering to the gods.

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Places to visit

AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK, NEW YORK

(212) 313-7278

www.amnh.org

The Hall of Human Biology and Evolution has life-size dioramas of *Australopithecus afarensis*, *Homoeoaster*, Neanderthals, and Cro-Magnons. There are also replicas of Ice Age art from the Dordogne and full-size casts of Lucy and Turkana Boy.

NATIONAL MUSEUM OF NATURAL HISTORY, WASHINGTON, D.C.

(202) 633-1000

www.mnh.si.edu

A re-created Neanderthal burial site, stone tools, and ancient artwork tell the story of early man. On the Web site, visit the Human Origins Program to see a Human Family Tree, information on new research, and the Ask a Researcher program.

SAN DIEGO MUSEUM OF MAN, SAN DIEGO, CALIFORNIA

(619) 239-2001

www.museumofman.org

Exhibits on ancient Egypt, the Maya, and California's own Kumeyaay bring anthropology to life. Guided tours and workshops are offered.

SERPENT MOUND STATE MEMORIAL, PEEBLES, OHIO

(513) 587-2796

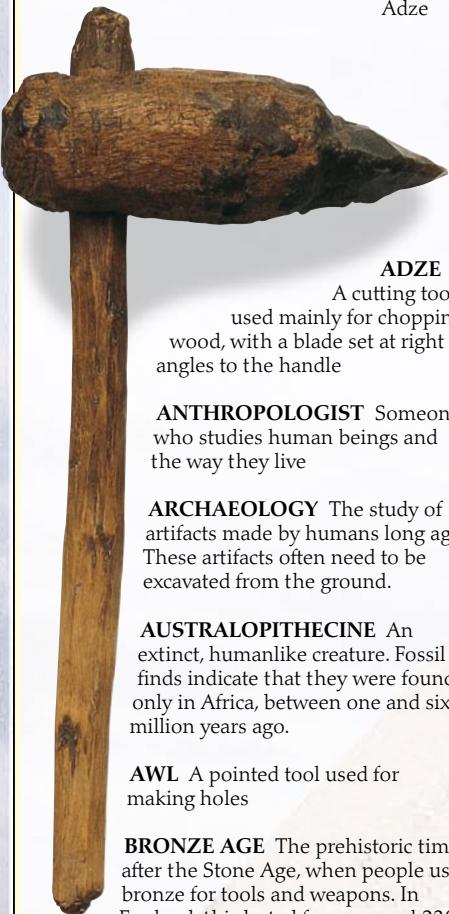
Serpent Mound, built between 800 BCE and CE 1, is an embankment that resembles a snake. A quarter of a mile long, it is the largest serpent effigy in North America.



BRITISH MUSEUM, LONDON

One of the world's most famous museums, the British Museum has rooms full of objects relating to early people and civilizations, including pottery, precious grave goods, and ancient weapons. It recently opened a new gallery that is dedicated to prehistoric finds.

Glossary



Adze

ADZE
A cutting tool used mainly for chopping wood, with a blade set at right angles to the handle

ANTHROPOLOGIST Someone who studies human beings and the way they live

ARCHAEOLOGY The study of artifacts made by humans long ago. These artifacts often need to be excavated from the ground.

AUSTRALOPITHECINE An extinct, humanlike creature. Fossil finds indicate that they were found only in Africa, between one and six million years ago.

AWL A pointed tool used for making holes

BRONZE AGE The prehistoric time after the Stone Age, when people used bronze for tools and weapons. In England, this lasted from around 2300 to 700 BCE.

CELTIC Relating to the Celts, a group of Iron Age farmers who lived across northern Europe

CIVILIZATION A settled society that has developed writing, trade, organized religion, architecture, and a form of government

CLIMATE The average weather of a place over a period of time

CRO-MAGNON The name given to an early type of *Homo sapiens* that lived in Europe in the Stone Age and produced spectacular cave paintings

CULTIVATE To grow plants as crops

CUNEIFORM The first written language, invented by the Sumerians around 8000 BCE

CURE To treat meat or an animal hide so that it will not decompose

DEMOTIC A popular and efficient form of writing used by the ancient Egyptians

DIVINING Using magic to find out about the future and other mysteries

DOLMEN Prehistoric stone structure, where two or more erect stones support a "table top" made of one large, flat stone

ETHNOGRAPHY The study of the different human races

EVOLUTION The process by which species change into new ones, occurring gradually as some characteristics are kept and others are lost or modified

EXTINCT Describes an animal or plant species that has died out

FIRE DRILL A primitive fire-making device, incorporating a stick that is twirled to create friction – and a spark

FLINT A type of stone that chips in a way that produces sharp edges; frequently mined in prehistoric times and used for simple tools

FOSSIL The naturally preserved remains of animals or plants, or evidence of them

FRESCO A wall painting

GEOLOGIST Someone who studies rocks

HALBERD An axlike weapon with a long shaft

HIERATIC SCRIPT A simplified version of hieroglyphs, used by the ancient Egyptians

HIEROGLYPHS Picture writing used in ancient Egyptian script

HILL FORT A prehistoric stronghold, built either on a naturally occurring hill or on a mound made by people

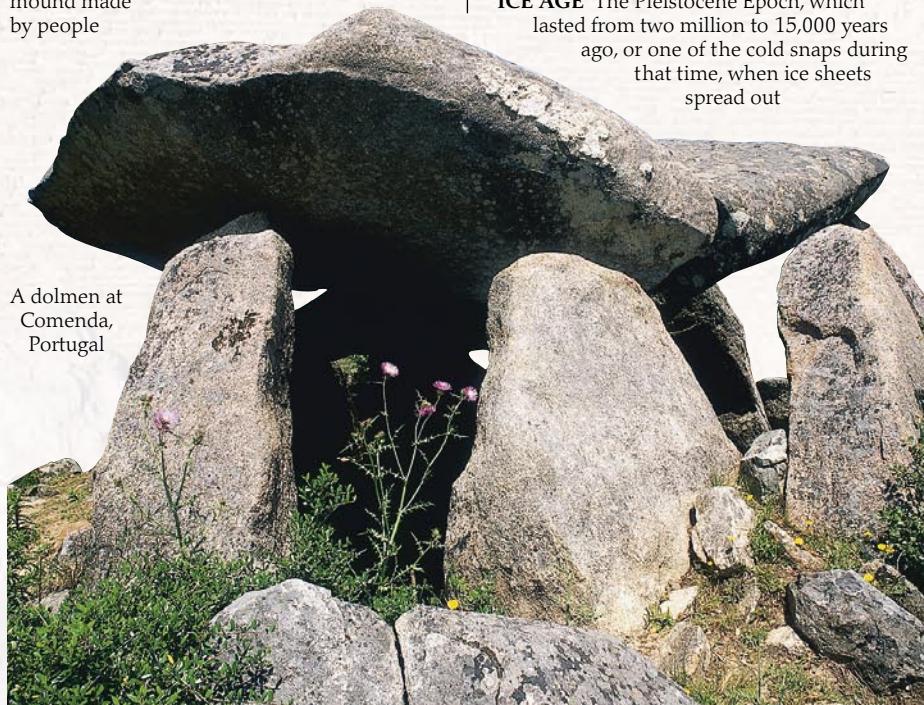


Egyptian hieroglyphs

HOMINID A member of the family *Hominidae*, which includes our apelike ancestors, such as australopithecines, as well as *Homo neanderthalis* and modern humans

HUNTER-GATHERER Someone who survives by hunting animals and gathering wild plants for food

ICE AGE The Pleistocene Epoch, which lasted from two million to 15,000 years ago, or one of the cold snaps during that time, when ice sheets spread out



A dolmen at Comenda, Portugal

IRON AGE The prehistoric time after the Bronze Age, when people used iron tools and weapons. In England, the Iron Age began around 700 BCE.

KAYAK A sealskin canoe used by the Inuit

KOHL Black powder used to create dramatic eye makeup

MEGALITH A prehistoric monument consisting of one or more huge stones

MUMMIFICATION The process of preserving a body so that it will not decay



Megaliths at Carnac, France

NEANDERTHAL An extinct hominid of the species *Homo neanderthalis* that lived in Europe and the Middle East from 120,000 to 30,000 years ago. The name comes from the place in Germany where the first Neanderthal fossils were found.

NEOLITHIC The New Stone Age, which began around the time of the last Ice Age. Neolithic people used more complex stone tools, built stone structures, and began to make pottery.

ORE Rock from which metal is extracted



Chumash Painted Cave, California, where Chumash Indians used pigments to create religious artworks



The Great Pyramid at Giza, Egypt

PALEOLITHIC The Old Stone Age, when people first used simple stone tools. It began around two million years ago and lasted until around the time of the last Ice Age.

PALEONTOLOGY The study of fossils

PAPYRUS An early form of paper used by the ancient Egyptians, made from pulped stems of a river reed of the same name

PIGMENT The chemicals that give something its coloring. Early cave artists used pigments made from plants and minerals.

PREHISTORY The time before there were written records

PYRAMID A massive stone structure with a square base and sloping sides; usually either a royal tomb or sacrificial temple

QUERN A stone mill, used for grinding grain such as corn

RELIEF Artwork, such as carving, that stands out from its surface

SMELTING Melting ore to separate out the metal

SPECIES A group of animals or plants that share characteristics and can interbreed. *Afarensis* and *africanus* are both species of australopithecine.

STONE AGE The prehistoric time before the Bronze Age, when people used tools and weapons of stone. The Stone Age is split into two main periods, the Paleolithic and the Neolithic.

TECHNOLOGY The practical uses of human knowledge, referring both to skills and the creation and use of new tools. New technology is driven by new discoveries and new uses for old knowledge.

TORC A twisted metal band worn as a necklace or bracelet

TREPANNING Cutting a hole in the skull; a type of surgery performed in prehistoric times, perhaps to free evil spirits

TUNDRA Land around the Arctic where the ground is frozen all year round and trees cannot grow



Stone Age carving from Ulster History Park, Omagh, Northern Ireland

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