

Book Reivew

Lowly Origin: Where, When and Why Our Ancestors First Stood Up. Jonathan Kingdon, *Princeton University Press, Princeton and Oxford, New Jersey (2003). Hard bound*

The story of human evolution still awaits full length documentation. Palaeontological records the uncovered fragmentary fossils of our ancestors tell us some story about the evolution of *Homo sapiens sapiens* but there are still many more questions than answers. In the recent years the boom in molecular technology attracted the human evolutionary biologists to address this story with the fossil markers on our blue print of life, i.e., mutational events on our DNA, with the whole story revolving around the estimation of mutation rates in the part of our genome where we look for the foot prints of our journey up till now. At this juncture when biologists use DNA technology to dictate this story, the documentation of our evolutionary history has taken a little fast tract.

Looking back to the bipedalism, the basic difference which separates *Homo* from other primates in the light of new evidences, its precursor conditions as well as the consequences, which are the central themes of the book under review, are of importance for the better understanding of human evolutionary history. Though bipedalism has been discussed from a long time in connection with the evolution of man, but it always remained brief and scattered in the literature.

In the present book “Lowly Origin: Where, When and Why Our Ancestors First Stood Up”, it is placed as a dominant theme and discussed in detail along with palaeo-ecological and palaeo-geographical settings where it evolved and transformed an animal into man.

The total content of the book is divided into 10 chapters plus an appendix of plants which favored human and other primates in the course of evolution.

The Chapter 1 discusses the different concepts, hypotheses and definitions of evolution and how and why bipedalism, its peculiarities along with the geographical and ecological setting which shaped it, is central to evolution of hominines or particularly to our species. The

separate origin and development of fore/hind limbs and brain has also been discussed by the author in this chapter. The chapter also documents the stance of origin of bipedalism and bipeds in East African coastal forest and their evolution by river basin.

Chapter 2 looks into the evidences of beginnings of mammals in general (including Australian marsupials) and placental mammals in particular. The question of the scanty fossil records and direct evidences to explain the origin of mammalian order and the role of eco-niches in shaping the mammalian characters are well accounted in this chapter. The role of temperature in giving space to mammals in reptile world. The advantages of mammalian order over reptiles and birds have been discussed in view of anatomical and metabolic differences. Further the bifurcation of primate order from basal order. In view of fossil record and anatomical/physiological characters have been discussed. Then the development of the primate hand and feet, padded fingers, opposable thumbs and hand brain coordination is discussed in the light of available evidences. The becoming of diurnal from nocturnal and evolution of higher order anthropoids due to the changing climate have been discussed in the light of evidences from Egypt and North Africa.

The chapter 3 “On being an Ape”, opens up with the famous cartoon of Charles Darwin drawn during his life time of his bearded face looking out from the quadruped body of an ape, to reflect upon the opposition to the idea of ape like ancestry of man during that time. This chapter discusses the origin of proto-apes over 2 mya, the most significant being *Morotopithecus bishopi*. Emergence of apes in Eurasia 18 to 20 mya, development of separate African and Asian ape lineages, raise of modern monkeys, a likely influence in the decline of apes, emergence of Dryopithecines before 12 mya in Europe and their migration to Africa about 10.5 mya. This chapter also documents the evidence of arid rain-shadow eoniches through eastern Africa which may explain the separation of chimp and human ancestors possibly as early as 7.8 mya.

The chapter 4 “On being a Ground Ape”, illustrates the evidence of emergence of

hominines (7.8 and 6.2 mya) in East African coastal littoral forests which became isolated from Central Africa as also suggested by vestigial primate population differing at species and subspecies level from their central African counterparts. Furthermore, this chapter discusses the transformation of eastern African Apes into ground apes due to behavioral adjustment to living in smaller home ranges to specific types, choices and location of foods and to appropriate foraging techniques as well as more terrestrial use of their restricted habitat which brought in the structural change in skeletal in general and pelvis in particular. The conceptual transformation of last ape to first hominine in river basin econiche in eastern Africa have been discussed and a probable time of 5 to 6 mya has been assigned to this transformation.

Chapter 5 and 6 examine different basin regions as potential environments for two, three or even more bipedal lineages emerging from eastern ground apes, explained by expansions out of costal enclaves about 6.0 mya into separate basin complexes, displacement of ecologically specialized species, unique ecology of the southeast African coast and its hinterland, South African Man apes, *Australopithecus africanus* lineage (3.6-2.3mya), approximate human ancestors and chimpanzee behaviour as a guide to latent behaviors and manipulation of tools, “scavenging” graduating into “niche stealing”.

The Chapter 7 “On the uncertainties of becoming Human” addresses some issues of modern human ancestry, like in the presence of several *homo* lineages, which one is ancestral to modern humans?. Where does the category *homo* begin in the fossil record? And about the *Homo rudolfensis* (2.4-1.85 mya) and *Homo habilis* (2.3 - 1.7 mya) controversy to be ancestral to modern human, their accurate allocation of time and status. The importance of accurate identification of differences in early humans and hominines to build incremental view of evolution has also been highlighted.

The chapter 8, “On going far with Fire” examine the evolution of *Homo ergaster* (1.8-1 mya) a member of *Homo erectus* complex (1.8 - 0.3 mya in Asia) whether in northwest Africa or Arabia. The association of this complex with fire

and Achulean stone tool industry has also been looked into. The emergence of “archaic” man in Africa or Eurasia about 1 mya and their evolution into *Neanderthals* in Northern temperate habitats has also discussed in this chapter. The chapter concludes by looking into the tool assisted specialization and its role in hominid and human evolution.

Chapter 9 “On Being a self made human” examines the status of *Buia skull* (encountered from the Eritrean coast, about 1 m.y. old) irrespective whether it is an African Archaic human or Heidelberg, this is the first fossil evidence for braincase of modern aspect. The chapter also discusses the genetic evidences which suggest the emergence of a minuscule population, inhabiting 2,50,000 and 300,000 years ago and the earliest fossils of moderns in eastern Africa at about 130,000 to 120,000 BC. The dispersal of modern human out of Africa is looked into as the ultimate triumph of bipedalism and significance of Y chromosome makers in marking dispersal event has also been discussed. At the end the “self making” and “niche stealing”, fundamental traits of modern human are examined in view of their migration.

In conclusion (The chapter 10) the author has given a summary of evidences for a diverse radiation of hominids, of which modern humans are the lone bipedal survivor. Further in this chapter the need to understand human evolution, natural world and the working of global environments and ecosystems for the sustainability and to learn how to live on the home planet, without consuming it, has been identified and discussed.

The overall result of the book is a compilation of information that will be a welcome addition to the library of anyone interested in the various aspects of human evolution. Professor Kingdon’s book is a valuable addition to the literature of human evolution, perhaps not solving the debate over the origins of man, but rather giving the researchers a foundation of knowledge upon which to base his or her own opinion.

Satish Kumar
*Anthropological Survey of India,
 Mysore, Karnataka, India*