

THE ANCIENT ART AND CRAFT OF THE LAPIDARY

LEONARD GORELICK

This present issue of *Expedition*, like the previous one, is a special number devoted to the subject of the ancient lapidary. Together, they constitute the first time that the subject has been dealt with as a unified theme, from the work of Paleolithic Man, through that of the cunning craftsmen who made the first cylinder seals, to the spectacular jewellery of medieval and modern Islam, and the workshops of present-day India. All the papers will be given at a symposium entitled "The Ancient Craft and Art of the Lapidary," being sponsored by the Archaeological Institute of America, the National Endowment for the Humanities and the North Shore Society of the AIA. On behalf of the North

Shore Society, I offer thanks to all who made the symposium possible and to Bernard Wailes, editor of *Expedition*, who made these special issues available.

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The Symposium will be held at the New York Institute of Technology, Old Westbury, Long Island. It will take place on Saturday, November 21, 1981, from 9:30 to 4:00. For information write to Leonard Gorelick, 54-44 Little Neck Parkway, Little Neck, New York 11362.

PALEOLITHIC TOOLS

Some Design Considerations

JOHN S. KOPPER

Paleolithic tools have seldom been analyzed from the design viewpoint. We know a great deal about how they were made and how they were used from ethnographic observations, experimental manufacture and microwear analyses. A 'mental template' is often invoked as the guiding principle in Paleolithic tool design and production: the finished tool conforms to a mental picture of what a proper tool for a specific purpose must look (and function) like. Yet, such a model ignores the physical constraints that the real world imposes on the designer-maker-used of such implements. First, I will investigate how Paleolithic people coped with such parameters as strength of materials, biomechanics, the scale effect and other

engineering principles. Second, I will consider design advances in a time framework to see if a pattern emerges for technical innovation. Figure 1 gives data on the tools and people of the Paleolithic in a time framework.

TOOL DESIGN—TENSION, COMPRESSION, SHEAR

All natural substances fail mechanically in certain predictable ways. The earliest tool makers were aware of these and utilized them. A tree, an animal, a rock can be reduced to two or more pieces by mechanical stress in the form of tension, compression, or shear, or a combination of them. The forces producing these are