THE FOSSIL MAN OF MEMER* (AVEYRON, FRANCE)

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ABSTRACT—The skeleton of Memer (Aveyron, France) is that of a tall, well proportioned man, about 45 years old.

This fossil Man resembles the Men of Neanderthal, especially the Men of Spy (lower Würmian period), in some features of the skull: in particular with regard to the morphology of the frontal bone, which is short and receding, and has well marked supra-orbital ridges (though they do not form typical *tori*); and by the presence, on the mandible, of a *fossula supraspinata*.

But though very tall, the Man of Memer most resembles the Man of Chancelade (Upper Würmian period), by his dolichocephaly and a series of archaic features; on the *mandible*, the great breadth of the ramus, the length of the digastric dimple, the great size of the third molar; on the upper part of the *ulna*, a pronounced curve with an anterior concavity; on the *femur*, curvature of the bone with a posterior concavity more apparent than in modern Men; on the *talus*, the angle of the head indicating that the big toe was widely removed from the others. Some of these characteristics are to be found also in certain other Men of the Upper Würmian period, the Men of Combe-Capelle especially Oetrange.

The Man of Memer is far removed from the Negroids of Grimaldi, by the proportions of his skull, and from the Man of Cro-Magnon, by his orbital index; his receding forehead is quite distinctive.

Finally, our fossil shows marks of evolution like those of present day Men, notably in the morphology of the occipital bone and in the expansion of the *squama temporalis*.

As F. Weidenreich concedes, Humanity, on the whole, appears to have followed an orthogenic course, from *Pithecanthropus* to modern Man. For instance, it is known that the Neanderthalians of Palestine, less archaic than those of Europe, are a kind of transition between the latter and *Homo sapiens*. The position is somewhat similar in the case of the Man of Memer, who in that respect, is very interstring; in a way, he forms, in our part of the world, a link between *Homo neanderthalensis* and the race of Chancelade, some parts of his osteology already adumbrating the morphology of modern Europeans.

Judged from his anatomical characteristics, our fossil seems to have lived during the Upper Würmian period, because he is certainly not a Neanderthalian; moreover, beyond the Palaeolithic period, no normal skeleton shows any trace so clearly of a receding forehead. The strata in which the fossil was found confirm these conclusions.

The Man of Memer was very probably, one of the contemporaries of the artists of the Pech-Merle Grotto; this, situated some 30 kilometers away, has "paintings and engravings..mostly of the Aurignacian period" (A. Lemozi, 1929).

INTRODUCTION

IN 1949, Mr Henry Delhon, while sinking a well in his garden, at Memer, in the Commune of Vailhourles (Aveyron) came across a human skeleton.

At my request, Mr. Bernard Gèze of the College de France was kind enough to establish the stratigraphic sequence of the beds, which is as follows:-

3. Deposits of the historical period.		Om 60.
2. Weathered clay = ante-Würmian paleo-earth.	Quaternary period. Fossil Man.	Om 35.

*With regard to the Man of Memer, a preliminary note appeared in the *Comptes Rendus de l'Académie des Sciences de Paris* on June the 27th, 1949, and a detailed memoir has been published in the *Acta Anatomica*, 1951, 1-2, p. 35-81.

Translated by T. J. Barling, University College of the South West (England).

1. Clay of the Toarcian age. Upper Lias, Secondary period.

The skeleton was lying horizontally, in a somewhat arched position, at a depth of about Om 90. Accordingly, the man of Memer is later than the deposit of earth dating from the Quaternary ante-Würmian period, but earlier than the historical deposits of the district.

Although the skeleton had been severely damaged by the quarry men, I was able to study a certain number of characteristic bones.

I. THE SKULL

The dome of the skull is rather well preserved.

I. OSSA CRANII

A. *The frontal bone* (Pl. 15, fig. I), broken in its anterior part, is metopic. The dimensions, as compared with those of the frontal bones of some other fossil Men, are given below:

	Memer	Spy 1	Neanderthal	Chancelade
Total frontal curve..... ab.	110 mm.	105 mm.	133 mm.	130 mm.
Rectilineal bregmato-glabellar distance..... ab.	100 mm.	100 mm.	119 mm.	115 mm.
Transverse stephanic diameter.....	122 mm.	114 mm.		102 mm.

The very broad frontal bone is shorter than in the case of Neanderthal and Chancelade Men and has a less pronounced sagittal curvature.

The slight, but very distinct, projection of the superciliary ridges combines with these features to establish a similarity between this frontal bone and that of the Man of Spy.

B. *The parietal bones* (Pl. 15, fig. I), longer in an antero-posterior direction than those of Neanderthalians, are shorter than the parietal bones of Chancelade. The clearness of the two temporal lines betokens the great development of the temporal muscle.

C. *The temporal bones* (Pl. 15, fig. I). The *squamous portion* is high, as in present day Men and not low, as in fossil Men (Neanderthalians, Chancelade, Oetrange) and anthropoid apes. The *zygomatic process* is sturdy, and the *mastoid process* very large, with well defined muscular ridges; this process is, however, always small in Neanderthalian Men.

D. *The occipital bone* (Pl. 15, fig. II). Only the upper part of the squamous protion is preserved :

a. *Outer surface of the squamous portion.* The well developed upper curved line of the occipital does not constitute a true *torus occipitalis* as on many fossil skulls, the Spy skull for instance.

b. *Inner surface of the squamous portion.* The grooves for the hinder sinuses of the dura mater, correspond in their position to the 4th type of Le Double (1903) : "la gouttière longitudinale, simple, rectiligne, est située à droite de la ligne mediane, qui est indiquée par une saillie, et se continue avec la goutière latérale droite". But the transverse grooves for the lateral sinuses are nearly equally wide, though generally the groove on the right is the wider of the two. *The sulcus sagittalis*, which lodges the upper longitudinal sinus, is similarly distinct at the level of the parietal and the frontal bones; on each side, a great number of irregular depressions correspond to Pacchioni's granulations.

The *occipital fossae* are well preserved. An endocranial cast (Pl. 15, fig. III) reveals the presence of the two external *occipital sulci* on the cerebral hemispheres and, between them, the *sulcus lunatus*, a *sulcus* which, rare in man, seems especially to characterise the primitive races.

c. *Borders of the squamous portion.* The two upper edges of the squamous portion are deeply serrated for articulation with the posterior borders of the parietal bones to form, by this union, the lambdoid suture, "la plus compliquée de toutes les sutures du crâne", and, like the other sutures, "plus compliquée chez les métopiques que chez les non-métopiques" (Le Double, 1903). Apart from its very considerable complexity, this suture shows, in keeping with the metopism of the skull, four external talbdoidian bones.

THE FURROWS FORMED BY THE CEREBRAL BLOOD VESSELS

An endocranial cast clearly shows the *middle cerebral artery* with its few terminal rami, a feature that is archaic (Weidenreich); on the other hand, the branches of this artery are very ramified in our contemporaries.

STATE OF THE JOINTS

On the endocranium, the lambdoid suture, closed in its main region but free in its asteric region, shows (T. Wingate Todd, quoted by R. Anthony , 1931) that the Man of Memer was at least 42 years old, though not yet 47.

CRANIOMETRY

The cranial dimensions and index of the Man of Memer, compared with those of some other fossil Men are given below :--

		Memer	Combe-Capelle	Chancelade	Cro-Magnon
Antero-posterior maximum diameter (D. a. p.)	ab.	196 mm.	198 mm.	193 mm.	202 m.
Transversal maximum diameter (D. tr.)		140 mm.	130 mm.	139 mm.	149 mm.
Cranial index : $\frac{\text{D. tr.} \times 100}{\text{D. a. p.}}$	ab.	71	65.6	72.02	73.76

SUMMARY OF THE CRANIAL CHARACTERISTICS

1. The cranial index, about 71, shows that our fossil, though dolichocephalic, is not so to the same extent as the Man of Combe-Capelle and resembles, especially, the *Man of Chancelade.*

2. The great width of the frontal bone, its shortness and its faint sagittal curvature, the projection of the superciliary ridges reveal points of similarity between the Man of Memer and the *Men of Spy*, in particular.

3. On the other hand, the occipital bone, not projecting at all towards the rear, and the temporal bones, with a high squamous region and a large-sized mastoid process, already foreshadow the cranial formation of *present day Europeans.*

2. OSSA FACIEI

One of the malar bones and the lower jaw, both damaged, are the only facial parts we have.

A. The large right *malar bone* (Pl. 15, fig. IV) projecting outwards, with a marginal process on its temporal border, is much like the malar of Chancelade Man.

B. *The right orbit.* By its orbital dimensions and index, our fossil is far removed from the old Man of Cro-Magnon, with its wide orbits; on the other hand, it shows affinities with the Man of Chancelade and modern Men, with their narrower orbits.

C. *The mandible* (Pl. 15, fig. V), is characterised especially by its sturdiness, the great breadth of the ramus, the presence of developed genial spines and of a *fossula supra-spinata*, the length of the digastric dimple, the great size of the third molar: these characteristics are, on the whole, very archaic. The teeth are worn, as usual in fossil Men.

II. THE EXTREMITIES

1. BONES OF THE UPPER EXTREMITY

Of the upper extremity, we have only the upper part of the ulna, the os magnum and two phalanges of the hand.

A. *The ulna* (Pl. 15, fig. VI) is strong, with a length calculated approximately at 290 mm., which is considerable. In its upper part, the ulna is "concave en avant, du côté de la surface de flexon de l'avant-bras, par conséquent" (Testut). This curve, normal in some species of Apes, has been found in the Men of Spy, Combe-Capelle, Chancelade (the Man of Cro-Magnon). On the contrary, in modern Men, when there is such a curve, it is always very little developed.

2. BONES OF THE LOWER EXTREMITY

A. *The femur.* The *femoral head* is large (diameter: 49 mm.) and quite round as is generally the case in Men of the Upper Würmian period (Chancelade, Oetrange). The *diaphyse* is curved, with a posterior concavity more apparent than in modern Men, and recalls the femur in Spy and Chancelade Men. The bone is obviously platymeric, that is to say it is flattened in its upper part (platymery index: 69.6); it also presents a strong pilaster towards the middle of the bone (pilastric index : 119.2).

B. *The tibia* (Pl. 15, fig. VII) of which we have but fragments, show a platycnemy [transversal flattening "en lame de sabre droit" (*Broac*)] of 60.5, more developed even than on the tibia of Chancelade Man. The platycnemy, quite undeveloped in Neanderthalians, is not to be found at all in present day Parisians (Testut, 1889).

C. *The tarsus.* a. *The talus* (Pl. 15, fig. VIII) remarkable for its size, resembles that of the Man of Chancelade. The angle formed by the head (about 30°) is greater than in present day men and resembles that observed in Neanderthalians and the Man of Chancelade: this feature indicates that the big toe was widely removed from the others. The facets of the malleoli, especially the outer one, are very developed.

b. *The Calcaneus* (Pl. 15, fig. IX) as in Chancelade Man "l'emporte sur les calcaneums modernes par sa longueur (87 mm.) sa larger (43 mm.) et sa hauteur (41)". The *sustentaculum tali* is very large, as in the Man of la Chapelle-aux-Saints, which appears to be a primitive feature. The rear face of the bone is always rough in its lower half; at this point is inserted the *tendo Achillis*, the largest and the strongest tendon of the body. On the *calcaneus* of Memer, the roughness stands out in relief in a quite peculiar manner, overhanging, as it were, the upper part of this face, which is smooth, as is usual in living Man, there extends a synovial bursa between this surface and the *tendo Achillis*.

c. *The navicular* which is much like the one in Chancelade Man (maximum breadth, 43 mm.), possesses, to receive the *tibialis posterior*, a strong tuberosity that projects inwards.

d. *The os cuboideum* has, on its internal face, a long articular facet, of which the anterior part, for articulation with the third cuneiform, is separated by a faint ridge from the posterior part, for the corresponding facet of the navicular; these two cuboidian facets form between them a very obtuse angle facing outwards on the outer side of the foot; this arrangement exists also

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EXPLANATION OF PLATE 15

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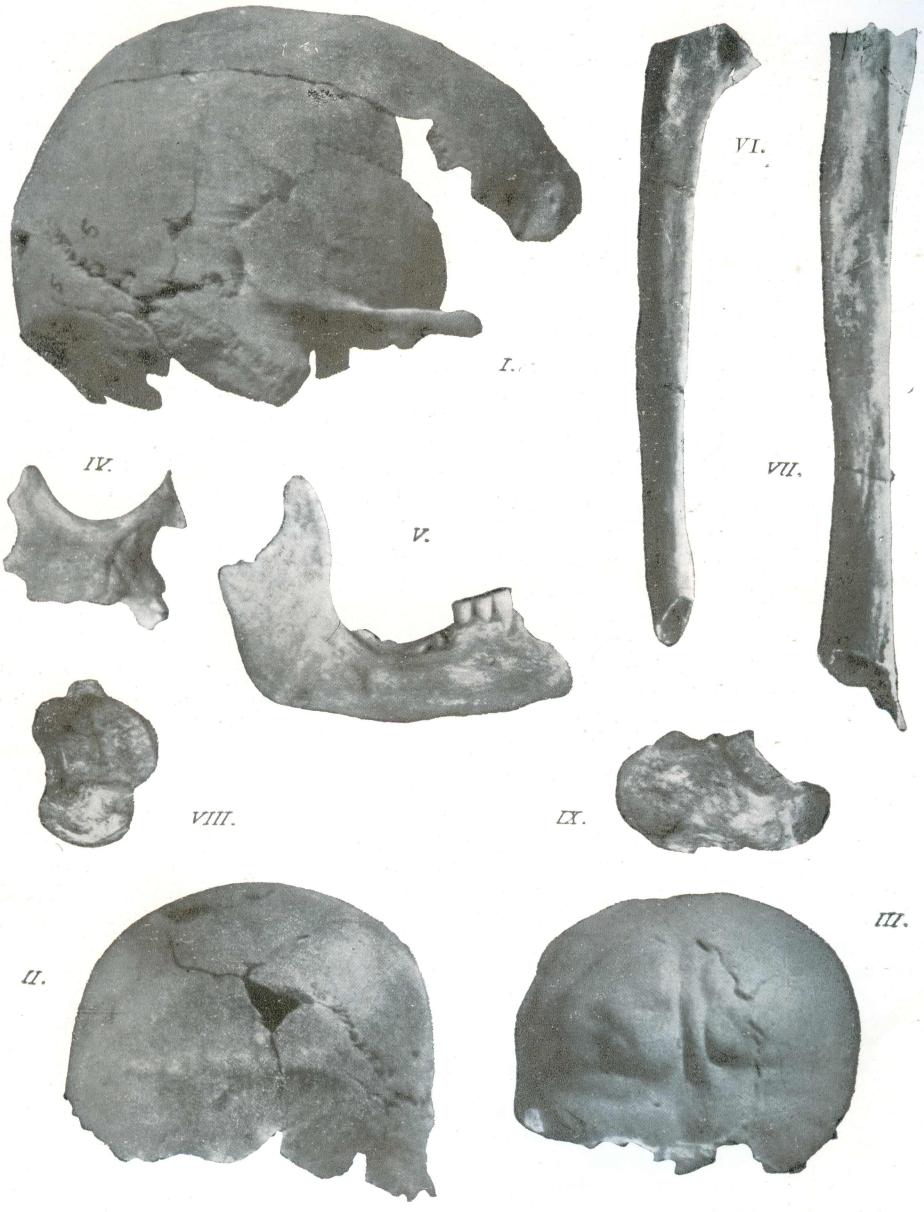
FIG. I—*Skull*, right lateral view. More than $\frac{1}{3}$ natural size.
II—*Skull*, posterior view. $\frac{1}{3}$ natural size.
III—*Endocranial* cast in the occipital region. $\frac{1}{3}$ natural size.
IV—*Right Malar bone*, united to a fragment of the maxilla, external view. $\frac{1}{2}$ natural size.
V—*Mandible*, external right view. $\frac{1}{2}$ natural size.
VI—Upper fragment of the left *Ulna*, internal view. $\frac{1}{2}$ natural size
VII—Fragment of left *Tibia*, external view. $\frac{1}{3}$ natural size.
VIII—Left *Talus*, dorsal surface. $\frac{1}{2}$ natural size.
IX—Left *Calcaneus*, internal view. $\frac{1}{2}$ natural size.



FRIANT : FOSSIL MAN OF MEMER.

in present day Men. On the other hand, the navicular facet does not exist in the Man of Chancelade, for Testut (1889) remarks: the os cuboideum and the navicular "n'étaient unis l'un a l'autre que par de simples ligaments".

e. *The 1st* and the *3rd cuneiforms* are like those of Chancelade in their dimensions.

To sum up: the tarsal bones of Memer Man are comparable to those of Chancelade Man.

D. *The metatarsus*, of which we have only the 1st , 4th and 5th metatarsal bones, is even larger than the tarsus, and this is so because of the relatively tall stature of our fossil: the Troglodyte of Chancelade, though sturdy, was smaller (1m. 55) than the average of present day Men. The 1st metatarsal bone is 72 mm. long. The 5th is remarkable for the development of the external tubercle.

III. DETERMINATION OF THE AGE SEX AND HEIGHT

1. *Age*. The age of adults is indicated, in the case of skeletons, by the state of the cranial sutures. We have seen by referring to the researches of T. Wingate Todd, who is an authority on this matter, that the closed condition, on the endocranium, of the lambdoid suture in its chief region, although its asteric part is unclosed, implies that the Man of Memer was at least 42 years old but not yet 47.

2. *Sex*. The best indications of sex are to be found, as we know, in the skull and the pelvis.

On the skull, the fracture of the frontal bone on its anterior part does not allow us to identify the glabella, which can give invaluable information. But the developed mastoid process shows that we are concerned with a man; although its considerable size is also a racial characteristic, we cannot suppose that our skeleton is that of a woman. The elongation and the sturdiness of the long bones also indicate the masculine sex.

The ischio-pubian region of the pelvis, a very good criterion of sex, is completely missing.

3. *Height*. The calculation of height is based on the length of the long bones of the limbs, using "*Manouvrier's* tables". Unfortunately, we have not a complete sample of the large bones of the limbs; the best fragment we possess is the upper part of the left ulna and using that bone, we have been able to compute an approximate total length of 290 mm. That dimension corresponds to a height of 1 m. 81 m.m. in Man. However, in fossil Men, the proportions of the limbs were not always the same as in modern Men, which makes the determination of height still more doubtful. For all that the Man of Memer was certainly very tall and strong.

IV. ACKNOWLEDGEMENTS

It behoves me to thank M. le Ministre Louis Marin, de l'Institute, Directour de l'Ecole d'Anthropologie, for asking me to study this fossil Man, a fossil very important in its bearing on the Prehistory of our regions.

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