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**MISREADING THE FOSSILS:
THE DARK SIDE OF EVOLUTIONARY BIOLOGY**

A discussion is presented of various proposed scientific interpretations of famous hominid fossils, including Neanderthal Man, Piltdown Man and *Hesperopithecus*. It is shown that all these scientific interpretations were incorrect, sometimes ludicrously so, even though proposed by the leading experts in the field and universally accepted by the scientific community for many years. It has become clear to contemporary authorities in hominid paleontology that, rather than being guided by scientific objectivity, earlier researchers of hominid fossils were all too often motivated by considerations of national pride, professional jealousy, and preconceived notions. The inevitable result was a series of profound misinterpretations and even outright blunders that remain a source of embarrassment to evolutionary biologists. The conclusions relevant to the Torah Jew are discussed.

1. INTRODUCTION

Everyone who deals extensively with Torah and Science will, sooner or later, be confronted with the question of fossils, those relics of prehistoric animals and men. The common assumption is, of course, that the scientific evidence regarding fossils is basically reliable and need not be seriously questioned by us laymen. In other words, our job is to *deal* with these facts — not to cast doubt on their veracity. Other than the creationists, who reject out of hand the scientific enterprise, one naturally assumes that the fossil evidence and its interpretation have been presented by serious scientists who were objective in their pursuit of knowledge and who used accepted standards of scientific rigor.

It is my thesis that *nothing could be further from the truth*. In fact, as we shall see, evolutionary scientists have a dismal record when it comes to interpreting hominid fossils. Blunder after blunder has been made in the course of “scientific

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work.” Moreover, these absurd interpretations of hominid fossils were not published by third-rate workers but, rather, by *world-famous scientists*. Indeed, it is precisely because of the unquestioned authority of these scientists that it often required decades to correct their errors. It has become clear in recent years that the reason for this shoddy work is that the evolutionists in question were often motivated by subjective considerations, such as national pride, professional jealousy, and preconceived notions.

To establish my thesis, I quote only from *today's leading authorities in evolutionary biology*. This is a very important point because, in recent years, a plethora of books and articles criticizing Darwin and evolutionary biology has been published, written primarily by lawyers, journalists, physicians, and other laymen in the field of evolutionary biology. It cannot be emphasized strongly enough that *no such books* will be quoted here. The sources presented here were all written by recognized experts in evolutionary biology in general and hominid paleontology in particular — Darwinists to a man. Moreover, the gross errors in fossil interpretation that will be pointed out are no longer subjects of controversy. They are admitted by all — with acute embarrassment.

2. NEANDERTHAL MAN — THE BRUTE THAT NEVER WAS

A few introductory remarks are in order before we begin our discussion of Neanderthal Man, the prehistoric men who immediately preceded us (“us” being, of course, Modern Man, whose scientific designation is *Homo sapiens sapiens*). The name “Neanderthal” derives from the valley near Düsseldorf, Germany where the first fossil skull was discovered in 1856. Such fossils have since been discovered throughout Europe, the Middle East, and even farther afield, with hundreds of nearly-complete skeletons now available for study. Regarding their history, the Neanderthals first appeared about 200,000 years ago (the date is uncertain), and then, for unknown reasons, they all abruptly disappeared from the fossil record about 40,000 years ago. Since that time, *only* Modern Man appears in the hominid fossil record, with the oldest Modern Man fossil skeletons being physically identical in every respect to the skeletons of contemporary people. It is relevant to the Torah Jew to point out that there is no “family connection” at all between Modern Man and Neanderthal Man.¹ As Professor Steven Stanley of Johns Hopkins University — a leading authority — has emphasized,² “Out of nowhere, [Modern Man] appeared in the fossil record with particular features that are utterly unpredictable on the basis of what preceded them.”

The question that interests us here is the following: What did the Neanderthals look like? How would one characterize them? In a recent discussion of this

question, the British journal *The New Scientist* points out that³:

Those who rail at the conduct of football hooligans or rowdy parliamentarians frequently describe the objects of their ire as "behaving no better than Neanderthals", thus conveying an image of conduct which is uncouth and uncivilized. "Neanderthal" has become a convenient term of abuse....to describe all that is brutish and boorish.

These assertions of *The New Scientist* are amply confirmed by Roget's *Thesaurus*, in whose list of synonyms for the adjective "Neanderthal," one finds terms such as⁴ "savage, brutal, bestial, animal, troglodytic." Indeed, the popular image of the Neanderthal is a coarse-featured, stooped-walking, long-armed brute, whom no one would want to meet in a dark alley.

The fact is that this description of Neanderthal Man is *completely and utterly false*. Scientists now understand that Neanderthal Man looked remarkably similar to Modern Man, so similar in fact that, to translate a current scientific joke into Israeli terms, if a Neanderthal wearing a *kova tembel* were to board an Egged bus, his fellow passengers would probably not even be aware that sitting next to them was a member of a different species.

How did this complete misrepresentation of Neanderthal Man come about? Why did all the leading scientists misunderstand the facts for so long? These are the questions that we explore briefly in this article. More details can be found in the definitive treatise on the Neanderthals⁵ that has recently (1993) been published by Professor Eric Trinkaus, probably the leading authority on Neanderthal Man. His book has been summarized in *The New Scientist*.³

In relating the history of Neanderthal research, *The New Scientist* asks: "What did the Neanderthals do to acquire their reputation for brutality and stupidity?" Trinkaus explains that³ "Neanderthals have hardly ever been interpreted objectively. They have suffered a range of scientific abuse which can only be understood in its historical context."

The "villain" of our story was the world-renowned scientist, Professor Marcellin Boule. In the early decades of the century, Boule was Director of the Institute for Human Paleontology of the famous Muséum National d'Histoire Naturelle of France and editor of the major journal *L'Anthropologie*. No one had more impressive scientific credentials in the field of prehistoric man than Marcellin Boule, "the doyen of human paleontology in France between the world wars."⁶ He made Neanderthal Man his special field of expertise and, after a long and detailed study, Boule published his definitive monograph on the Neanderthals in the 1911-13 issues of *Annales de Paléontologie*. Trinkaus points out that⁷ "the monograph was immediately a classic, a study of such thoroughness and merit that it established the paleontology of humans —

paleoanthropology, as it would be called — as a scientific discipline.”

Unfortunately, this “classic monograph” of Boule *was wrong in every respect*. As Professor Niles Eldredge — a leading authority — explains in his 1982 book on hominid paleontology, appropriately entitled *The Myths of Human Evolution* (p. 76):

Every feature Boule stressed in his analysis can be shown to have no basis in fact.... To Boule, the premier French paleontologist of his day, we owe the shambling brutish image of the Neanderthals immortalized in a thousand comic strips.

Trinkaus has emphasized the same point in his book, *The Neanderthals* (pp. 175, 181):

What is remarkable is that Boule’s monograph is astonishingly wrong in many of its conclusions.... Boule reconstructed the vertebral column of Neanderthals as much straighter [than it was], giving rise to a stooping posture and slouching gait, a forwardly thrust head and perpetually bent knees. The drawing in his monograph imprinted itself on the minds of anthropologists everywhere. It was the perfect troglodyte: the brute, the savage.

How did Professor Marcellin Boule, a leading scientist, come to make such gross errors? The explanation lies in the extreme subjectivity with which Boule approached his study of Neanderthal Man. The complete story is too long to relate here (see Trinkaus⁵ for more details); I will merely summarize the main points of this almost unbelievable episode.

Boule had a hated foreign rival, a well-known Swiss paleontologist named Otto Hauser, “much despised by the French for his boorish personality and his habit of finding prize fossils on French territory.... Boule was to remain Hauser’s arch-enemy for life.”⁸ Moreover, Boule was intensely jealous of two French colleagues, Gabriel de Mortillet and Leonce Manouvrier, who were professors at Boule’s rival institution, the Ecole d’Anthropologie. Therefore, for Boule, “embarrassing de Mortillet was always a welcome outcome to a study.”⁹

In addition, Boule began his research with very definite preconceived ideas about what the Neanderthals should look like. “He [Boule] was inclined to believe that Neanderthals had nothing to do with human ancestry, and his anatomical analysis succeeded in expelling these brutish forms from the human family tree.”¹⁰

The combination of national pride, professional jealousy, and preconceived notions led Boule to make an incredible series of errors. Trinkaus points out

that¹¹ “Boule did not deliberately and knowingly slant his results; it was only that he saw, readily, that which was agreeable and was oblivious to elements suggesting uncomfortable implications.” The results were inevitable. Worst of all was the effect on his colleagues of Boule’s grossly erroneous work. Eldredge explains that¹² “Boule’s authority was so close to absolute that his conclusions strongly affected paleontological thinking for several decades.” Similarly, Trinkaus emphasizes that¹³ “His conclusions were to have a more lasting effect on the image of Neanderthals than any previous work.”

3. PILTDOWN MAN — THE APE THAT BECAME A MAN

Professor Stephen J. Gould of Harvard University, one of the world’s leading paleontologists, characterizes Piltdown Man as “surely the most famous and spectacular fraud of 20th-century science.”¹⁴ Briefly, the facts are as follows (for details, see *The Piltdown Forgery*¹⁵).

In 1912, an amateur fossil collector named Charles Dawson announced that he had found in a Piltdown gravel pit, on the Sussex coast of England, parts of the fossil head of a prehistoric man, which quickly became widely known as *Piltdown Man*. Before his sudden death in 1916, Dawson “discovered” a few more pieces of the Piltdown Man skull and jaw. This fossil was accepted as genuine by almost the entire scientific community, and was given the scientific name *Eoanthropus dawsoni* (“Dawson’s dawn man”) in honor of its discoverer.

In fact, Piltdown Man was an outright fraud. What Dawson had done was to combine a contemporary human skull with the jaw of a contemporary ape (an orangutan), both of which he stained to match the color of the Piltdown gravel pit. Dawson broke off the parts of the bone where the skull attaches to the jaw to hide the fact, otherwise obvious, that the (human) skull did not fit the (ape) jaw. Finally, he filed down the ape’s teeth a bit to make them look more human, and in various ways contrived to make the bones look ancient, as befits a prehistoric fossil.

What is important here is *not* the fact that a fraud was perpetrated — every profession has its cheats. What is central to our discussion is the assessment of this fraudulent fossil by the leading members of the scientific community. One would have thought that as soon as this jaw of an ape reached the hands of the professional anatomists, the game would be up. How could any skilled anatomist fail to recognize that the Piltdown jaw was identical in every respect to that of a modern orangutan, and that the Piltdown skull was identical in every respect to that of a contemporary man, without any indication of those features that characterize “prehistoric man”? Surely, Dawson’s fraud would be exposed by any of the leading scientists within a matter of minutes.

But that is not what happened at all. In fact, this fraud remained undetected *for 40 years!* Piltdown Man created a sensation in the British paleontological community — England’s earliest prehistoric man — and was universally accepted as genuine. From 1912 until 1953, every scientific reference book and encyclopedia informed its readers of the great importance of Piltdown Man in establishing the evolutionary history of Modern Man. We were told that, unlike Neanderthal Man, who was nothing but a “savage brute” unrelated to Modern Man (as Professor Boule had so firmly established in his famous monograph!), Piltdown Man (the “Dawn Man”) was our earliest direct ancestor, as was clearly proven by the very modern appearance of his skull.

The “trio of heroes” in the Piltdown farce were Sir Grafton Elliot Smith, Sir Arthur Keith and Sir Arthur Smith Woodward, variously characterized as “the great names of the British school of paleontology of the 1920s and 1930s,”¹⁶ and “the three leading lights of British anthropology and paleontology.”¹⁷ Each man was a recognized world authority — the first two were the foremost British anatomists of their day, and the third was an expert in hominid paleontology. Each man had been knighted by his monarch as a sign of the esteem accorded him by the scientific community. And each man was convinced that the Piltdown fossils were genuine! “The great trio of British paleontologists found themselves in substantial agreement...the combined influence of Smith Woodward, Keith and Elliot Smith ensured that Piltdown Man became the standard by which other hominid fossils were to be measured.”¹⁸

How could such leading authorities have made such gross blunders? Once again, we shall find that having preconceived notions goes far to ensuring that one sees what one wants to see.

It was quite obvious to anyone who examined the Piltdown fossils that the skull (which, we recall, belonged to a modern man) appeared much more human-like and much less ape-like than the jaw (which was, in fact, that of a modern ape). To explain this anomaly, scientists invoked the principle of “mosaic evolution,” which asserts that different parts of the body may evolve at different rates. However, which part of the body evolved first remained a matter of sharp debate. The British school of paleontology insisted that the brain (skull) of Modern Man should have evolved relatively rapidly, whereas the jaw should have evolved more slowly. Thus, according to the British school, it was to be expected that our prehistoric ancestors would at some early stage have a relatively modern human-like skull while still sporting a relatively primitive ape-like jaw. When Piltdown Man displayed precisely these characteristics, he was welcomed with open arms by the British paleontologists. “Proof positive at last that man’s large brain had characterized his line from the earliest times.”¹⁸ And when one adds the happy fact that the

“Dawn Man” was discovered in England itself, the joy of the British scientists knew no bounds.

But there still remained one problem. If the British experts were right, then the basically human skull should display some clearly ape-like features, and similarly, the basically ape-like jaw should display some clearly human features. After all, Piltdown Man was supposed to be a fossil in transition — on the way to becoming a completely Modern Man. And these expected — but completely nonexistent — features were exactly what each of the three leading British scientists claimed to have seen in the Piltdown fossils! We illustrate this phenomenon by quoting the world-famous anatomist Sir Grafton Elliot Smith, who noted that¹⁹:

The Piltdown skull, when properly reconstructed, is found to possess strongly simian [ape-like] peculiarities. In respect to these features, it harmonizes completely with the jaw, the simian features of which have been exaggerated by most writers....The outstanding interest of the Piltdown skull is the confirmation it affords of the view that in the evolution of man, the brain led the way.

In other words, Britain’s leading anatomist was claiming that he was able to see distinctly human anatomical features in the jaw of a modern orangutan and distinctly ape-like anatomical features in the skull of a contemporary human being — when in fact, *none of these anatomical features really existed*. It is clear that one should never underestimate the power of wishful thinking when hominid fossils are being examined by scientists in the light of their strongly-held preconceived ideas. As Professor Donald Johanson, a present-day authority on hominid paleontology, wryly comments²⁰: “Anthropologists who deal with prehistoric man tend to get very emotionally involved with their fossils.”

4. *HESPEROPITHECUS* — THE MAN WHO WAS A PIG

The final fossil we will discuss was given the scientific designation of *Hesperopithecus* (“western anthropoid”), in order to emphasize that this was the first anthropoid fossil ever discovered in the Western Hemisphere — in particular, in the United States, near Snake Creek in the State of Nebraska. It will be the rare reader who has ever heard of *Hesperopithecus* because the history of this fossil has been shoved deep under the rug by almost all paleontologists (an exception is Professor Stephen J. Gould of Harvard University, who has written an amusing essay²¹ about the fossil), and its story has been carefully excised from scientific writings — and with good reason. Of all the blunders

committed by evolutionary biologists during the 20th century in their various “scientific studies” of hominid fossils, none can compare with *Hesperopithecus*.

Our story takes place in America in the 1920s, a decade marked by an ongoing battle between the creationists and the scientists. Nowadays, creationists are much more modest in their demands — they merely insist that their views be taught in the schools side-by-side with standard evolutionary theory. In the 1920s, however, their demands were considerably more far-reaching; they insisted that *only* their ideas be taught. In fact, the creationists succeeded in passing laws in several states — including Tennessee — making it a criminal offense to teach Darwin’s theory of evolution in the public schools. The opposition convinced a high-school teacher in Tennessee, named John Scopes, to openly teach Darwin’s theory in order to challenge the law. The resulting Scopes trial became a national sensation, pitting the foremost trial lawyer of the day — Clarence Darrow — against one of America’s leading creationists — William Jennings Bryan (who was very nearly elected President of the United States). It is necessary to understand this background and the mood of the country to properly appreciate the story of *Hesperopithecus* and its impact on scientific thinking.

As with the hominid fossils discussed earlier, the “hero” of the *Hesperopithecus* episode was one of the nation’s leading evolutionary biologists — Henry Fairfield Osborn. And, once again, we encounter a scientist motivated by intense personal rivalry and preconceived notions, features which paved the way for yet another scientific disaster. Osborn was universally recognized as “a great paleontologist”²² and served as the Director of the world-famous American Museum of Natural History, visited by almost every tourist who comes to New York. Professor Gould characterizes Osborn’s feelings for Bryan as “pure venom and contempt.... For Osborn, Bryan was perverting both science and the highest notions of divinity.”²² Osborn hated Bryan with a passion, setting the stage for a vicious confrontation between the two men in the arena of “Science and Religion.”

The highlights of the Osborn-Bryan confrontation (for full details, see Gould²¹) are as follows. On 26 February 1922, *The New York Times* published an article by Bryan attacking Darwin’s theory of evolution, which was soon followed by a reply by Osborn which defended the scientific principles of evolution and also pointed out that the concept of evolution was, in fact, completely compatible with the Bible. To ridicule Bryan’s rejection of the fossil evidence, Osborn cited a passage from the Bible (Job 12:8): “Speak to the earth and it shall teach you.” Osborn was referring, of course, to the fossil evidence.

In the very next month following this sharp exchange of articles in *The New*

York Times, a geologist sent to Osborn a fossil tooth that he had discovered. Osborn quickly created a sensation by claiming that this was the first anthropoid fossil ever discovered in America. This claim was to lead to Osborn's downfall. Gould describes the course of events²³:

Osborn's enthusiasm warmed as he studied the tooth and considered its implications. An American anthropoid would certainly be a coup for Osborn's argument that the earth spoke to Bryan in the language of evolution....Therefore, Osborn's confidence increased, and he was soon ready to proclaim the momentous first discovery of a direct human ancestor in America. Osborn named the fossil *Hesperopithecus* and presented it to the scientific world in a paper published in the April 1922 issue of the prestigious *Proceedings of the National Academy of Sciences*.

Osborn was particularly exulted in the uncannily happy coincidences of both time and place. Not only was this fossil discovered at the very time that Bryan was denying the fossil evidence. The crowning irony was that *Hesperopithecus* had been found in Nebraska — Bryan's home state! No fossil could have had a greater potential to embarrass Bryan; no fossil could have bettered *Hesperopithecus* for rhetorical impact. Needless to say, the precious irony of the situation was not lost on Osborn, who triumphantly gloated in his article for the staid *Proceedings of the National Academy of Sciences*:

It has been suggested humorously that the fossil should be named *Bryanopithecus* after the most distinguished primate that the State of Nebraska has thus far produced. It is certainly singular that I had advised William Jennings Bryan to consult a certain passage in the Book of Job, "Speak to the earth and it shall teach you," and it is remarkable coincidence that the first earth to speak on this subject is the sandy earth of Snake Creek in western Nebraska.

For several years after the discovery of *Hesperopithecus* in 1922, Osborn missed no opportunity to use the fossil to heap public abuse on Bryan. For example, on the eve of the Scopes trial in 1925, Osborn published a book devoted primarily to ridiculing Bryan and chose a biting parody of Job as his title: *The Earth Speaks to Bryan*.

In addition to using *Hesperopithecus* to attack Bryan, Osborn publicized the prize fossil by commissioning for his American Museum of Natural History, "a graphic reconstruction of a *Hesperopithecus* couple in a forest surrounded by other members of the Snake Creek fauna, prepared by the well-known scientific

artist Amadee Forestier.”²⁴ This reconstruction was a marvelous example of the life-like three-dimensional exhibits for which this museum is justly famous. Looking at a photograph of the well-known *Hesperopithecus* exhibit, one cannot help but be amazed by the many details of the physical appearance and the cultural behavior of this prehistoric man and woman that Osborn and “the well-known scientific artist” claimed to have deduced *from a single tooth*.

Five years later, Osborn’s world collapsed. Additional fossil evidence discovered in the Snake Creek beds in Nebraska showed conclusively that the *Hesperopithecus* fossil was, in fact, the tooth of a pig. Osborn’s long-standing claim that *Hesperopithecus* was an anthropoid was officially retracted in an article published in the 16 December 1927 issue of *Science*. As a comment on Osborn’s integrity, it should be noted that his name does not appear in the retraction article. Osborn had left to a colleague the embarrassing task of admitting publicly that their famous *Hesperopithecus* “prehistoric man” was really nothing but a pig. As Gould explains,²⁵ “Osborn simply shut up and never mentioned *Hesperopithecus* again in his numerous succeeding articles on human ancestry.”

Once again, we ask: How did this farce happen? Why were America’s leading hominid paleontologists so ready to accept the absurd idea that a single tooth — so worn that it could not even be properly identified as belonging to pig — was sufficient to establish a new class of prehistoric men? To answer this question, one must be aware of the situation at that time in hominid paleontology. By the 1920s, hominid fossils had been found worldwide — everywhere but in America. England had Piltdown Man; France and Germany had Neanderthal Man, Cro-Magnon Man and Heidelberg Man; Asia had Java Man and Peking Man; Africa had *Australopithecus*. Hominid fossils were being discovered everywhere — except in America. The American paleontologists had been relegated to being mere spectators in the prestigious game of hominid paleontology. Therefore, when the *Hesperopithecus* fossil was discovered, they eagerly jumped onto Osborn’s hominid bandwagon. It would have required considerably more scientific integrity than the American paleontologists could muster for them to have taken a more cautious stance. In spite of his unquestioned scientific talents, objectivity was not a strong feature in the character of Henry Fairfield Osborn.

Among the results of this scientific fiasco was the fact that for five long years, a million visitors to the American Museum of National History were enthralled by the brilliantly executed reconstruction of the *Hesperopithecus* prehistoric man and woman living in the Nebraskan forest. Few of these visitors would ever read the scientific literature which eventually revealed the truth about “the

man who was really a pig.” This should be a sobering thought for anyone who enjoys visiting famous science museums in order to learn about “our prehistoric ancestors.”

5. CONCLUSIONS

In our account of hominid paleontology during the 20th century, we first encountered the gentle man who was described as a savage brute (Neanderthal Man), we then moved on to the modern orangutan who was mistaken for our prehistoric ancestor (Piltdown Man), and finally, we met the pig who was misrepresented as a man (*Hesperopithecus*). And all these almost unbelievable mistakes were made by the most famous names in hominid paleontology: in France (Marcellin Boule); in England (Sir Grafton Elliot Smith, Sir Arthur Keith, Sir Arthur Smith Woodward); and, in the United States (Henry Fairfield Osborn). Moreover, it should be emphasized that two of these gross misrepresentations remained universally accepted by the scientific community for nearly half a century.

Upon viewing this incredible parade of scholarship, I am sorely tempted to cry out, “But the Emperor has no clothes on!” I am not alone in this view. Professor David Pilbeam of Harvard University, one of today’s leading authorities on human origins, has recently discussed this lamentable situation at length, and made the following remarks²⁶:

Our theories have often said far more about the theorists than they have about what actually happened....Virtually all our theories about human origins were relatively unconstrained by fossil data....The theories were fossil-free and in some cases even fossil-proof....Many evolutionary schemes were in fact dominated by theoretical assumptions that were largely divorced from data derived from fossils.

Has the situation improved in recent years? Currently, the origins of Modern Man are the subject of violent controversy in scientific circles, with the champions of the two competing theories — “out-of-Africa” vs. “multi-regional” — each accusing the other of lack of scientific rigor. One can almost hear history repeating itself, leading one to wonder what future generations of scientists will think of current theories of hominid paleontology.

In addition to their intrinsic interest, the examples of misinterpretation of hominid fossils discussed here carry an important message for the Torah Jew regarding the issue of “contradictions” between Torah and Science. As a professional scientist for several decades, I greatly respect and value the scientific enterprise. Nevertheless, one must not lose sight of the fact that

scientific research is performed by human beings, who are subject to the shortcomings of prejudice, professional jealousy, national pride, etc., that afflict us all. Indeed, the history of science has shown that subjective behavior has plagued some of the most famous scientists throughout their careers. Therefore, present-day “contradictions” between Torah and science may well melt away as new scientific understanding emerges. In fact, this has already happened in many scientific disciplines, including geology, cosmology, and molecular biology, where discoveries of the last few decades have led to a rapidly growing convergence between Torah and science.²⁷

NOTES

* Based on a lecture given at the Second Torah and Science Conference March 1995.

- 1 It is also very relevant for the Torah Jew to compare the *cultural achievements* of Modern Man and Neanderthal Man. For such an analysis, see N. Aviezer, *In the Beginning: Biblical Creation and Science* (Ktav: Hoboken, 1990), pp. 94-102.
- 2 S.M. Stanley, *The New Evolutionary Timetable* (Basic Books: New York, 1981), p. 151.
- 3 B. Wood, *The New Scientist*, 3 July 1993, p. 38.
- 4 P.M. Roget, *Thesaurus* (1852; 4th edn., Harper & Row: New York, 1977), p. 702.
- 5 E. Trinkaus, *The Neanderthals* (Jonathan Cape: London, 1993).
- 6 Trinkaus, *ibid.*, p. 181.
- 7 Trinkaus, *ibid.*, p. 190.
- 8 Trinkaus, *ibid.*, pp. 175, 181.
- 9 Trinkaus, *ibid.*, p. 194.
- 10 Trinkaus, *ibid.*, pp. 194-195.
- 11 Trinkaus, *ibid.*, p. 194.
- 12 N. Eldredge, *The Myths of Human Evolution* (Columbia University Press: New York, 1982), p. 76.
- 13 Trinkaus, *loc. cit.*, p. 190.
- 14 S.J. Gould, *Hen's Teeth and Horse's Toes* (W.W. Norton: New York, 1983), p. 202.
- 15 J.S. Weiner, *The Piltdown Forgery* (Oxford University Press: Oxford, 1955).
- 16 R. Lewin, *Bones of Contention* (Penguin Books: London, 1987), p. 31.
- 17 S.J. Gould, *The Panda's Thumb* (Penguin Books: London, 1980), p. 97.
- 18 Eldredge, *loc. cit.*, p. 79.
- 19 Lewin, *loc. cit.*, pp. 72, 73.
- 20 Lewin, *ibid.*, p. 300.
- 21 S.J. Gould, *Bully for Brontosaurus* (Penguin Books: London, 1991), pp. 432-447.
- 22 Gould, *ibid.*, p. 433.
- 23 Gould, *ibid.*, pp. 434-436.
- 24 Gould, *ibid.*, p. 444.
- 25 Gould, *ibid.*, p. 442.
- 26 D. Pilbeam, in *Major Trends in Evolution*, ed. L.K. Konigson (Pergamon Press: London, 1980), pp. 262, 267.
- 27 N. Aviezer, *In the Beginning: Biblical Creation and Science* (Ktav: Hoboken, 1990).