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ON THE GENESIS OF BIPEDALISM*

by

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ABSTRACT

Bipedalism is the hallmark of the Hominidae, past and present. Only against this fundamental adaptive background could cerebral, dental and manual modifications develop to change ape into ape-man, and ape-man into man. Yet surprisingly little is known of its origin, of the variety of forms of locomotor behaviour it has encompassed, or about the sequence of postural refinements which has led to our modern pattern of stance and gait.

In an attempt to trace the Plio-Pleistocene history of two-footedness, lower limb fossils of early hominids are examined here. South and East African sites are covered, with special reference to the period 3,6 to 1,5 My ago.

Numerous structural challenges had to be met so that uprightness could evolve successfully. Several are considered of special interest here, including sacroiliac joint consolidation, a lumbo-acetabular weight transfer mechanism, acetabular remodelling and femorotibial alignment. These features have contributed to the attainment of balance over two limbs, minimal eccentric joint movements and a flow of body weight close to or through joint centres.

A primary palaeoanthropological question is then discussed: the time period during which cladogenesis brought about the emergence of earliest *Homo* from an *Australopithecus* stock. Lower limb evidence is used to evaluate whether *A. africanus* postdated this split, and in so doing the possibility is considered that southern African australopithecines exhibited parallel evolution to *Homo*, rather than having been ancestral.

Finally, comparisons are drawn between certain East and South African features of pelvic and lower limb evolution. A chronology of osseous aspects of such evolution is proposed.

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