

The Peking Man (*Homo erectus pekinensis*)

The Peking man is known from a discovery of teeth, fragments of jaw and skull at Zhoukoudien—a site about 40 km. South-west of modern Beijing (Peking). The story started in the early 1920s with Davidson Black, Head of the Dept. of Anatomy at the Peking Union Medical College. Dr. Black had a firm belief that the remains of earliest man would surely be explored in the soil of China. From the earliest time the Chinese had a profound interest in fossilized bones to utilise these for some disease curatives. There was a strong local belief that the Dragon Bone Hills were the storehouse of such fossil bones. Dr. Black was attracted to this site influenced by the local belief.

In the year 1921, Drs. Anderson and Zdansky discovered a few bone remains from a village named Choukoutien (now Zhoukoudien). At that time, two molars were discovered and those were, in many respects, human in characteristics. Then Dr. Bohlin, in the year

1927, found the third molar which was examined and described by Prof. Davidson Black of Peking Union Medical College. Dr. Black declared that those belonged to the very earlier types of man, and further remains could be obtained by intensive excavations. From these findings he created a new genus, *Sinanthropus pekinensis* (Chinese man of Peking). In 1929, a Chinese palaeontologist named, Dr. Pei discovered a notable complete brain case of *Sinanthropus*. During the period ranging from 1928 to 1937, various fossil remains belonging to the *Sinanthropus* were unearthed and these were studied carefully by Dr. Black and F. Weidenreich.

The strata in which *Sinanthropus* skeletal remains have been discovered belong to the Lower Pleistocene to Middle Pleistocene. The fauna includes a primitive water buffalo, a big beaver, rhinoceros, hyaenas, bears, rodents, etc. This fauna is completely different from that of the Loessic period. While the deposits were being dug up, Dr. Anderson had observed roughly worked pieces of quartz. Those were completely foreign to the said locality and their presence there could not be explained without thinking that those were brought there by man.

The *Sinanthropus* collection includes five incomplete brain cases, nine fragmentary skulls, a dozen fragments of lower jaws, six facial fragments, nearly 152 isolated teeth, a collar-bone, two fragments of long bones and four ungual phalanges. By 1939, the number of individuals in the *Sinanthropus* collection had risen to 40, of which 15 were children upto the age of 14 years.

THE SKULL

The skulls of *Sinanthropus* are, in general, similar to those of *Pithecanthropus* but, in many respects, it is far advanced. The bones of the skull are very thick. The maximum length of *Sinanthropus* skulls range from 165 mm. to 205 mm. and an average of 194 mm. The maximum breadth of the skulls in question vary from 137 mm. to 143 mm. Both in length and breadth the *Sinanthropus* skulls exceed those of the *Pithecanthropus*. The cranial index is 72.2 and, therefore, these are dolichocranial. The cranial capacity varies from 850 c.c. to 1,300 c.c. with an average of 1,075 c.c. The vault of the skull is high.

The forehead of *Sinanthropus* is receding. On the frontal bone there is a bump which is lacking in *Pithecanthropus*. Supra-orbital ridge is of great size and comparable to *Pithecanthropus*. A ridge runs down the middle of the skull from front to back, known as sagittal crest. The parietal bones are more or less flattened. The occipital torus is well-developed. The occipital bone slopes

abruptly, while in man it is arching. The glenoid fossa for articulation with the jaw is comparatively deeper as in man.

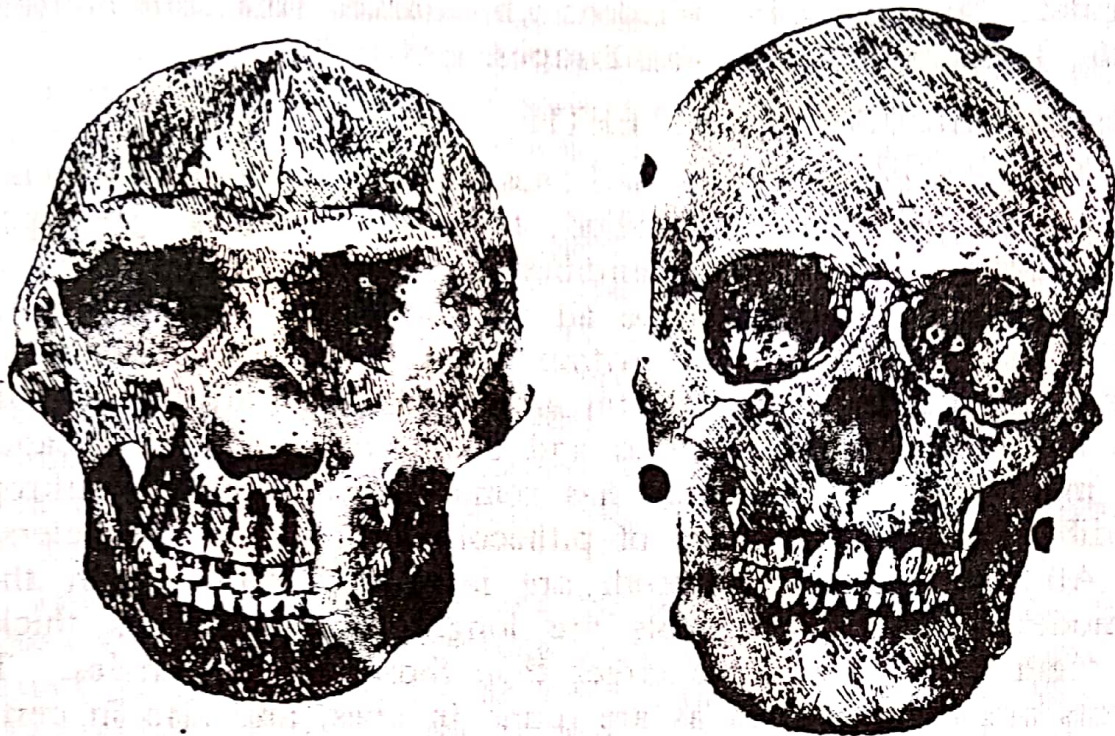
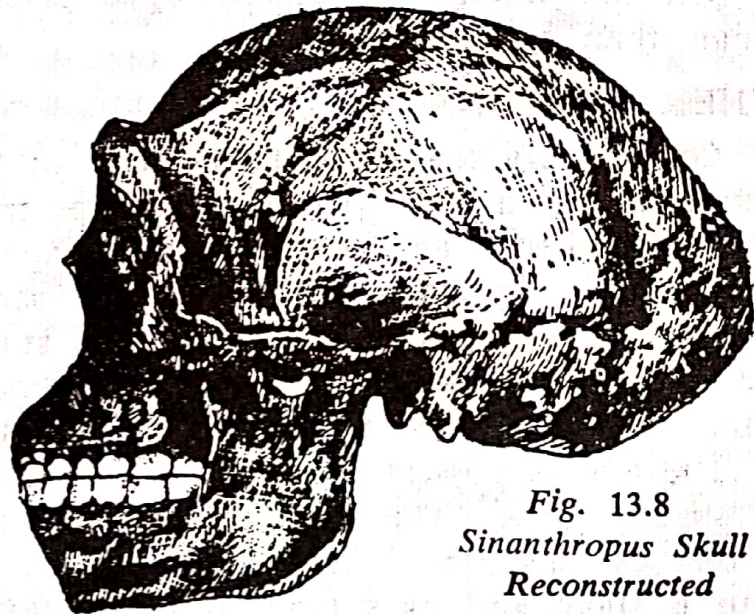


Fig. 13.7 : Skull of Pekin Man (Left) and Modern Man (Right) Compared; Viewed from the Same Angle

The face of *Sinanthropus* is relatively small but projecting. It is broad in comparison to its length. The nasal bones are broader than those of modern man. The bridge is broad and high. The nasal spine is not present. The cheek bone is quite prominent and there is no oblique sloping in it as in European Neanderthal man. The upper jaw is not hollowed out as we find in the case of modern man. The malar bones are high and prominent as in modern Mongoloids. The orbits are large.



*Fig. 13.8
Sinanthropus Skull
Reconstructed*

THE BRAIN

The endocranial cast of the third skull shows a chimpanzoid

form. But the frontal lobes possess certain human characters. Prof. Black opined that the hemispheres were slightly unequal.

The *Sinanthropus* people were right-handed and they could articulate language. F. Weidenreich marked the diminutiveness of the temporal lobe in *Sinanthropus*.

THE LOWER JAW AND TEETH

Almost a dozen lower jaw bones were discovered at Choukoutien. Prof. Weidenreich studied these fragmentary jaw bones systematically. The male mandible is very big and heavy, and these exceed in size and shape all the lower jaws of modern man. The female lower jaws fall within the range of modern Mongoloids. In its shape of the dental arcade the *Sinanthropus* mandible goes away from the great apes and comes closer to the Neanderthal man. Prof. Weidenreich has remarked that the *Sinanthropus* mandible presents a mixture of pithecoïd and human characters.

All the *Sinanthropus* teeth are large and robust than those of modern man. Their roots are longer and enamel is thicker. The teeth of the males are larger than those of the females. The incisors are shovel-shaped as are found in apes, and also in certain human races, e.g. the Mongols. The upper canines are large and they rise above the level of the other teeth as in *Pithecanthropus* and the great apes. But there is no diastema in these teeth. The pre-molars are ape-like in their oblique oval shape and in the development of a heel. The molars are low and long, whereas in hominids, these are high and short.

On the whole, the *Sinanthropus* jaws show more primitive human than simian characters.

OTHER REMAINS

Only a very few skeletal fragments of *Sinanthropus* have been discovered, e.g. a semilunar bone, a large fragment of clavicle, two pieces of humerus, and seven femoral diaphyses. Almost all these bones were badly damaged (except the semilunar bone).

The large fragment of clavicle was studied carefully by Prof. Black who found that it resembled the human collar bone in every detail. The semilunar bone also shows human features.

The femurs possess many interesting features. These are short and slightly bent. The femurs show marked front-to-back flattening that extends along their whole length. The curvature of the femur is slight and its summit is much closer to the lower extremity of the bone than in man.

PHYLOGENETIC POSITION

Prof. Black is of opinion that the Peking man represents a stage

higher than the Java man. But it is not far removed from the type from which the extinct Neanderthal group and modern groups of man evolved. Prof. Weidenreich found a peculiar hyperosteoses on the inner face of the lower jaw as is common in recent Chinese and Eskimo jaws. This fact has led Prof. Weidenreich to conclude that there is direct genetic relation between *Sinanthropus* and the Mongolian people. However, most of the anthropologists do not support this view.

Besides the presence of shaped stones along with the Pekin man skeletal remains, there were traces of charcoal, charred bones, which revealed that they knew the use of fire. It is regarded as one of the most important discoveries in Pekin man living site which indicates the first unequivocal evidence of using fire by the hominids. They may have started the habit of roasting the meat before eating which would have minimised the labour of chewing their food.

The close similarity between the different features in the bone remains of Pekin man and Java man indicates that they are not different generically. Some eminent scientists like Boule, Weinert, Le Gros Clark, Piveteau and Vallois have expressed their independent views regarding the dismissal of the generic name of *Sinanthropus*, and the man of Peking should be termed as *Pithecanthropus pekinensis* on the ground that it is closely related to the man of Java, the *Pithecanthropus erectus*. Following the lead of the scholars mentioned, many prefer to call Pekin man as *Pithecanthropus pekinensis* instead of *Sinanthropus pekinensis*.

But now the situation has thoroughly been changed. After reevaluation of the fossil remains relating to Pekin man it has been suggested by the anthropologists that it indicates the direct line of development towards *Homo sapiens*. Thus its *Homo* status has been established. Pekin man has been given the scientific name *Homo erectus pekinensis* after discarding *Sinanthropus pekinensis*. Thus former position of Pekin man in the human line of evolution has been thoroughly changed.

Sinanthropus and cannibalism: Prof. Weidenreich discovered a skull with five big wounds which were made to break open the skull. Almost all the skulls lack basal regions. Now the question comes who has done these? According to Prof. Weidenreich, these skulls had been broken by the *Sinanthropus* people themselves, who used to feast regularly on brains and bone marrow.

The Java Man and the Pekin Man

A COMPARATIVE STUDY

INTRODUCTION

The Java man, most famous and most discussed fossil, brought

for the first time, the problem of the coming of man, before the public. The discovery of this particular fossil man created a storm of controversies in the then scientific world. No other discovery has ever made such a sensation among the people of various status.

The Pekin man may be called the second primitive species of great importance. The discovery of Pekin man did not create so much controversies as happened in the case of Pithecanthropus; rather the Pekin man was received with honour and understanding by the people.

DISCOVERY

In 1891, the Dutch anthropologist, Dr. Dubois, found the first remains, a skull-cap, a thigh bone and two malar teeth of Java man, whom he named Pithecanthropus erectus. In 1936 and later, von Koenigswald and others discovered in the central region of the island of Java, the other remains of Java man.

The second type was discovered at Choukoutien (now Zhoukoudien), 27 miles south-west of Beijing (Peking), in China. As early as 1922, and in 1927, the first find of the fossil 'hominid' teeth were discovered. Prof. Davidson Black examined those teeth keenly and established a new genus of man, Sinanthropus pekinensis. After this, various remains of Pekin man were unearthed by the different scientists.

GEOLOGICAL AGE

These two early hominids—the Java man and the Pekin man—lived during the early Pleistocene age in Asia.

Table No. 13 : 3

<i>Different characters</i>	<i>Pithecanthropus</i>	<i>Sinanthropus</i>
(1) Size and form of the skull	Smaller in size, form is more or less same	Larger in size, form is same
(2) Cranial capacity	Average 800 c.c.	Average 1,075 c.c.
(3) Maximum length	Average 185 mm.	Average 194 mm.
(4) Maximum breadth	Average 130 mm.	Ranges from 137 mm. to 143 mm.
(5) Cranial index	70.0, Dolichocranial	72.2, Dolichocranial
(6) Vault	10.5 cm. (Low)	11.5 cm (High)

Table contd.

<i>Different characters</i>	<i>Pithecanthropus</i>	<i>Sinanthropus</i>
(7) Forehead	Receding ; the frontal region is more or less flat	Receding ; the frontal region shows a bumplike development
(8) Median keel	Present	Present
(9) Supra-orbital region	Heavy and continuous	Heavy and continuous, there is a distinct furrow which separates the forehead from the supra-orbital region
(10) Occipital region	Broad and rounded	More or less narrow and elongated
(11) Frontal sinus	It is large	It is very small
(12) Palate	Smooth	Rough
(13) Lower jaw	Massive	Massive
(14) Lower canines	Smaller	Larger
(15) Molars	Larger in size	Smaller in size
(16) Gap between the upper canines and lateral incisors	Present	Absent
(17) Chin	Absent	Absent

In discussing the principal features of the skulls of *Pithecanthropus* and *Sinanthropus*, we see a close resemblance between them. The Java and the Pekin men belong almost to the same geological age in Asiatic continent. It is true that there are a few morphological differences between them, but these differences are not generic but specific in type. But a few characters like the ape-like gap between the lateral incisors, the primitive smooth form of the palate, the greater robustness of the frontal part of the mandible in *Pithecanthropus*, have made him more primitive than *Sinanthropus*.

According to Dubois, the *Sinanthropus* is simply a primitive type of *Homo sapiens*. Prof. Weidenreich opines that *Pithecanthropus* and *Sinanthropus* occupy the same level on the line of human evolution. According to him, *Pithecanthropus* cannot be more primitive than *Sinanthropus*. He shows some dental characteristics

of Sinanthropus, which are more simian than we find in the case of Pithecanthropus. Weidenreich also tries to establish that modern man descends directly from the Sinanthropus-Pithecanthropus stage through the intermediate stage of Neanderthal man.

In 1929, Black made a comparison between his Peking skull with that of Pithecanthropus. He came to the conclusion that the skulls represented two specimens of the same type of creature. In both the cases, he saw, the bones of the skulls were thick, the forehead was sloping and low. The massive brow ridges were found to spread over the eye sockets. In 1939, the two renowned palaeontologists and experts in the study of the findings of Java and Peking fossils put forward their opinions after a detailed study by saying that Pithecanthropus and Sinanthropus were indeed close relations, and both of these represented earliest human types. The assessment put forward by von Koenigswald and Weidenreich was corroborated by Le Gros Clark. According to Clark, Pithecanthropus was slightly primitive and he had a comparatively heavier jaw. Still there was likeness between these two primitive hominids. The differences, in whatever way they might exist, were little more than the pattern of differences as found between two different races of the present population. It was supported by Le Gros Clark. On the basis of close similarity between these two specimens Clark advocated for dropping the two separate generic names—*Pithecanthropus erectus* for Java man and *Pithecanthropus pekinensis* for Peking man. But Dubois went against this view and he believed in the utter distinctiveness of his own findings.

Modern studies based on reevaluation of the fossil evidences tell us the fact that both the types of men represent a direct line of development towards *Homo sapiens*. Both are essentially the same with slight variations. Mayr has put forward that Java man and Peking man belong to *Homo erectus* group. Campbell has gone further to say that there is subspecific distinction between these two and nothing else. The Java man is called as *Homo erectus erectus* and the Peking man is recognised as *Homo erectus pekinensis*.

THE NEANDERTHAL MAN

(HOMO SAPIENS NEANDERTHALENSIS)

A skull cap and some long bones were discovered from a valley known as Neanderthal, in Germany, in the year 1856. In German language 'Tal' means valley, and previously it was spelt 'Thal'. Thus Neanderthal signifies the valley near Neander River.

In that period the discovery of such a fossil did not meet with a welcome reception, and the then society was violently opposed to any such idea regarding the coming of man from animal ancestry. The bones of Neanderthal man were excavated from the quarry in a cave in the Dusseldorf region. The cave was situated near the course of Neander River—a small tributary of the Rhine. It was a limestone quarry and while the workmen were carrying their work they found some old types of bones. These included the skull cap, some ribs, parts of a pelvis and a few limb bones. The quarry owner brought these to a local scientist, J. C. Fuhlrott for his explanation.

Fuhlrott examined the bones with full seriousness and came to the conclusion that the thick low skull with prominent brow-ridges and stocky, curved limbs were the indication of great antiquity of this type of man. Since then numerous fossil finds are being discovered from the different parts of the world which are

attributed to the Neanderthal man. All these fossil remains bear certain common features due to which these may be grouped as belonging to the Neanderthal race. Almost all the findings are incomplete. But amongst these we find a best preserved specimen known as La Chapelle-aux-Saint found in a small cave in the department of Correze, France.

This more or less complete Neanderthal skeleton was examined and evaluated by Marcellin Boule. He was the first anatomist to reconstruct the Neanderthal skeleton. The La Chapelle-aux-Saints skeleton was reexamined by William Straus of John Hopkins University and Alec Cave of St. Bartholomew's Hospital Medical College in London. According to them, it belonged to an adult man between forty and fifty years of age suffering from arthritis.

A great many of Neanderthal man have been found from Europe, North Africa, the Middle East, Western Asia and beyond. It has been seen that the Neanderthal man represent all over the Old World as a type specimen in the line of human evolution. The first Neanderthal remains were excavated from a Belgium cave in 1829 and at that time it did not receive any recognition. In 1848, a Neanderthal woman's skull was found in a cave at Gibraltar but it was accepted as late as 1908.

The following Table throws discernible light on the Spatial and Temporal distribution of the important hominids flourished during the glacial phases. It will help in understanding the nature and extent of hominid patterns to evaluate the Neanderthaloid development perspective.

Table No. 15 :1

THE SPATIAL AND TEMPORAL DISTRIBUTION OF THE IMPORTANT HOMINIDS APPEARED DURING THE GLACIAL PHASES

<i>Name of Fossils</i>	<i>Date of Discovery</i>	<i>Location</i>	<i>Time</i>
<i>From Europe</i>			
Neanderthal	1856—a work crew of limestone gorge	Germany	Wurm Glaciation
Ehringsdorf	1914—25-workmen	Germany	Riss-Wurm Interglacial
Steinheim	1933—Berckheimer	Germany	Mindel-Riss Interglacial
Gibraltar	1848—	Spain	Wurm Glaciation

[Contd.]

<i>Name of Fossils</i>	<i>Date of Discovery</i>	<i>Location</i>	<i>Relative to the average front, Wurm Glaciation</i>
Karpina	1899—Gorjanovic-Kramberger	Yugoslavia	Wurm Glaciation front,
La Chapelle-aux-Saints	1908—Bardon and Bouyssonie	France	Wurm Glaciation
Le Moustier	1908—Hauser	France	Wurm Glaciation
La Ferrassie	1909—Peyrony	France	Wurm Glaciation
La Quina	1911—Martin	France	Wurm Glaciation
Spy	1886—De Puydt and Lohest	Belgium	Wurm Glaciation
Teshik-Tash	1938—Okladnikov	Uzbekistan	Wurm Glaciation
Saccopastore	1929—Sergi	Italy	Riss-Wurm Interglacial
Circeo	1939—Sergi	Italy	Wurm Glaciation
<i>From Asia</i>			
Galilee	1925—Turville-Petre	Israel	Wurm Glaciation
Shanidar	1953—60-Solecki	Iraq	Wurm Glaciation
Mugharet al-Tabun	1931—32-Garrod	Israel	Wurm Glaciation
Mugharet al-Skhul	1931—32-Garrod	Israel	Wurm Glaciation
Jabel Qafza	1933—	Israel	Wurm Glaciation
Shukba	1928—	Israel	Wurm Glaciation
Amud Cave	1961—Suzuki	Israel	Wurm Glaciation.
<i>From Africa</i>			
Tangier	1939—	Morocco	Wurm Glaciation

Neanderthals—Two Distinct Categories : Hooton has divided the Neanderthal people into two complete heads—*Conservative* and *Progressive*. The Conservative Neanderthals possess the Classical Neanderthaloid features, whereas the Progressive group show a few more special characters which give the group a closer relationship with the modern *Homo sapiens*. La Chapelle-aux-Saints, Le Moustier, Le Quina, La Ferrassie, Neanderthal, Gibraltar, etc., are the examples of the Conservative

group (and Ehringsdorf, Steinheim, Karpina, Swanscombe, Galilee, Skhul and Tabun, etc., are the members of the second group. But in the light of recent findings a new interpretation has been arrived at as regards Steinheim, Swanscombe, Ehringsdorf and other allied fossil specimens. These have been termed as early Homo sapiens or early Mousterian Homo sapiens. Therefore, these will be discussed elsewhere separately.)

Conservative Neanderthals are Middle and Upper Pleistocene hominids. They possess such features which make them distinct from modern man. The skull is provided with heavy supra-orbital torus; "bun-shaped" occipital bone, long, narrow and prognathous face. In the case of Progressive group it is seen that the specimens here are to some extent finer than the Conservative types. The supra-orbital torus in the Progressive group does not show any heavy development, occiput is expanded and the occipital torus is poorly developed.

La Chapelle-aux-Saints Finds

The *La Chapelle skeleton* is beautifully preserved. Therefore, it would be better to describe this particular skeleton as a representative of the whole race.

The remains of La Chapelle skeleton were found by French Expedition in 1908. These were found buried in a cave in the Correze District, France. The materials include a skull with lower jaw, a clavicle, two humeri, two incomplete radii, bones of hand, fragments of ilia, two femora, portions of tibiae, bones of foot, and a number of vertebrae and ribs.

The associated fauna includes the numerous species, the most characteristic of which are the woolly rhinoceros, cave hyaena, ibex, extinct bison, reindeer, etc. The layer in question is rich in dressed flints—scrapers and points, the two main types of implements of the Mousterian culture.

THE SKULL

The skull in general is very large and heavy. (It is dolichocranial and, when seen from above, it appears remarkably uniform.) The maximum length and breadth of the skull are 208 mm. and 155 mm. respectively. The cranial index is 74.5. The Neanderthal cranial index, in general, varies from 70-76. The cranial capacity is about 1,600 c.c. (One of the characteristic features of the Neanderthal skull is that of the size of the brain. The earlier fossil men like Pithecanthropus, Sinanthropus had a skull capacity between those of apes and man but Neanderthal man surpassed all.)

The cranial capacity of Neanderthal is well above the average capacity of modern Englishmen.

The skull is much more elongated behind than the front, where the frontal bone recedes greatly. (There is a protuberance on the occipital region and the whole skull gives the tendency of

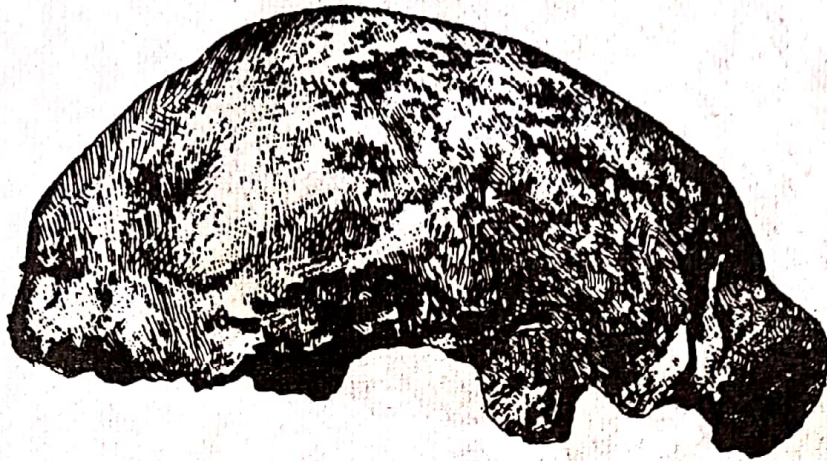


Fig. 15.3 : The Skull Cap of Neanderthal Man Found at Neander Valley

having been flattened down. The whole surface of the occipital bone is rough which indicates strong muscular impression.)

The supra-orbital ridges are immense and continuous forming a heavy rounded torus. The orbits are large and round. (The malar region is inclined forward, which is the indication of a flat cheek.) The upper jaw is prominent. It projects forward to some extent. The nose is very broad and short; the nasal aperture is large, wide and pyriform.

The temporal fossae are large, the temporal lines rise half-way up the side of the cranium. The forehead is receding. (The projecting parietal eminences are placed further back. The vault of the skull is low and, therefore, it makes the skull flattened in shape.)

The base of the skull presents many primitive features. The foramen magnum is situated further back than in modern man. The palate is large. The mastoid processes are very small. The glenoid fossae are very shallow. The post-glenoid process is large. The superior alveolar border is very deep and strong. The alveolar prognathism is absent.

THE BRAIN

The endocranial casts of the Neanderthal skull present some important features. The La Chapelle-aux-Saints possessed a long, broad and low brain. The left side is somewhat larger than the right side, which indicates the right-handedness of these people. The pattern of the convolutions are simple. (Boule opines that the brain of La Chapelle-aux-Saints presents many features like those of the micro-

cephalic idiots and of anthropoid apes. (The parietal lobes are larger. This indicates a greater sensory development. The temporal lobe is also well-developed. In the occipital lobes, the visual

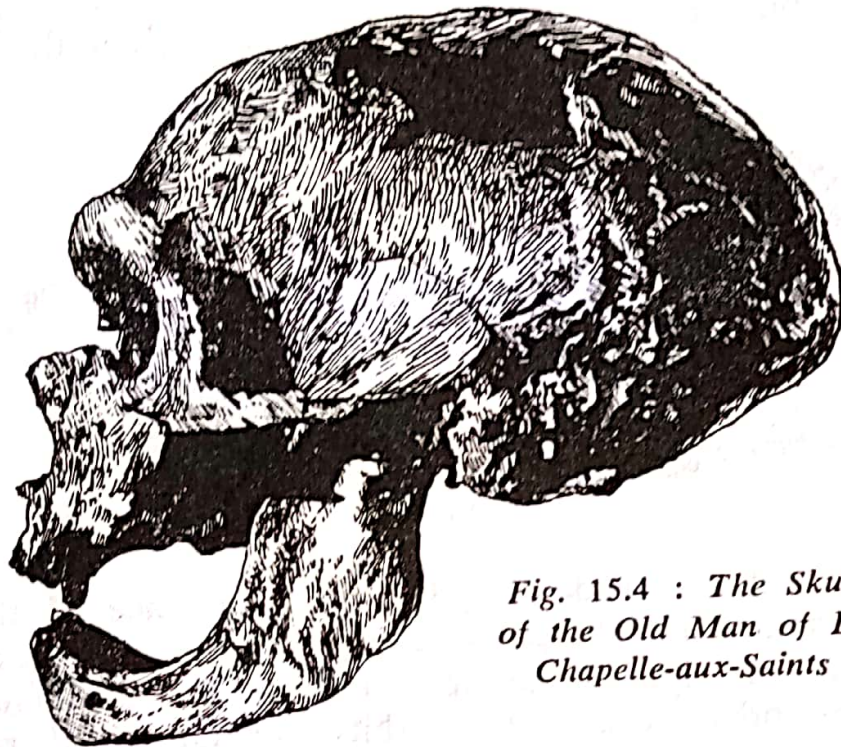


Fig. 15.4 : The Skull of the Old Man of La Chapelle-aux-Saints

and visuopsychic areas show important development. On the whole, the Neanderthal brain though presents many primitive features, yet it is more human.

THE LOWER JAW AND TEETH

A number of lower jaws have been unearthed. These are large and massive. The ramus is very wide and the sigmoid notch is very hollow. The chin is absent. (The symphysis slopes more backward and inward as is found in the case of the apes. The genial tubercles have already been developed which is a characteristic feature of the modern human races.)

The dental arch is 'U'-shaped and it is intermediate in shape between that of modern man and apes. The teeth present human characteristic in arrangement. (But most of the European specimens show *taurodont* dentition like those of Heidelberg and Sinanthropus.) The wear of the teeth indicates the backward and forward chewing habit, whereas the modern man is habituated in side-to-side chewing. The canines are not projected and these are set on the curve and not on the side of the arch.

THE LONG BONES ETC.

The long bones are particularly stout and strong, which suggests powerful muscular development.

The vertebral column of the La Chapelle-aux-Saints is short and massive. The first vertebra presents the simian features. The vertebrae have long and almost horizontal spinal process very similar to those of the chimpanzee. (The cervical vertebrae do not show the forward convexity which is found in modern man. The vertebrae of the other regions are poorly preserved. The lumbar curve in Neanderthal man was less pronounced and the sacrum was straight instead of being anteriorly concave as in modern man. It is certainly a simian feature. The ribs are strong which denote a broad thorax with very powerful intercostal muscles.)

The clavicles are long, slender and larger than modern man. (The proportions of the limbs are ultra-human, the forearm is very short in relation to the upper arm and not enormously elongated as we find in the case of the apes. (The right humerus is always a slight stronger than the left. The radius, instead of being straight as in modern man, is curved. (Ulna does not show so much simian characters as we find in radius. The hand is almost human in character - but the carpal is relatively small and the fingers are comparatively short.)

The pelvis is very short in relation to its breadth. The femur is massive, strong and bowed forward as in the apes, with a weakly developed *linea aspera*. They resemble the femora of the gorilla and chimpanzee. From this point, some authorities opined that Neanderthal man was less erect in posture than the Pithecanthropus. The tibiae are very strong and short. The upper head of tibia is sloped backward indicating Neanderthal man's movement with knees bent.

The Neanderthal foot exhibits some interesting features. The ankle bone possesses some special characteristics. The astragalus is short and broad. The head is bent denoting a wide separation of the great toe from its neighbours. The calcaneum or heel bone also has certain peculiarities. On the whole, the foot, though human, retains a number of simian features.

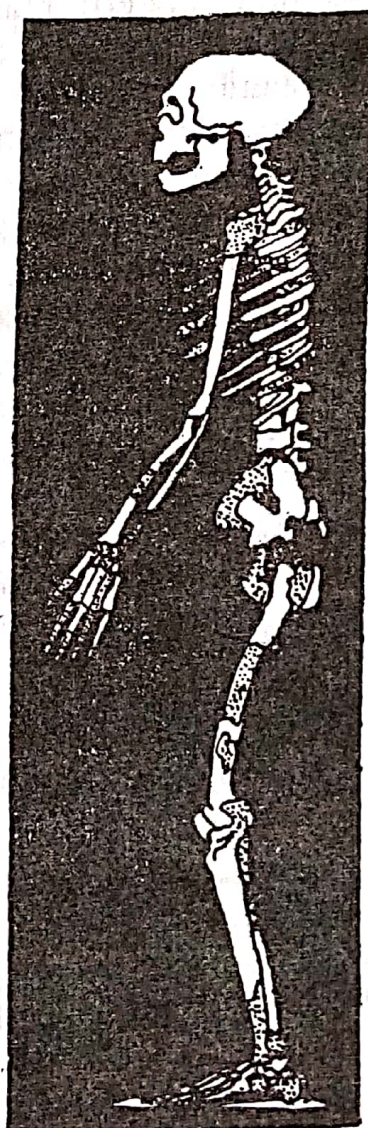


Fig. 15.5 : Reconstruction of La Chapelle-aux-Saints Skeletal Remains (After Mac Curdy)

STATURE

The stature of the La Chapelle-aux-Saints, as calculated by Boule, is 5 feet 1 inch. The statures of the classic Neanderthals vary between 5 feet 1 inch and 5 feet 5 inches.

NEANDERTHAL MAN AND MODERN MAN

A Comparative Study

Neanderthal man's place in the hominid evolution raises various questions—there are lots of differences of opinion amongst the scientists in this regard. It is thought that some Neanderthals did evolve into modern man, but it is not certain whether all these early sapiens are the direct ancestors of *Homo sapiens sapiens*. The Neanderthal man had developed a few progressive anatomical characters which sometimes become meaningful when these are compared with the modern man exemplified by *Homo sapiens sapiens*. Now let us compare the physical characteristics of Neanderthal man with those of modern man and see in how many ways the former is related to the latter.

Table No. 15 : 2

COMPARISON BETWEEN NEANDERTHAL MAN AND MODERN MAN

<i>Neanderthal man</i>	<i>Modern man</i>
1. Skull is large and heavy.	1. Skull is large but not so heavy.
2. Vault of the skull is low.	2. Vault of the skull is high.
3. Forehead is receding.	3. Forehead is vertical.

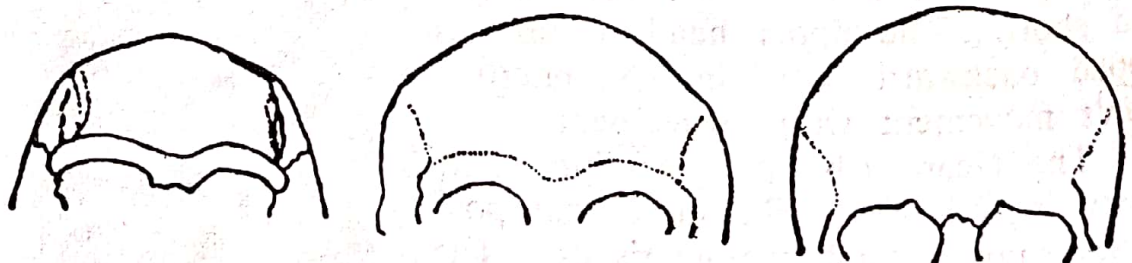


Fig. 15.6 : Man's Forehead is the Indicator of His Intelligence
Pekin Man (Left) ; Neanderthal Man (Centre) ; Modern Man (Right)

4. Face is long and forwardly projected.	4. Face is short in height and flat.
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Neanderthal man

5. Foramen magnum of the skull is situated further back than in modern man.
6. Skull is not well balanced on the top of the vertebral column.
7. Supra-orbital ridges are immense and continuous forming a heavy rounded torus.
8. Mastoid process is small and rudimentary.
9. Occiput is seen to be vertically compressed.
10. Orbits are very large and round.
11. Malar region is inclined forward—it indicates a flat cheek.
12. Nasal bones are broad and large.
13. Mandible is robust in formation.
14. Chin is absent or it may be rudimentary.
15. The dental arch is U-shaped.
16. Upper jaw is strongly prognathous.
17. Teeth are large in size.
18. Wear of the teeth indicates backward and forward chewing habit.
19. Vertebral column is short and massive; vertebrae show some simian features.
20. Cervical vertebrae do not show forward convexity.

Modern man

5. Foramen magnum of the skull is situated centrally at the skull base.
6. Skull is perfectly balanced on the top of the vertebral column.
7. Supra-orbital ridges have been conspicuously diminished.
8. Mastoid process is very well-developed.
9. Occiput is not vertically compressed.
10. Orbits are relatively large and more or less rectangular.
11. Malar bones are fully developed to give the prominence of cheek.
12. Nasal bones are short, wide and fused.
13. Mandible is relatively finer and smaller.
14. There is a prominent chin eminence.
15. The dental arch is parabolic.
16. No prognathism is found in the upper jaw.
17. Teeth are relatively smaller and close together.
18. Habituated in side-to-side chewing.
19. Vertebral column is in fullest development with distinct humanoid vertebrae.
20. Cervical vertebrae are characterized by forward convexity.

[Contd.]

Neanderthal man

21. The lumbar curve of vertebral column is less pronounced.
22. Sacrum is straight in formation—a simian feature.
23. Radius is curved.
24. Femur is massive, strong and bowed forward.
25. In femur, there is no sharp development of *linea aspera*.
26. Tibia is short and strong with bent back; head suggesting walk with knees bent.
27. Great toe is widely separated from other digits.
28. Foot, on the whole, retains some simian features.
29. Adaptation to upright posture and bipedalism is not totally perfect.
30. In the brain formation there are some primitive features—patterns of convolutions are in most cases simple.

Modern man

21. The lumbar curve of vertebral column is fully pronounced.
22. Sacrum is anteriorly curved.
23. Radius is straight.
24. Femur is slender but strong and straight.
25. In femur, *linea aspera* is prominently developed.
26. Tibia is a large and stout bone. It is straight with the anterior border forming short crest—the *shin*.
27. Great toe lies in the same line and close to other digits.
28. Foot is uniquely developed with the axis of the body weight which passes through the big toe.
29. Unique perfection is seen in the adoption to uprightedness and bipedalism.
30. Brain is extremely of advanced type—pattern of convolutions are always complicated.

PROGRESSIVE NEANDERTHALS

A few Neanderthal specimens have been discovered which exhibit certain special characteristics and, therefore, differ, in many features, from the Conservative Neanderthal types, which have already been discussed. These are known as Progressive Neanderthals, and specifically represented by the Mount Carmel Fossils. Some scholars are of opinion that Mount Carmel group is the result of hybridization between two distinct types. Ales Hrdlicka, an American Physical Anthropologist, put forward a theory of the "Neanderthal phase of man". It traces an evolutionary trend from *Homo erectus* through Neanderthals and other early sapiens into modern *Homo sapiens sapiens*. These early sapiens, according to

Hrdlicka and his followers, are the immediate ancestors of modern man. Besides Tabun and Skhul remains the fossils recovered from Shanider Cave, Iraq, and the Wadi Amud, Israel, are also important addition to this phase. At another site in Israel, in the Galilee, known as Qafzeh Cave, some hominid remains with Mousterian artefacts have been discovered. According to F. C. Howell, all these fossils look like proto-Cro-Magnon in all respects.

Reference: R. M. Sankar