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PALAEONTOLOGICAL STUDIESON THE FOSSILS OF THE CRO-MAGNON MAN IN THE UPPER PALEOLITHIC AGE IN EURASIA

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Abstract

This research paper aims at to fix the exact status of Cro-Magnon Man in the line of evolution and to determine whether modern European human can be direct descendents of Cro-Magnon Man and that whether biological changes of significant importance had happened between Cro-Magnon Man and modern man in Europe, Particularly in cranial features.

Introduction

Cro-Magnon is the site in south of France from where the first remains of the Aurignacian (28,500 to 22,000 B. C.) people were found. Hence, the man who survived during that period was known as Cro-Magnon Man. In 1868, the first fossils of eight individuals of the Cro-Magnon variety of *Homo sapiens sapiens* were discovered from a cave behind the present Hotel des Cro-Magnons, in Les Eyzies, France (Gavin, 1970, Jurmain R. et al; 1998). These fossils looked so much similar to those of modern man that they were reburied. Later, they were dug up from their graves for physical anthropological studies, because these belonged to the man who had survived during Upper Paleolithic Age and had produced a splendid cave art and culture during the Aurignacian period. This man manifested morphological characteristics very much similar to modern human, with large brain-case, high-domed, upright, like north west Europeans, in appearance, capacity and capabilities. He showed much advancement on the *Homo sapiens Neandertalensis*. This man is the early *Homo sapiens sapiens* and assumed to be direct ancestor of modern man, at least in some regions of Eurasia (Jurmain R. et al; 1998).

The Upper Paleolithic Age is roughly marked from 32,000 to 9,500 B. C. or a bit more old. And, the era of Neandertals had come to an end about 35,000 years ago. (Qureshi A.H; 2003). Early *Homo sapiens sapiens* emerged on the scene midway through the fourth glacial period. Thereafter, only one genus, one species, and one subspecies had remained on the earth to continue the line of the evolution of mankind. No big and significant genetical change happened since then. Indeed, a slight and insignificant genetic evolution is happening always. From biological and morphological point of views this man had reached to the stage where he adopted almost similar qualities and where the modern man exists today. Mostly the changes since Upper Paleolithic Age have cultural innovations and genetic evolution has been less witnessed in gross morphology.

The Cro-Magnon Man evolved at the end of Mousterian Phase of Paleolithic culture. At this stage the Neandertals of Europe were replaced by the people almost modern European type. There are reasons to believe that this new population, the Aurignacians, after having developed their peculiar culture elsewhere, probably in Near East and Asia, had migrated to Europe. (Clark W.G. (Sir), 1970). Heobel maintains the grounds that "the Neandertals evolved into modern *Homo Sapiens* about 35,000 to 40,000 years ago in the Near East". (Hoebel E.A; 1979). When they migrated in Europe, they settled permanently and with their well planed social organization, promptly displaced Mousterian Man and occupied his territory. (Clark W.G. 1970). This new population was Cro-Magnons, who in the opinion of European and American authors were the first *Homo sapiens sapiens*. It can be explained like this that the modern human represents a continuous evolutionary line of Pleistocene peoples. The justification for different races and various ethnical properties can be given because of natural selection and through long imposed geographical isolations which brought a change into the

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Then, some human remains, were discovered from the Magdalenian period (15,000 B. C to 9,500 B. C.) in the deposits of a cave. Some of them showed anatomical characters closely resembling modern Eskimo. This is particularly in the case of a skull discovered at Chancelade, in Dordogne region of France (reproduced in this article). This fossil exhibited Eskimoid features in the brain-case with its vertical sides and its "keeled" roof, in the narrowness of the nasal aperture, in the breadth of cheek region, and in the shape of lower jaw (Gavin, 1970). It was then argued, on the basis of the similarities between Magdalenian culture and the modern Eskimos, that western Europe was populated by Eskimos during Magdalenian period. Further evidence are provided that with the retreat of ice age during the terminal of last glaciation, the reindeers migrated towards north extremity followed by Eskimos, and finally reached to North Pole. Nevertheless, in many other respects the Chancelade skull provides characteristic features completely different than Eskimos and very close to the modern Europeans. Thus, it was but a variety of Cro-Magnon type, which is known from their fossil evidence that persisted till the Magdalenian period. It is now widely accepted that the final phases of Pleistocene period was composed of people entirely modern type. *Homo sapiens*, with their developed culture flourished in Europe by the beginning of the Aurignacian period (35,000 B. C.), and well before the completion of last glaciation of the Ice Age. Afterwards, the *Homo sapiens sapiens* survived and Cro-Magnon is the earliest of them.

Morphology of Cro-Magnons

When the evolution from *Homo sapiens* to *Homo sapiens sapiens* occurred, the changes of significant importance happened mostly in brain and the skull. Because mostly it is the brain which is the generator of culture-creating capacities. Furthermore, it was the *Homo sapiens sapiens* mostly responsible to accelerate the slow-moving Lower Paleolithic Culture of *Homo erectus* into the fast activities, which finally landed into the civilization. Thus, we see that the major development in the case of Cro-Magnons occurred in the skull and the brain. With their high-domed upright brain-case, and considerable large and high frontal bone, the Cro-Magnon man was so much like northwestern Europeans, that it was very easy for European scholars to accept him as their direct ancestor. The skull with its vertical growth is particularly developed like modern man. It shows globular brain-case and noticeable reduction of facial region as well as the mandible. The anterior of brain-case is more spacious to accommodate the enlarged frontal lobes of the brain. Though, the brain of modern man and Cro-Magnons varies from 1000 cubic centimeters to 2000, with an average of 1350 c.c; but it is slightly smaller than Neandertal Man who had much posteriorly developed skull and the brain. (Qureshi A.H; 2003). Cro-Magnon's brain is anteriorly developed like modern man. The skull as a whole shows thoroughly modern characteristics as evidently appears in its smooth-contoured cranium with high forehead and with rounded occipital and large volume. The occipital protuberance (Inion) is much less prominent and the occipital bone shows reduction comparing Neandertals. The zygomatic arches, bridging the temporal bones, are reduced and more cursive as well as slender, like modern man. It has lost its rather robust and straightened character of Nendertals. The zygomatic bones (cheek bones) have become more pronounced and prominent. Extremely notable character is the high and strong nasal bridge with developed nasal bone and a very much prominent Nasion. A generally upright and recessive built face above a strong and jutting chin with prominent mental protuberance are some of its readily visible characters. The supraorbital ridges have virtually disappeared; the occipital torus became residual. The foramen magnum is no longer tilted like Neandertals and is more horizontally oriented and well forward under the brain-case. The mastoid processes are more pronounced as muscular anchor. The ramus is not robust any more; it is more refinely built like modern man. The general development and appearance of entire skull is more like modern man. The general features of the skeleton as a whole also differ from his *Homo sapiens* predecessors. Cro-Magnon Man was taller, slender and muscular than any of his predecessors: well above five feet to six feet (Gavin, 1970). The general character of the thigh bones (femur) and shin bones (tibia, fibula) have lost their curvature and become more selender as well as less robust. Similarly, the fore arm showed much less bowed radius and the humerus in the upper arm has become

continuity of germ plasam. Nevertheless, enough genetic inter mixture was always at work so that *Homo sapiens sapiens* were mostly developing in Africa, Asia Minor, and outer edges of Asia, almost simultaneously. Among them large groups of population from Asia must have migrated to Europe and settled there and produced magnificent Upper Paleolithic culture. They were the Cro-Magnons.

Cro-Magnon was a wonderer and a hunter-man. He was also a cave man and produced such beautiful cave art, round about 22,000 through 13,000 B. C; whose specimens are found scattered in south of France in the caves of Lascaux near Montignac and also in Dordogne in the caves of Font-de-Gaume. The caves at Niaux also provide the evidence of cave art and culture.

The Upper Paleolithic Age, on the bases of culture can be categorized into five traditions: The Chatelperronian, 32,000 to 28,500 B. C; The Aurignacian, 28,500 to 22,000 B. C; The Gravettian, 22,000 to 18,000 B. C; The Solutrean, 18,000 to 15,000 B. C; and the Magdalenian, 15,000 to 9,500, B. C. During most of these periods, the Cro-Magnon produced variety of skilful tools, which were certainly an improvement over the Mousterian tools produced by Neandertal Man. (Qureshi A.H; 2003). The Cro-Magnon materials, belonging to Aurignacian tool assemblage, an Upper Paleolithic Industry, dating about 28000 years B.C; supposed to represent the earliest of France's anatomically modern humans (Jurmain R. et al; 1998). The tools produced by Cro-Magnon are: (a) Aurignacian end scraper, (b) Chatelperronian double-concave scrapers, (c) Chatelperronian backed blade and graver (burin), (d) Aurignacian gravers, (e) Gravattian backed blade, (f) Gravattian gravers. (Hoebel E.A. 1972).

Cro-Magnons believed in magical powers also as is evident from his cave art which proclaim that by painting (capturing) the image of any living being, the soul of the same (living being) will come easily under the control of the possessor. (Gardner L. 1986) Thus, with the exception of "Falling Man" (painted after the death of the man), in Lascaux, the cave art centered round the animal images, such as the woolly mammoth, bison, reindeer, wild cow, bear, woolly rhinoceros, horse and ibex, mostly now extinct in Europe. He produced art pieces in the forms of paintings, drawings, engravings and stone sculptures, which display masterfull abilities of the Cro-Magnon painters in Caves of France and Spain (Jurmain R. el al; 1998).

The first appearance of Cro-Magnon *Homo sapiens sapiens* and the Upper Paleolithic culture have been traced out in Iraq (Shanidar Cave), Afghanistan (Kara Kamar), Palestine in the Skhul Cave (Mt. Carmel), and Cyrenaica, North Africa (Haua Fteah) (Jurmain R. et al; 1998). According to carbon-^{14} dating, the Upper Paleolithic sites in western Europe fall about 2,000 years later. (Hoebel E.A. 1972).

Fossils of Cro-Magnons

The first fossils of Cro-Magnon were found in 1868 in a grotto behind the present Hotel des Cro-Magnons, in a rock shelter in the village of Les Eyzies at Dordogne in South Western France (Gambier D; 1989). Much importance was not given to them because they were too much like modern man. Thus, the mayor of Les Eyzies reburied them in local cemetery. However, later they were disinterred for scientific study. And it was proved that this man had lived in Europe and produced art round about 22,000 years B. C. (Hoebel E.A; 1979)

Then, a skull of Cro-Magnon found at Combe-Chapelle, France, (reproduced in this article) dating from Aurignacian period. It showed the supraorbital ridges moderately developed, not more than in many cases in modern human skulls. The rest of the cranial features were very much like modern man. Furthermore, two nearly complete skeletons of Aurignacian age were discovered from a cave at Grimaldi, on the Riviera. But, they showed slight negroid appearance, particularly in the projecting character of both jaws (Gavin, 1970). It was argued in the lines of penetration of Negroid race from Africa into Southern Europe, and interesting parallels were found between Aurignacian cave art and the cave art of modern bush-man. However, no definite decisions could be formed. The Grimaldi Skull is also reproduced in this article.

Grimaldi Skull (Cast)
Skull of adeloscent male from Aurignacian grave from Grotte de Enfants near Mentone, in France

relatively longer and slender. The scapula had broadened out at the top and relatively less elongated, again modern man's character. The iliac wings of the pelvis had become more smoothly rounded and tilted more towards the rear.

The pattern of dental arcade and the pattern of cusps of the molars have also changed in Cro-Magnon. Due to the less mastication process, the molars have become smaller and the Y-Pattern of five cusps persisted in old Dryopithecus has been changed into the a+Pattern of four cusps structure (C. S. Coon, "The Origin of Races", pp. 360-364, in : Hoebels' "Anthropology". P. 176). Teeth are comparatively smaller and set closely in an arranged dental arcade, embracing a smaller plate, like modern man.

Furthermore, some of the remains from Aurignacian traditions provide further evidence that Cro-Magnons were finely built up race, taller and muscular, more selender than Neandertals. With a high cranial capacity and refined facial features, they stand very close to modern human and in fact undistinguishable from some of the European groups of people living in Europe today.

Conclusions

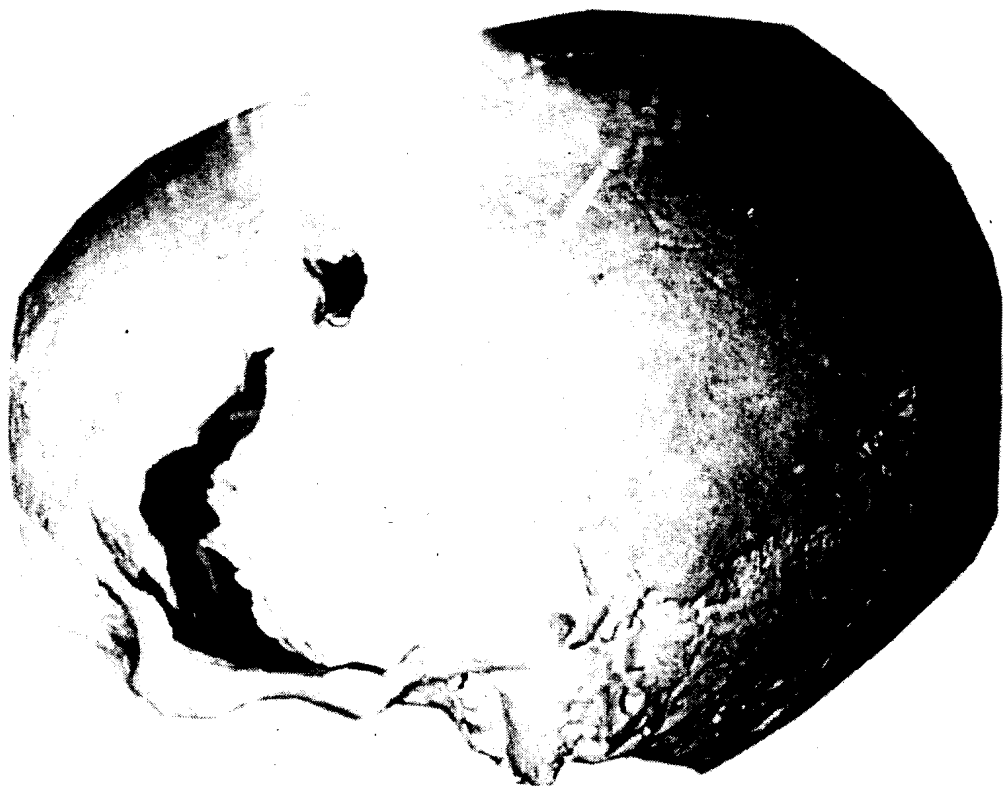
(1) Cro-Magnon Man, is the earliest type of *Homo sapiens sapiens* that survived after the last glaciation of the Ice Age and is direct ancestor of the modern man in Europe.

(2) Cro-Magnon Man shows little biological or morphological changes comparing modern man in Europe, and no genetical evolution has been seen in gross anatomy.

(3) Cro-Magnon Man with its high cranial capacity and developed frontal brain stands very close to modern European human.

Chancelade Skull
Skull of a Late Pleistocene Homo sapien sapien found from Chancelade, in France. This is a cast of an elderly man found in Magdalenian grave in South of France near Perigeaux, Dordogne.
Observe that the skull shows Eskimo type features in the shape of brain case, with its vertical sides and its 'keeled' roof. It has narrow nasal aperture, broad cheek regions and shape of lower jaw like Eskimos.

Cro-Magnon Skull
Cast of skull of old man from Middle Aurignacian grave in the Cro-Magnon rock-shelter at Les Eyzies, Dordogne, S.W. France. The skull is long, but the face is short and wide: the cheek bones are strong; the eye sockets are low, the chin is prominent.



Whaley Skull
An orginal skull found in 1947 with an Upper Paleolithic Industry in a rock-shelter at Whaley near Creswell, Derbyshire. This skull is of the long-headed type, with high brain vault.

Combe-Capelle Skull (Cast)
Dordogne,.France skull of middle Aged-Man from Early Aurignacian (Chatelperronian)grave in Rock Shelter at Combe-Capelle Couze Valley at Dordogne

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