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A Possible Creationist Interpretation of Archaic Fossil Human Remains

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THE POST-FLOOD WORLD AND THE ICE AGE(S)

The subject matter of this paper will be archaic fossil human remains. However, before undertaking a detailed examination of archaic, neanderthal and Cro-Magnoid remains, we would do well to examine the biblical narratives and historical contexts into which these ancestors might fall.

In Genesis 8:1 we read that: '. . . *God caused a wind to pass over the earth, and the waters subsided.*' This particular event may well have coincided with the commencement of a single, but intense, post-Flood Ice Age (recognizing that post-Flood oceans would have been relatively warm, and that warm oceans are a necessary prerequisite for an Ice Age).[1] In geological terms the onset of the Ice Age in the Northern Hemisphere is thought to have occurred during the Pliocene epoch (that is, the Late Tertiary period).[2] However, its most severe phase corresponded with the Late Pleistocene epoch (120,000 to 10,000 years BP according to secular dating).[3] The minimum duration for a post-Flood Ice Age, based on biblical exegesis, would be between 100 and 340 years.[4,5]

It should also be noted that the **Cenozoic era** (embracing both Tertiary and Quaternary deposits) is also known as **'the Age of Mammals',[6]** and is likely to have corresponded to the post-Flood period during which mammalian populations re-established themselves upon the face of the earth — **commencing from the Anatolian region of south-eastern Europe** (and Mt Ararat in Eastern Turkey specifically).

Many creatures, which today are confined to the African continent or South-East Asia, were present in significant, though not necessarily large, numbers throughout Eurasia during the Late Tertiary period and subsequent Pleistocene epoch.[7,8] These creatures no longer inhabit the European mainland and Britain — having been subjected to forced migrations during the so-called Quaternary period of Earth history. Possible catalysts for such migrations include:

(1) A deteriorating climate (following the onset of a post-Flood Ice Age);
(2) An increasing scarcity of food (vegetation, fruits, grasses, etc.), due to item (1), and steadily increasing animal populations; and some time later,
(3) The presence of man, and his demands for vast tracts of agricultural and grazing land.

The Miocene, Pliocene and Pleistocene epochs are thought to have been periods of intensifying aridity.[9,10] In places such as East Africa they are evidenced by a rapid succession of floral and faunal types — commencing with rainforest type vegetation and transforming to savannah type forests and open grasslands.[11] During these post-Flood epochs the earth rapidly 'dried-out' with the onset of a full-blown Ice Age and the development of vast continental icesheets.

The earliest primates are said to have emerged during the early epochs of the Tertiary period of the Cenozoic era.[12] In the main they were rather small and mobile creatures, with small, and readily satisfied food demands.[13] Larger primates, including the sivapithecines,[14] the dryopithecines[15] and perhaps early australopithecines,[16–18] appear somewhat later in the fossil record and, **not without significance, in Anatolia or neighbouring regions of Eastern Europe and South-West Asia.[19,20]**

But what of mankind?

Whilst the following paper preserves the ordered appearance of Late Pleistocene fossil humans according to modern radiometric dating techniques, the author does not wish to imply an endorsement of the absolute ages derived from the use of such techniques or the evolutionary timescale *per se.*

ANATOMICALLY MODERN MAN

Anatomically modern man is **conspicuously absent in Tertiary (early post-Flood) deposits.[21]** This is due, presumably, to the deferment of post-Flood human resettlement of the earth **until the confusion of tongues at Babel.[22–24]** Indeed, as a result of this deferment, the only place one would anticipate finding the remains of humans in Tertiary deposits is between the Mt Ararat and the Lake

Van regions of Eastern Turkey and Iraq's **southern Mesopotamian Valley** (the region encompassing the Tigris and Euphrates river valleys; otherwise known as biblical **'Shinar'** [Genesis 11:2]).[25] However, even in this regard it is difficult to pin down a precise route for early post-Flood human migration away from Ararat. For instance, the King James Version and the Revised Standard Version suggest that the descendants of Noah '... *journeyed (migrated) from the east . . .*' whilst the New American Standard Bible infers that '*... they journeyed east, ...*' into the plain of Shinar. If migration was westward into Shinar, then the route may have involved wanderings through the regions of **Urmia** and the **Zagros Mountains** — the latter forming a natural barrier to easterly migration.[26]

Furthermore, the biblical record suggests that the **longevity of early post-Flood patriarchs was significantly greater than that observed today;** see Table 1.[27] Therefore, unless some of the post-Flood/pre-Babel human population died prematurely during migration — either by natural or unnatural causes — the possibility of finding their preserved (fossilised) remains would appear to be miniscule, especially when one considers that fossilisation would be a much rarer event than death *per se.* It must also be recognized that the total human population alive during this period of post-Flood history may have been **exceedingly small** — perhaps numbering less than a thousand.

Indisputable modern man *(Homo sapiens)* first appears in deposits of **Late Pleistocene age,** although some creationist writers[28–30] have argued (erroneously perhaps[31,32]) for an earlier appearance in the fossil record.

The earliest remains of *Homo sapiens* in East Africa, for instance, appear to be the crania from the Omo River Valley in Ethiopia. These crania are variously dated between 60,000 and 130,000 years BP. Fossilised human remains have been recovered from several other relatively early sites in Africa; for example, Klasies River and Border Cave in South Africa (c. 90,000 years BP). However, the earlier of the two datings for the Omo remains and those from Border Cave are thought to be unreliable; in the latter instance, a more recent dating has been

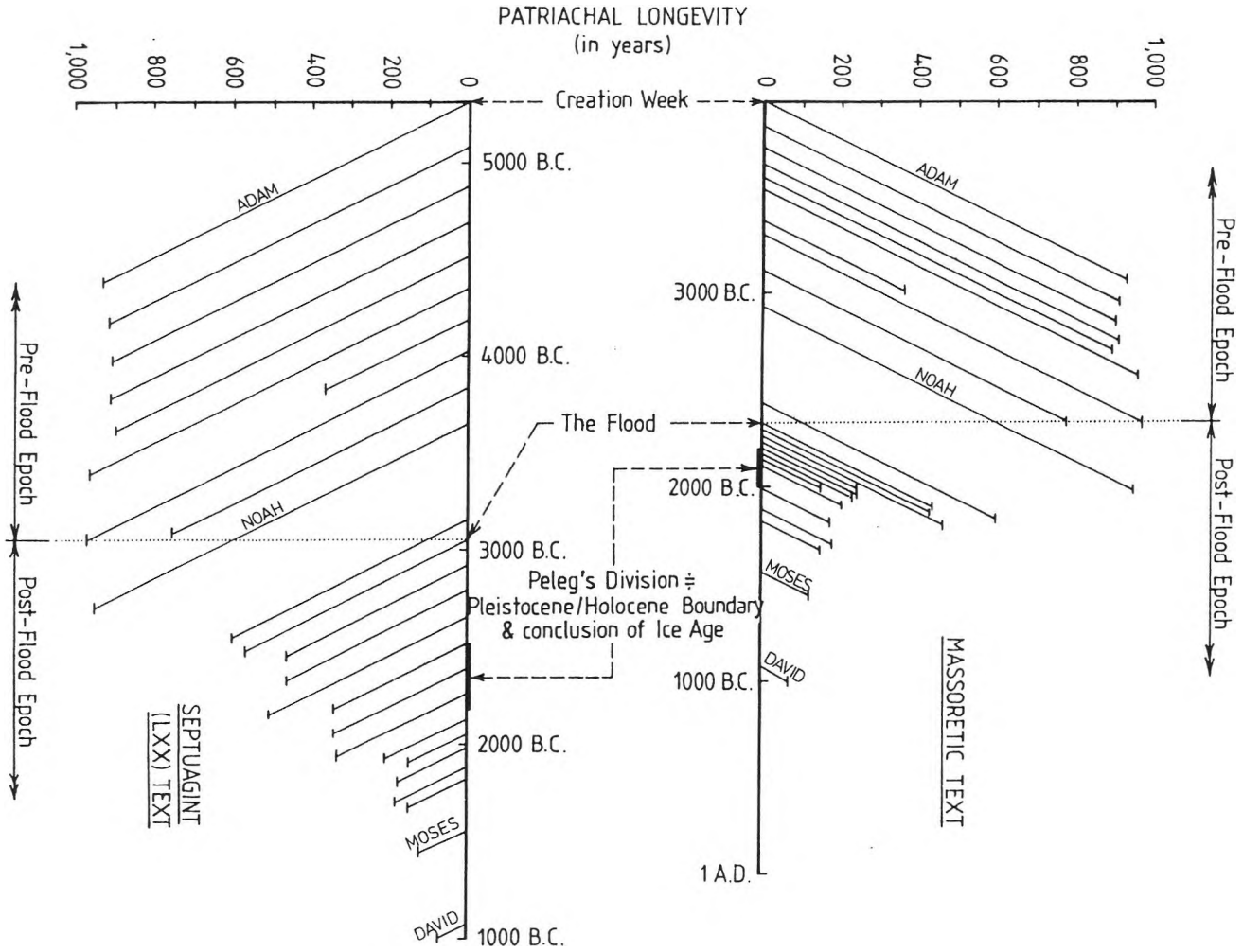

Table 1. *Pre- and post-Flood patriarchal longevity as recorded in the Massoretic and Septuagint (LXX) texts of the Old Testament.*

advocated by Wolpoff and Thorne.[33]

For the purposes of this paper I will assume that most, if not all, Tertiary deposits from the Near East and adjacent regions (for example, Anatolia, Trans-Caucasia and perhaps North-East Africa) can be compressed into the period between the biblical Flood and the confusion of tongues. Tertiary deposits from more remote regions (for example, East and South Africa, Eastern and Western Europe) may, in part, postdate the confusion of tongues.

THE NEANDERTHALS

The neanderthals (or **neandertals[34])** were confined to the Late Pleistocene epoch, and were once thought to bridge the gap between ***Homo erectus,*** **archaic** ***Homo sapiens*** and modern man.[35]

There is little consensus amongst evolutionists concerning the nature of the relationship between neanderthal and modern man.[36] Some suggest that neanderthal man represents a divergent offshoot to the line leading to modern man; a line that ultimately became extinct at the hands of modern man.[37] Others have argued that he was *'... part of the rootstock of modern man*.'[38,39] In recent years the status of neanderthal man has been dramatically altered (upgraded).[40] He was previously regarded as being **specifically distinct** from modern man ***(Homo neanderthalensis*** versus *Homo sapiens).[41]* No longer is this so, and he is now regarded as having been a subspecies of *H. sapiens;* hence the classification ***Homo sapiens neanderthalensis*.[42,43]**

Neanderthals are generally associated with the most severe phase of the Late Pleistocene, or **Würm,** Ice Age; that is, the period immediately preceding the Holocene epoch.[44] All of Northern Europe, portions of Central Europe, and isolated regions of Southern Europe came under the grip of the Ice Age during the Pleistocene epoch.[45,46]

There is mounting evidence that neanderthal populations were **contemporaneous with, and/or graded into *H. sapiens sapiens*** in some regions of the Middle East and Eurasia.[47] Whilst many authorities are now willing to concede contemporaneity, some have expressed reservations concerning interbreeding between the two subspecies.[48]

Neanderthal populations were widespread throughout Eastern and Western Europe, the British Isles, Soviet Krym (Crimea), the Middle East, Trans-Caucasia and possibly numerous other regions (including Northern and East Africa as well as Northern and South-East Asia).[49,50]

The neanderthals have been described by many authorities as having possessed quite distinctive cranial and post-cranial morphologies. They are said to have possessed relatively large and thick crania, which were often rather low and elongated **(dolichocephalic).[51]** Although generally being of moderate stature only, neanderthals also possessed relatively large brains. Wolpoff[52] has noted that:

> *'Using the brain size-body height relation for modern people for comparison, we find that European Neandertal brains were close to 330cc larger than those of living people of the same height.'*

They featured divided and quite prominent **brow (or supraorbital) ridges** above the eye sockets and also receding foreheads.[53–57]

The degree of variation in supraorbital development, cranial thickness and frontal morphology was often considerable, however, in single populations — especially those from East European sites such as Vindija and Krapina in Yugoslavia.[58] At Vindija the degree of supraorbital development is extremely variable. The cranial fragments V 261 and 262, for instance, feature rather reduced and thin brow ridges as well as high foreheads (not unlike those of Cro-Magnon remains from Predmost in Czechoslovakia, and Skuhl and Djebel Qafzeh in Israel), whilst other specimens such as V 202 and 260 feature thick brow ridges and receding foreheads.[59]

Concerning the frontal remains at Krapina, Wolpoff has stated that:

> *'... while the best-preserved Krapina crania show some degree of variation, the isolated fragments suggest that the actual cranial variation at the site was far greater than these few specimens indicated.'*[60]

In the preceding paragraph he noted that:

> *'The large sample of supraorbital fragments give evidence of an average reduction in brow ridge thickness compared with the earliest European* Homo sapiens *sample. It also reveals variation in both the size and morphology of the region; some specimens have virtually no, torus at all.'*[61]

(It is important to recognize that **a significant proportion of the Krapina remains belonged to children).[62]** On the other hand, the three most complete specimens — the C, D and E partial craniums — are an enigma in themselves. The C and E calvariae are thought to belong to females, whilst the D cranium, which features robust temporal markings on the frontal and a sagittal torus, is generally regarded as having belonged to a male.[63] However, the D cranium **features brow ridges of only moderate thickness and projection,[64]** whilst the female C skull **possessed brow ridges which were amongst the thickest at the site.[65]** The female E cranium, by way of contrast, is described as having been **smaller and more delicately built than the** C **skull, and with smaller brow ridges as well.[66]**

As observed above, some neanderthal crania were characterised by slight **sagittal 'keeling'.[67,68]** Adult neanderthal crania usually featured a prominent occipital **'bun'** (or posterior occipital bulge).[69]

The smallest recorded cranial capacity for an adult 'neanderthaloid' is 1,200cc (the Saccopastore I female cranium from Italy);[70–72] a value well above the lower

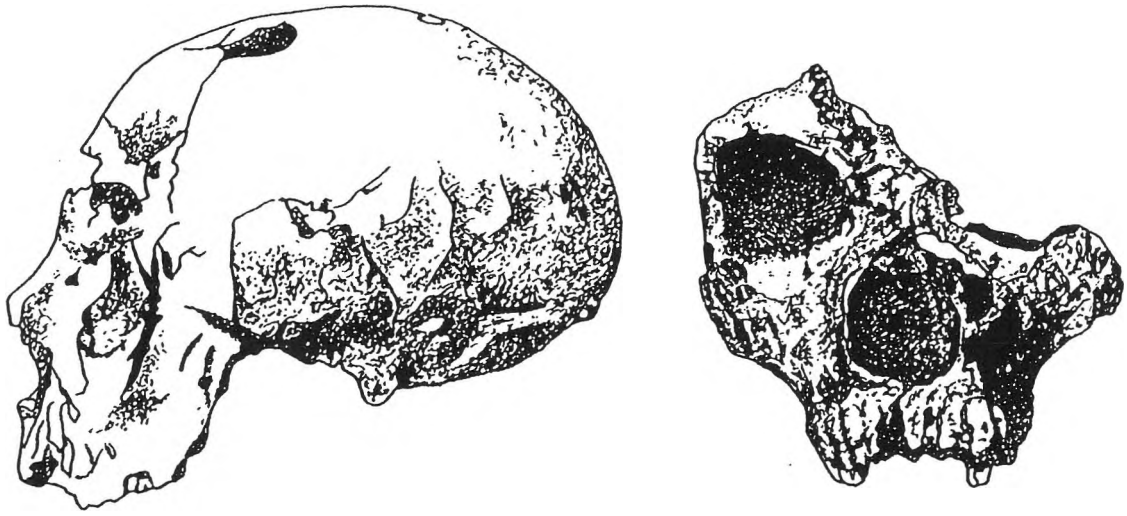

Figure 1. *The Saccopastore I (left) and II (right) skulls contrasted.*

limit of 'normal' human endocranial volume (ECV). A second and slightly larger (male?) cranium was also recovered at Saccopastore — the craniofacial remains of which were of decidedly more 'robust' appearance (see Figure 1).[73–74] However, it is not always possible to determine the sex of a fossil hominid based on craniofacial remains alone. For instance, Wolpoff has inferred that the distinctive morphologies of the two Saccopastore skulls are of a dimorphic (sexual) nature. However, elsewhere he notes that whilst:

> *'... some female specimens, such as Gibraltar, have markedly reduced browridges, the large size of this structure in the Spy female suggests that this may not be a consistent sex difference.'*[75]

Furthermore, he also concedes that:

> *'. . . no northern* (European neandertal) *females are distinguishable.'*[76]

The largest neanderthal cranium (Amud 1, from Israel) is of the order of 1,740cc[77] — well above the modern average (l,350cc). Male endocranial capacities exceeded 1,450cc, whilst female values ranged between 1,200 and 1,500cc. Coincidentally, the Amud cranium is not only the largest, but also the most recent, of the Middle Eastern neanderthal specimens (the significance of this will be seen later).

The neanderthal face was quite variable in appearance, but generally featured forward jutting jaws and relatively large teeth.[78]

In many adult neanderthal specimens the lower jaw (mandible) is 'chinless'; that is to say, the jaw recedes in a 'simian' manner. However, this is not to say that all neanderthal mandibles conform to this pattern. For instance, the lower jaws of an old adult and juvenile (male?) neanderthal from Ehringsdorf and the D mandible of a juvenile from Krapina featured incipient, or rudimentary, chins.[79] Furthermore, Thoma[80] has noted that there is also considerable variability in the symphyseal angle of neanderthal mandibles. Some specimens, such as the Spy I and Montmaurin mandibles (69° and 73°, respectively), possess symphyseal angles beyond the notional range for neanderthals (62.5°–65°). In this respect they may be regarded as being 'more modern'.

Neanderthal molars have been described by Zihlman as having been:

> *'... well worn, with characteristic enlarged pulp cavities (taurodontia).'*[81]

Cuozzo[82] has argued that:

> *'The taurodont formation enables the tooth to undergo extensive occlusal wear (attrition) without infringing on the pulpal contents of the tooth.'*

Therefore neanderthal molars could well be regarded as having been superior to the 'more modern' cynodont molars, which are somewhat limited in their longevity.

The eye sockets were large and rounded, and the nasal cavity capacious.[83] The sinus cavities were also quite large. According to Trinkaus and Howells[84] and Heim[85] the frontal sinuses filled the brow ridge from above the nose to the middle of the eye sockets with multichambered 'cauliflower' cavities. It is not without significance that the sinus cavities of men and women today increase appreciably during middle and old age.[86,87] Perhaps the exceedingly large sinuses of adolescent and adult neanderthals (and other archaic fossil humans) reflect prolongation of the maturation phase and generally greater longevity in the past.[88–90]

Much publicity was given to the recent discovery of a fossilised neanderthal hyoid bone.[91–94] It was previously asserted that neanderthals had been incapable of normal

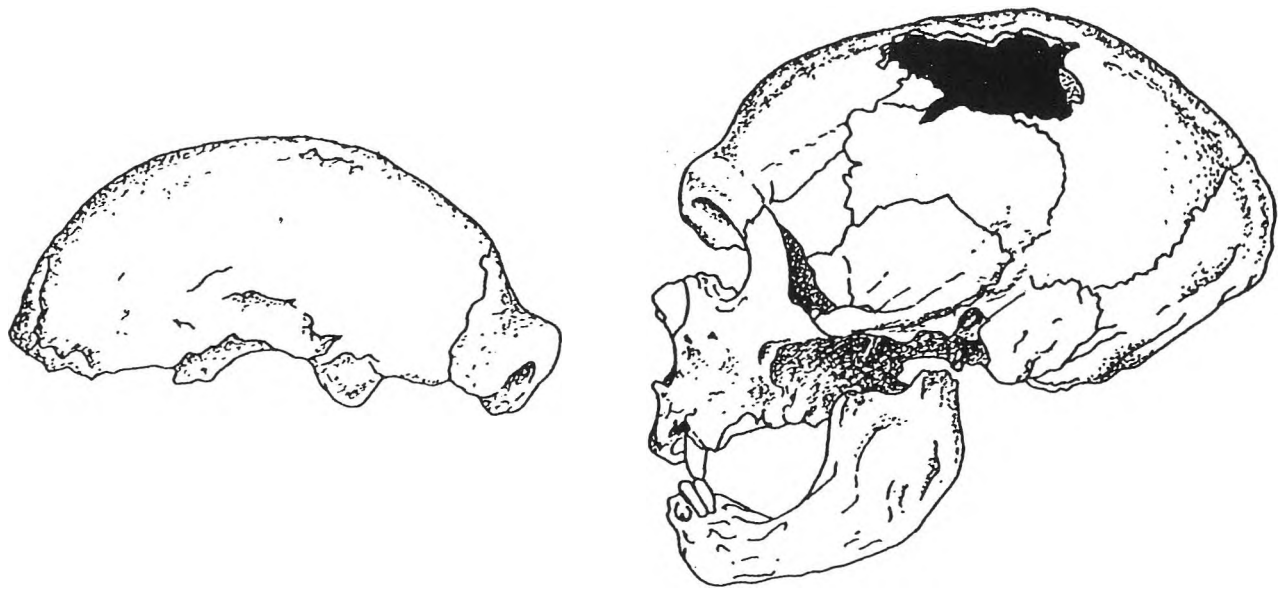

Figure 2. *The cranium of the* Homo sapiens neanderthalensis *type specimen from the Neander River Valley, near Düsseldorf, West Germany (left) and the 'Old Man' from La Chapelle-aux-Saints, France (right).*

human speech reproduction.[95,96] However, the discovery of this hyoid bone (which was associated with the Kebara 2 skeleton from Israel)[97] has dispelled this myth, for the bone has been described by Arensburg *et al* as being

> '*... almost identical in size and shape to the hyoid of present day populations, suggesting that there has been* ***little or no change in the visceral skeleton*** *(including hyoid, middle ear ossicles and, inferentially, the larynx)* ***during the past 60,000 years of human evolution.'***[98]

A comparison with a large sample of hyoid specimens from Naturifian, Neolithic, Chalcolithic, Roman and Recent Bedouin cultures nevertheless revealed that in most dimensions the Kebara specimen either approached or exceeded the upper limit for the aforementioned human samples.[99] The Kebara 2 mandible is also said to be quite robust (large) when compared to modern populations.[100]

Post-cranially, their features created the impression that they were rather squat individuals.[101] These features included thickened and deformed long-bones, spinal curving and a barrel-chested ribcage.[102,103] The stooped posture of the **'Old Man' from La Chapelle-aux-Saints —** a man regarded by many evolutionists as having been between forty and fifty years old — gave impetus to the false notion that neanderthals were primitive, ape-like 'missing links'.[104–106] Cuozzo, on the other hand, has suggested that the 'Old Man' may have been older than evolutionists are prepared to concede.[107] He argued that the La Chapelle-aux-Saints skull **may have belonged to an individual between 150 and 200 years of age.** Cuozzo based his conclusions on the observation that the degree of rotation of the hard palate, in reference to a fixed datum (the Frankfurt horizontal), is substantially greater in neanderthals than in modern humans. The craniofacial remains of the 'Old Man' and the skullcap of the original type specimen of *neanderthalensis* are illustrated in Figure 2.

One particularly interesting facet of neanderthal morphology pertains to the size of the female pelvis. Diamond has recently suggested that:

> *'... a Neanderthal woman's birth canal may have been wider than a modern woman's, permitting her baby to grow inside her to a bigger size before birth. If so, a Neanderthal pregnancy might have lasted one year, instead of nine months.'*[108,109]

However, this proposition is hard to accept because **the trait is to be observed in both sexes — not just in females.**[110]

Some authorities have drawn comparisons between neanderthals and modern-day eskimos **(Innuits);** stating that both were and are short and of stocky build.[111,112] The average eskimo stands about 1.55 metres (about 5 feet 2 inches) tall.[113,114] Yet the average adult neanderthal male stood about 1.7 metres (5 feet 7 inches) tall; not exactly short.[115–118] Neanderthals frequently possessed bowed and thickened limb bones (see Figure 3); therefore their perceived stature may belie their true height.[119]

The Western European neanderthals were generally 'more robust' than their eastern cousins. This may have been a consequence of their having migrated into a harsher, Ice Age environment.[120] The bowing of limb bones, spinal curving (characteristics observed in many West European neanderthal skeletons) and deformation of eye sockets (to a simian-like vertical ellipse) have been attributed to the childhood disease, **rickets** — a bone disorder arising from a deficiency of vitamin D, mineral salts and/or calcium.[121] Rickets may occur when the individual does not receive adequate exposure to sunlight;

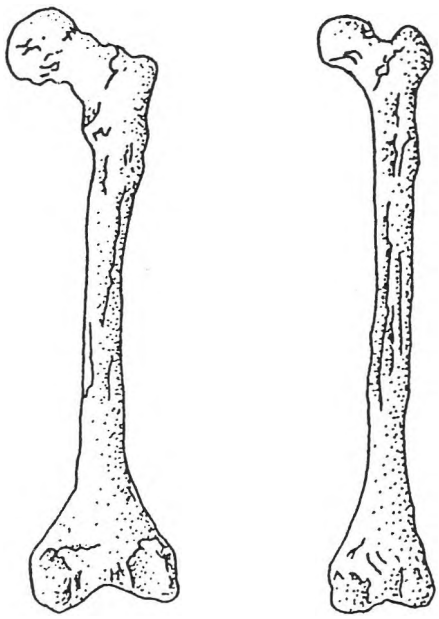

Figure 3. *The deformed (bowed) and robust (thick and strong) form of a neanderthal femur (left) contrasted with that of a modern human (right).*

for instance, where there is a dependency on heavy clothing in cold climatic regions (or for that matter, during an Ice Age).[122–124] The corresponding disorder in adulthood — **osteomalacia** — also manifests itself in a softening and bowing of the limb bones.[125]

Ivanhoe has noted that:

> *'At lower latitudes, even during temperate interglacial epochs like the present, it is possible to get by largely on this endogenous vitamin D alone, provided sociocultural factors such as crowding and purdah do not impede direct access to sunlight. ... Neandertal had limited access to ultraviolet. The palaeoclimate of the early Würm was characterized by cold and a marked increase in atmospheric turbulence and precipitation, which was worldwide but more intense in the higher latitudes above 40° The cold itself contributed further to the reduced availability of ultraviolet by driving Neandertal out of the open to seek shelter in caves or tents, and perhaps to wearing thick furs.'*[126]

He also suggested that Neanderthal man had little access to dietary vitamin D; **his diet (primarily meats) being largely deficient in vitamin D.** Ivanhoe argued that:

> *'... Neandertal had little access to dietary vitamin D, because his basic hunter's food list, relatively adequate in terms of calories, protein, calcium and phosphorus and vitamin B, included only negligible amounts of fatty fish and eggs';*[127]

only the latter two food sources being rich in vitamin D.

D.J.M. Wright,[128] on the other hand, has suggested that the shortening and thickening of neanderthal bones may have been due to their having suffered from **congenital syphilis.** Wright has also noted that many of the abnormalities associated with rickets and osteomalacia (for example, 'olympian front', 'caput quadratum', 'craniotabes') may also be attributed to congenital syphilis.[129] Furthermore, he has stated that:

> *'In societies with poor nutrition, rickets and congenital syphilis frequently occur together.'*[130]

(This raises the possibility that some neanderthals may have been social outcasts).[131,132]

Other writers have suggested that some of the skeletal characteristics of neanderthals (for example, prognathic jaws, thickening of limb bones) may indicate that the individual has suffered from **acromegaly.**[133,134] For instance, the reactivation of the release of growth hormone after fusion of the epiphysis and diaphysis in long bones is complete may result in a (outward) thickening of long bones.[135,136]

Straus and Cave,[137] on the other hand, have suggested that some neanderthals suffered from malnutrition and **osteoarthritis;** the latter being a degenerative disease which affects the body's major joints, and which usually (but not always) manifests itself in old age.[138] One can only speculate as to how common-place this disease would have been in populations where longevity was greater than that observed today.

It is also possible that the thinning and deformation of the long bones in some neanderthal specimens may be due to the onset of **osteoporosis — a disease of old age.**[139,140] It also induces a shortening of the spinal column during old age — resulting from the collapse of spinal vertebrae.[141]

Several writers have also affirmed a general tendency toward thickening of cranial and post cranial bones during middle and old age even today. For instance, Israel[142] has suggested that the human face and cranium continue to grow (enlarge) well into middle age. According to Israel,[143] Hrdlicka (some forty years earlier) perceived such processes of enlargement as ongoing until senility and gradual diminution set in.[144] More recently, Lazenby[145] has reaffirmed the same, noting:

> *'The existence of continuing periosteal apposition of bone throughout the adult period seems well established, in spite of it being found to be of insignificant magnitude in some studies.'*

Smith *et al.* have also noted a degree of femoral expansion in ageing women.[146]

Could it be that the observed cranial expansion and thickening as well as the enlargement of the frontal sinuses in many, **but not all,** neanderthals is but an extension of that process observed in middle aged and elderly people today? Could it be that many of the more exaggerated features found in neanderthal populations are but **a legacy of greater longevity in the past?**[147] Such a view would, of course, conflict with the generally

accepted belief that neanderthals seldom lived beyond 40 years.[148] Furthermore, it would also raise serious questions concerning the nature (status) of younger neanderthals in relation to their older kin.

Whilst the characteristics of neanderthals are distinctive, they are now considered to be **insufficient to differentiate them and modern men and women at a species level.** On the other hand, the neanderthals have been classified, somewhat arbitrarily, into two groups — **'classical'** and **'progressive'** neanderthals.[149,150] The significance of these two groupings, together with neanderthal gradation generally, will be discussed later.

The extreme, or classical, neanderthals would include the following specimens: the original type-specimen from Neander, West Germany; various crania from the French Dordogne, including specimens from La Chapelle-aux-Saints, La Ferrassie, La Quina and Fontechevade; the Spy I skull from Belgium and the Saccopastore II cranium from Italy; the Shanidar 1 and 5 skulls from Iraq; the Tabun female skull from Israel and the Bodo cranium from Ethiopia. On the other hand, progressive specimens would include the skull of a youth from Ehringsdorf, East Germany; the Gibraltar woman cranium; the Spy II cranium from Belgium; the Saccopastore I and Monte Circeo skulls from Italy; the Krapina remains from Yugoslavia; some of the 'neanderthaloid' remains from Predmost in Czechoslovakia; the Shanidar 2 cranium and some of the Skuhl and Djebel Qafzeh specimens from Israel.

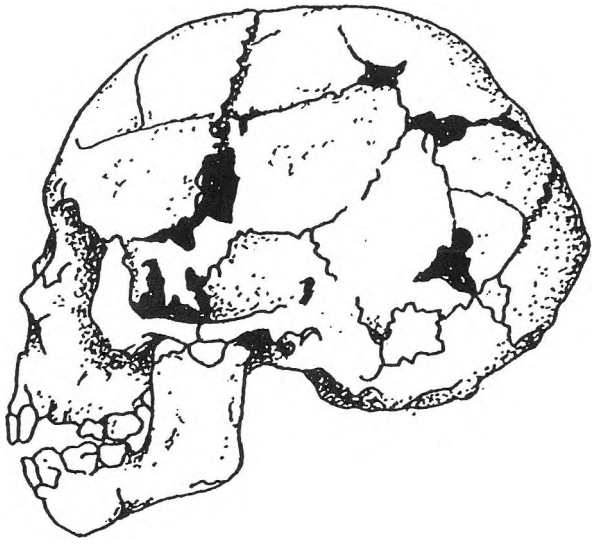

Figure 4. *The skull of a juvenile male neanderthaloid from Teshik-Tash, Uzbekistan. Note the underdeveloped brow ridges and rather vertical facial region.*

Infant and Juvenile Neanderthals

Many of the features that characterize adult neanderthals are either underdeveloped or undeveloped in their children.[151] For instance, the 9 to 10 year old neanderthal boy from **Teshik-Tash** (in Soviet Uzbekistan) is described as having: '*... **undeveloped brow ridges,** and other classic **(**neanderthal**)** features, **yet more modern face and limbs'*** (see Figure 4).[152] According to Wolpoff the 13 year-old juvenile from **Le Moustier** (France) lacked occipital flattening or 'bunning' and possessed **a greater degree of brow ridge reduction than the Teshik-Tash youth.[153]** Likewise, a fragmentary juvenile cranium from Krapina (accessioned Krapina A) featured '*... a high curved forehead and **virtually no brow ridge development.'*[154]**

Of particular interest are Wolpoff's observations that the morphological variability of the Krapina sample had led some authorities (erroneously he suggests) to conclude that there were both modern and neanderthal types present in the remains and that the so-called '*modern type'* at Krapina was '*. . . actually **represented by the remains of very young individuals . . .**'*[155] Furthermore, Tillier[156] cites Trinkaus as stating that: '*. . . youngNeanderthals, approximately one year of age, are **similar to infants of modern humans',*** whilst Wolpoff has conceded that the **Staroselje** infant cranium from the Russian Crimea is '*... generally regarded as **very modern in appearance.'***[157] He added:

> *'Further studies by E. Vlcek and others show that Neanderthal children look more modern than Neanderthal juveniles or adults, **largely because the superstructures associated with robustness are undeveloped** and the face grows proportionately far more than the cranium. Nonetheless, in a recent study V. P. Alexeyev attempted to account for the expected growth changes and **still concluded that the infant was more modern than not in its morphology and metric features.'***[158]

Some authorities have gone so far as to suggest that this Mousterian child could be readily consigned to the subspecies *Homo sapiens sapiens* rather than *neanderthalensis.*[159]

It has also been suggested that the late neanderthal Fontechevade 1 frontal, which is said to have **featured thin cranial bone and a virtual absence of any bulge that would correspond to the central portion of a brow ridge,** possibly belonged to a juvenile.[160] Wolpoff has indicated that:

> *'... interpretation of the fragment is **confused by the possibility that it is a juvenile,** since these features **could reflect no more than a young age at death (thicker cranial bone and a torus might possibly have developed later in life).'***[161]

Likewise, the Ehringsdorf H cranium (regarded by some authorities as having belonged to a youth of approximately 18 years,[162] although Wolpoff[163] chooses to de-

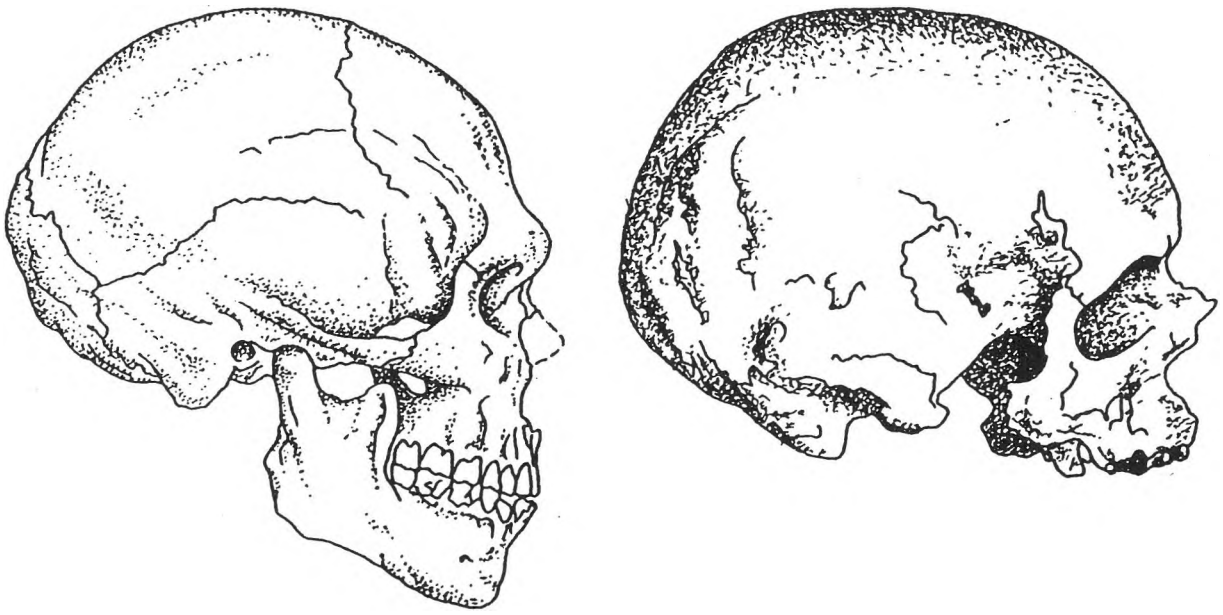

Figure 5. *Typical Cro-Magnoids from Eastern and Western Europe; the Predmost **3** skull from Czechoslovakia (left) and the 'Old Man' from Les Eyzies, France (right).*

scribe it as female) is described as having possessed '... ***a fairly high vault and steep forehead',***[164] **a moderate brow ridge** and **vault bones much thinner than isolated (adult) parietal bones found at the same site.**[165] Two mandibles (accessioned Ehringsdorf F and G) — one from an old adult and the other from a juvenile — are both described as having possessed well developed mental eminences (the external buttress or 'chin' of the lower jaw). Wolpoff has noted that the degree of development of the chins is somewhat overshadowed by the degree of prognathism of the mandibles and the forward (protruding) incisors.[166]

Ivanhoe has noted that every Neanderthal child skull studied so far **shows signs compatible with severe rickets, including an abnormal and accelerated growth of the cranium.**[167] He noted in particular that the increase in size of eye orbits — as observed in the **Pech de l'Aze** neanderthal child — is a feature of rickets in infants.[168] He also noted that neanderthal juveniles and infants from lower latitudes (for example, the Teshik-Tash boy, the Shanidar baby and the Lebanese specimen 'Egbert')

> '*... as a rule **show less extreme evidence of rickets,** as one might expect from the greater general availability of vitamin D at these lower latitudes or temperate interstadial sites.*'[169]

CRO-MAGNON MEN

Until recent times it was thought that neanderthals *(Homo sapiens neanderthalensis)* preceded the arrival of anatomically modern man *(Homo sapiens sapiens).* The gap between neanderthal man and *Homo sapiens sapiens* was said to be bridged in part by the Cro-Magnon race (see Figure 5). The remains of Cro-Magnon man in Western Europe were previously thought to occupy a timeslot between 15,000 and 35,000 years BP, coinciding approximately with the so-called **Upper Palaeolithic** period of the **'Stone Age',** whereas the so-called classic neanderthals of Western Europe clustered between 40,000 and 100,000 years BP (the bulk of which falls within the **Middle Palaeolithic** period, but which also includes the latter phase of the **Lower Palaeolithic** period).[170]

Any attempts to distinguish between East and West European Cro-Magnoid fossils and living *H. sapiens sapiens* are somewhat artificial.[171]

The Cro-Magnon race was **relatively tall** — an early estimate of five male individuals from selected European sites yielding an average height of 1.82 metres (5 feet 11½ inches).[172] Indeed, the so-called 'Old Man' from Cro-Magnon was said to have been approximately 1.90 metres (6 feet 3 inches) tall.[173] More recently, however, the estimated heights for individuals from the original Cro-Magnoid site (Les Eyzies, in France) have been revised downwards — to between 1.66 and 1.71 metres (5 feet 5 inches to 5 feet 7 inches).[174] Likewise, Cro-Magnoid specimens from Predmost in Czechoslovakia have been described as having been rather short and robust individuals.[175] Taller members of the Cro-Magnon race included individuals from Grimaldi, Italy. A young male and an old woman from this particular site were only 1.56 and 1.6

metres (5 feet 1 inch and 5 feet 3 inches) respectively.[176] However, other members of the Grimaldi race were much taller, and the average height is said to have been 1.77 metres (5 feet 10 inches).[177] In each Cro-Magnon population the females were somewhat smaller, but still moderately tall in most instances.

The Cro-Magnoids featured large, dolichocephalic to mesocephalic crania, with reduced (or very slight) supraorbital tori or brow ridges.[178] The cranium was generally higher, and more rounded, than those belonging to neanderthals. Lambert described the transition of the craniofacial complex from the neanderthal form to modern man (via the Cro-Magnon phase) in terms of *'Evolving eggheads';*[179] that is to say, the facial region was not as elongated as that of modern man, but more so than those of neanderthal men and women. Cranial capacity ranged from 1,220cc up to 1,736cc (some authorities suggest a higher upper limit to the range[180]); well above the modern day average. Whilst the large cranial capacity is said to have reflected **generally** *'larger bodily dimension'*[181] (that is, stature and robustness), it **no longer appears to be the case with some populations from Eastern and Western Europe** (for example, those from Les Eyzies and Predmost).

The French palaeontologist, Henri J. Delporte, has also noted that:

> *'... the teeth of other fossil humans classed as Cro-Magnon show that the dentition of Cro-magnon man was nearly identical to that of modern man. Most of the teeth, however, especially the last molars, are distinctly larger than those of modern peoples.'*[182]

Several Cro-Magnoid specimens were thought to have exhibited some 'negroid' characteristics.[183] However, most Cro-Magnoids generally conformed to the 'Caucasian'-type pattern.[184] Indeed, some physical anthropologists have drawn comparison with present-day populations from the Dordogne region of France, Scandinavia, parts of Spain and the Canary Islands.[185] In other words, the Cro-Magnon race **was not far removed from the present-day inhabitants of Western Europe.**

Of particular interest to palaeoanthropologists is the fact that **amongst some Cro-Magnoid populations there are some specimens that exhibit curiously 'neanderthaloid' characteristics, for example, at Les Eyzies, the site of the original Cro-Magnon finds.[186–188]** This might be interpreted as evidence of intra-specific mixing of subspecies of humans, the last vestiges of a subspecies on the decline, or perhaps even a measure of the extent of human variability.[189] On the other hand, it may well indicate an **extreme difference in the ages of the populace (or even single family);** perhaps also reflecting a rapid decline in the (post-Flood) longevity. If such were the case, then the 'neanderthal'-like fossils would generally (but not always) belong to older relatives, whilst the Cro-Magnoid (or 'more modern') remains would, in most instances, represent a related, but generally younger, generation. The Cro-Magnoid's potential longevity would still, however, have been **measurably greater than that attained by most modern men and women.**

Juvenile and Infant Cro-Magnoids

Tillier has noted that:

> *'Juvenile neanderthals are more numerous than proto-Cro-Magnoids, with a wide distribution extending from Western Europe to Southwest Asia.'*[190]

Nevertheless, a significant number of infant and juvenile proto-Cro-Magnoids have been unearthed in the Levant at Skuhl and Djebel Qafzeh. Furthermore, a significant number of Cro-Magnoids have been recovered from deposits in Western Europe (for example, three children from the Baoussa da Torre and Grotte des Enfants sites at Grimaldi in France, two children and a foetus at Solutre in France, and a foetus at Cro-Magnon) and, to a lesser extent, South-West Asia (for example, Sungir, where two boys aged between 12 and 13 were found buried along with an old man).[191]

With respect to the Skuhl I and X infants and the Skuhl VIII juvenile proto-Cro-Magnoids, Tillier has noted that McCown and Keith concluded the **limb proportions and limb segments corresponded with those of modern specimens.[192]** Cranial characters of the Skuhl I child, both metric and non-metric, are said to '. . . *conform on the whole to the modern type*.'[193]

Very little attention has been focussed on the morphology of East and West European Cro-Magnoid infants and juveniles.

ARCHAIC *HOMO SAPIENS*

These include the fossilised remains of humans that are said to occur remarkably early in the fossil record — generally within the Middle Pleistocene period. It is rather difficult to define these remains since they exhibit varying affinities with specimens attributed to *Homo sapiens sapiens* (as in the case of the thick-boned Swanscombe female cranium from England and the thin-boned Omo skulls from Ethiopia), *Homo sapiens neanderthalensis* (for example, the Saccopastore skulls from Italy, the Saldanha Bay skull from South Africa, and the Steinheim skull from West Germany) and even *Homo erectus* (for example, the Petralona and Arago skulls) (see Figure 6). Others, including the Florisbad skull from South Africa, represent a mosaic of neanderthal and *H. sapiens sapiens* characteristics. Despite such apparent diversity Pilbeam suggests that:

> *'Clear anatomical and archaeological boundaries are hard to draw between modern and archaic humans, and the latter are solidly placed in* Homo sapiens.'[194]

For the record, it should be noted that some authorities prefer to place the Arago skulls in *Homo sapiens*

neanderthalensis[195] (rather than consigning them to a separate sub-species of *Homo erectus —Homo erectus tautavelensis* — as did Henry de Lumley, the discoverer of the remains).[196]

It is significant that some specimens of archaic *Homo sapiens* are of uncertain age and affinity. For instance, the Kabwe skull (otherwise known as Rhodesian, or Broken Hill, Man) was once regarded as being representative of an early form of neanderthal; yet it is **variously dated between 200,000 and 20,000 years** BP.[197–199] It was been suggested that this fossil human was a sufferer of Rigg's disease and dental caries, and may have died as a result of a 'ballistic' wound to the head.[200] Likewise, the Steinheim skull shares many characteristics found in Neanderthal and proto Cro-Magnon skulls from the Levant; in fact, it would make an excellent mediatory link between specimens from Tabun and Skuhl caves. Yet it is asserted to be some 200,000 to 250,000 years older than these Levant humans.[201]

Archaic *Homo sapiens* are often found in regions **remote to the Middle East and Anatolian region of Eastern Europe,** suggesting that they may be of equivalent age or even post-date the neanderthal and Cro-Magnon fossils of Eastern Europe, the Levant and South-West Asia. Furthermore, many *erectus* specimens are found in relatively low latitudes — raising the possibility that they were merely **tropical variants of *neanderthalensis.***

FOSSILISED *HOMO SAPIENS SAPIENS*

These remains may be found throughout the world's continental land masses and are confined, in the main, to the last 20,000 years of purported human history according to the evolutionary timescale. They represent the earliest known remains of humans in continents such as Australia, North and South America, and East and South-East Asia. As a rule, they **conform more closely** (both in terms of physical size and skeletal anatomy) **to modern day human morphology than the remains of Late Pleistocene humans.** They can generally (though not always) be linked to native aboriginal populations of the continents. The timing of the arrival of these 'native' populations on the various continents is often the subject of intense debate. Recent arguments concerning the timing of initial colonisation and mode of entry into the New World[202] typify such debate.

'EVOLVING' INTERPRETATIONS OF ARCHAIC FOSSIL HUMAN REMAINS

Classical vs Progressive Neanderthaloids

It was once accepted by most authorities that the neanderthals could be arbitrarily divided into two distinct groupings: the so-called 'classical' (and presumed to be more primitive) type, and the 'progressive' (or 'generalised') form. The classical (and more physically degenerate) form was said to derive from Western Europe, whilst the so-called progressive form was said to be confined to Eastern Europe, the Middle East and South-Western Asia.[203,204] This was, however, an oversimplification, since **many of the Middle Eastern neanderthals were very much 'classical' in skeletal and cranial morphology.[205]** Trinkaus and Howells, in rejecting the notion of a distinction between 'classical' and 'progressive' forms, regarded the **'classical' specimens only as true neanderthaloids.** They did, however, consider the Shanidar and Tabun fossil remains from the Middle East to be **genuine neanderthaloids[206]** (see Figure 7).

A Possible Middle East Origin for the Archaic *Homo sapiens*

Until comparatively recent times it had been generally accepted that Middle Eastern neanderthals had been largely contemporaneous with late occurring West European neanderthals, and that both populations had pre-

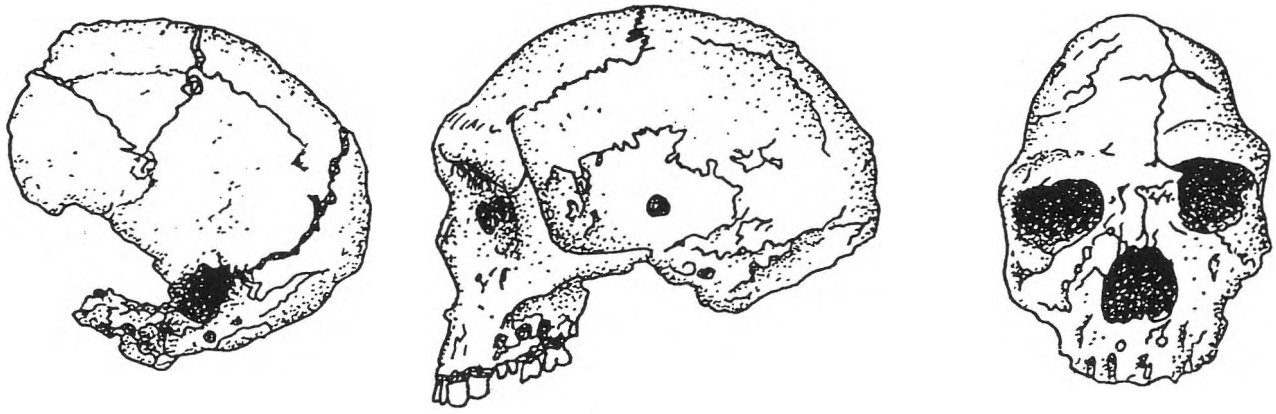

Figure 6. *The calvarial remains of Archaic* Homo sapiens *contrasted: the Swanscombe skull from England (left): the Broken Hill skull from Rhodesia (centre), and the Arago 21 cranium from France (right).*

ceded more 'modern' representatives of the genus *Homo* (for example, Cro-Magnon man). The redating of some of the Middle Eastern neanderthal and proto-Cro-Magnoid population sites during **1987,** by refined radiometric methods such as **thermoluminescence** (TL) **and electron spin resonance** (ESR) dating techniques, **demonstrated that the 'classical' West European form of neanderthal and his counterparts in the Middle East were younger than the supposedly more advanced proto-Cro-Magnoids of the Levant.** The Kebara[207] and Djebel Qafzeh[208–210] datings, in fact, led Bunney to conclude that neanderthals were not a part of our direct ancestral line.[211] This view seemed to be reinforced, for a time, by datings of mammal remains at the hominid (proto-Cro-Magnon) level from the Skuhl Cave.[212] However, a series of ESR determinations for the neanderthal level at Tabun produced a revised — and somewhat contentious — date of c. **120,000** years BP.[213,214] The resultant spread of dates for Near Eastern Neanderthals now range from **45,000** years BP (for the Wadi Amud site[215]) to **120,000** years BP (for the Tabun site). The Kebara and Shanidar[216] neanderthals fall comfortably within this range. The net result of these revised datings is that the neanderthal/proto-Cro-Magnoid dates for the Middle East (ranging between **45,000** and **120,000** years BP) are **significantly earlier than the corresponding spread of dates for neanderthals from Western Europe** (for instance, the French specimens range from **45,000** to **70,000** years BP only).[217]

These earlier Middle East datings also **infer a westward migration of mankind's neanderthal and proto-Cro-Magnoid ancestors from the Middle East into the European continent.[218]** A southward migration into the African continent by early representatives *of Homo sapiens* may also be inferred if lower (more recent) dates for 'neanderthal' specimens such as Rhodesian man prove to be correct. Such datings impart a certain measure of support to the (biblical) view that the origins of *Homo sapiens* is, **in fact, to be found in South-West Asia or Eurasia, rather than the prevailing 'Out-of-Africa' (sub-Saharan) view favoured by most palaeoanthropologists.[219]**

Contemporaneity of European Neanderthaloids and Cro-Magnoids

Bunney suggested some time ago that neanderthals were still present in Western Europe as recently as **35,000** years ago.[220,221] Gowlett has also indicated that the partial remains of a neanderthal skull from St Cesaire in France derived from Upper Palaeolithic (Chatelperronion) deposits; **deposits which elsewhere contain the remains of Cro-Magnon man.[222]** Such deposits are generally regarded as being less than **32,000** years old.[223] So-called 'neanderthaloids' from Predmost (Czechoslovakia) date at about **25,000** years BP.[224,225]

Elsewhere, at L'Arbreda cave, near Gerona, Spain, Aurignacian tools (advanced flint stone tools usually associated with Cro-Magnon cultures) have been found in a layer immediately above that which contains Mousterian artifacts (those crude stone tools usually attributed to neanderthal cultures). The Cro-Magnon culture has been radiometrically dated at between **37,700** and **40,000** years BP.[226] These, and other finds in the Catalonian region of Spain, have forced some authorities, including James Bischoff[227] and Sarah Bunney,[228] to conclude that:

> *'In southwestern France and along the northernmost coast of Spain, as in the Middle East, there are signs that modern people and Neanderthals lived side by side for a time';*

that is to say, once again, purported ancestor and descend-

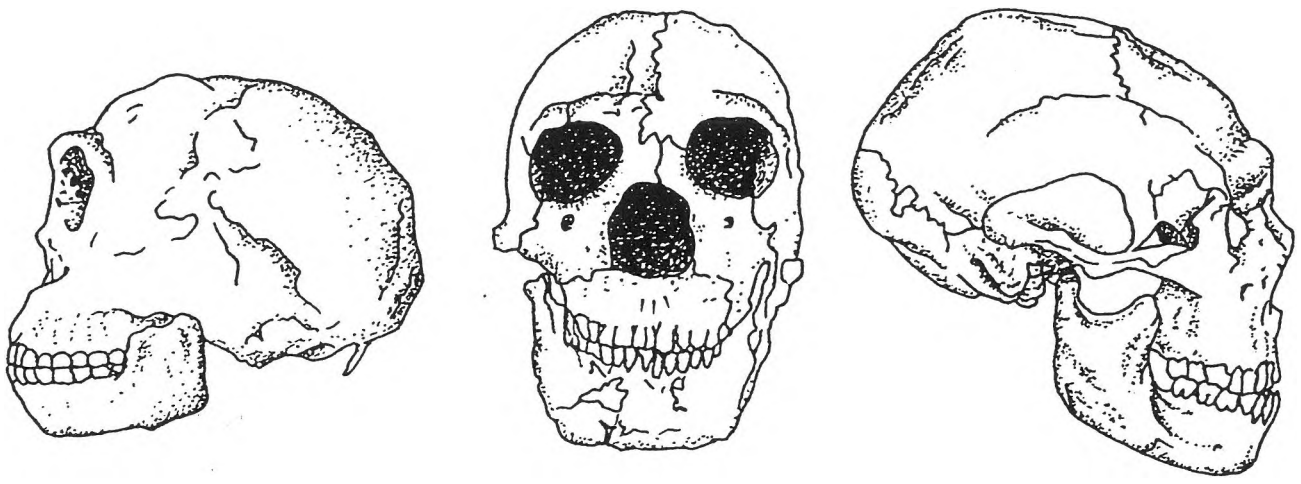

Figure 7. *Neanderthal specimens from the Levant and Middle East: the Tabun female (left) and the male Amud I (centre) skulls from Israel, and the Shanidar 1 skull from Iraq (right).*

ant co-existed in time.

It, therefore, appears possible that neanderthal-like ancestors existed well into the Upper Palaeolithic of Eastern and Western Europe, and thus **co-existed with their supposed evolutionary descendants — the Cro-Magnon race.** 'Neanderthaloid'-like Cro-Magnoids, such as those from Predmost, post-date many of the French and Riviera specimens of Cro-Magnon man, yet are smaller in stature than them.[229,230] They also appear to have been of comparable or perhaps even slightly smaller stature than many of the proto-Cro-Magnoid and low latitude neanderthal specimens from the Middle East.[231] On the other hand, they are still of larger stature than most full-blown (and earlier) neanderthal forms from Northern and Western Europe.[232]

Gradation of Neanderthal and Cro-Magnon Types

Now within the various neanderthaloid and Cro-Magnoid populations there is an enormous degree of variability; that is to say, there is **a gradation of 'types' within single populations.** This is particularly evident where larger numbers of individuals are involved. For instance, at Krapina in Yugoslavia — a neanderthal site — we are confronted with a large number of 'almost modern' children as well as adults reflecting variable degrees of 'robustness'.[233] The Krapina remains are dated between 75,000 and 100,000 years BP and, therefore, correspond to the early part of the Late Pleistocene. On the other hand, gradation is not only confined to neanderthal populations. For instance, the Cro-Magnoid site at Predmost in Czechoslovakia has produced some hominid remains with a decidedly **(remnant?)** 'neanderthaloid' character.[234] These specimens date from the terminal phase of the Late Pleistocene epoch — about 25,000 years BP. Several of the Cro-Magnon crania from Les Eyzies in France also retain affinities with neanderthals; especially Crania 3 and 4. Wolpoff has stated, for instance, that these characteristics **contrast markedly with the so-called 'Old Man' (Cranium 1) and the smaller and more gracile female skull (Cranium 2).[235]** He notes that:

> *'The cranium 3 forehead is lower and the browridge better developed. The occipital region of Cranium 3 is remarkably Neandertal-like, with a prominent bun and cranial flattening above it. The endocast of this cranium also appears to resemble the Neandertals in size and proportions. Cranium 3 is* **not** *Neanderthal, but his features confirm the mix of typically Neandertal characteristics in more modern populations*.'[236]

Gambier,[237] whilst reiterating the observations of Wolpoff, notes, however, that:

> '*... the morphology of the occipital bun is very different from Neanderthal specimens.'*

In describing Cranium 4, Wolpoff states that this cranium

> *'... has even more prominent browridges and extraordinary development of spongy bone at the cranial base, the nuchal muscle attachment area, and the mastoids.'*[238]

Likewise, when we turn to the Middle East we are confronted with similar gradations in morphology at the primary proto-Cro-Magnoid sites of Djebel Qafzeh and Mugharet es Skuhl in Israel.

The hominids from Qafzeh have been associated with typical Mousterian (neanderthal) artifacts according to Valladas *et al.*, and others.[239–241] Bunney[242] has alluded to the fact that the Qafzeh hominids have been described by some authorities as *'proto Cro-magnons';* that is to say, they represented an early form of Cro-Magnoid and were, therefore, **more anatomically 'modern' than neanderthals.** (Bunney's view mirrors that of Trinkaus and Howells concerning the remains from Qafzeh and Predmost.[243,244]) Wolpoff has suggested that: *'of all the Near Eastern samples, Qafzeh is generally the least Neandertal-like'*[245]*;* yet the same writer also concedes that: '*. . . as with the Skuhl sample, individual specimens range from Neandertal-like to fully modern.'*[246] The Qafzeh (and Mugharet es Skuhl) hominids retained some neanderthaloid characters such as **large bones and robust skulls[247]** (see Figure 8). Most vaults were quite high and well-rounded. Whilst some crania featured moderate brow ridges (for example, Qafzeh 3, 6 and 9), **others** (such as Qafzeh 7 and the juvenile Qafzeh 11) **were characterised by an absence of any supraorbital tori development.[248,249]** Wolpoff has also noted that:

> *'... Qafzeh 9 (which B. Vandermeersch believes is female) resembles the European Neandertals in the robustness of her muscle attachments, anterior tooth size, and so on. These features are even more archaic-appearing in males such as Qafzeh 6.'*[250]

Lower jaws feature fairly prominent chin development (as do those from Skuhl), whilst limb proportions are also said to be similar to those found at Skuhl.[251] However, Wolpoff also notes that the Qafzeh limb bones reflect a greater development of strength-related features than those from Skuhl.[252]

Even greater diversity is to be found amongst the remains of the Skuhl hominids from Mt Carmel in Israel.[253] Howells, for instance, stated that amongst the Skuhl population variability was so great that:

> *'There seem(ed) to have been a single tribe ranging in type from almost* **Neanderthal** *to almost sapiens.'*[254]

This view was shared by several other authorities including Romer[255] and Cornwall.[256]

Some of the Skuhl remains admirably fit the picture of proto-Cro-Magnoids, for example, the Skuhl V skull features a high vault and reduced brow ridges.[257] Other specimens, such as the Skuhl IV and IX skulls, are **decidedly more 'neanderthaloid' in cranial form** (with robust brow ridges, flattened and elongated crania, and in the case of Skuhl IX, a receding forehead).[258] Mid-facial

prognathism is marked in the Skuhl population.[259] According to Wolpoff the degree of variability present in the Skuhl population, like that at Krapina, was so great that it

> *'... was often taken to mean that different human species, or races, were all present together and probably making war and not love.'*[260]

He then went on to add:

> *'Much to their credit, the original describers, McCown and Keith, interpreted the variation in features to mean that the Skuhl sample was in the process of evolutionary change and was transitional in morphology between archaic and modern* **Homo sapiens.'**[261]

The post-cranial skeletons were according to Romer

> *'... closer to that of modern man than that of the typical Neanderthal, the distal segments of the legs* (being) *long rather than short, and the structure of the backbone is intermediate between Neanderthal and modern types.'*[262]

The revised dates for the Skuhl and Qafzeh hominids, however, challenge such a conclusion; placing them as virtual **contemporaries of the earliest Near Eastern neanderthals** such as those from Tabun and Mugharet-el-Zuttiyeh (the Galilee skull), and earlier than other 'classical' neanderthaloids from this region (for example, Wadi Amud, Kebara and Shanidar). They also place them **considerably earlier than most neanderthal remains from Eastern and Western Europe.**

The problems of interpreting Middle Eastern archaic human remains do not end here, however, for the evolutionist.

The young, female neanderthal from Tabun is regarded as having been of 'classical' neanderthal form (for example, sloping forehead, strong brow ridges, low skull, etc.); **yet the back of her skull and the facial region are said to be quite modern.**[263] Furthermore, a male lower jaw **of quite modern appearance** was recovered from the same deposits as the Tabun female;[264,265] **again suggesting contemporaneity of differing forms of fossil humans in the Middle East.** The most recent dating for the Tabun remains (120,000 years BP) goes some way to restoring neanderthal man to modern man's line of descent.

So what are we to make of this increasingly complex story of man's origins? Is there, perhaps, a better (more simple) explanation for the fossil evidence and the apparent mix of archaic and modern ancestral types?

THE SIGNIFICANCE OF CHANGING ANATOMICAL STRUCTURE IN FOSSIL MEN

(1) The Significance of Archaic Infant/Juvenile Remains

We have established previously that the fossilised remains of neanderthal, proto-Cro-Magnoid and Cro-Magnoid children were **essentially 'modern' in cranial and post-cranial morphology.** Any variation on this pattern was generally attributable to the onset of pathological disorders such as rickets and congenital syphilis during early childhood or prior to birth. The obvious conclusion is that **our purported archaic ancestors started out in life as essentially normal ('modern') human infants.** They progressed through adolescence again as essentially 'modern' individuals. However, during this formative period some of the so-called archaic characteristics (for example, brow ridges and occipital bunning in the calvariae as well as changes in jaw morphology) began to manifest themselves in selected indi-

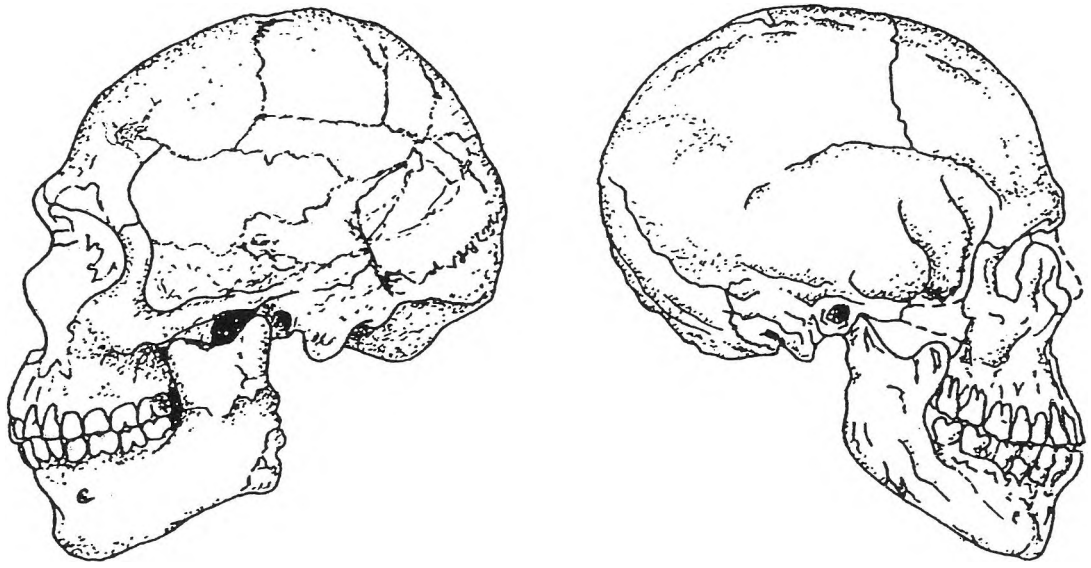

Figure 8. *Proto-Cro-Magnon remains from the Levant: the Skuhl V (left) and Qafzeh 9 (right) skulls from Israel.*

viduals.

(2) Climatological Factors and the Nature of Archaic Humans

Tillier has stated that:

> *'The Near East has yielded a number of fossils closely aligned with, but not strictly identical to, the Western European Neanderthals, in both cranial and post-cranial morphology*.'[266]

She has also noted that:

> *'There has been many attempts to explain the distinctive aspects of post-cranial Neanderthal morphology and limb proportions, in terms of adaptive hypotheses.'*[267]

Furthermore, she has also suggested that the biomechanical requirements **and environment** of early modern humans (for example, proto-Cro-Magnons) were probably more similar to those of the Neanderthals than to those of later Upper Palaeolithic hominids (for example, the Cro-Magnoids of Western Europe).[268] Would a colder, Ice Age climate have influenced the morphology of our archaic (post-Flood) ancestors, and to what degree?

The Cold Adaption Theory

According to Trinkaus[269] authorities such as Coon,[270] and Brose and Wolpoff,[271] have suggested that the neanderthals were *'morphologically adapted to the periglacial climate of the last glacial in Europe'* and that Coon, specifically, had argued that their relatively short distal limb segments **were merely a reflection of this cold adaptation.**

If we examine living human populations today we find that they generally conform to **ecogeographical rules** established by Bergmann and Allen during the last century.[272] According to Trinkaus they had argued that **organisms in colder climates, as a rule, tended to have** *'... greater body mass and relatively shorter extremities than their warm climate conspecifics.'*[273] Subsequent studies on animals demonstrated that extremities tended to be relatively shorter when animals were subjected to cold environments. Conversely, when animals were subjected to heat stress, their extremities tended to be relatively longer. However, **less consistent results were found with respect to body mass changes.[274]**

It is generally accepted that the neanderthals of Europe lived during periods of intense cold. The southward advance of massive continental ice sheets into Central Europe during the Late Pleistocene epoch would suggest that human (neanderthal) populations migrating through Northern Europe would have been subjected to climatic conditions far worse than those experienced today by Lapplanders. These colder climatic extremes would moderate as one moved further towards the Equator, and this would create a cline of (changing) morphological 'types'.[275] This cline is manifested in a number of differing ways, including the severity of limb bone bowing (due to rickets and osteomalacia) and perhaps even stature (northern neanderthals having shorter long bones on average than those from Southern Europe).

It has been suggested that the neanderthals from the Middle East experienced more moderate (temperate) climates again — a possible exception being the Shanidar neanderthals, whose relatively small stature and 'classical' morphology may have been determined to a large extent by the high altitude (colder, mountainous) conditions prevailing in the Zagros Mountains of the north-eastern Iraq.[276] It is not without significance that the long bones of neanderthals from low altitude and low latitude Middle Eastern sites such as Kebara, Tabun and Wadi Amud are not nearly as bowed as those from Northern Europe. Furthermore, they are, as a rule, generally longer than those of European neanderthals. According to Lambert the Amud 1 skeleton is noted for its **long limb bones.[277]**

Despite a slightly smaller stature, European and Near Eastern neanderthals retained limb bone proportions — as defined by humero-femoral and intermembral (humerus plus radius to femur plus tibia) indices — **identical to those of recent humans.[278]** Brachial and crural indices for neanderthals, however, tend to cluster toward the lower end of the human range;[279] some crural values, in fact, falling below the anticipated range of variation for recent populations. The mean brachial index for neanderthals falls in the middle of the combined Eskimo, Lapp and European (Yugoslavian) means, whilst the crural mean most closely approximates that for Norwegian Lapps. As such, the brachial and crural indices for neanderthals would **appear to be in accordance with the cold adaption theory** — the respective upper and lower distal limb bones being smaller than the proximal bones.[280] Trinkaus has also noted that European neanderthals have lower indices than those from the Middle East;[281] **perhaps reflecting differences in the severity of their respective Ice Age climatic conditions.**

Whilst Near Eastern proto-Cro-Magnoid and European Cro-Magnoid humero-femoral and intermembral indices are also indistinguishable from those of neanderthals and recent human samples,[282] their brachial and crural indices cluster towards the upper limit of recent human variability.[283] Because it is widely believed that the European Cro-Magnoids lived in climatic conditions similar to those of neanderthals, the high indices **run contrary to the cold adaption theory.[284]** Likewise, the same may be said of the Near Eastern proto-Cro-Magnoids, who were also regarded as having lived under cooler climatic conditions than those prevailing in the Middle East today.[285] (A possible explanation for these distinctions will be attempted later.)

(3) Greater Longevity and Periosteal Apposition in the Past

If Israel's observations[286] concerning post-pubescent

'growth' are correct, then the Skuhl and Qafzeh proto-Cro-Magnoids may have been **generally younger, yet slightly earlier generations than Near Eastern and European neanderthals.** Both archaic forms would have reflected a generally **greater (potential) longevity and duration of skeletal maturation than is the case today.**

Crania (and post-cranial skeletons) of neanderthals and modern forms of *H. sapiens* from the Middle East are comparatively large. The largest calvariae recovered thus far from the Middle East are the Amud 1 skull (1,740cc[287]) from Israel and the Shanidar 1 cranium (1,600cc[288]) from Iraq. Both are generally regarded as having belonged to males. Several other skulls from Shanidar, although less complete than Shanidar 1, are thought to have been of comparable (or greater) ECV.[289–291] On the other hand, the proto-Cro-Magnoid crania from Skuhl[292] and Qafzeh[293] were **marginally smaller** — though comparable in size to those of many European neanderthals and **slightly larger than the modern mean.**

It is significant that cranial and long bone thickening (see Figure 9) as well as sinus enlargement are found in varying degrees in adult neanderthals, proto-Cro-Magnoids and Cro-Magnoids. For instance, the rear sagittal region of the parietals of Qafzeh VI (a proto-Cro-Magnoid) is said to have been '*... close* (in thickness) *to that encountered among the Neanderthals and is above the present-day average.*'[294]

On the other hand, a frontal bone belonging to a young adult from La Crouzade (France) is described by Gambier[295] as having a **modern** supraorbital region and weak superciliary and supraorbital arches. She also notes that: *There is no frontal sinus, in contrast to the Neanderthals which have an extensive pneumatisation of the torus.'*[296] Yet this same bone is described as having been **wider than that of the Cro-Magnon specimens** (which, themselves, are described as having possessed broad and short faces).[297] Perhaps the La Crouzade front bone was exceptional amongst Cro-Magnoids. On the other hand, it could also be representative of a gradual **'neanderthalization'** of the craniofacial complex during adult life.

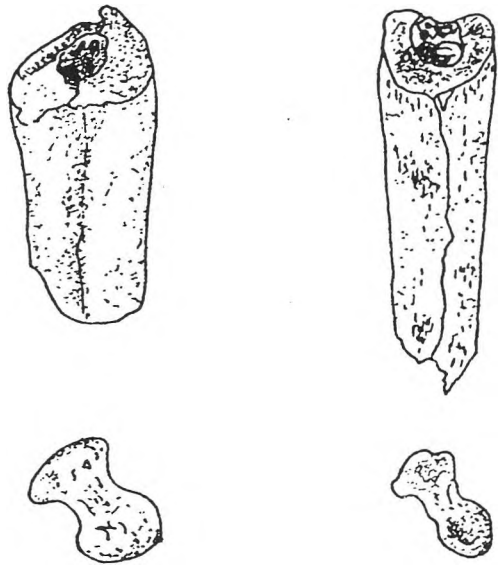

Figure 9. *The femoral (top) and phalangeal bones (bottom) of typical neanderthals from Krapina in Yugoslavia (left) and modern man (right) contrasted. The thicker Krapina bones may well evince greater longevity and periosteal apposition in the past.*

Even among the Near Eastern neanderthals there is an enormous diversity in 'robustness'. For instance, Stringer and Trinkaus[298] suggest that:

> *'... the Shanidar postcrania exhibit the great skeletal robusticity, ... found in other Neanderthal skeletons.'*

Yet the Kebara 2 skeleton from Israel is described by Arensburg[299] as having been:

> *'... so robust that the robust skeletons described by Trinkaus (1983) from Shanidar seem almost gracile by comparison.'*

Furthermore, Cuozzo[300] has argued that some archaic characteristics (for example, brow ridging, acute gonial angles of the jaw, elongated cranial vaults and flattened zygomatic arches) may indicate greater longevity in the past. Likewise, Custance[301] (in reference to a book by Dawson[302]) has drawn attention to the fact that:

> *'. . . many fossils of early man show the sutures of the skull to have virtually completely closed, a circumstance indicating extreme age.'*

For instance, Trinkaus[303] has noted that:

> *'. . . the coronal and sagittal sutures* (of Shanidar 5) *show an advanced state of closure. Endocranially they are completely obliterated, exocranially they can be discerned but are mostly fused.'*

The same may be said of many of the more extreme forms of European neanderthal — for example, the Old Man from La Chapelle-aux-Saints and the adult male from La Ferrassie.

(4) Downward Trends in Endocranial Expansion

It is interesting to note that cranial capacities of fossil humans from the Americas, South Africa, South-East and North-East Asia, and Australia are, as a rule, smaller than those of archaic neanderthal, proto-Cro-Magnoid and Cro-Magnoid populations from the Levant, Trans-Caucasia and Eastern and Western Europe. In fact, in most instances, they approximate the modern human mean (1,350cc). Those specimens that appear to be exceptions to this rule — for example, the **Boskop** skull from the South African Transvaal,[304] and the **Wadjak** skulls from Java[305] — are generally regarded as having been ancestral to either indigenous peoples of the region (as in the case of the Boskop remains, which are said to be morphologically similar to modern-day **Hottentot**

Bushmen)[306] or migrating populations from nearby, but more remote, regions of the earth (as in the case of the Wadjak skulls, which are thought to be **Australoid** in morphology).[307–309] Concerning the former, Romer has suggested that the Boskop skull

> '*... appears to represent an ancestor of this interesting race, although one with a larger body and larger brain than his physically degenerate descendants.*'[310]

The same observations may equally apply in the case of the Wadjak skulls and later fossil Aboriginal crania such as the Talgai and Cohuna skulls — both of which were still quite robust, **yet nevertheless smaller and closer in ECV to the modern-day mean.**[311] (For further discussion on Australian fossil human remains see Flood[312] and Stringer[313]).

The possibility of endocranial diminution away from the Near East may also be countenanced, in part, by the presence of archaic and somewhat 'neanderthal'-like cranial remains in China, including the Mapa and Dali skulls; the latter of which had an estimated endocranial volume approaching 1,050cc. Other more 'modern' fossil skulls from this region include the Zhoukoudian 'Upper Cave' 101 male (1,500cc), the Yinkou archaic mail cranium (1,390cc) and the 'modern' Jinnui Shan cranium (1,400cc).

(5) Dietary Factors and Craniofacial Morphology

Many of the 'primitive' characteristics of neanderthal skulls (for example, prominent brow ridges, cranial flattening and elongation, occipital 'bunning', sagittal 'keeling', prognathism of the jaws, etc.) have been causally linked to dietary and ageing factors.

Perhaps the most obvious characteristic of archaic fossil human skulls is the presence of prominent supraorbital tori (brow ridges) above the eye orbits. In archaic fossil human skulls brow ridges are **largely confined to adults.** Rudimentary brow ridges do occasionally occur in juvenile neanderthals, but seldom, if ever, in juvenile Cro-Magnoids. They do not, however, appear in all adult archaic humans, and are generally less apparent (or reduced) in adult females.

Supraorbital tori are deemed to be an adaptive response to greater pressures exerted upon the upper margins of the face and eye orbits in particular.[314,315] The ridges absorb the pressures exerted by the anterior teeth during the intensive tearing of food. They are **intrinsically linked to tougher, more fibrous diets or specialised cultural activities.**[316] Furthermore, were such a diet to be introduced during the early years of life, the skull — still being in a relatively plastic state — would tend to depress, **thereby creating a relatively low cranium and sloping forehead,** such as that observed in many adult neanderthal specimens.[317] In fact, cranial flattening is evidenced even in the skulls of some neanderthal children.[318]

Assuming that the diet of neanderthal man were composed largely of uncooked or poorly tenderised meat, then we would anticipate some modification of this craniofacial morphology in accordance with this 'tougher' diet. The evolved Acheulian Mousterian site of Salzgitter-Lebenstedt, for instance, has provided direct evidence of **a largely meat-based diet for the neanderthals;** the site yielding the remains of eighty reindeer, sixteen mammoths, six bison, four horses and two rhinoceroses, **but only three fish** (one pike, one perch and one unidentified).[319] The hides of some of these creatures would also have provided a vital source of clothing for neanderthals living a day-to-day existence during a cold and hostile post-Flood Ice Age.

It should also be recognized that prominent brow ridges are not confined to our fossil ancestors; they are **still to be observed in many cultures today,** including our own. Most males of European extraction have centrally located brow ridges, which disappear towards the centres of the upper margins of the eye orbits.[320] Amongst the Munda people of India even the women have quite prominent and divided brow ridges.[321] Prominent supraorbital tori are also a feature of many hunter-gatherer societies throughout the world (for example, the Australian Aborigines, South African Bushman).

Furthermore, Custance[322] has noted that Eskimo skulls occasionally feature a sagittal 'keel'—a feature also found in some neanderthal and Cro-Magnoid specimens (for example, Rhodesian Man and the female Cro-Magnon from Les Eyzies). The explanation of the keel in Eskimos is, according to Custance, a cultural one — one reflecting a stronger masticatory mechanism and anchorage reinforcement generally for diet and preparatory softening of animal hides for clothing (by chewing the skins).[323]

If our early (post-Flood) ancestors had been required to engage in intensive and repetitive chewing for substantially longer periods of time than is typical for modern lifespans, then we would anticipate a **more pronounced deformation of the skull** and **exaggerated development of the supraorbital tori,** such as that found in many archaic fossil humans.[324]

(6) Pathological Disorders

Many pathological disorders observed in living human populations — especially the elderly — are also to be found in archaic fossil human remains. For instance, we have already noted that Straus and Cave's examination of the skeletal remains of the 'Old Man' from La Chapelle-aux-Saints revealed an individual whose spinal column had been **severely distorted by arthritis.**[325] Haviland[326] noted that severe arthritis and malnutrition were common complaints in neanderthals, whilst Stewart[327] has observed **widely varying degrees of arthritis in a number of adult neanderthals from Shanidar.** Concerning these individuals it is worthwhile noting that Shanidar 2 (a male purported to be between 20 and 40 years of age) possessed a substantially higher

cranial vault than purportedly older males such as Shanidar 1 and 5 (thought to be between 30 and 50 years).[328] This could well indicate that the former was in the **early stages of 'neanderthalising'** and was, **therefore, substantially younger than Shanidar 1 and 5.**

The 'Old Man' from La Chapelle had also **lost most of his teeth prior to death and his jaw had undergone subsequent alveolar resorption.[329]** Stringer and Trinkaus have also noted the same characteristic in the preserved incisor to premolar region of the Shanidar 5 maxillary[330,331] — regarded by Trinkaus as probably the oldest of the Shanidar neanderthals.[332]

The 'Old Man' and the Shanidar 1 male may have suffered a measure of hearing loss as a result of a build-up of **exostoses** in their **external auditory meati.[333]** Exostoses are regarded as a **characteristic of advanced (old) age.[334,335]** They have also been observed on the ribs and ulna of Shanidar 5.[336]

Another possible indicator of advanced age in many of the adult neanderthal specimens is the presence of **excessive tooth wear.** Following his examination of the La Chapelle-aux-Saints and La Ferrassie males Cuozzo concluded that these neanderthals exhibited prolonged and heavy use of their teeth — **more than is generally observed in humans today.** Furthermore, he detected evidence of consequent **mesial migration** of the teeth.[337]

The degree of wear is, however, **extremely variable** in single neanderthal populations. For instance, whilst Shanidar 5 is noted for extreme dental wear and alveolar resorption[338] and Shanidar 1 an unusual pattern of wear (extreme enough to have led to pulp exposure and apical abscesses in some of the upper anterior teeth),[339] Shanidar 2 has very little tooth wear.[340] **Such variations may well infer considerable age differences in the sample.**

(7) Decreasing Robusticity of Teeth and Jaws

The process of (human) cranial diminution and gracilization during the Late Pleistocene and Early Holocene epochs was accompanied by a decrease in jaw size.[341] Perhaps the most obvious evidence for a reduction in jaw size is the relatively recent phenomenon of overcrowding of teeth in the upper and lower jaws of humans and the painful malady of impacted permanent third molars (or 'wisdom teeth'). Lambert described overcrowding as '*. . . a legacy of jaw shrinkage . . .* '[342]

However, there has also been a parallel reduction in the robusticity of teeth along with a decrease in jaw size — although at an apparently slower rate. Quoting from Lambert again:

> *'The powerful chinless jaw*(s of neanderthals) *held larger front teeth than ours, and molars tended to contain big pulp cavities.*'[343]

Gowlett has noted that:

> *'The Neanderthals were characterized by heavy brow ridges, long low skulls, and large teeth, but so were other early men, such as those from Ngaloba and Broken Hill.*'[344]

Likewise, Delporte has also noted that:

> *'The teeth of other individuals found at Cro-Magnon, which are similar to the teeth of other fossil humans classed as Cro-Magnon, show that the dentition of Cro-Magnon man was nearly identical to that of modern man. Most of the teeth, however, especially the last molars, are distinctly larger than those of most modern peoples.*'[345]

Metrical data compiled by Hublin and Tillier[346] have demonstrated that **macrodonty is greatest in the Middle Eastern proto-Cro-Magnoids and the early 'neanderthaloid' populations from Jebel Irhoud (Morocco) and Krapina.** On the other hand, the Near Eastern neanderthals appear to have possessed smaller teeth than their European counterparts who in turn appear to have been of slightly greater macrodonty than the Cro-Magnoids of the French Upper Palaeolithic and the last 'neanderthals' from Predmost.[347] Such data would **appear to give added credence to the notion of an early appearance of** *Homo sapiens sapiens* **in the Levant.** Furthermore, the data would appear to give superficial support to the proposition that neanderthals **bridged in time the period between the Near Eastern proto-Cro-Magnoids and the later 'neanderthaloid' and Cro-magnoid populations from Eastern and Western Europe.**

(8) Precocious Brain Growth

A number of authorities have alluded to the possibility of precocious (or **accelerated)** brain growth in neanderthal infants. For instance, Ivanhoe[348] has noted that the 2½ year old infant from Pech de l'Aze possessed a **very substantial cranial capacity of 1,200cc.** (Average ECVs for modern-day infants of comparable age would range between 950 and 1,000cc). The anticipated adult cranial capacity for this particular infant would approximate 1,580cc — well within the range for adult male neanderthals.

Ivanhoe has attributed the enlarged skull of the Pech infant (and other neanderthal children) to a deficiency of endogenous and exogenous vitamin D. He also notes that the resultant disease, rickets, was **more severe in specimens from higher latitudes.[349]**

More recently, however, Dean, Stringer and Bromage have examined another neanderthal infant — the Gibraltar II (or Devil's Tower) child — and concluded that this individual **also exhibited a remarkable degree of precocious brain growth.[350]** The same authorities have stated that this three year old child's frontal and parietal dimensions **approximated those of older neanderthal children,** such as the six to eight year old Engis 2 child (estimated ECV of 1,392cc) and the more mature male child from Teshik Tash (estimated ECV between 1,425 and 1,531 cc).[351] An anticipated adult cranial capacity for the Gibraltar child of 1,750cc does not appear untoward if the assessed age of the child is accurate. **Yet this child**

derived from a Mediterranean site of relatively low latitude. However, the same writers have also noted[352] that other authorities, including Anne-Marie Tillier,[353] have argued that the Gibraltar child's remains **may have actually represented the remains of two individuals.** It is possible that the frontal and parietal bones belonged to a child of at least five years, with the remaining material (including a temporal bone, mandible and partial maxilla) to a younger child. (If the larger cranial bones did, indeed, derive from a five year old, the anticipated adult cranial capacity would fall to a value approximating 1,550cc.)

What, then, are we to make of the notion of precocious brain growth? Are there any other possible explanations for this intriguing phenomenon? Is it possible that modern day standards of craniofacial development cannot be applied to the children of our archaic ancestors?[354,355]

Bower,[356] in summarizing the work of Smith and Green, has argued that the phenomenon of precocious brain growth may be the by-product of, or an adaption to, prevailing Ice Age conditions. However, this fails to answer why the phenomenon is also to be observed in low latitude (Mediterranean) neanderthal children such as the Gibraltar child.[357]

Furthermore, not all neanderthal children evinced accelerated brain growth. For instance, the estimated ECV for the 6½ year old child from La Quina (between 1,166 and 1,250cc) — is **not altogether different to that of average adult females today.[358]**

Could such differences indicate that craniofacial development proceeded at differing rates in different neanderthal children; that is to say, maturation rates varied with the passage of time? Furthermore, given the degree of variability in single populations of archaic fossil humans, is it not also possible that such changes took place over a relatively short timeframe (say, hundreds, rather than tens of thousands, of years)?

The notion of **retarded facial and jaw growth rates** is one which has been advocated recently by Cuozzo.[359] For instance, he has noted the apparent 'mis-match' in jaw and cranial development in neanderthal children. On the other hand, he has also drawn attention to the fact that the teeth of the Gibraltar **II** infant are **well worn;[360]** possibly suggesting an age more in keeping with the stage of cranial development. This would seem to indicate that infantile and juvenile neanderthal age assessments based on modern day standards of tooth eruption may be **too low.**

A corollary of this observation is that the timing of the **eruption of deciduous and permanent teeth in neanderthals was 'stretched-out' over a much longer timeframe than is presently the case.[361,362]** Another possible corollary is that **skeletal and sexual maturation occurred much later in neanderthals than it does in humans today.[363]** Such observations are consistent with the notion of greater longevity in the past.[364]

Many questions still remain to be answered. For instance, why did some high latitude and late Pleistocene archaic humans 'neanderthalize' and others not? Secondly, what happened to the neanderthals? Was their disappearance linked, in part, to a rapid abatement of the Würm Ice Age? Did they disappear as a consequence of dramatic dietary shifts or, perhaps even, declining longevity?

To answer these questions I believe it is necessary to develop a new model for human origins; one which will readily answer all the preceding questions and embrace all the aforementioned possibilities.

A CREATIONIST INTERPRETATION OF ARCHAIC FOSSIL HUMAN REMAINS

The 'Pond Ripple' Effect and Post-Flood Human Migration

In 1986 Osgood[365] introduced a new explanatory model for the interpretation of 'Stone Age' cultures — the so-called **'Pond Ripple' Effect.** The model was summarized by Osgood as follows:

> *'In the biblical model the centre and place of catastrophe is Sumer, southern Mesopotamia. When a population is in crisis and is thrust outwards into a new geographical location, their first business is to survive. They will survive by every means possible at their disposal, and cultural niceties will be put aside until the question of survival has been completed and sufficient time and leisure was available for them. So a population of people driven from the centre, namely Mesopotamia, as a result of some catastrophe, which included in the biblical model the confusion of tongues and hostilities engendered following this, will cause people to migrate in different directions in order to find a new place to live, free from dispute and trouble. They will use whatever is available, whether it is stone, wood, grass or mud. They will hunt. If they have more time they will plant crops and gather various types of food primarily in order to survive.'*

Osgood also noted that there is **no evidence of a Stone Age period preceding the earliest cultural period in Sumer (the Chalcolithic).[366] Yet well developed Stone Age cultures are to be found immediately to the north, east and west of southern Mesopotamia.[367]** He concluded that the so-called Stone Age embraced the period between the Flood and Abraham's entry into Canaan; a period of approximately 430 years according to the Massoretic text of the Old Testament. It was during this period that the confusion of tongues took place at Babel. Therefore, it comes as no surprise that proto Indo-European languages are being traced to the regions of Mesopotamia, Trans-Caucasia and the Levant.[368,369]

Declining Longevity and the Impact of a Post-Flood Ice Age

The genealogies of Genesis 5 and 11 indicate that

human longevity plummeted from in excess of 900 years before the Flood to approximately 70 years during the lifetime of King David — an intervening period of approximately 1,000 years if the Massoretic text is followed (the Septuagint stretches this period to 2,000 years).[370]

Now if the confusion of tongues took place towards the end of the first century after the Flood, then the only individuals alive at the time and exhibiting great longevity would have been those who survived the Flood — Noah, his wife and three sons, and his three daughters-in-law. Accordingly, the entire human population alive at the time of the confusion of tongues — with the exception of Noah and his immediate family — had to be **less than 100 years old when this post-Flood judgement took place.** Nevertheless, the *potential* **longevity** of the generations born between the time of the Flood and Babel would still have been considerable; anywhere between 200 and 500 years, given the lifespans of Arpachshad through to Eber (Genesis 11:12–17). Peleg — possibly the first Semitic patriarch to die after the Flood — was only 239 years old at the time of his death. Yet this took place a mere **12 years before the birth of Abraham.**

At the other end of the Stone Age we note that Abraham died at the age of 175 years (Genesis 25:7), whilst his two sons, Ishmael and Isaac, lived to 137 (Genesis 25:17) and 180 years (Genesis 35:28) respectively. These lifespans suggest that longevity potential was **still more than double that of the present day average some 300 years after the confusion of tongues.**

In the intervening three centuries the so-called 'dispersion from the homestead'[371] took place, during which time a rapid and radiating dispersion from the region of lower Mesopotamia (biblical 'Shinar') transpired (see Figure 10). The Levant and Trans-Caucasia, regions within 1,500 kilometres of Babel, were probably occupied within a decade or so of the judgement at Babel. The occupation of Eastern Europe, North-East Africa and the Indian sub-continent may have taken several more decades, whilst that of Western Europe and Britain, Central Africa and South-East Asia perhaps a century. Several centuries would have elapsed before humans reached North America and Australia, and perhaps a millennium before entry to South America, the latter being in excess of 20,000 kilometres from Babel. Migratory rates for the above would vary between 0.5 km/day in the case of the Levant and Trans-Caucasia to 0.1 km/day for South America. Such migrations would have been aided by the existence of intercontinental land-bridges during the post-Flood Ice Age.

Now according to the Massoretic text of Genesis 11 there would have been five successive generations alive at the time of the confusion of tongues (less than 100 years

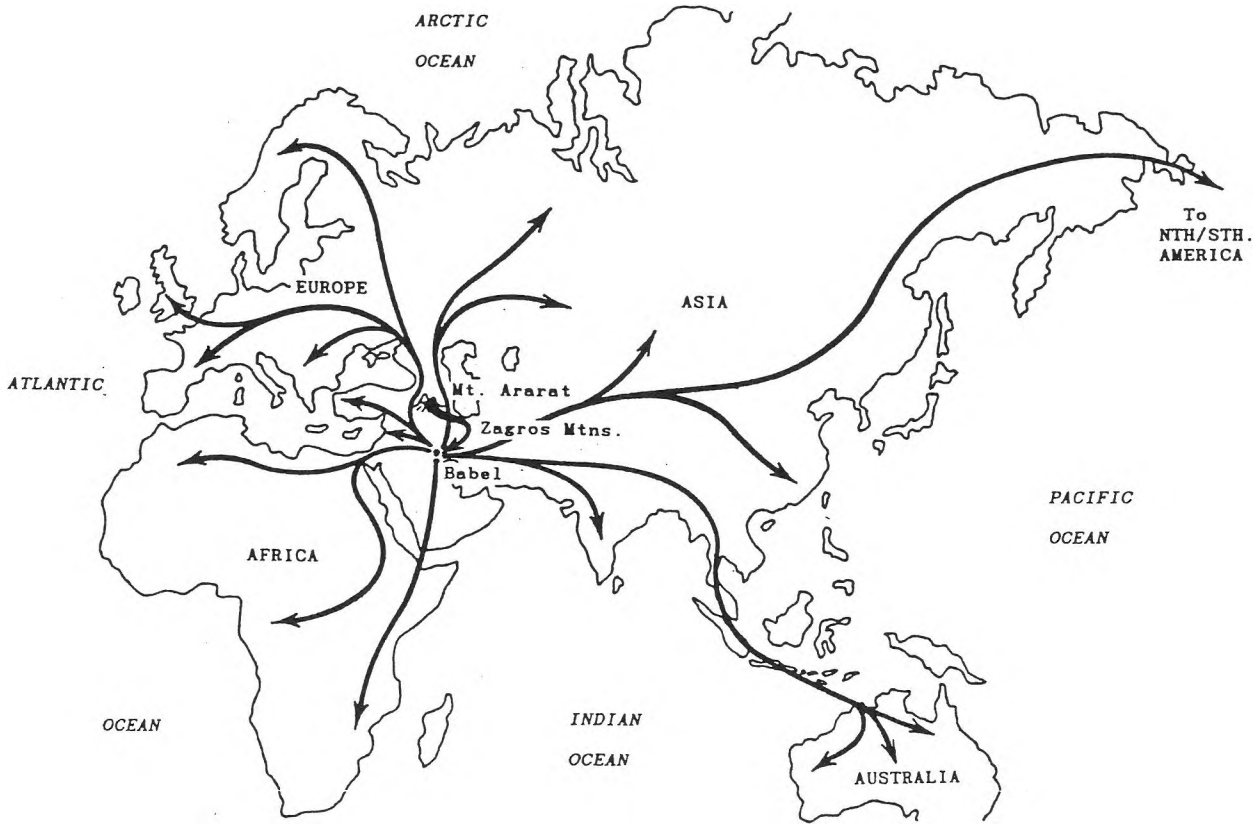

Figure 10. *Post-Flood migration and dispersion from Babel, in Shinar (southern Mesopotamia).*

after the Flood). This number increased to nine generations some 200 years after the Flood due to the remarkable longevity of post-diluvial patriarchs. As such, the range in ages for a typical population at this time would have **varied between zero and 200 years.** A further hundred years down the track would see little change in the number of living generations. (This would bring us to the approximate time of glacial maximum; see Table 2.) However, the range in ages **would now stretch to 300 years.**[372]

During the thousand years following glacial maximum the number of living generations would steadily diminish towards present-day values in the wake of declining longevity.

The period between Babel and glacial maximum would have witnessed a steady increase in the size of proto-national tribes. It is during this same period that we would anticipate finding the first hard evidence of extended longevity; that is to say, longevity beyond the present-day norm of 70 to 80 years. This extension of longevity would evidence itself in a steadily increasing diversity of morphological forms at some of the earlier hominid sites in the Levant and Eastern Europe, for example, the Middle Palaeolithic sites at Qafzeh,[373–375] Skuhl[376–378] and Krapina.[379,380]

Of course, not all individuals would have lived out their full life expectancy. In a rather hostile post-dispersion world, in which proto-national tribes attempted to secure regional dominance,[381] it is likely that many individuals would have died quite young.[382] Others would have died prematurely as a result of natural catastrophes (for example, cave roof collapses).[383] Furthermore, many of these tribes would have encountered steadily worsening climatic conditions as the (post-Flood) Ice Age intensified. Food sources would have been scarce at best; especially at higher latitudes. Malnutrition[384] and pathological disorders, such as rickets[385] and dental abnormalities,[386,387] would have been commonplace around the time of glacial maximum. The first hints of the presence of such diseases would appear during infancy or childhood, with the pathologies becoming 'full-blown' during adulthood.

It is significant that ***more 'modern'*** is, less 'neanderthaloid') forms of fossil humans are found in deposits both before and after the most severe phase of the Ice Age; the Qafzeh, Skuhl and Krapina hominids **before glacial maximum**[388] was reached, and Cro-Magnoids such as those from Krapina (again),[389] Predmost, Mladec, Brno, Les Eyzies, Grimaldi and Chancelade in Europe and Northern (Singa) and West Africa (Iwo Eleru) in Africa immediately prior to the commencement of the milder Holocene epoch (see Table 2).

On the other hand, 'classical' neanderthals appear to have been largely confined to the period approximating the most severe phase of the Ice Age. We have noted previously the existence of a cline of 'neanderthal' forms, with the most severe forms from Northern Europe and generally less severe examples from Southern Europe, the Middle East, Northern (Djebel Irhoud), Eastern (Bodo and Omo 2 skulls) and possibly Central Africa (the Broken Hill skull). **Yet even amongst the more extreme European and Near Eastern neanderthal populations there were a significant number of 'modern' individuals — generally infants or juveniles** (for example, La Ferrassie 4 and 5, Le Hortus I/I, La Quina 18, the Pech de l'Aze and Staroselje infants, the Shanidar VII and IX infants, the Teshik-Tash boy and the Fontechevade 1 juvenile).

The fact that neanderthals **started out life as 'modern' infants** suggests that the adult form had nothing to do with evolutionary change but, rather, **morphological changes and pathological disorders acquired throughout the course of life.** A rapid decline in (potential) longevity and duration of skeletal maturation would tend to exaggerate the diversity in contemporaneous populations for some time after the Flood.

Table 2 also depicts the sudden explosion in human population centres in both the Near East and Europe immediately following glacial maximum (between 10,000 and 50,000 years ago according to the evolutionary timescale, but within 300 to 400 years of the Flood according to a 'tight' biblical chronology). It is not without significance that the earliest archaic human remains from the Middle East and Eastern Europe precede this explosion.

CONCLUSIONS

What happened to neanderthal and proto Cro-Magnon man? Did they become extinct, as many transformists suggest? Or is it just possible that they 'disappeared' when human longevity plummeted during the post-Flood/post-Babel epoch (Genesis 11:10–32 cf. 5:3–32; Psalm 90:9)?

In the above paper I have attempted to place our post-Flood fossil ancestors into a biblical framework of human history. A model has been devised — one embracing a temporary deferral of post-Flood human settlement of the earth's continents, declining human longevity and skeletal diminution ('gracilisation'), a greater susceptibility to pathological disorders (either as a result of old age, climatic and/or cultural factors or dietary deficiencies), and at least one major post-Flood catastrophe for mankind (that of the confusion of tongues at Babel).

The model does not preclude the possibility that archaic, neanderthal and Cro-Magnon forms of *Homo sapiens* were largely contemporaneous, and might therefore be found in the same deposits as one another, nor does it preclude the possibility that in some stratigraphic successions one might find proto Cro-Magnon remains in deeper deposits than their supposed evolutionary ancestors, the neanderthals. The extreme morphological variability observed in some populations of fossilised humans

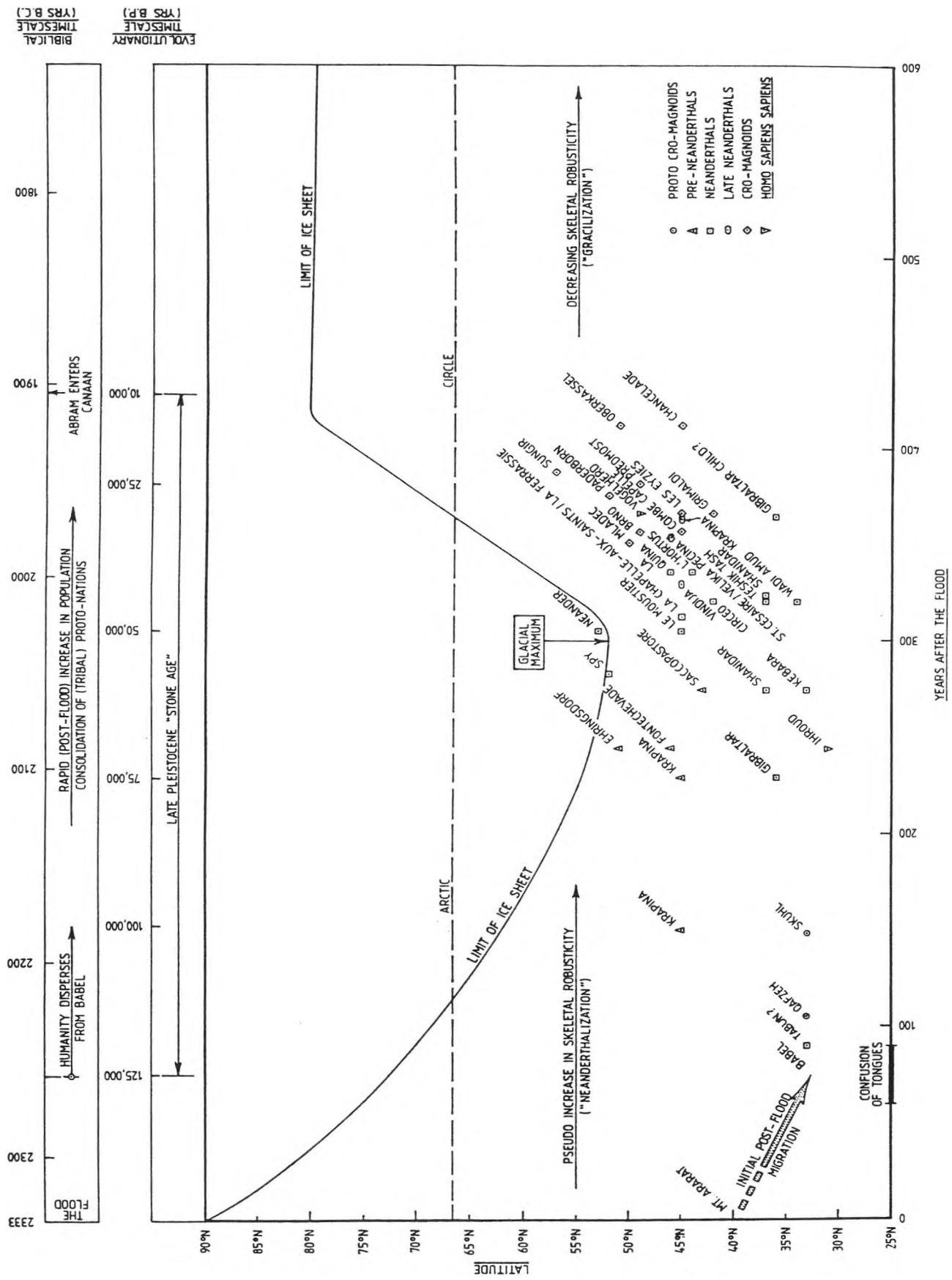

Table 2. *A possible creationist reappraisal of archaic fossil human remains.*

(for example, those remains at Skuhl, Qafzeh, Krapina, Fontechevade, La Quina, La Ferrassie, Vindija, Saccopastore, Predmost, Les Eyzies, Jebel Irhoud, Omo and several other sites) may reflect, in part, **considerable variation in the ages of the individual members of each group; such variation being consistent with the biblical record of the early post-Flood history of mankind.**

The model recognises the validity of **an earlier appearance of human ancestors in the Middle East and Levant over those from more remote regions of the earth.** The biblical record of post-Flood human history predicts such **a radiation from the region of Mesopotamia.** However, whilst recognizing the validity of the ordered appearance of anatomically 'modern' and degenerate or aged forms of fossil men in the Middle East/Levant over those from Eastern and Western Europe, Northern and Southern Africa and South-East Asia/Australia, it would not necessarily hold to the radiometric dates ascribed to these remains.

The fact that physically larger and radiometrically older 'classical'-type neanderthals are also to be found in the Levant and the Middle East negates, in part, the assertion that the morphological characteristics of neanderthals were primarily an adaption to harsh Ice Age climatic conditions. Furthermore, robust populations of earth *Homo sapiens sapiens* are also to be found in the Levant, suggesting that there may be a common causal relationship between many of the assumed-to-be 'primitive' characteristics observed in many neanderthals and so-called proto-Cro-Magnons from the Near East, and their younger (more recent descendants in Europe, Africa and Asia.

In conclusion, I would submit that archaic fossil human remains, as described above, are most definitely post-Flood, and probably post-date the confusion of tongues at Babel.

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   In this paper the author argued that the submergence of continental land-bridges (following a short, post-Flood Ice Age) took place during the lifetime of the patriarch Peleg (Genesis 10:25 and Genesis 11:18,19). The stated duration for the Ice Age was based on the Massoretic text. Adoption of the Septuagint would stretch the duration of the Ice Age to between 530 and 870 years.
5. In a recent Technical Monograph entitled An Ice Age Caused by the Genesis Flood (Institute for Creation Research, El Cajon, California, 1990) Michael J. Oard outlined a model for a single, post-Flood Ice Age. According to Oard the best estimate for the duration of the Ice Age was 700 years, with glacial maximum occurring about 500 years after the Flood (p. 97). This estimate assumed that the initial post-Flood average ocean temperature was 30°C. However, were this figure to be lowered by 5° or 10°C the estimated time to reach glacial maximum would be reduced to 370 and 245 years respectively (pp. 209, 210) — within the lifespan of the post-Flood patriarch, Peleg.
6. Arduini, P. and Teruzzi, G., 1982. Prehistoric Atlas, Macdonald & Co. (Publishers) Ltd, (1985 Edition), pp. 62–63.
7. Examples include orang-utans, gibbons, hyaenas, elephants, hippopotami, rhinoceri, lions (including the giant 'cave lion', *Felis leo spelaea*), and possibly gorillas.
8. Arduini and Teruzzi (Ref. 6, p. 72) even list elephants, hippopotami and felids amongst the faunal remains found in Quaternary deposits in London.
9. Lambert, D., 1985. The Cambridge Field Guide to Prehistoric Life, Cambridge University Press, pp. 222–225.
10. Gribbin and Cherfas, Ref. 2, p. 190.
    The evolutionist contends that the expansion of polar icecaps and the subsequent development of massive continental icesheets in the Northern Hemisphere commenced during the Oligocene epoch and continued through to the Late Pleistocene. If the biblical account of human history is adopted as a framework for interpreting geological history we would anticipate an Ice Age of relatively short duration (perhaps as brief as a single century), commencing shortly after the biblical Flood.
11. Haviland, W. A., 1979. Human Evolution and Prehistory, Holt Rinehart & Winston, New York, pp. 124–125.
12. Zihlman, A. L., 1982. The Evolution Coloring Book, Barnes & Noble Books, New York, Part I, Plate 4 and text.
13. Zihlman, Ref. 12, (text).
14. Andrews, P. and Tekkaya, I., 1980. A revision of the Turkish Miocene hominoid *Sivapithecus meteai.* Palaeontology, 23(1):85–95.
15. *D. fontani* and *D. laietanus.*
    Nickels, M. K., Hunter, D. E. and Whitten, P., 1979. The Study of Physical Anthropology and Archaeology, Harper & Row, New York, p. 180.
16. de Bonis, L., Bouvrain, G., Geraads, D. and Koufos, G., 1990. New hominid skull material from the late Miocene of Macedonia in Northern Greece. Nature, 345:712–714.
17. Andrews, P., 1990. Lining up the ancestors. Nature, 345:664–665.
18. Lewin, R., 1989. Humans may have come from Greece, not Africa. New Scientist, 125(1701):15.
19. de Bonis *el al.*, Ref. 16, p. 712.
    They concede that *'Miocene hominoid material is very scarce'.* Yet there is an ever increasing abundance of such material being recovered from deposits of Middle to Late Miocene age in Anatolia and adjacent Macedonia, including the possible remains of ancestors of the living pongids and australopithecines.
20. Andrews and Tekkaya, Ref. 14, p. 85.
    They note that deposits below those in which remains of *Sivapithecus meteai* (an ancestral form of the living orang-utan) have been recovered in Turkey *'... only sparsely fossiliferous.'*
21. The evolutionist cites this as evidence for a late emergence of modern man, *Homo sapiens.* The creationist, on the other hand, would argue that mankind was concentrated elsewhere at the time (Mesopotamia).
22. Many Bible expositors have equated the post-Babel dispersion of hu-

manity (Genesis 11:8) with the events described in Genesis 10:25 (Peleg's 'Division').

23. Beasley, Ref. 4, p. 20, has argued that the latter events either refer to the submergence of intercontinental land bridges at the conclusion of a (post-Flood) Ice Age or continental rifting (drifting); in both cases division by water being inferred. If this interpretation is correct, then the confusion of tongues (and the commencement of the 'Stone Age') would have had to have taken place prior to the so-called 'Division'; that is to say, prior to the lifetime of Peleg (102 to 341 years after the Flood, or between 2203 and 1964BC according to the Massoretic text).

24. Strickling, J. E., 1980. The Tower of Babel. Creation Research Society Quarterly, 16(4):222. Strickling has argued from an extra-biblical source that construction of the tower of Babel took place during the lifetime of Abraham. According to this source the confusion of tongues took place in Abraham's 48th year (1904BC) — thus post-dating even Peleg's 'Division'.
However, there appear to be several indicators within the text of Genesis 10 pointing to an earlier dating. Firstly, the dispersion from Babel would have had to have preceded Abram's arrival in Egypt (c. 1877BC). Clearly, the intervening 27 years between the 'confusion' and Abram's arrival in Egypt would be insufficient time to allow for the establishment of Egypt as a nation in its own right. Secondly, Peleg's father's name — Eber — traces its origin to the Hebrew word *'abar,* which implies any form of transition, alteration or even alienation. The purpose of the confusion of tongues was certainly to alienate the post-Flood descendants (families) of the three sons of Noah from one another, thereby forcing them to scatter over the face of the earth (Genesis 11:7–8). Thirdly, the names of many of the pre- and post-Flood patriarchs may have been prophetically inspired. If this were true in Eber's case we might readily deduce that the confusion of tongues would have taken place during the early life of Eber and prior to the birth of Peleg (between 2267 and 2237BC). Fourthly, the founder of Babel and many other Mesopotamian city-states (Genesis 10:10) was Nimrod — the great grandson of Noah (Genesis 10:6–8). The 'beginning of his kingdom' is linked intrinsically to Babel, which suggests that the city had to be founded during the early years of the life of its founder — a representative of the second generation to be bom after the Flood. Finally, we are told that the establishment of various proto-nations is associated with the second and third generation post-Flood descendants of Japheth and Ham (Genesis 10:5 and 18).

25. The geographic location of 'Shinar' is associated with the kingdom of Nimrod (Genesis 10:10); that is, south-eastern Mesopotamia.

26. Lloyd, S., 1984. The Archaeology of Mesopotamia, (Revised Edition), Thames & Hudson Ltd, London, pp. 22–24.
A large number of 'Stone Age' cultures are known from these regions. They are generally analogous to Mousterian through to Magdelanian cultures of Palaeolithic Western Europe, and almost certainly post-date the catastrophic events at Babel.

27. Beasley, Ref. 4, pp. 9–11.

28. Whitcomb, J. C. and Morris, H. M., 1961. The Genesis Flood, The Presbyterian and Reformed Publishing Company, Philadelphia, Pennsylvania, pp. 175–176.

29. Bowden, M., 1977. Ape-Men: Fact or Fallacy?, Sovereign Publications, Bromley, Kent, pp. 173–179 (Appendix VI).
Bowden's argument is based on the discovery of a fully human skeleton at Olduvai Gorge (Tanzania). The skeleton, accessioned Oldoway Hominid 1, is variously dated from Middle Pleistocene (if, indeed, it derived from upper Bed II deposits, as claimed by Bowden) to Late Pleistocene (if from Bed V) — with an upper limit of 1 million and a lower limit of 16,900 years BP.

30. Taylor, I. T., 1987. In the Minds of Men: Darwin and the New World Order, (2nd Edition), TFE Publishing, Toronto, Canada, p. 244.
That OH1 belonged to the species *Homo sapiens* is indisputable. A photograph of 'Oldoway Man', as Reck's discovery came to be known as, is reproduced here.

31. Frair, W., 1969. The human skull composed of coal. Creation Research Society Quarterly, 5(4):133–135.

32. Protsch, R., 1974. Age and position of Olduvai hominid I. Journal of Human Evolution, 3(5):379–385.

33. Wolpoff, M. H. and Thome, A., 1991. The case against Eve. New Scientist, 130(1774):37.

34. The neanderthals take their name from the Neander River Valley, near Düsseldorf (West Germany) — the river valley in which the type of the species/subspecies was recovered in 1856. The word 'neanderthal' is the common usage form of the original and specifically correct German term 'neandertal' (the German word 'tal' = valley in English).

35. Washburn, S. L., 1978. The evolution of man. Scientific American, 239(3): 148–149.

36. Lambert, D., 1987. The Cambridge Guide to Prehistoric Man, Cambridge University Press, Cambridge, p. 139.

37. Pfeiffer, J. E., 1969. The Emergence of Man, Cardinal Ed., London, 1973, p. 203.

38. Lambert, Ref. 36, p. 138.

39. Haviland, Ref. 11, p. 180.

40. Leakey, R. E., 1981. The Making of Mankind, Michael Joseph Ltd, London, pp. 147–148.

41. Trinkaus, E. and Howells, W. F., 1979. The Neanderthals. Scientific American, 241(6):94.

42. Trinkaus and Howells, Ref. 41,p. 96.

43. Leakey, Ref. 40, p. 149.

44. Gowlett, Ref. 3, p. 102.
According to Gowlett the coldest phase of the Late Pleistocene extended between 60,000 and 20,000 years BP. Neanderthal remains from Western Europe fall largely within this timeframe. However, those from the Levant and Middle East (for example, the Tabun, Shanidar and Kebara remains) are now dated between 120,000 and 60,000 years BP; suggesting that the neanderthals migrated westward from the Middle East into the European continent.

45. Lambert, Ref. 36, p. 136.

46. Arduini and Teruzzi, Ref. 6, p. 74.

47. Haviland, Ref. 11, p. 180.

48. Diamond, J., 1989. Dawn of the human race: The great leap forward. Discover, 10(5):55–60.

49. Lambert, Ref. 36, pp. 140–143.

50. Zihlman, Ref. 12, Part V, Plate 108.

51. Lambert, Ref. 36, p. 138.

52. Wolpoff, M. H., 1980. Paleoanthropology, Alfred A. Knopfe, New York, p. 286.

53. Trinkaus and Howells, Ref. 41, pp. 97–98.

54. Lambert, Ref. 36, p. 138.

55. Gowlett, Ref. 3, p. 101.

56. Lambert, Ref. 36, p. 135.
Many of the characteristics that distinguish the neanderthal craniofacial complex from those of *Homo sapiens sapiens* are also present in many archaic *Homo sapiens* from the African continent (for example, Rhodesian Man, the Saldanha skull from South Africa and, to a somewhat lesser extent, the Ngaloba skull of Tanzania and the Florisbad skull from South Africa.

57. Lambert, Ref. 36, p.142.
Such cranial remains are quite similar in morphology to those of neanderthals from Morocco (Djebel Irhoud), which, according to Lambert, possessed skulls which were *'... long and low with large brow ridges but a modern face and slight "bun".'* It is the present writer's view that these archaic *Homo sapiens* are probably African variants of neanderthals, and may, in fact, be very aged humans.

58. Wolpoff, Ref. 52, pp. 272–277 (for Krapina specimens) and pp. 302–303 (for Vindija) specimens.

59. Wolpoff, Ref. 52, p.303, Figure 12.3.

60. Wolpoff, Ref. 52, p.267.

61. Wolpoff, Ref. 52, p.267.

62. Wolpoff, Ref. 52, p.273.

63. Wolpoff, Ref. 52, p.276.

64. Wolpoff, Ref. 52, p.276.

65. Wolpoff, Ref. 52, p.273.

66. Wolpoff, Ref. 52, pp. 273, 277.

67. Lambert, Ref. 36, p. 135.
The sagittal keel is quite prominent in the Kabwe skull (Rhodesian or Broken Hill Man), as it is in many modern-day eskimos. Whilst this particular specimen is generally considered to be an archaic form of *Homo sapiens* (that is to say, it purportedly pre-dates both neanderthal

and modern man), its morphology is an interesting mix of neanderthal and modern sapient characteristics. The skull features very heavy brow ridges and a sloping forehead; yet it also features steep 'modern' sides.

68. Waechter, J., 1977. Prehistoric Man, (Exeter Books Ed., 1986), pp. 56–57.
Post-cranial remains, including leg and arm bones, are also quite 'modern' in appearance.
69. Haviland, Ref. 11, p. 173.
70. Sergi, S., 1944. Craniometria e craniografia del primo Paleantropo di Saccopastore, Richerche di Morfologia, XX-XXI.
71. Cousins, F., 1966. Fossil Man, Evolution Protest Movement (1971 Revised Ed.), p. 94.
72. Wolpoff, Ref. 52, p. 275, Figure 11.7.
Two skulls were recovered at Saccopastore. The first, and smaller of the two, was quite modern in craniofacial morphology.
73. The Pictorial Encyclopaedia of the Evolution of Man, Hamlyn, London (1975), p. 93.
The second skull, Saccopastore II, possessed a slightly larger endocranial capacity (1,300cc) and was decidedly more 'robust' in physical appearance.
74. Wolpoff, Ref. 52, p. 279, Figure 11.8.
75. Wolpoff, Ref. 52, p. 289.
76. Wolpoff, Ref. 52, p. 274, Figure 11.7, text.
77. Lambert, Ref. 36, p. 143.
78. Lambert, Ref. 36, p. 138.
79. Wolpoff, Ref. 52, pp. 272–273.
80. Thoma, A., 1975. Were the Spy fossils evolutionary intermediates between classic neandertal and modern man? Journal of Human Evolution, 4:406.
81. Zihlman, Ref. 12, Part V, Plate 108 (text).
82. Cuozzo, J. W., 1987. Early orthodontic intervention: A view from prehistory. The Journal of the New Jersey Dental Association, 58(4):36–37.
83. Trinkaus and Howells, Ref. 41, p. 99.
84. Trinkaus and Howells, Ref. 41, p. 99.
85. Heim, J.-L., 1974. Les hommes fossiles de La Ferrassie (Dordogne) et le problems de la definition des Neandertaliens classiques. L'Anthropologie (Paris), 78(2):336–337.
86. Israel, H., 1973. Age factor and pattern of change in craniofacial structures. American Journal of Physical Anthropology, 39:111, 118–119, 122.
87. Cuozzo, J.W., 1991. Asymmetric adult growth and mechanical advantage in the etiology of the myofacial pain dysfunction syndrome: A case report. The Journal of the New Jersey Dental Association, 62(4):25.
88. Cuozzo, Ref. 87, p. 25.
Prior to Israel's 1973 paper it was generally believed that frontal sinus expansion peaked shortly after puberty. Israel's studies demonstrated otherwise. Referring to a paper by Behrents, Cuozzo has stated that the frontal sinuses enlarge dramatically with age and that they move forward and apart — increasing the protrusion of the supraorbital ridges. He attributes pneumatisation of the tori and the enlargement of the frontal sinuses to repetitive chewing over a substantially longer timeframe than is the case today.
89. Heim, Ref. 85, p. 337.
90. Tillier, A.-M., 1977. La pneumatisation du massif cranio-facial chez le hommes actuels et fossiles. Bulletins et Mémoires de la Société d'Anthropologie de Paris, 4(2):312–313 (Table IX).
The antero-posterior diameter of frontal sinuses of most (but certainly not all) neanderthals lie well above the mean or even beyond the normal range for modern man.
91. Arensburg, B., Tillier, A.-M., Vandermeersch, B., Duday, H., Schepartz, L.A. and Rak, Y., 1989. A Middle Palaeolithic human hyoid bone. Nature, 338:756–758.
92. Marshall, J. C., 1989. The descent of the larynx? Nature, 338:702–703.
93. Bunney, S., 1989. Neanderthals weren't so dumb after all. New Scientist, 123(1671):15.
94. Diamond, J., 1990. How to speak neanderthal. Discover, 11(1):52.
95. Lieberman, P., Crelin, E.S. and Klatt, D.H., 1972. American Anthropologist, 74:287–307.
96. Shackley, M., 1983. WILDMEN — Yeti, Sasquatch and the Neanderthal Enigma, Thames and Hudson, London, pp. 157–158.
97. Arensburg *et al*., Ref.91, pp. 758–759.
98. Arensburg *et al*., Ref. 91, p. 758 (Abstract).
99. Arensburg *et al*., Ref. 91, p. 759 (Table 1).
100. Arensburg *et al*., Ref. 91, p. 759.
101. Shackley, Ref. 96, p. 145.
Shackley notes that:
'The short, stocky Neanderthal body is also often viewed as a climatic adaption ... But some stocky Neanderthals lived in tropical and semi-tropical conditions, and in the very cold phase at the end of the Ice Age, Europe was inhabited by populations of modern-looking men whose bodily proportions were similar to our own, so the cold adaption theory is not so simple after all.
102. Trinkaus and Howells, Ref. 41, p. 99.
103. Shackley, Ref. 96, p. 143.
104. Leakey, Ref. 40, pp. 147–148.
105. Trinkaus and Howells, Ref. 41, p. 96.
106. Shackley, Ref. 96, pp. 143–144.
107. Anonymous, 1982. Neanderthalers — 200 year life span. Bible-Science Newsletter, 20(1):4.
This article represented an editorial summary of a paper presented by Dr John W. Cuozzo in October, 1980 to the Middle Atlantic Association of Orthodontists. Cuozzo's conclusions were based on a comparison of adult crania from La-Chapelle-aux-Saints and La Ferrassie and the juvenile neanderthal skull from Pech de l'Aze.
108. Diamond, Ref. 48, p. 55.
109. Trinkaus and Howells, Ref. 41, p. 100.
110. Trinkaus and Howells, Ref. 41, p. 100.
111. Lambert, Ref. 36, p. 138.
112. Shackley, Ref. 96, p. 145.
113. The Encyclopaedia Americana, (1989 Ed.), Grolier lncorp., Vol. 10, p. 571.
An average height of 5 feet 3 inches (1.6 metres) is quoted for eskimos.
114. Collier's Encyclopedia, (1983 Ed.), Vol. 9, p. 302.
It is suggested that: *'The eskimos are short, the men a little over* 5 *feel (1.5 metres) tall, and the women a little less.'*
115. Lambert, Ref. 36, p. 138.
116. Leakey, Ref. 40, p. 149.
Leakey suggested that, '*The Neanderthal's average height was around 1.67 metres (5 feet 8 inches).'* The imperial conversion should read 5 feet 6 inches.
117. Romer, A. S., 1933. Man and the Vertebrates — Volume 2, Pelican reprint (1975), p. 231.
Romer noted that *'Typical Neanderthals are short; at Mount Carmel the men tend to be tall, for they have heights of* 5 *feet* 7 *inches to 5 feet 10 inches, and even the females are of moderate height.'*
118. Lasker, G. W. and Tyzzer, R. N., 1982. Physical Anthropology (3rd Ed.), Holt, Rinehart and Winston, Fort Worth, pp. 368–369.
The Wadi Amud neanderthal has been described by these authors as '... *tall (to judge by the bone lengths) ...*' In fact, the preserved remains of a femur and tibia lie between the mean values for modern Euro-africans and Afro-americans.
119. Acton, R. K., 1978. Bone disease simulating ancient age in 'pre-human' fossils. ICR Impact Series, Article No. 59, Institute for Creation Research, San Diego, p. iii.
In this article Acton draws comparisons between individuals afflicted with Paget's Disease, *Osteitis Deformans*, and neanderthals. According to Acton the disease occurs mainly in fifty to seventy year olds, and may affect one or many bones in the individual's body. It commonly affects long bones of the lower extremity (that is, the leg bones — the femora and tibiae) and the spinal column. The bones become thicker, softer and bow severely. Of particular interest is the observation that Paget's disease may lead to a reduction in body height or stature. Acton notes that height losses of up to 13 inches (33 centimetres) have been documented.
120. Shackley, Ref. 96, p. 146.
According to Shackley the neanderthals were hunter-gatherers (as

evidenced by the 'squatting facet' modification of their ankle bones — a characteristic observed in present-day hunting communities). Given that they may have been a post-Flood population subjected to great duress (they lived in a hostile environment, on the edge of an expanded Arctic tundra), they would almost certainly fit the picture of an Ice Age nomad.

121. Ivanhoe, F., 1970. Was Virchow right about Neanderthal? Nature, 227:577–579.
122. Acton, Ref. 119, pp. ii, iii.
123. Shackley, Ref. 96, p. 146.
124. New Age Encyclopedia (1983 Ed.), Bay Books, Sydney, vol. 24, p. 248.
125. Acton, Ref. 119, p. iii.
126. Ivanhoe, Ref. 121, pp. 577–578.
127. Ivanhoe, Ref. 121, p. 578.
128. Wright, D. J, M., 1971. Syphilis and Neanderthal Man. Nature, 229:409.
129. Wright, Ref. 128, p. 409.
130. Wright, Ref. 128, p. 409.
131. Job 30:1–8.
132. Morris, H. M., 1988. The Remarkable Record of Job, Master Books, Santee, California, p. 33.
A possible modern day analogy might be isolated communities for sufferers of leprosy.
133. Patten, D. W., 1966. The Biblical Flood and the Ice Epoch, Pacific Meridian Publishing Co., Seattle, pp. 249–258.
134. Custance, A. C., 1975. Genesis and Early Man (Vol. II of the Doorway Papers), Zondervan Corp., Grand Rapids, Michigan, pp. 217–219.
135. Lazenby R. A., 1990. Ongoing periosteal apposition — 1: Documentation, hypotheses and interpretation. American Journal of Physical Anthropology, 82:459.
Long bone extension (that is to say, elongation of the shaft) is said to conclude at maturation with the fusion of the epiphyses and diaphyses. Acromegaly results from a post-maturational reactivation of the release of Growth Hormone (hyperpituitarism). The disease manifests itself in a thickening (or cross-sectional increase) only of the long bones. It is not to be confused with the normal process of ongoing adult bone growth — continuing periosteal apposition.
136. Israel, Ref. 86, p. 112.
Whilst there does not appear to be any evidence of shaft elongation beyond skeletal maturation, E.C. Buchi is said to have found evidence of long bone growth after epiphyseal/diaphyseal union, which he regarded as having involved cartilaginous deposition on joint surfaces.
137. Straus, W. L. and Cave, A. J. E., 1957. Palaeontology and the posture of Neanderthal Man. Quarterly Review of Biology, 32(4):348–363.
138. Osteoarthritis is a degenerative disease of the joints. It constitutes a disorder brought on by wear and tear (due to repetitive applications of stress and/or strain) to the affected joints. The disease can attack people during middle age, and is more common in men than in women. It is also more common in people who have led physically active lives (for example, sportsmen and women).
139. Frame, B., Parfitt, A. and Duncan, H. (Eds), 1973. International Symposium on Clinical Aspects of Metabolic Bone Disease, Excerpta Medica, Amsterdam.
140. New Age Encyclopaedia (1983 Ed.), Bay Books, Sydney, vol. 21, p. 286.
141. Osteoporosis involves a reduction in the mass per unit volume of bone, and is not to be confused with rickets/osteomalacia (which involves an actual softening of the bones).
142. Israel,Ref. 86, p. 111.
143. Israel, Ref. 86, p. 111.
144. Hrdlicka, A., 1936. Growth during adult life. Proceedings of the American Philosophical Society, 76:847–897,
145. Lazenby, Ref. 135, p. 459.
Lazenby notes (p. 454) that CPA (continuing periosteal apposition) is demonstrably present in both the cranialfacial complex and post-cranial skeletons of adult humans. Concerning the craniofacial complex he states : *'In spite of specific differences in patterns or magnitude of change, and although cross-sectional in nature, most available data support the existence of continuing growth of the adult craniofacial complex'*; whilst he notes concerning the post-cranial skeleton that: *'Many bones of the infracranial skeleton have* (also) *provided direct or indirect evidence of adult growth. These include cervical vertebrae, ribs, humerus, radius, the second metacarpal, femur and tibia.'*
146. Smith, R. W., Jr. and Walker, R. R., 1964. Femoral expansion in aging women: Implications for osteoporosis and fractures. Science, 145:156–157.
147. Taylor, Ref. 30, p. 214.
148. Diamond, Ref. 48, p. 57.
In the same article Diamond suggested that Cro-Magnons survived to 60 years of age.
149. New Age Encyclopaedia (1983 Ed.), Bay Books, Sydney, vol. 20, p. 212.
150. Haviland, Ref. 11, p. 173.
151. Trinkaus and Howells, Ref. 41, p. 99.
Trinkaus and Howells suggested that signs of adult 'skeletal robustness' or massiveness of bone structure appeared early in neanderthal childhood.
152. Lambert, Ref. 36, p. 143.
153. Wolpoff, Ref. 52, p. 314.
154. Wolpoff, Ref. 52, pp. 276, 311, 313.
This particular specimen derived from later deposits than the main body of 'neanderthaloid' remains at Krapina. However, Wolpoff has also noted that amongst the earlier remains from the so-called '*Homo* zone' there were some frontal fragments with virtually no torus (brow ridging) at all.
155. Wolpoff, Ref. 52, p. 276.
156. Tillier, A.-M., 1989. The evolution of modern humans: Evidence from young Mousterian individuals. *In*: The Human Revolution: Behavioural and Biological Perspectives in the Origins of Modern Humans, P. Mellars and C. Stringer (Eds), Princeton University Press, p. 287.
Tillier then adds that: *'This hypothesis would appear to be confirmed by the la Ferrassie 4,5, L'Hortus I/I* bis, *Kebara I, and Shanidar 7 individuals.'*
157. Wolpoff, Ref. 52, p. 303.
158. Wolpoff, Ref. 52, p. 303.
159. Tillier, Ref. 156, p. 294.
Tillier states: *'As pointed out by Howell (1958), Atexeiev (1976) and Tillier* (in *Ronen 1982: 315), the attribution of this young child of about one year old to* Homo sapiens sapiens *seems certain.'*
160. Wolpoff, Ref. 52, p. 270.
161. Wolpoff, Ref. 52, p. 270.
162. Chambers' Encyclopaedia, (1973 Ed.), International Learning Systems Corp. Ltd, London, vol. 9, p. 29.
163. Wolpoff, Ref. 52, p. 272.
Wolpoff's assertion that the Ehringsdorf H skull belonged to a female is disputable. It seems to be largely founded on the relative thinness of the skull bones when compared with other (thicker) cranial material from the site. However, Wolpoff concedes that his assertion is *'... in spite of the supraorbital development'* and the observation that the cranium *'... retains fairly robust features of the upper face';* features which have led other authorities to regard the skull as that of a juvenile male.
164. Chambers' Encyclopaedia, Ref. 162, p. 29.
165. Wolpoff, Ref. 52, p. 272.
166. Wolpoff, Ref. 52, p. 272.
167. Ivanhoe, Ref. 121, p. 578.
168. Ivanhoe, Ref. 121, p. 578.
169. Ivanhoe, Ref. 121, p. 578.
170. Gowlett, Ref. 3, p. 200 (Appendix III — Summary Time Chart).
171. Most authorities are forced to place East and West European Cro-Magnoid specimens (such as those from Predmost in Czechoslovakia and Combe Capelle in France) within the subspecies *Homo sapiens sapiens*, since their so-called skeletal and cranial 'robustness' can still be observed in some living populations today.
172. Chambers' Encyclopaedia, Ref. 162, p. 34.

173. Delporte, H. J., 1986. The New Encyclopaedia Britannica, vol. 18, p. 966.
174. Delporte, Ref. 173, p. 966.
175. Chambers' Encyclopaedia, Ref. 162, p. 34.
176. Lambert, Ref. 36, p. 168.
177. Delporte, Ref. 173, p. 966.
178. Delporte, Ref. 173, p. 966.
179. Lambert, Ref. 36, p. 154.
180. Romer, Ref. 117, p. 237.
Romer suggested a range of between 1,700 and 1,800cc for males, but conceded that there was pronounced sexual dimorphism and that females were 'smaller-brained'.
181. Chambers' Encyclopaedia, Ref. 162, p. 34.
182. Delporte, Ref. 173, p. 966.
183. Romer, Ref. 117, p. 34. and plate 02 (between pages 320 and 321).
In reference to the Grimaldi race Romer noted that the Grotto des Enfants caves yielded both typical Cro-Magnon (including some children) skeletal material and the remains of '*... two individuals of a somewhat different type, with projecting teeth and other features which some believe to be suggestive of Negroid affinities.*' These individuals are those mentioned in Ref. 176. Romer also noted that these remains derived from '*… a lower Aurignacian level'*, one which had yielded Mousterian (neanderthal) artifacts. The possibility of an intrusive burial was thus brought into play to explain the co-existence of the 'modern' Grimaldi individuals and (presumed) neanderthal ancestors.
Sir Arthur Keith disputed the assertion of affinities with Negroids, pointing out that the remains lacked the typical Negroid median frontal boss. He also suggested that had the youth attained adulthood he might have been as tall as other Cro-Magnon males (there was a discernible absence of marked male characteristics in the youth, suggesting that he was quite young).
184. Campbell, B. G., 1968. Encyclopaedia Britannica (1968 Ed.), vol. 6, p. 792.
185. Delporte, Ref. 173, p. 967.
186. New Age Encyclopaedia (1983 Ed.), Bay Books, Sydney, vol. 8, p. 138.
The remains of an old man, two younger males, a woman and an unborn infant were recovered at Les Eyzies. The extent of the variability in the adult group is demonstrated in a photograph of three of the skulls.
187. Lexicon Universal Encyclopaedia, Lexicon Publication Inc., New York, vol. 5, p. 353.
Perhaps greater variability is to be found amongst the skeletal remains of some 29 individuals at Predmost, in Czechoslovakia. Some of these specimens are said to have been '*... clearly modern in appearance . . .*' whilst others are said to have possessed '*... features very similar to those of the neanderthals.*'
188. Romer, Ref. 117, pp. 237–238.
In describing the degree of variability within the Cro-Magnon race generally, Romer stated: *'In the body as in the skull, build and proportions are modern, without any trace of Neanderthaloid characters.'* Yet in the very next paragraph Romer concedes that, *'Some degree of variation existed, of course, amongst these ancient men. The Predmost type, for example, is that of a group of mammoth-hunters of ancient Moravia, in which the face was rather long, the chin rather less prominent, the supraorbital ridges more than normally developed — features which give a slight Neanderthaloid aspect to their skulls.'*
189. It has been argued by some authorities that many of the physical features used in distinguishing certain types of fossil men from their living descendants (for example, thick cranial bones, brow ridges, high cheek-bones, broad faces, etc.) can still be found in various extant racial groups; thereby suggesting that such traits were absorbed into *Homo sapiens sapiens.*
Furthermore, the morphological diversity exhibited in fossil human remains may indicate that we are dealing with relatively small post-Flood and post-Babel populations of potentially great genetic variability.
190. Tillier, Ref. 156, p. 286.
It is interesting to note that the Skuhl and Qafzeh sites have yielded collectively the remains of at least 11 children, ranging in age from a newborn infant to a 13 year old juvenile. No less than fourteen individuals have been recovered at Skuhl, of which only three are infants or juveniles. Djebel Qafzeh, on the other hand, has yielded the remains of no less than 15 individuals — eight of which are infants or juveniles. This relatively high percentage of children could be construed to mean that life expectancy was somewhat less than today's average. On the other hand, it could also indicate a relatively highnumber of offspring for this particular population of Qafzeh hominids. The low percentage of children at Skuhl could infer a generally older population and, perhaps, greater longevity.
191. Chambers' Encyclopaedia, Ref. 162, p. 34.
192. Tillier, Ref. 156, p. 290.
193. Tillier, Ref. 156, p. 290–291.
194. Pilbeam, D., 1986. The origins of Homo Sapiens: The fossil evidence. *In:* Major Topics in Primate and Human Evolution, B. Wood, L. Martin and P. Andrews (Eds), Cambridge University Press, Cambridge, p. 333.
195. Gowlett, Ref. 3, p. 85.
196. Chippindale, C., 1986. At home with the first Europeans. New Scientist, 112(1529):38.
197. Lambert, Ref. 36, p. 135.
Lambert suggests that Rhodesian Man probably represented an archaic form of neanderthal and lived perhaps 200,000 years ago.
198. Gowlett, Ref. 3, p. 100.
Gowlett, on the other hand, suggests that the individual lived between 100,000 and 120,000 years ago.
199. Groves, C. P., Encyclopaedia of the Animal World, Bay Books, Sydney, vol. 13, p. 1174.
This book infers that it may have been as recent as 20,000 years ago!
200. Taylor, Ref. 30, pp. 230–231.
201. Lambert, Ref. 36, p. 135.
202. Horgan, J., 1992. Early arrivals. Scientific American, 266(2):8–9.
203. Haviland, Ref. 11, p. 173.
204. New Age Encyclopaedia (1983 Ed.), Bay Books, Sydney, vol. 20, p. 211.
205. Haviland, Ref. 11, p. 173.
Other 'classical' neanderthals from this particular region included the Galilee partial cranium and the Amud I craniofacial remains.
206. Trinkaus and Howells, Ref. 41, pp. 97, 101.
207. Valladas, H., Joron, J. L., Valladas, G., Arensburg, B., Bar-Yosef, O., Belfer-Choen, A., Goldberg, P., Laville, H., Meignen, L., Rak, Y., Tchernov, E., Tillier, A.-M. and Vandermeersch, B., 1987. Thermoluminescence dates for the Neanderthal burial site at Kebara in Israel. Nature, 330:159–160.
The Kebara 2 neanderthal skeleton was recovered from Unit XII deposits at Mt Carmel, and is now dated at 60,000 years BP.
208. Valladas, H., Reyss, J. L., Joron, J. L., Valladas, G., Bar-Yosef, O. and Vandermeersch, B., 1988. Thermoluminescence dating of Mousterian 'Proto-Cro-Magnon' remains from Israel and the origin of modern man. Nature, 331:614–616.
209. Schwarcz, H. P., Grun, R., Vandermeersch, B., Bar-Yosef, O. and Valladas, H., 1988. Journal of Human Evolution, 17:733–737.
According to TL and ESR (LU) dating the Jebel Qafzeh hominids are now regarded as being between 92,000 and 115,000 years old.
210. Stringer, C. B., Gran, R., Schwarcz, H. P. and Goldberg, P., 1989. ESR dates for the hominid burial site of Es Skuhl in Israel. Nature, 338:756–757.
211. Bunney, S., 1987. Neanderthals were not our ancestors. New Scientist, 116(1588):32.
212. Stringer *et al.*, Ref. 210, pp. 756–758.
The early uptake (EU) and linear uptake (LU) ESR dates for the hominids at Mugharet es Skuhl average out at 81,000 and 101,000 years BP respectively. It is worthwhile noting that the burial site at Skuhl was previously considered to be at least 10,000 years younger than that at Tabun, with the former dating at about 40,000 years BP.
213. Stringer, C. B., 1990. The emergence of modern humans. Scientific American, 263(6):72–74.
The Tabun neanderthal remains had previously been dated by C^{14} at

about 51,000 years BP. It is worthwhile noting that as a result of the new (older) date for Tabun that Stringer has suggested that: *'The new dates seem to confirm the early presence of modern humans* (in the Middle East) *but add the complication that early Neanderthals were apparently there too. The Neanderthals (at Tabun) either immediately preceded the moderns of Qafzeh and Skuhl after all or were their approximate contemporaries.'*

214. Stringer, C., 1988. The dates of Eden. Nature, 331:565–566.
Here two years earlier Stringer had stated rather emphatically that, '*... most people have favoured an estimated age for the Skuhl and Qafzeh hominids of about 40,000 years, but a few have argued that the Qafzeh sample, at least, was much older. Biostratigraphy based on microfauna suggested that the Mousterian levels of Qafzeh were earlier than the main Mousterian levels of Tabun and Kebara, and it was proposed that the Qafzeh hominids might actually predate the Neanderthals.'* This issue still has to be addressed by palaeoanthropologists.
215. Lambert, Ref. 36, p. 143.
The Wadi Amud I cranium is regarded by most authorities as belonging to a late neanderthal and is dated at c.45,000 years BP.
216. Lambert, Ref. 36, p. 143.
The Shanidar neanderthals are dated between 45,000 and 70,000 years BP.
217. Lambert, Ref. 36, p. 141.
The youngest (most recent) undisputed neanderthal specimens — two adults and two children — derive from La Ferrassie, France; the oldest — two fragmentary skullcaps — from Fontechevade. The latter remains exhibit a degree of diversity such that some authorities have regarded them as neanderthals and others as true *Homo sapiens.* Lambert says that one of the skulls featured a brow ridge, the other not. Both are, however, noted for their cranial thickness.
218. Whilst an inferred westerly migration for neanderthal man is based on a single set of datings for the Tabun site, it should be pointed out that radiocarbon dates for both Shanidar and Wadi Amud may be revised upwards with the application of ESR and TL dating techniques.
219. Stringer, Ref. 214, pp. 565–566.
Stringer raises some very interesting questions which still remain to be answered by evolutionary palaeoanthropologists: *'If modern* H. sapiens *populations were present in Israel 90,000 years ago, why did they take another 50,000 years to register their presence in Europe and the Far East? Were environments to the north so unsuitable or Neanderthals so well established that they prevented an early modern human radiation until much later? Or are the relatives of the Qafzeh people wailing to be discovered elsewhere in Eurasia, part of a hitherto unsuspected early dispersal of modern* H. sapiens?'. It is the present writer's belief that both the neanderthal and proto-Cro-Magnon types represent a continuum of human ancestors and that further datings on Middle Eastern neanderthal sites such as Shanidar and Wadi Amud will establish the contemporaneity of the two types, with a slightly earlier appearance of the more archaic (neanderthal) form.
220. Bunney, Ref. 211, p. 32.
221. Bunney, S., 1990. Modern man not so modern. New Scientist, 125(1700): 15.
222. Gowlett, Ref. 3, p. 123.
223. Gowlett, Ref. 3, p. 127.
The Chattelperronian culture is thought to have been contemporaneous with the Aurignacian (32,000 to 27,000 years BP).
224. Groves, Ref. 199, p. 1174.
225. Gowlett, Ref. 3, pp. 134–135.
226. Bunney, Ref. 221, p. 15.
227. Bischoff, J. *et al.,* 1989. Journal of Archaeological Science, 16:563, 577.
228. Bunney, Ref. 221, p. 15.
229. Chambers' Encyclopaedia, Ref. 162, p. 34.
230. Howells, W. F., 1959. Mankind in the Making (1960 Ed.), Secker & Warburg, London, p. 211.
231. Trinkaus, E., 1981. Neanderthal limb proportions and cold adaption. *In:* Aspects of Human Evolution — Symposia of the Society for the Study of Human Biology, Volume XXI, C. Stringer (Ed.), Taylor & Francis Ltd, London, limb bone data from Table 2 (p. 196 cf. p. 194).
232. Trinkaus, Ref. 231, limb bone data from Table 2 (p. 196) cf. Table 1 (p. 190).
233. Wolpoff, Ref. 52, p. 276.
234. Wolpoff, Ref. 52, p. 341.
Wolpoff notes that the preserved male crania, in particular, '*... retain numerous Neandertal-like features, although these are never found together in the same cranium.*' He also notes that post-cranial limb bone proportions '*... differ somewhat from the Neandertal condition. The limb bones farther away from the body are slightly elongated. Skeletal robustness in the sample is marked. Although no specimen approaches the Neandertal extreme, characteristics of some fall well within the Neandertal range.'*
235. Wolpoff, Ref. 52, p. 344.
236. Wolpoff, Ref. 52, p. 344.
237. Gambier, D., 1989. Fossil hominids from the early Upper Palaeolithic (Aurignacian) of France. *In:* The Human Revolution: Behavioural and Biological Perspectives in the Origins of Modern Humans, P. Mellars and C. Stringer (Eds), Princeton University Press, p. 197.
238. Wolpoff, Ref. 52, p. 344.
239. Valladas *et al.,* Ref. 208, pp. 614–615.
240. Stringer, Ref. 214, p. 565.
241. Delson, E., 1988. One source not many. Nature, 332:206.
242. Bunney, Ref. 211, p. 32.
243. Trinkaus and Howells, Ref. 41, p. 98.
It should be noted that the Qafzeh hominids were 'modern' post-cranially as were those from Skuhl. The Djebel Qafzeh (and Skuhl) skeletons featured '*... large bones and robust skulls'.*
244. Trinkaus and Howells, Ref. 41, p. 101.
However, according to Trinkaus and Howells, *'Fugitive signs of Neanderthal features appear in some of the Skuhl craniums, but they are rarely found in the Qafzeh group or in the (early European) Upper Palaeolithic specimens .... these were ordinary robust representatives of modern humanity*
Brow ridges were stronger in the Skuhl population than in the Qafzeh population, but neither group approached the robusticity of the 'classical' neanderthals. The Qafzeh 9 cranium yielded an endocranial capacity of 1,560cc, which approximates those for the males at Skuhl.
245. Wolpoff, Ref. 52, p. 306.
246. Wolpoff, Ref. 52, p. 306.
247. Trinkaus and Howells, Ref. 41, p. 101.
248. Wolpoff, Ref. 52, p. 307 (Figure 12.6).
249. Tillier, Ref. 156, p. 292 (Figure 17.1).
250. Wolpoff, Ref. 52, p. 306.
251. Wolpoff, Ref. 52, p. 308.
252. Wolpoff, Ref. 52, p. 308.
253. Wolpoff, Ref. 52, p. 305.
254. Howells, W. F., 1945. Mankind So Far, Doubleday Doran, New York, p. 202.
255. Romer, Ref. 117, p. 232.
256. Chambers' Encyclopedia, Ref. 162, p. 29.
257. Wolpoff, Ref. 52, p. 305 (Figure 12.5).
258. Wolpoff, Ref. 52, p. 305 (Figure 12.5).
259. Wolpoff, Ref. 52, p. 305.
260. Wolpoff, Ref. 52, p. 306.
261. Wolpoff, Ref. 52, p. 306.
262. Romer, Ref. 117, p. 232.
263. Lambert, Ref. 36, p. 142.
The Tabun female cranium yielded a rather small estimated endocranial capacity of 1,271cc.
264. The Pictorial Encyclopaedia of the Evolution of Man (1975 Ed.), Hamlyn, London, p. 105.
265. Lambert, Ref. 36, p. 142.
266. Tillier, Ref. 156, p. 286.
267. Tillier, Ref. 156, p. 289.
268. Tillier, Ref. 156, p. 289.
269. Trinkaus, Ref. 231, p. 208.
270. Coon, C. S., 1962. The Origin of the Races, Alfred A. Knopf Inc., New York.
271. Brose, D. S. and Wolpoff, M. H., 1971. Early Upper Paleolithic man

and the Late Middle Paleolithic tools. American Anthropologist, 73:1156–1194.

272. Trinkaus, Ref. 231, p. 208.
273. Trinkaus, Ref. 231, p. 208.
274. Trinkaus, Ref. 231, pp. 209–210.
275. Ivanhoe, Ref. 121, p. 577.
276. Ivanhoe, Ref. 121, p. 577.
277. Lambert, Ref. 36, p. 143.
278. Trinkaus, Ref. 231, p. 193.
279. Trinkaus, Ref. 231, p. 200 (Table 4), p. 211 (Table 7).
280. Trinkaus, Ref. 231, p. 211.
281. Trinkaus, Ref. 231, p. 215.
282. Trinkaus, Ref. 231, p. 189.
283. Trinkaus, Ref. 231, pp. 215, 217.
284. Trinkaus, Ref. 231, p. 215.
285. Trinkaus, Ref. 231, p. 217.
286. Israel, Ref. 86.
287. Lambert, Ref. 36, p. 143.
288. Stewart, T. D., 1977. The Neanderthal skeletal remains from Shanidar Cave, Iraq: A summary of findings to date. Proceedings of the American Philosophical Society, 121(2):133.
289. Whilst the Shanidar 1 cranium was the only specimen sufficiently complete to enable a reliable estimate of ECV, the large cranial capacity was clearly not exceptional. Other Shanidar males appear to have possessed equally large (if not larger) cranial capacities.
290. Wolpoff, Ref. 52, p. 265.
Concerning the Shanidar 2 cranium Milford Wolpoff stated that it '... *appears to have been very large, although it is too fragmentary for an accurate brain size measurement.'*
291. Stringer, C. B. and Trinkaus, E., 1981. The Shanidar Neanderthal crania. *In:* Aspects of Human Evolution — Symposia of the Society for the Study of Human Biology, Volume XXI, C. B. Stringer (Ed.), Taylor & Francis Ltd, London, p. 155.
Chris Stringer and Erik Trinkaus have more recently written that, *'The large dimension of the Shanidar 2 and* 5 *cranial vault bones (…) suggest that they too probably had large cranial capacities, similar to that of Shanidar 1.'*
292. Romer, Ref. 117, p. 232.
Endocranial capacities for two females from Skuhl were 1,300 and l,350cc respectively, whilst the males ranged from 1,518 to 1,587cc.
293. Vallois, H. V. and Vandermeersch, B., 1975. The Mousterian skull of Qafzeh (Homo VI): An anthropological study. Journal of Human Evolution, 4:446.
The cranial capacity of Qafzeh VI was estimated to be 1,568cc.
294. Vallois and Vandermeersch, Ref. 293, p. 446.
295. Gambier, Ref. 237, p. 200.
296. Gambier, Ref. 237, p. 200.
297. Gambier, Ref. 237, pp. 197, 200.
298. Stringer and Trinkaus, Ref. 291, p. 162.
299. Arensburg, B., 1989. New skeletal evidence concerning the anatomy of Middle Palaeolithic populations in the Middle East: The Kebara skeleton. *In:* The Human Revolution: Behavioural and Biological Perspectives in the Origins of Modern Humans, P. Mellars and C. Stringer (Eds), Princeton University Press, p. 170.
300. Anon., Ref. 107, p. 4.
301. Custance, A. C., 1975. Man in Adam and Christ (Vol. III of the Doorway Papers), Zondervan Publishing House, Grand Rapids, Michigan, p. 48.
302. Dawson, W., 1904. Meeting Place of Geology and History, Revell, New York, p. 63.
303. Trinkaus, E., 1977. The Shanidar 5 Neanderthal skeleton. Sumer, 33:38.
304. Chambers' Encyclopaedia, Ref. 162, p. 33.
Estimated endocranial capacity for the Boskop skull was 1,630cc.
305. Chambers' Encyclopaedia, Ref. 162, p. 38.
Estimated endocranial capacities for the two Wadjak skulls were 1,550 and 1,650cc (Wadjak I and II respectively).
306. Romer, Ref. 117, p. 239.
307. Chambers' Encyclopaedia, Ref. 162, p. 38.
The Wadjak skulls were not considered to belong to ancestors of people inhabiting this region today — native Malays.
308. Mulvaney, D. J., 1966. The prehistory of the Australian Aborigine. Scientific American, 214(3):90.
Mulvaney drew comparisons between the Wadjak crania and the Keilor skull from Victoria. If such a relationship can be established then we may have evidence of cranial diminution and, perhaps, declining longevity during a south-easterly migration from Asia to the Australian continent.
309. Chambers' Encyclopaedia, Ref. 162, p. 38.
The modern day average for male Australian aborigines is said to be 1,287cc.
310. Romer, Ref. 117, p. 239.
311. Very few Late Pleistocene and Early Holocene Australian crania are sufficiently complete and undistorted to permit reliable determinations of ECV. The skull of a 15 year old boy from Talgai in southern Queensland (1,300cc), the Cohuna cranium from northern Victoria (1,260cc) and the hyper-robust Willandra Lakes hominid W.L.H.50 from the western New South Wales (>1,300cc) are amongst the few for which endocranial capacities have been determined. The latter two are also thought to have belonged to males, and all three approximate the mean value for extant male aboriginals. A number of other fossilised crania, including the Cossack skull from Western Australia, the Mossgiel and Lake Nitchie skulls from New South Wales and the Kow Swamp crania from Victoria, also fall into the archaic/robust category.
All of the aforementioned skulls featured thick cranial bones, brow ridges and were, in many instances, elongated (dolichocephalic) and the bearers of extreme frontal recession. Where facial remains were preserved the jaws were usually quite large and prognathic.
Metrical data (see: Freedman, L. and Lofgren, M., 1979. Human skeletal remains from Cossack, Western Australia. Journal of Human Evolution, 8:288, Table 1) would suggest that the male crania from Cossack, Kow Swamp, Mossgiel and Lake Nitchie were significantly larger than the average male Western Australian aborigine today. Furthermore, the same writers have noted (p. 294) that *'The* (post-cranial) *measurements would seem to again indicate that* (the Cossack male) *was a large, robust individual.'*
312. Flood, J., 1983. Archaeology of the Dreamtime, Collins Publishers Australia, Sydney, pp. 57, 63–65.
The extreme frontal recession and archaic form of many robust specimens are thought by some physical anthropologists to have been due to artificial deformation of the cranium, a practice known the world over. Not all fossil aboriginal crania are of the archaic/robust form. Many are quite gracile and modern in appearance (for example, the Keilor skull from Victoria and the Lake Mungo cranial remains from western New South Wales). The gracile skulls tend to be more variable in overall size. The Keilor skull is quite large, whilst Mungo I and III (a young female of short stature and a male, respectively) are relatively small. ECVs are not known for these specimens.
313. Stringer, C., 1990. The Asian connection. New Scientist, 128(1743):26–27.
The contrasting forms (archaic/robust and gracile) have led some palaeoanthropologists, including Milford Wolpoff and Alan Thome, to conclude that Australia was populated by two morphologically distinct groups of *Homo sapiens* during the closing stages of the Pleistocene epoch. On the other hand, Philip Habgood and Peter Brown have argued that the variability observed in Australian human fossils merely reflects variation within a single population.
Whilst it is generally asserted that robust, thicker-boned and more archaic forms of *Homo sapiens* generally preceded gracile and more lightly built forms throughout the world, the picture remains unclear in Australia at the present time. For instance, the gracile Mungo individuals are regarded as having lived earlier than most of the known robust populations (the Willandra Lakes hominid being a possible exception).
314. Smith, F. H., Simek, J. F. and Harrill, M. S., 1989. Geographic variation in supraorbital torus reduction during the later Pleistocene (c. 80,000–15,000 BP). *In:* The Human Revolution: Behavioural and Biological Perspectives in the Origins of Modern Humans, P. Mellars and C. Stringer (Eds), Princeton University Press, pp. 173, 188.

315. Howells, Ref. 254, p. 131.
316. Custance, Ref. 134, pp. 204, 206.
In repudiating Weidenreich's 'ballooning' hypothesis, Custance argued that: *'There is another explanation. ... however, in which we assume that the first true man had a high vault, but that the circumstances of his early history were such to deprive him of some of the essentials of culture thus forcing him to adopt the use of raw meat, which in time greatly developed the jaws and thus "deflated" the high vault with which his ancestors had been endowed.'*
317. Custance, Ref. 134, pp. 204, 211.
318. Cuozzo, Ref. 82, p. 39.
Extended longevity and deferred skeletal maturation would tend to exaggerate the deformation of the skull during childhood and adolescence.
319. Ivanhoe, Ref. 121, p. 578.
320. Wolpoff, Ref. 52, p. 311.
321. Taylor, Ref. 30, p. 214.
322. Custance, Ref. 134, pp. 203–204.
323. Custance, Ref. 134, p. 204.
Custance suggested that, *'If man is subjected to uncooked food and forced in the absence of knives to tear it from the bone, the developing muscles will find a way of strengthening their anchorage along these bony ridges.*'
324. Cuozzo, J. W., 1992. Personal communication, 31st January.
325. Straus and Cave, Ref. 137, p. 348.
326. Haviland, Ref. 11, p. 172.
327. Stewart, Ref. 288, p. 145.
In contrasting the preserved states of Chanidar 1 and 2, Stewart has stated that the latter '*... has very little tooth wear and the only detectable arthritis is a slight amount at the posterior border of the right occipital condyle.'*
328. Stringer and Trinkaus, Ref. 291, Figure 3 cf. Figures 2 and 4 and Table 1.
329. Trinkaus and Howells, Ref. 41, p.100 (Figure, notes).
330. Stringer and Trinkaus, Ref. 291,p.138 (Figure 4, notes).
331. Trinkaus, Ref. 303, p. 38.
332. Trinkaus, Ref. 303, p. 38.
333. Stringer and Trinkaus, Ref. 291, p. 145.
334. Stringer and Trinkaus, Ref. 291, p. 145.
335. Stewart, Ref. 288, p. 136.
336. Trinkaus, Ref. 303, p. 38.
337. Anon., Ref. 107, p. 4.
338. Trinkaus, Ref. 303, p. 38.
339. Stewart, Ref. 288, p. 135.
340. Stewart, Ref. 288, p. 145.
341. Brown, P., 1987. Pleistocene homogeneity and Holocene size reduction: The Australian human skeletal evidence. Archaeology in Oceania, 22(2):62.
342. Lambert, Ref. 36, p. 38.
343. Lambert, Ref. 36, p. 138.
344. Gowlett, Ref. 3, p. 104.
345. Delporte, Ref. 173, p. 966.
346. Hublin, J. J. and Tillier, A.-M., 1989. The Mousterian juvenile mandible from Irhoud (Morocco): A phylogenetic interpretation. *In:* Aspects of Human Evolution — Symposia of the Society for the Study of Human Biology, Volume XXI, P. Mellars and C. Stringer (Eds), Princeton University Press, pp. 176–177 (Table 2), 182–183.
347. Hublin and Tillier, Ref. 346, pp. 176–177 (Table 2), 182 (Figure 6).
348. Ivanhoe, Ref. 121, p. 578.
349. Ivanhoe, Ref. 121, p. 577.
350. Dean, M. C., Stringer, C. B. and Bromage, T. G., 1986. Age at death of the Neanderthal child from Devil's Tower, Gibraltar and theimplications for studies of general growth anddevelopment of Neanderthals. American Journal of Physical Anthropology, 70:301–308.
351. Dean *et al.*, Ref. 350, p. 306.
352. Dean *et al.*, Ref. 350, p. 302.
353. Tillier, A.-M., (in press). Laplace de rests de Devil's Tower (Gibraltar) dans l'ontogenese des Neanderthaliens. Bulletins et Mémoires de la Société d'Anthropologie de Paris.
354. Cuozzo, Ref. 82, pp. 35, 37.
355. Tillier, Ref. 156, p. 294.
356. Bower, B., 1991. Neandertal's disappearing act. Science News, 139(23):363.
According to Bower, Fred Smith and Michael Green theorize that precocious growth of the neanderthal head and body commenced whilst in the womb. They contend that accelerated growth represented an adaption that minimized heat-loss amongst otherwise vulnerable newborns entering Ice Age Europe.
357. The Gibraltar child represents the most southerly example of a neanderthal infant to have been recovered in Europe.
358. Dean *et al.*, Ref. 350, p. 306.
359. Cuozzo, Ref. 82, pp. 33–40.
360. Cuozzo, Ref. 82, p. 36.
361. Cuozzo, Ref. 82, p. 39.
Cuozzo states: *'From the relationship of the Pech de l'Aze child to the 9 week old embryo of today, close to a 3:1 relationship in osseous development or bone age can be drawn. If this is applied to eruption dates, the Neanderthal 6 year molar could have erupted in the late teens and the 12 year molar in the late twenties.'*
362. Cuozzo, J. W., 1992. Personal communication, 16th March.
Cuozzo advised the present writer that the bone age ratio might be slightly less than the above published value.
363. Cuozzo, Ref. 82, pp. 33–34, 39.
364. Cuozzo, Ref. 82, p. 39.
365. Osgood, A. J. M., 1986. A better model for the Stone Age. EN Tech. J., 2:91.
366. Osgood, Ref. 365, p. 94.
Osgood states: *'Cultures of Mesopotamia seem to come into life fully developed, at least so far as southern Mesopotamia is concerned. Evidence for the Neolithic is very scant in that part of the country between the Tigris and Euphrates Rivers, yet the further we go out from this centre, whether it be into Palestine or up into the Zagros Mountains, we come to apparently increasing "primitiveness" of cultural type ...'*
367. Lloyd, Ref. 26, pp. 21–25.
368. Renfrew, C., 1989. The origins of Indo-European languages. Scientific American, 261(4):82–90.
369. Gamkrelidze, R. V. and Ivanov, V. V., 1990. The early history of Indo-European languages. Scientific American, 262(3):82–89.
370. Beasley, Ref. 4, p. 10 (Table 1).
371. Schmich, J. E., 1979. The dispersion from the homestead of the race of man. Creation Research Society Quarterly, 16(1):17–21.
Schmich used the term 'homestead' in reference to the Ark of Noah. He argued that the descendants of Japheth and Ham migrated away from the region of Mount Ararat shortly after the conclusion of the Flood year. Thus, he concluded that only the descendants of Shem were involved in the settlement of Mesopotamia and the construction of the Tower of Babel. The present writer would argue that, following an initial post-Flood migration from Eastern Anatolia to the Middle East, the 'homestead' in this case was Mesopotamia (biblical Shinar), and that dispersion commenced from Babel.
372. Extreme morphological diversity is to be observed in many archaic human populations, including those from Skuhl, Qafzeh, Krapina, La Quina, La Ferrassie, Vindija, Mladec, Les Eyzies, Predmost, Jebel Irhoud, Omo, Shanidar, and possibly Fontechevade and Saccopastore. It is the considerable spread of ages present in each of the above populations that leads to the extreme diversity in craniofacial and post-cranial skeletal morphology.
373. Wolpoff, Ref. 52, pp. 304, 306.
According to Wolpoff the Qafzeh hominids represent the least archaic and neanderthal-like of the Near Eastern sample. Brow ridge development is moderate in some adults (for example, Qafzeh 3), but the cranial vault is still well-rounded.
374. Vallois and Vandermeersch, Ref. 293, pp. 446, 452–453.
The Qafzeh 6 cranium is of almost comparable thickness to adult neanderthals and is well above the present-day average. The mastoids were also 'massive'. The same writers also noted considerable wear to the preserved teeth, with the pulp chamber exposed in all but one of the

specimens.

375. Tillier, Ref. 156, p. 292, Figure 17.1.
On the other hand, the 13 year old juvenile — Qafzeh 11 — features very little (if any) brow ridge development. So-called primitive retentions, such as large biorbital, bifrontal and biasterionic breadths (all of which are present in the Qafzeh adults) are lacking in this juvenile. The mandible also features a prominent mental eminence (chin).

376. Wolpoff, Ref. 52, p. 305, Figure 12.5.
There is considerable variability in the skull shape of the Skuhl adults; especially in the degree of elongation and cranial flattening, frontal recession and supraorbital development. In these respects some of the Skuhl adults are moderately 'archaic' in appearance.

377. Tillier, Ref. 156, pp. 290, 291.
By way of contrast, Tillier has described the characteristics of the 4 year old Skuhl I cranium as, '*... conforming on the whole to the modern type.*' She also observed that the rate of development of the chin in the Skuhl X lower jaw and five of the immature Qafzeh mandibles appeared to be, '*. . . slightly retarded, compared to growth processes in modern mandibles.*'

378. See p. 154 of this paper for a possible corollary to this phenomenon.

379. Wolpoff, Ref. 52, p. 273.
Wolpoff has suggested that there was a paucity of adult remains at the Krapina cave site. He suggested that (he cave '*... was used as a shelter for the sick (most of whom would have been children) while the remainder of the tribe inhabited open-air sites as they followed game.*' He also suggested that many of the teeth of individuals from the cave site exhibited deformities consistent with periods of sickness and/or starvation during tooth formation. Of course, it is also possible that the few adults at the cave site were elderly folk, who had been left to supervise the children whilst their parents were out hunting game or scouring the countryside for edible foods. Thus we may have evidence for a makeshift day-care centre at Krapina.

380. Wolpoff, Ref. 52, p. 276.
All the same, there was still a particularly wide degree of variability in the preserved remains at the cave site. Mastoid processes varied from smaller than that observed in the C cranium (which was, in itself, small) to large and projecting structures in other fragmentary specimens. Similarly, brow ridge development varies from virtually no torus at all to quite strong and robust structures.

381. Gowlett, Ref. 3, pp. 94–95.

382. Shackley, Ref. 96, p. 146.
The most common age at death of neanderthal children was, according to Shackley, between five and six years. This is deemed unusual, given that mortality rates are, today, highest amongst newborns and very young infants. On the other hand, this may simply indicate that natural (as opposed to accidental) death was comparatively rare amongst newborn and very young neanderthal infants. Of course, a possible corollary to this view is that the neanderthal infant was physiologically superior to his modern-day counterpart at, and shortly after, birth.

383. Solecki, R. S., 1963. Prehistory in Shanidar Valley, Northern Iraq. Science, 139:179.

384. Haviland, Ref. 11, p. 172.

385. Ivanhoe, Ref. 121, pp. 577–579.

386. Wolpoff, Ref. 52, p. 276.

387. Wolpoff, Ref. 52, p. 273.

388. Daly, Ref. 1, p. 70, Figure 13.
According to Daly, the Ice Age reached maximum intensity between 60,000 and 40,000 years ago. In rejecting the notion of multiple Ice Ages and cyclic or irregular interglacials, I would suggest that glacial maximum occurred at c.50,000 years BP according to evolutionary chronology.

389. The hominid remains from Krapina span from c.100,000 to 30,000 years BP according to secular dating. Therefore, hominids from the so-called '*Homo* zone' existed during the period immediately preceding glacial maximum and the Krapina A partial cranium after glacial maximum; see Table 2, p. 157 in the text of this paper.

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