THE DEVELOPMENT OF TOOL MAKERS

The stone tools associated with *Australopithecus* are known as the Oldowan tools and consist of at least a half dozen different categories, each well defined as to form and function. From Olduwai Gorge in Tanzania, dated as just under 2 million years ago, comes evidence of the oldest undoubted hominid living sites. The area contains stone tools, debris from tool making and the remains of animals killed and eaten by the hominids. From comparisons with campsites of living hunters it can be inferred that the size of the band using the site was around 30 individuals. Circular piles of stones suggest that the hominids had constructed a windbreak at the site, and this together with the amount of stone and bone recovered, indicates that by the time hominids were no longer completely nomadic (shifting sleeping areas from night to night) like the apes. Also the associated remains of large mammals proves that those hominids were capable hunters, and this in turn, implies division of labour, cooperation and reciprocity, the economic foundations upon which was built the hominid success story.

One final point which can be made about *A. africanus* – and by inference, *A habilis* – is based upon studies of maturation rates. If X-rays are taken of *Australopithecus africanus* jaws, we find that these primitive hominids had tooth maturation patterns identical to those of modern man. The

inference therefore would be that their period of maturation was similarly extended. That so long a learning period would have been necessary, or even possible, without the existence of language is hard to believe.

The phase of human evolution after *A. habilis* began some 1.5 million years ago and lasted approximately one million years. The Old-World hominids of this period are known as *Homo erectus* was a larger creature than *A. habilis,* and judging from post-cranial remains was fully adapted to habitual erect bipedalism. Brain size had also increased.

Material cultures of *H. erectus* populations were advanced over those of earlier hominids: their stone tools were more diversified and the workmanship was more standardized. However, from the succeeding Acheulian (hand-axe) cultures found throughout much of the Western Old World between 1.5 million and 100,000 years ago, there was only very slow change in tool design, diversity and standardization. Nor did change occur in a steady fashion, but rather in bursts. It seems likely that the slow rate of change reflects the fact that technology was still linked intimately to biologically determined capabilities, both cognitive and manipulative, and that these capabilities changed only slowly in the hominids of the Piocene and Pleistocene up to a few hundred thousand years ago.

Homo erectus populations seem to have been more efficient hunters than their predecessors, hunting large quantities of big game. Perhaps this points to cooperative associations between bands, although it appears that individual bands still number only 30 or 40 individuals. Northern populations, at least, had discovered fire by about 700,000 years ago, and presumably used it for protection, cooking, stampeding game and to extend the length of the working day and perhaps for something else, as well. Many tribal people living today cook meat partly in order to transform it and make it 'clean,' to emphasize the separateness of man from the rest of the animate world. If this was true of *H. erectus*, then we should have to say that the advent of fire marked an important stage in the evolution of human self-consciousness.