

## Lecture 2

# Early Humans and the Prehistoric Record: Human-Plant Interaction

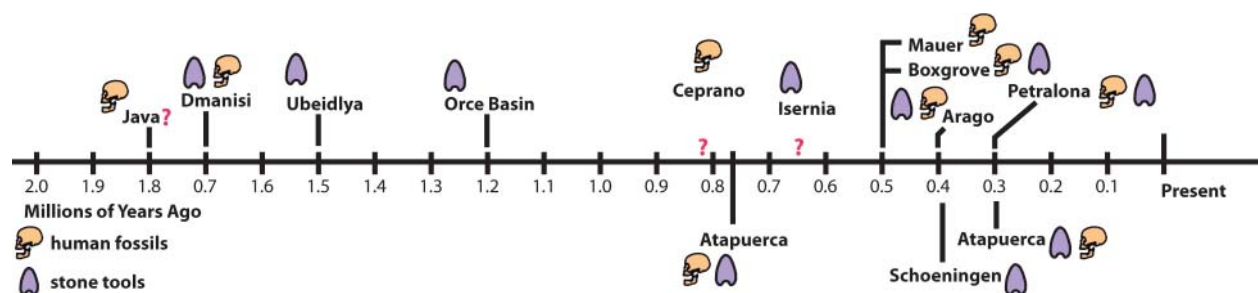
### The Prehistory of Humans

The development of humans from primates is an area of intense study based upon hominid remains, tools, and other artifacts. The earliest evidence is found in Africa and there is firm evidence that this continent is the source of human evolution (Fig. 2-1).

There are remnants (bones and tools) of hominid wanderings to Asia at least 1.7 million years ago, to the Middle East about 1.5 million years ago, and recent evidence shows that Europe was entered about 1.2 million years ago (Fig. 2-2). Thus, tool making dates back to at least 1.7 million years ago and was first associated with a species known as *Homo erectus*, with a brain capacity of about 1000 cc.



**Fig. 2-1.** Africa is the source of human evolution. The dates given in this figure are the generally accepted dates for main migrations but recent evidence indicates initiation considerably earlier as shown in Fig. 2. Source: Time Magazine, Feb. 13, 1995.

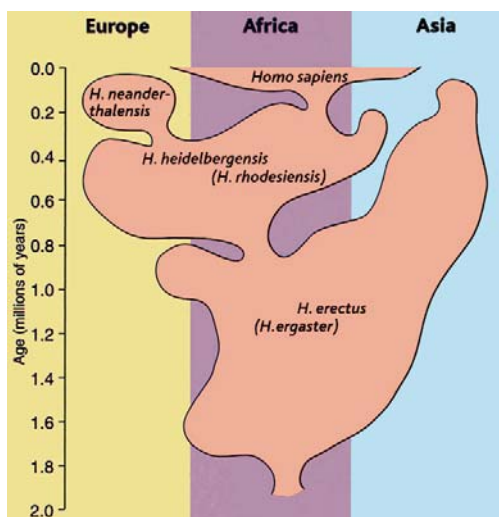


**Fig. 2-2.** Hominid fossils and tools date to 1.8 million years ago and there is some evidence of tools in Europe as early as 1.2 million years ago. An explosion of hominid remains appears in Europe about 500,000 years ago. Source: A. Gibbons, Science 291:1722 (March 2, 2001).

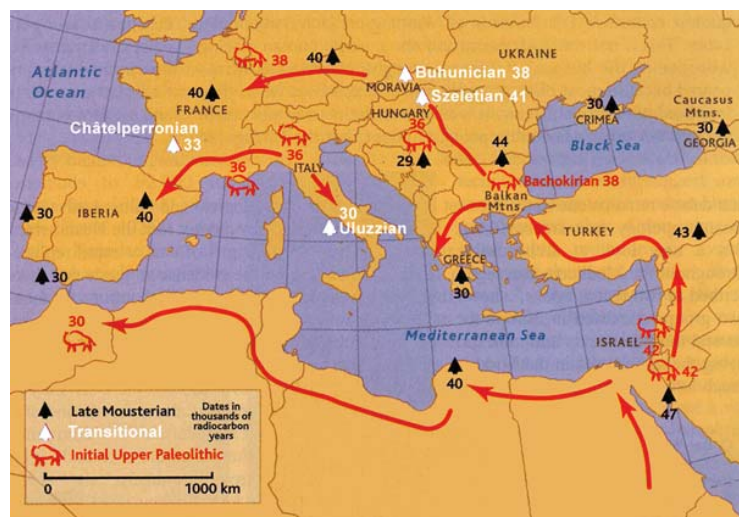
## Paleolithic Humans

The **Paleolithic period**, which means “**Old Stone Age**,” has been considered to extend from 750,000 to 15,000 years ago. Paleolithic humans were hunters and gatherers. Their culture survives chiefly through the remains of stone tools, which along with carbon dating can be used to determine chronology. Evidence is accumulating that there were waves of migrations. About 500,000 years ago, a surge of hominid expansion occurred from populations that had a brain capacity of 1100-1300 cc, a species now known as either **archaic *Homo sapiens*** or ***Homo heidelbergensis***, after its discovery in Germany (Fig. 2-3). This new immigrant population firmly established itself in Europe with superb hunting skills as evidenced by weapons such as spears. This group gave rise to **Neandertals**, brawny and large-brained humans with short arms and a broad trunk, who appeared in Europe about 250,000 years ago. However, about this time a new African group, ***Homo sapiens*** or **Cro-Magnon**, spread to Asia and eventually reached Europe (Fig 2-4). Cro-Magnon man, up to six feet in height, with a cranial capacity greater (by 200 cc) than modern humans (1500-1700 cc) had a huge frontal lobe that some have suggested was “wired” for cognitive thinking. By 200,000 years ago, Neandertals and Cro-Magnons came in contact and co-existed for several thousands of years. This encounter had a pivotal role in human evolution. The *H. sapiens* group, our direct ancestors overwhelmed the Neandertals who essentially disappeared about 25,000 – 30,000 years ago, although there is a possibility of some interbreeding. The evidence suggests that the Neandertals could not compete with Cro-Magnons, especially as the climate changed in the Ice Age. Note that the Ice Age came to an end about 15,000 years ago.

Cro-Magnons dominated Ice Age Europe from at least 40,000 years ago. Remnants remain of their high culture including animal skin clothing and moccasins tailored with bone needles, highly efficient flint blades, and homes made from branches and, in the Ukraine, from mammoth bones. Evidence of the high culture of Cro-Magnons is found in their artistic legacy found in **cave paintings** which have been dated from 30,000 years ago. This art in its depictions of animals and hunting scenes indicates their complete involvement with the hunt (Fig. 2-5). This cave art was not a rare event; more than 200 late Stone Age caves bearing wall paintings, engravings, bas-relief decoration, and sculptures have been found in southwestern Europe alone. The most spectacular are the caves at Lascaux (dated 18,000 to 17,000 years ago) and recently at Chauvet (20,000 years ago).



**Fig. 2-3.** One view of how various human species might have dispersed in space and time. Source Science 291:1724 (March 2, 2001).

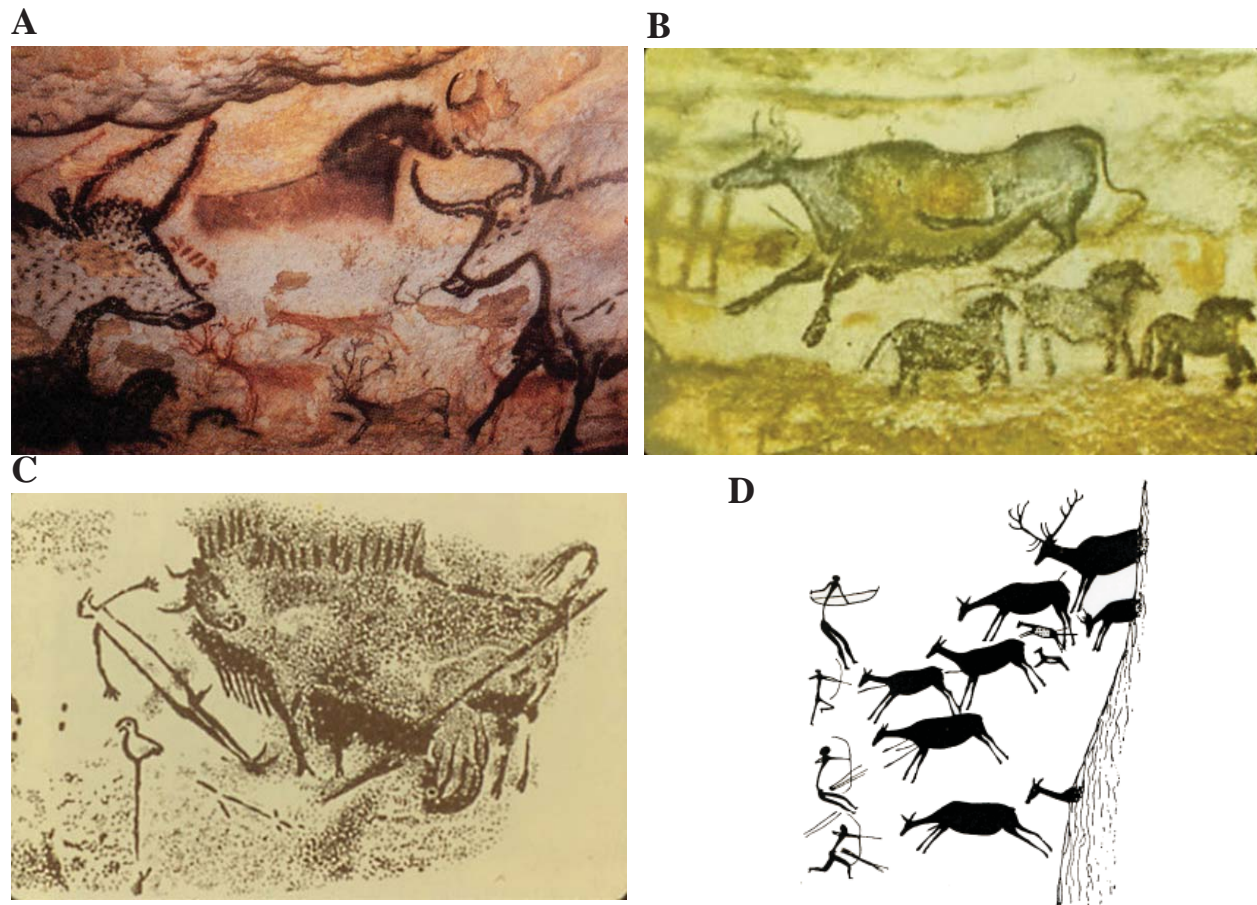


**Fig. 2-4.** Cultural diversity as modern humans (Cro-Magnons) and their sophisticated tools arise from Asia (red). Tools made by Neandertals (black) persist in Europe and Asia while transitional tools perhaps made by both kinds of people (purple), also appear at this time. Source: Science 291:1725 (March 2, 2001)

### Early Humans and Plants

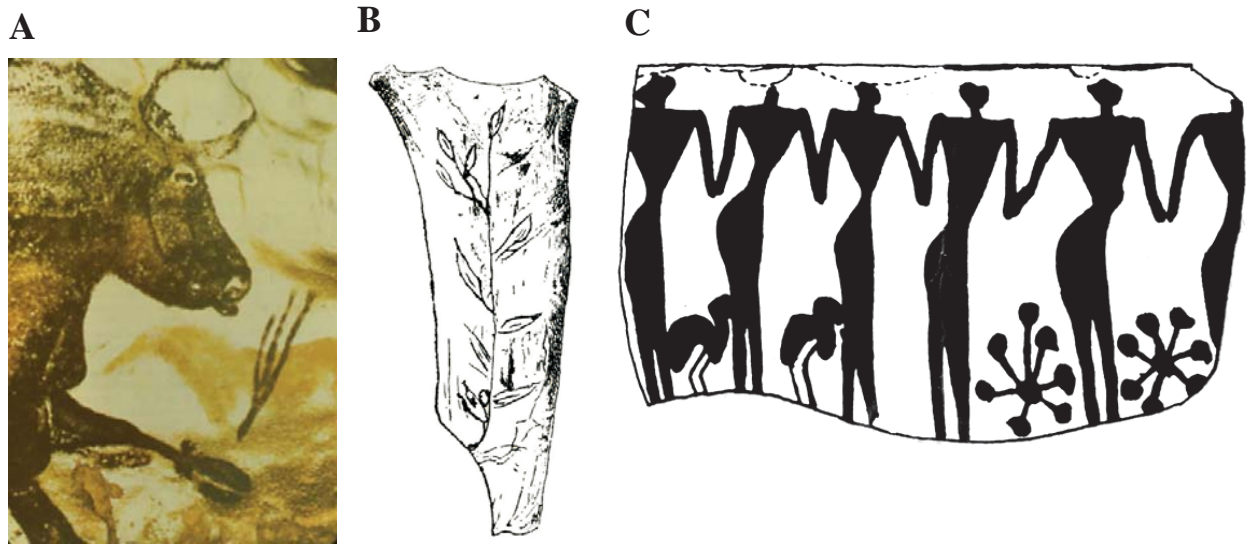
There are indications that our ancestors increasingly interacted with plants. The actual evidence has been rare and ephemeral because of the perishability of plant forms. Consequently most of what we know of the past involves corroboration from durable material such as arrowheads and spear points emphasizing activity of males in the hunt, ignoring other members of the tribe such as woman, children, and the elderly. However there is Stone Age evidence of plant material. In burial sites 60,000 years ago, a high incidence of pollen associated with skeletons suggests flowery funerals. Paleolithic representations of plants are scarce but one cave wall painting, 18,000 years ago shows what may be the first representation of a plant, a Paleolithic image of plants has been found etched on a reindeer horn, and images of plants have been found drawn on pottery dating to 7000 years ago (**Neolithic period**) along with birds and humans holding hands and dancing (Fig. 2-6).

**1. Plants as clothing.** The most remarkable artifacts of human-plant interaction concerns the use of plants as clothing which demonstrates the ability to weave twisted plant fibers into cloth as well as rope, nets, and baskets. These can be shown in early sculpted hand-sized representations of females bodies, sculpted 20,000–27,000 years ago. These sculptures, referred to as “**Venuses**” typically emphasize voluptuousness, suggesting a keen interest in woman’s fertility. Their clothing includes string skirts, elaborate caps, and halters (Fig. 2-7). The voluptuous figures and the clothing suggest a very modern interest in adornment



**Fig. 2-5.** Paleolithic cave paintings showing the importance of the hunt. A. Portion of the “Hall of Bulls” in the Lascaux caves, France, showing superb drawings of bulls, horses, and stags. B. Bison and horses, C. Speared bison with extruded entrails; note the male figure with bird-like head; D. Hunting of stags with bow and arrow, Cueva de los Caballos, Albocacer, Castellon, Spain. Source: Singer 1954, Fig. 89.



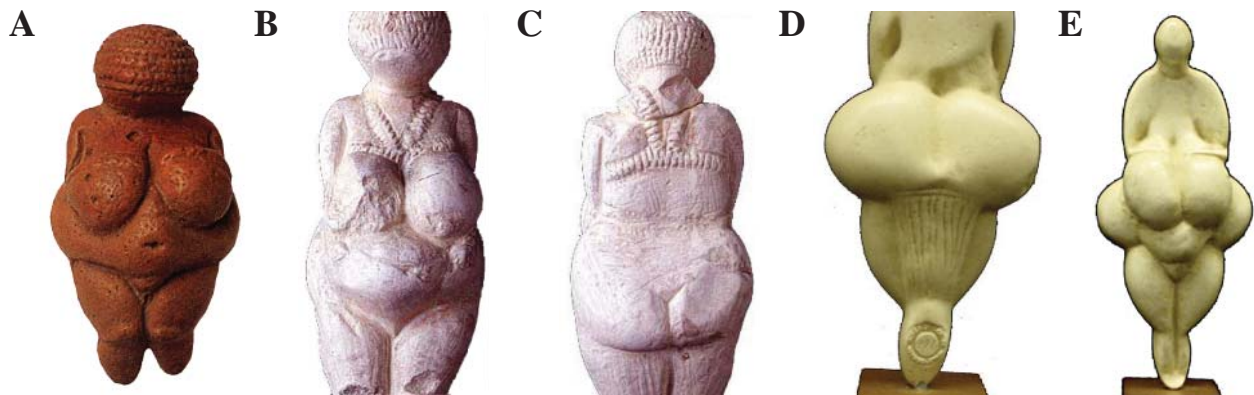


**Fig. 2-6.** Paleolithic and Neolithic representations of plants.

A) Close-up of the beautifully wrought bison from Lascaux showing what appears to be a plant form. Could this be the first representation of a plant? B) One of the few clear Paleolithic representations of a plant scratched on a piece of reindeer horn. Arcysur - Cure, Dep. Yonne, France. Source: Singer 1958, Fig. 66. C) Pottery from Tejpe Sialk, Iran, 7,000 years ago showing dancing figures (!), birds, and plants, perhaps wheat or barley. Source: New York Times.

and sexuality. Thus, long before people settled into towns, domesticated plants or animals, or developed an agriculture, they clearly gathered special plants, probably nettles, extracted fibers, and manufactured useful articles. See Reading 2-1.

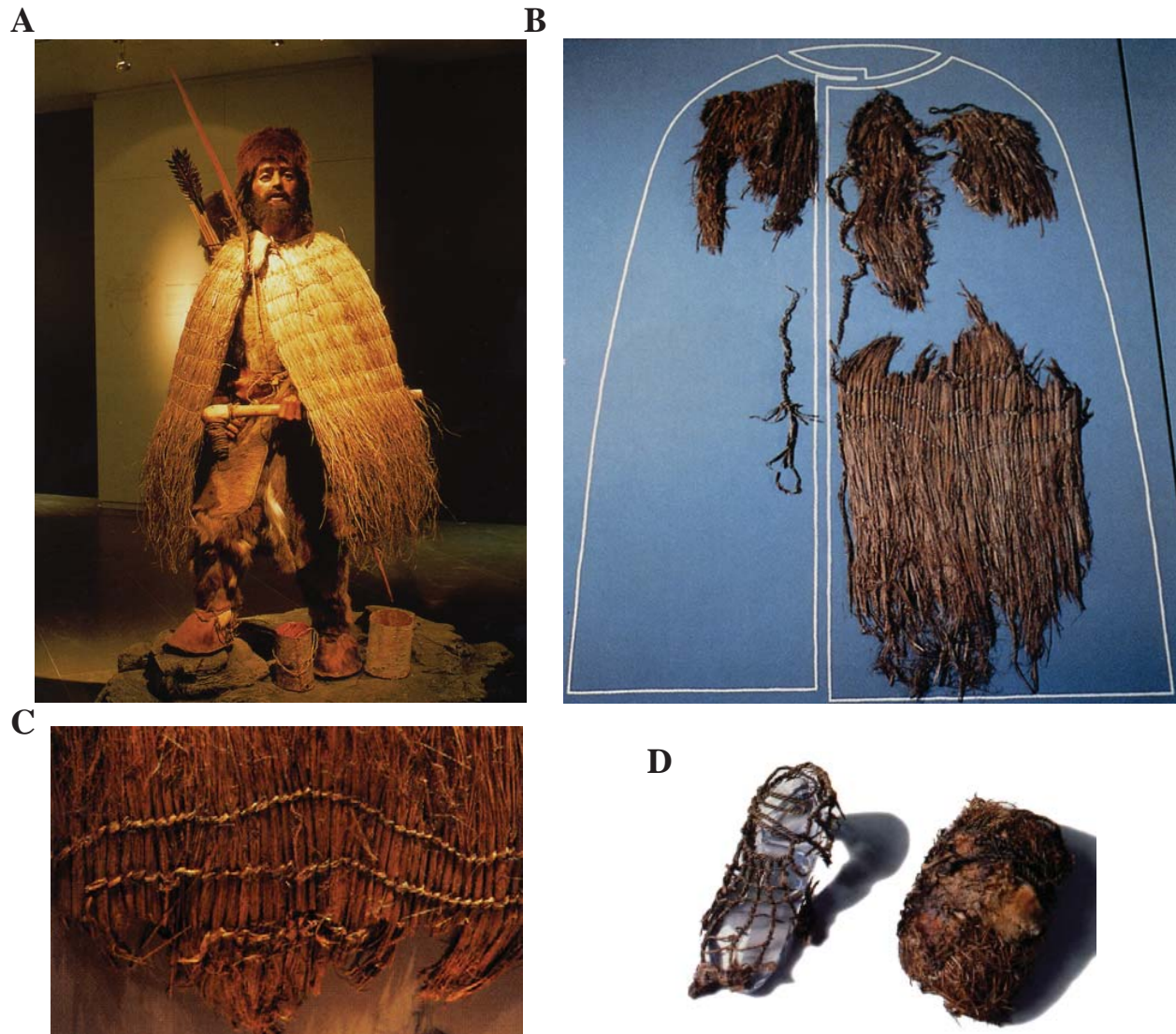
The recent discovery of the Ice Man, has increased our knowledge of clothing in the late Neolithic period. This period is known as the **Bronze Age** based on the use of smelting technology and the development of bronze weapons and utensils. (Fig. 2-8). A murdered hunter, about 46 years old, was discovered protruding from a glacier in 1991 in the Southern Alps in south Tyrol, at an altitude 3,210 m, on the Italian side of the border. The body, dated 5300 years ago, represents Late Stone Age, Early Bronze Age (in fact, one of his tools was an ax with a bronze blade). His clothing consisted of leggings, belt, loincloth, cap and shoes made out of leather or skins. However, a woven grass net was attached to the inside of the shoe to hold hay which



**Fig. 2-7.** Plants materials used in clothing. A) The Venus of Willendorf, Austria, dated 30,000 years ago showing a snood-like cap. B and C) A woven halter. D and E) A grass skirt from a stunning figure found in Lespurgue, France (facsimile sold in the Lourve).

was stuffed inside for protection from the cold. The legging around the ankle was bound with grass filaments. A cloak made of plaited alpine grass was worn over of the skin clothing, attached with grass cords and sewn with grass threads. Other plant material were wooden arrows, string wound up in a ball, wooden handles for a dagger and a wooden tool for work on flint (retoucher), a bird net, birch bark containers, probably used for carrying embers, but containing charred oak leaves, einkorn, a primitive wheat, and wheat particles, bits of a birch fungus, used up to the 20<sup>th</sup> century as a medicinal, and whose active ingredients stop bleeding and act as a disinfectant. Food remains include a sloe berry and an einkorn grain embedded in the cloak. His last meals consisted of gruel made of einkorn, meat, and unidentifiable plants. His worn teeth suggest a diet of ground grain contaminated with quartz dust from a stone mill (“The Iceman’s Last Meal” [www.pbs.org/wgbh/nova/icemummies/iceman.html](http://www.pbs.org/wgbh/nova/icemummies/iceman.html)).

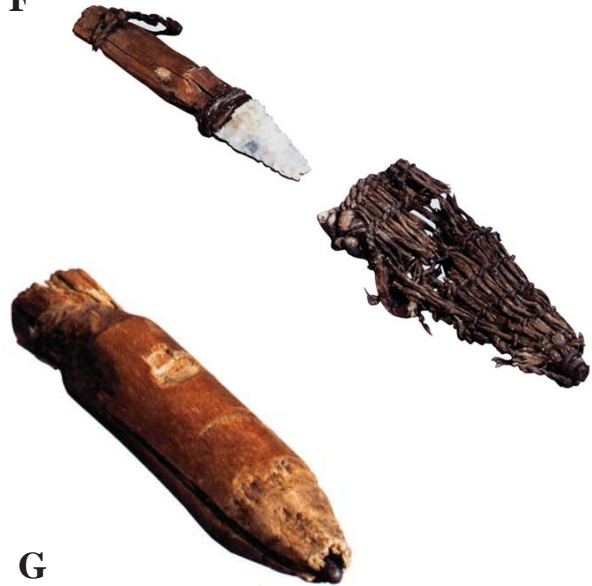
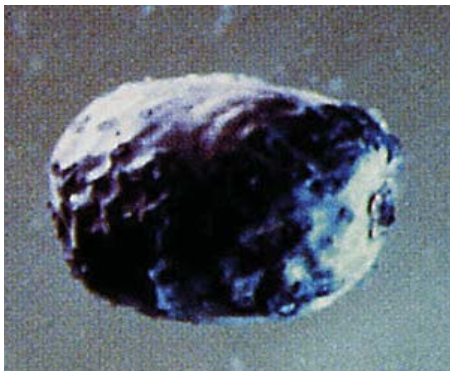
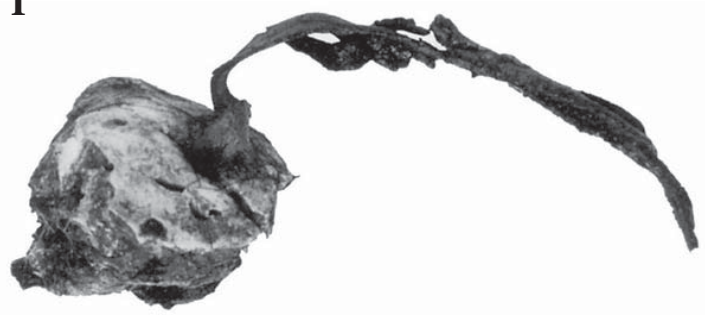
**2. Pictorial Representations of Plants.** Representation of plants are increasingly found in pre-agricultural societies. See Readings 2-2. One of the most remarkable descriptions is the gathering of grain by



**Fig. 2-8.** Plant derived artifacts of the Ice Man, dated about 5000 years ago, found in the Southern Alps, 1991 dated 5300 years ago showing uses of plant products. A) Reconstructed figure of the Iceman. B) Remains of grass cloak. C) Details of woven grass cloak. D) Woven grass net (left) found inside leather shoe (right). (Continued on following page.)



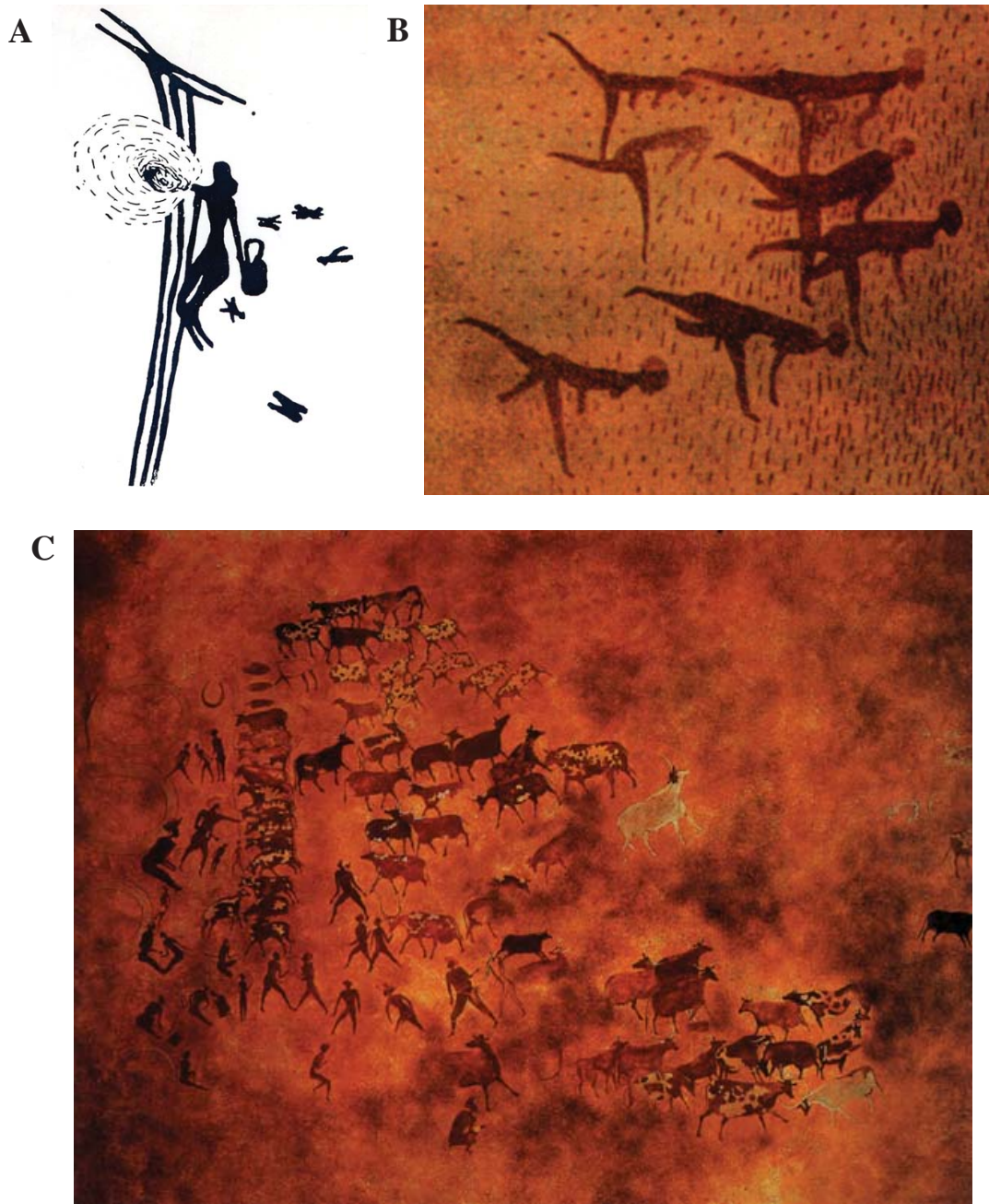
women in a cave painting from Tassili n'Ajjer, Algeria, estimated to be 5000 to 6000 years old (Fig. 2-9). A similar painting from the same cave shows a pastoral scene with domesticated cattle. However, not until pre-dynastic Egypt, about 4000 to 5000 years ago, can specific plants be identified. The earliest were date palm and cereals (Fig. 2-10).

**E****F****G****H****I**

**Fig. 2-8.** continued. E) Leather quiver and wooden arrows. F) Wooden handle of dagger (top) and tool "retoucher" (bottom) used to sharpen flints. G) Birch bark container used to carry embers. H) Sloe berry. I) Birch fungus attached to a leather thong used as a medicinal.

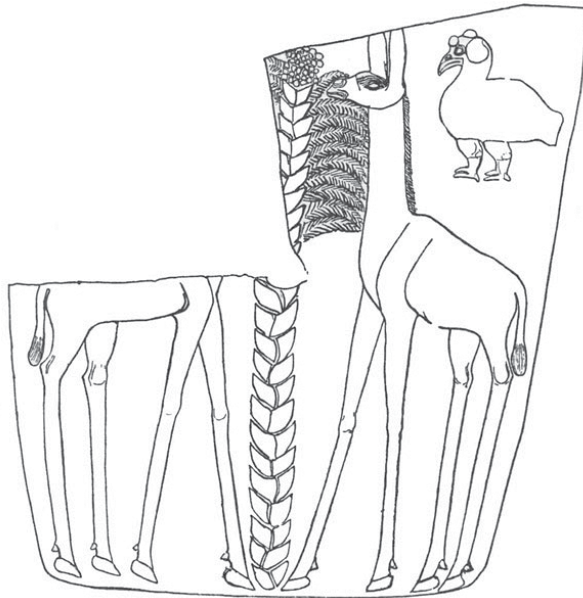
### Conclusions

The information presented above suggests that plants played an increasingly important function for early man, for food, clothing, and medicine. The shift from gathering to cultivation that occurred about 10,000 years ago in Neolithic times was associated with the development of communities and ultimately villages, towns, and cities. They did not occur out of the blue but had a long gestation period. Similar events occurred independently in the Indus Valley, in China, and the Americas although the details and the time

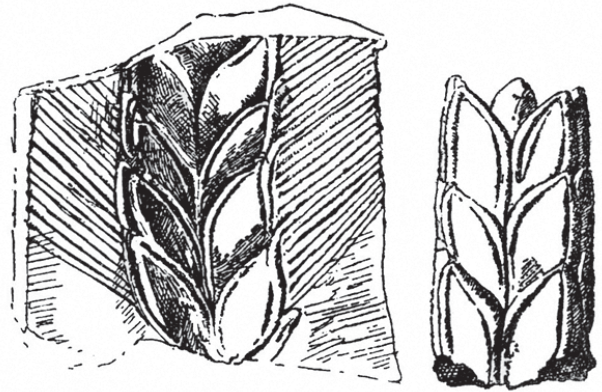


**Fig. 2-9.** Gathering and herding and the beginnings of agriculture. A) Paleolithic representation of honey gathering. B) Cave painting, 5000 to 6000 years ago, of women gathering grain, Tassili n'Ajjer, Algeria. C) Domesticated cattle Tassili n'Ajjer. Source: Bruce 1995.

A



B



**Fig. 2-10.** Early representation of plant that can be identified. A) Predynastic drawing of palm tree and gazelle, 5000–6000 years ago. B) Cereal carvings, first dynasty, 5000 years ago.

scale differ. In the Mid-East the invention of agriculture is associated with the harvest of native wheats and barley and the domestication of the goat and dog. In Asia the grain was rice and in the Americas it was maize, in Africa it was largely millets.

### References

- Fleckinger, A. and H. Steiner. 1999. *The Iceman*. 2nd ed. Falio Verlag Balzano, Vienna 1998 and South Tyrol Museum of Archaeology.
- Gibbons, A. 2001. In search of the first Europeans. *Science* 291:1722–1729.
- Singer, C., 1958. *From Magic to Science*, Dover, New York (1st ed. pub 1927).
- Singer, C., E.J.H. Holmyard, and A.R. Hall. 1954. *A History of Technology*. Vol 1. Fall of ancient empires. Oxford Univ. Press, London.
- Smith, B.D. 1995. The emergence of agriculture, *Scientific American Library*, W.H. Freeman, New York.