Homo in respect of cranial capacity it

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Homo erectus javanensis (Pithecanthropus erectus):

1. Discovery:

The remains were discovered at Trinil on the bank of River Solo in Java by Dr. Eugene Dubois in the year 1891.

2. Material:

The skeletal material consists of a skull cap, three teeth—a lower premolar and two upper molars and a femur.

3. Associated Finds:

From the same bed many skeletal remains of various species including rhinoceros, hippopotamus, elephant, etc.

were also unearthed. The fauna indicates that at one time Java was connected with the mainland of Asia.

4. Age:

The geological age is Middle Pleistocene. Characters:

(a) Skull Cap:

1. Only the upper part of the skull including the supraorbital region of the frontal bone and the upper part of the nuchal region of the occipital bone was found. 2.

The skull cap is 18. 5 cm. in length and 13. 0 cm. in breadth and thus giving a cephalic index of 70.

So it belongs to dolichocephalic group. 3. The cranial capacity is estimated at 940 cc.

In man it ranges from about 850 to 1700 cc while in apes (other than gibbon) it varies between 290 and 650 cc. Thus, in respect of cranial capacity it stands intermediate between apes and man. 4. The cranium is flattened in vertical direction (ape-like).

The vault is very low (as in apes). 5. The supraorbital ridges are continuous across the frontal bone to form a torus (as in apes). 6. The forehead is very narrow, low and receding (ape-like). 7. The frontal bone presents a slightly marked median keel.

8. The temporal lines run nearly parallel to one another while in man these become more and more separated as traced backwards and in apes a line runs to meet its fellow of the other side. 9. The inclination of the nuchal plane is more marked than in man and less marked than in apes. Thus the skull cap shows remarkably simian features and is, according to Prof.

Boule, really intermediate between that of an ape, like the chimpanzee and that of a man of really low status, such as Neanderthal Man. In respect of the development of brain also it may be considered as intermediate between man and the large apes.

(b) Teeth:

1. The teeth are of enormous size. Each one is larger than the corresponding human tooth.

2. The roots of the molars are strong and divergent (ape-like). 3. The crowns resemble more that of man than that of apes.

(c) Femur:

1. The femur is complete and 45. 5 cm.

in length, which suggests the individual to whom it belonged was 167 to 170 cm. in height. 2. The linea aspera is fully developed, a suggestion of erect posture. The name Pithecanthropus erectus which means ‘ ape man with erect posture’ is justified. 3. In all characters the femur closely resembles that of modern man.

Thomas Huxley, a stern supporter of Darwin, published a book entitled ‘ Evidence as to Man’s Place in Nature’ in 1863, in while he demonstrated the similarities between man and the great apes. Since then the scientists were looking for ‘ missing links’ between the apes and humans. When Eugene Dubois made the famous discovery of the Java man in 1891, it was considered to be the ‘ missing link’. At that time three plausible explanations as regards position of Pithecanthropus erectus were put forward by different scientists.

1. Pithecanthropus stands in the direct line of evolution of modern man, being truly intermediate between man and the apes. 2. Pithecanthropus stands on a side branch that rises from the main human stem. The side branch could not grow more and thus it became extinct.

3. Pithecanthropus is no more than a highly evolved giant ape related to the gibbon group. Now the Pithecanthropines, of which Pithecanthropus is also a

member, are included under Homo. The Homo erectus represents a stage of hominid evolution beyond Australopithecines.

Other Remains of Pithecanthropus:

Since 1936 several new discoveries have been made by von Koenigswald and Weidenreich from different parts of Java. These remains were discovered from two geological beds of Java, namely, Trinil and Djetes.

The Trinil bed is assigned to Mid Pleistocene period, while the Djetes to Early Pleistocene. A list of some important discoveries is given below. Found from Trinil Bed:

1.

Pithecanthropus I (Pithecanthropus erectus):

Discovered by Dubois.

2. Pithecanthropus mandible A:

It is commonly known as the mandible of Kedung Brubus. Discovered by Dubois in 1890.

3. Pithecanthropus II:

Discovered by von Koenigswald in 1937 at Sangiran in central Java.

A skull and some parts of lower jaw were discovered.

4. Pithecanthropus III:

Fragments of a juvenile skull were discovered in the vicinity of Sangiran by von Koenigswald in 1938.

Found from the Dejetes Bed:

1. Pithecanthropus IV:

It has been named as Pithecanthropus robustus. Some parts of the skull were found by von Koenigswald and Weidenreich in Sangiran in 1939.

2. Homo modjokertensis:

A skull cap and some facial parts were discovered by some members of von Kopenigswald's party in 1939 in the Djetes zone near Modjokerto in east Java.

It was a skull of a child. 3. Pithecanthropus mandible B. Discovered by von Koenigswald in Sangiran in 1939.

Homoerectus pekinensis (Sinanthropus):

1. Discovery:

In 1926 two fossil teeth were found at Chouk-outien, 37 miles south-west of Peiping (Peking) in China. In 1927 another tooth was discovered.

Prof Davidson Black of Peking Union Medical College, after careful study gave the name Sinanthropus pokiness to the owner of these teeth. Following the discovery of the type of tooth in 1927, intensive ft excavations of the various sites began and as a result of that the famous Sinanthroups discovery of a nearly complete brain case was made by a young Chinese Paleontologist, Dr. W.

C. ; Pei, in 1929. This is called Sinanthropus skull No. 1. Subsequent hunt for fossil remains continued and in course of time skull fragments of about 40 individuals of both sexes and of varying ages were found.

The earlier Sinanthropus finds were studied by Prof. Davidson I Black and the later finds by Prof. Franz Weidenreich as the death of the former occurred in 1934.

2. Age:

The age of Sinanthropus as determined by the fauna, the strata and the tools is believed to be Middle Pleistocene. The animal remains are of rhinoceros, hyenas, bears, deer, water buffalo, etc. Sinanthropus man used pieces of the antlers of deer as tools and they made very crude implements like choppers, scrapers, cores, etc, of chipped stone.

3. Description:

1. The average maximum length of the skull is 19. 4 cm, the range varying between 16.

5 cm. and 20. 5 cm. 2. The breadth varies from about 13. 7 cm. to 14.

3 cm. 3. The cranial index is 72. 2. Thus it is a very long head. 4. The vault of the skull is high (11. 5 cm.

) 5. The cranial capacity varies from 850 cc to 1300 cc with an average of 1075 cc. 6. The skull bones are very thick and massive (more so than in any ape). 7.

The cranial sutures appear to close at an earlier age (it is an apelike character). 8. The forehead is receding.

9. It is separated by a distinct furrow from the supraorbital ridge which are pronounced and continuous. 10. A prominent median keel on the midsagittal plane is present. 11. On either side of it the parietals are flattened.

12. The orbits are large. 13. The molar bones are very high and prominent (as in modern Mongoloids). 14. The nasal bridge is relatively high and broad. 15.

The nose as a whole is very broad (much broader than those of the modern man). 16. The nasal spine is absent; a low ridge separates the nasal floor from the alveolar part of the upper jaw. 17. The upper jaw is “ not hollowed out as in modern man. 18. The palatal arch is narrower than that of the modern man but broader than that of the apes.

19. It is rough in the modern man; the face is broad and short. 20. The fragmentary lower jaws studied by Prof. Weidenreich reveal that the male jaws are very big and heavy, much more so than in any modern man, but the female jaws are comparable to the jaws of the modern Mongloian females. 21. The chin is absent.

4. Affinity with Pithecanthropus:

Sinanthropus and Pithecanthropus so closely resemble one another that they merely represent two geographical races of the same Pithecanthropoid stock. Sinanthropus is however more advanced than Pithecanthropus,

though Weidenreich is not in favour of accepting this view. According to him both of them are on the same level of human evolution.

He traces the line of evolution from Sinanthropus-Pithecanthropus stage through Neanderthaloid forms to modern man. He further points out to the resemblance of some characters of jaw between the modern Chinese and the Eskimo on the one hand and Sinanthropus on the other, which indicates direct genetic relations between Sinanthropus and the Mongolian group of recent mankind. Some anthropologists, however, do not agree with Weidenreich in these opinions.

Comparison between Sinanthropus and Pithecanthropus:

Though Pithecanthropus and Sinanthropus are two different varieties of the same stock, Pithecanthropus seems to represent a more primitive type with smaller cranial capacity, more marked platycephaly, larger frontal sinus, greater flattening of the frontal region, earlier fusion of cranial suture, more heavily constructed mandible, smooth palate, presence of diastema in between the canine and the lateral incisor, etc.