

in stark contrast to the lower phyla of animals. For example, even the segmented worms and Phylum Hemichordata have very little cephalization even in their adult form.

Some other difficulties which evolutionary biologists face in the area of embryology are: (a) The discovery by paleontologists that bony fishes existed before cartilaginous fishes, thus showing bone to be more primitive than cartilage (Paul Weisz, 1966, p. 408). This is the opposite of the embryological sequence. (b) The earliest fishes known in the fossil record had teeth but no tongue; later fishes had both teeth and a tongue (A. F. Huettnner, 1949, p. 39). However, mammalian embryos develop a tongue before developing teeth--as is well known in man by the lack of teeth in newly born babies. (c) The presence of a vas deferens (separate sperm duct) in male teleost fishes, but not in amphibians. The development of a vas deferens is considered to be an advanced characteristic in the vertebrates, but here it appears in the less advanced form and is not present in the amphibians, which are thought to have developed from the fishes. (d) The swim bladder of the higher fishes is now thought to have been derived from lungs, and not vice versa, as was formerly assumed (R. Mertens, 1960, p. 23).

12. The gradual discovery of evidences which have led modern biologists and anthropologists to recognize that the so-called "ape-man" races were fully human, possessing manufactured tools, a religion of their own, art, etc. (See The Gods of Prehistoric Man, by J. Maringer, 1960.)

The celebrated "Java man" which was discovered in 1891 was given the generic name Pithecanthropus, from the Greek pithekos (ape), and anthropos (man). However, within the past decade both this fossil form and the former Sinanthropus pekinensis (the "Peking man") have been placed in the genus Homo by the leading anthropologists of both Britain and America. (See "Homo Erectus" by W. W. Howells, in Scientific American, Nov. 1966, pp. 46-53; and The Fossil Evidence for Human Evolution, by W. E. Le Gros Clark, 1964, pp. 7-9, and 19ff).

Even the Neanderthal man, which has long been recognized as belonging to Genus Homo, has recently been declared to have been more human than was formerly thought. Dr. William L. Straus, Jr., in the December 1957 Quarterly Review of Biology, describes further studies of the Neanderthal skeletal remains, pointing out that the familiar stooped posture of the Neanderthal reproductions which we frequently see is due to the fact that the LaChapelle skeleton, after which the reproductions have been designed, was severely affected by arthritis of the bones.

Now that these and the other "old reliable" fossil hominids have been classified as human, anthropologists have turned their attention to ape and other anthropoid remains which have been recently discovered in Africa. The main group of these is given the generic name Australopithecus (the name is derived from Latin australis "southern," plus Greek pithekos "ape," and does not denote a connection with the Australian continent). (The reader should realize that the living apes--the gorilla, gibbon, orangutan, and chimpanzee--are distant^{inct} from monkeys, being tailless and generally being larger than monkeys. The fossil apes are, of course, basically similar to modern apes.) The name Australopithecus originated with R. A. Dart in 1925. Since Dart's first description of the fossil remains to which he gave this generic name, there have been numerous other similar finds. Some of these have been given other generic names such as Paranthropus and Zinjanthropus, but Le Gros Clark (1964, p. 20-21) and numerous other authorities assert that they are of the same type as Australopithecus, and should be placed in this genus. This australopithecine group is sometimes referred to as the "African man-apes;" they are widely regarded as being in the evolutionary line from which man is said to have evolved.