

## Symbols in the Stone Age

Archaeologists have long agreed that the artwork of the later ice age in Europe (a period extending from roughly 10,000 to 37,000 years ago) cannot be considered art for art's sake. Although many of the drawings and carvings that have been discovered are of a high artistic caliber, particularly in southern France and northwestern Spain, it is obvious they were not intended merely for aesthetic contemplation. Many of the celebrated French cave paintings, for example, were executed on walls to the rear of the caves where there is very little light; often they were drawn directly on top of earlier pictures, without regard to the resulting artistic composition.

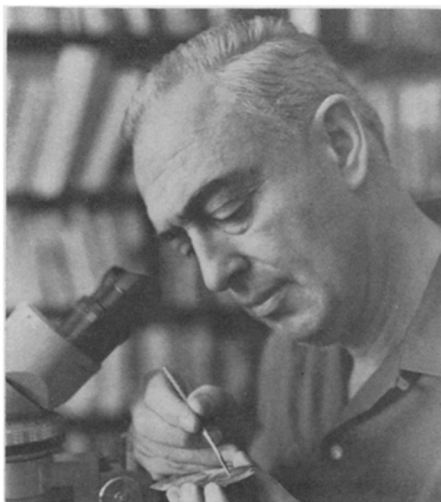
Since the animals portrayed were often the prey of ice age hunters, the traditional theory has held the images to be elements of a hunting ritual. The theory, says Dr. Elwyn Simons, a paleontologist at Yale University, was that "The artwork represents some kind of hunting magic." A more recent theory interprets the images in terms of sexual symbolism.

**These interpretations** are too limited, says Alexander Marshack, an archaeological researcher with the Peabody Museum of Archeology and Ethnology. Having spent the past six years in a microscopic re-examination of ice age artifacts, Marshack believes there is a great deal more than just hunting, fertility or sexual references to be seen.

Marshack argues, in research to be published in France and Italy this spring, that ice age art reveals a consistent and complex pattern of symbolic and notational meaning, the earliest complex system of symbols yet found. The symbolism, Marshack says, indicates a far greater development of intellectual skills and a more precise observation of the natural world than archaeological theory has thought possible for ice age man.

Because formal writing began alongside agriculture, which did not develop until thousands of years after the end of the ice age, archaeologists have not looked for complex systems of symbol-making in early prehistoric culture. "Nobody has examined the whole body of ice age artifacts with a strict analytic methodology before," Marshack points out.

As an example of ice age symbolism, Marshack has analyzed a reindeer-antler baton discovered in France in 1885 and dated at roughly 12,000 years of age. Somewhat over a foot long, with a hole bored at one end, the baton is carved with images includ-



*Marshack finds unexpected pattern.*

ing plants, fish and mammals.

"Most of the images are carved with incredible realism," Marshack says, "but the important thing is that all the images have a spring and summer reference." There is a male salmon of the spawning season, for instance, and three plants at different stages of growth. One is a young spring shoot, one a branch in full leaf and one a flower. "Other images are as precisely seasonal," Marshack notes, "and the different creatures come from different realms in the hunters' territory." The baton also contains an ibex head marked by an X. "Other ibex heads, and other animals, are symbolically marked in ice age art," he says.

Previous studies of the baton without the help of a microscope had overlooked many details. Some of the plants had been labeled harpoons, and most of the smaller images were considered indecipherable.

Marshack speculates that the images on the baton are part of an ice age system of symbol-making, and a complementary mythology, designed to explain the seasonal reappearance of plants and animals. But the baton and its symbolic representations are only one small part of an intricate system of notation, he claims. "There are hundreds of other aspects. The tradition of symbolism is very complex."

**Most archaeologists** and anthropologists in the United States have not yet seen Marshack's data, the bulk of which is to be published in this country in the fall. Even so, his findings are attracting attention. Dr. Simons, who has not seen the research, finds the outline of Marshack's theory "plausible and very interesting." And Dr. Clark Howell, an anthropologist at the University of Chicago who is acquainted with the evidence, agrees the theory is highly significant and adds, "I think he has pretty well proved his case."

## Road is cleared for FDA

Ever since 1962 when Congress passed the Kefauver-Harris amendments empowering the Food and Drug Administration to demand proof of efficacy as well as safety of drugs on the market, the FDA's authority to apply its power retroactively has been challenged. At issue was not so much its authority to act at all but its right to insist that older drugs meet the same high standards of proof that apply to compounds approved since 1962.

**A landmark case** just decided in Ohio says that it has that right. If the decision stands through the Supreme Court, the floodgates to swift and extensive FDA action will open.

The Ohio contest challenged FDA's power to ban from the market Panalba, a combination antibiotic that brings the Upjohn Company of Kalamazoo, Mich., \$1.5 million a year in sales (SN: 7/5, p. 6). But its ramifications reach far beyond Panalba itself, extending to all combination antibiotics and to other compounds accused of being unsafe, ineffective or both.

Backed by a review conducted by the National Academy of Sciences, the FDA contended that Panalba, a fixed combination of tetracycline and novobiocin, is ineffective and that, because of dangers associated with its novobiocin component, is unsafe.

Over Upjohn's objections, the Court of Appeals in Cincinnati ruled that because of the threat to health, the drug agency was justified in its attempt to remove Panalba without granting the company a lengthy prior hearing.

According to a spokesman for the Pharmaceutical Manufacturers Association, which represents most of the major drug houses in the United States, PMA is particularly unhappy with this decision because it significantly fortifies FDA's power to act first and talk later.

Further, the three-man panel of judges upheld FDA's authority to apply the same criteria to pre- and post-1962 drugs. The FDA, under the amendments, must demand "substantial evidence" of safety and efficacy. In a regulation promulgated Sept. 19, the agency spelled out the conditions of substantial evidence it had been imposing since 1962. A drug, it said, must be evaluated in controlled clinical trials, employing a reasonable number of patients whose disease state is clearly defined. The compound must be compared to a placebo—or in some cases, an active drug—in double-blind studies. Only occasionally, FDA said, would it accept the kind of historical data—clinical experience and general acceptance in

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