

Historical Perspectives

THE HISTORY OF *HESPEROPITHECUS HAROLDCOOKII* HOMINOIDEA

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Abstract

The discovery and controversy surrounding Hesperopithecus huroldcookii and its importance in proving evolution is recounted. An extensive review of the statements of its supporters reveals the role that preconceptions played in interpreting the evidence. The account provides an important lesson today for the need of neutral observers to carefully evaluate the empirical evidence for new ideas, especially those that are related to the field of origins.

Introduction

One of the most well-known examples of misidentification in the history of physical anthropology is Nebraska Man, technically labeled *Hesperopithecus haroldcookii*. This incident was of special importance because Henry Fairfield Osborn, a prominent paleontologist and head of the American Museum of Natural History, planned to use it as prime evidence of human evolution at the Scopes trial. The events which surrounded the discovery and the statements of many internationally prominent anthropologists and evolutionists made about the find are instructive of the influence of belief structures and preconceptions on evaluating empirical data. In Cattell's words:

This discovery . . . in addition to being important scientifically, has a timely interest because of the attacks that during the past few months have been launched at the ground work of science through the zeal of opponents of the fact of evolution of man, and has a dramatic or comic aspect in that it comes from the home state of William Jennings Bryan (1922, p. 588).

The Evidence

Nebraska man was based on a single molar tooth discovered in early 1922 by Harold J. Cook. This 10.5 X 11 mm tooth was no ordinary tooth, but as Blinderman (1985, p. 47) states, "was the answer to American anthropologists' prayers." Cook was an Agate, Nebraska consulting geologist who had experienced some success in discovering fossils. *Hesperopithecus* was found on the ranch of Harry Ashbrook, 20 miles south of Agate, on Olcott Hill in a quarry near Snake Creek, a small town about 400 miles west of Omaha, Nebraska (Gregory and Hellman, 1923a). The site contained fossils

of a fauna so Asiatic in its characters that it is necessary to suppose that when these beds were laid down, or before they were deposited, America was united to Asia, thus making it possible for early precursors of man or ape to make their way from the Old World to the New (Keith, 1925, pp. 474-475).

He no sooner discovered his soon to be famous tooth than he sent it to Harry Fairfield Osborn, the President of the American Museum of Natural History in New York. On February 25, 1922 Harold Cook wrote to Osborn the following about the tooth:

I have had here, for some little time, a molar tooth from the Upper, or Hipparion phase of the Snake Creek Beds, that very closely approaches the human type. . . . In as much as . . . you and [your colleagues] are in the best position of anyone to accurately determine the relationship of this tooth . . . I will gladly send it on to you, should you care to examine and study it (Osborn, 1922a, p. 463).

Osborn received the actual tooth himself on March 14, and with what Gould (1991, p. 334) states was "his usual precision" he telegraphed Cook to tell him that the "tooth just arrived safely. Looks very promising. Will report immediately." Osborn concluded that the tooth "looks one-hundred per cent anthropoid" and added that in consultation with Dr. Mathews we concluded that it is "the last right upper molar tooth of some higher Primate" (Osborn, 1922a, p. 464). The tooth was determined to be in a Pliocene deposit, and was evaluated to be over a million years old (Hitching, 1982). After "careful studies" Osborn named the genus and species. *Hesperopithecus Haroldcookii* which means *western world ape-man* (literally ape of the land where the sun sets) with Harold Cook's name as the species (Osborn, 1923a, p. 464). This naming system set the pattern for other finds, the most well known example being *Australopithecus africanus* "southern ape of Africa" (Reader, 1981). Gregory and Hellman (1923a, p. 13) after extensive evaluation of the tooth concluded that the evidence furnished, "fairly conclusive proof of the Lower Pliocene age of the *Hesperopithecus* tooth. There is no reasonable doubt as to its age." And Grafton Elliot Smith (1929) stated of Osborn and his find:

The earliest and most primitive member of the human family yet discovered . . . one would regard so momentous a conclusion with suspicion if it were not for the fact that the American savants' authority in such matters is unquestionable.

Although the crown was extensively "worn down by use nearly to the base so that the cusps had entirely disappeared" the roots were broken, and the tooth was "rolled and polished" and was "cracked and fissured," Osborn, using drawings and casts of other tooth findings, formally concluded that "it was the second right molar of a primate similar to apes and humans, yet distinct from any known species" (Blinderman, 1985, p. 47; Keith, 1925, p. 476). Examinations by other paleontologists, including William Kane Gregory of the American Museum, a leading authority on the evolu-

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tion of dentition, and his colleague, Milo Hellman, both concluded that the tooth differed from any known ape molar, and far more closely resembled those of modern man (Gregory and Hellman, 1923b, Keith, 1925, p. 475). It was judged to be very similar to the primitive Java man teeth. Its evenly concave surface of wear was "strikingly similar to the worn-down surface of one of the upper molar teeth" of Java man (Gregory, 1927, p. 580).

Gregory (1927, p. 580) also concluded that since the Nebraska tooth "had a very wide root on the inner side, which was similar to the wide root on the inner side of the upper molars of *Pithecanthropus* and of many teeth of American Indians" that it was evidence of the missing link between men and their primate ancestors. While some scientists concluded that the upper molar resembled a man similar to that of an American Indian, others felt it was a *Homo erectus* more similar to Java Man. Disagreements involved all of the other missing links as well, and even the status of *Pithecanthropus*, now called *Homo erectus*, was then and is still today being debated (see Linton, 1925; Milner, 1990). Sir Grafton Elliot Smith, a renowned University of London scholar who has published much on the evolution of the brain, wrote in June of 1922 that, "The tooth found in the [Miocene] beds of Nebraska is really that of a primate member of the human family" (Blinderman, 1985, p. 49; Bowden, 1977, p. 46). The tooth was judged by many of the leading scientists as clear evidence for a creature about half way between the apes and modern man, the perfect missing link needed to prove Darwin's theory:

The anatomical, palaeontological, and other evidence already accumulated tends to show that man, *Pithecanthropus*, *Hesperopithecus*, and the various anthropoids form a natural superfamily group, which may now be named the **Hominioidea**, in contrast with the **Cercopithecoidea**, or Old World monkeys (Gregory and Hellman, 1923a, p. 140).

Osborn was exuberant over the find which he regarded as not only the long awaited proof of evolution, but also evidence of the first anthropoid ape in America. Wilder (1926, p. 157) concluded:

Judging from the tooth alone the animal seems to be about half way between *Pithecanthropus* and the man of the present day, or perhaps better between *Pithecanthropus* and the Neandertal type, and is assumed to represent a very early migrant from the Old World, passing over land bridges, which then quite possibly existed. It thus revives again a hope, long since abandoned, that the human stem may have had its beginning in the New World.

The tooth was brought to light just in time to provide Osborn with evidence to use against his long time nemesis, William Jennings Bryan, whom he had just written to advise him to read Job 12:8 which states, "Speak to the Earth and it shall teach thee." Osborn felt that the Earth "spoke to Bryan" by the discovery of this tooth because this "irrefutable" evidence for evolution was by a "humorous coincidence" discovered in Bryan's home state of Nebraska (see for example

Osborn, 1922a). Osborn soon wrote an article and then a book with this title on this theme.

The *Hesperopithecus* was believed by many paleontologists to be the oldest then known humanoid fossil, found in a ten million year old Miocene fossil bed. Cro-Magnon, the many Neandertal fossils, and Java man were even then considered far too modern, and today are judged as simply different races of modern man (Shackley, 1980). Nebraska man also had a great patriotic significance because it was the first evidence, according to Osborn,

after seventy-five years of continuous search in all parts of our great Western territory of a [higher] primate. Evidence of this anthropoid ape-man was also proof that some primitive humans lived in America, and some speculated that it may even prove that mankind in North America predated European and African humans. We have all eagerly looked forward to such a discovery (quoted in Blinderman, 1985, p. 48).

Having found evidence of primitive man in America, the next question was to explain how he got here. Osborn hypothesized that Nebraska man had migrated across the Bering Straits land bridge which he believed existed 10 to 15 million years ago during the Miocene era. He also concluded that Nebraska man must be as ancient as the prehistoric animals unearthed nearby, a conclusion based upon the fact that the tooth was found in the same strata as several primitive horses, old world antelopes, hornless rhinos and other animals all dating from the Miocene era.

Soon vivid drawings of the reconstructed body of *Hesperopithecus haroldcookii* appeared in popular press publications throughout the world and even in some scientific journals. In the *Illustrated London News* of June 24, 1922 was a picture of a stooping Negroid featured ape-man and his wife spread over two pages complete with a vivid prehistoric background of horses and camels. Under the picture painted by Amedee Forestier the text said:

The poise of the head should be noted, large muscles from the occiput [back of the head] to the back and shoulders having to counteract the weight of the prognathous [jaws extended forward] and heavy jaw—a simian [monkey-like] character (p. 943).

The level of confidence that Osborn had in the validity of his conclusion are vividly revealed in his own words:

The world-wide interest aroused by the discovery in Nebraska of *Hesperopithecus*, "the ape of the western world," is in widest of possible contrast to the diminutive and insignificant appearance of the single grinding tooth of the right side of the upper jaw, which speaks of the presence of the higher or manlike apes in our western country at a time when the ancient "Territory of Nebraska" was in close touch with the animal civilization of Asia and of western Europe. This *Hesperopithecus* tooth is like the "still small voice;" it is by no means easy to hear its sound. Like the hieroglyphics of Egypt, it requires its Rosetta Stone to give the key to interpretation. Our Rosetta Stone is [a]

comparison with all the similar grinding teeth known, collected from all parts of the world, and described or figured in learned books and illustrations. By these means this little tooth speaks volumes of truth,—truth consistent with all we have known before, with all that we have found elsewhere. The evidence is strongly supported by many other and more complete fossil specimens that speak of a fresh tide of migration from the Old World to the New perhaps a million years ago. . . . What shall we do with the Nebraska tooth? Shall we destroy it because it jars our long preconceived notion that the family of manlike apes never reached the western world, or shall we endeavor to interpret it, to discover its real relationship to the apes of Asia and the more remote Africa? . . . Certainly we shall not banish this bit of Truth because it does not fit in with our preconceived notions and because at present it constitutes infinitesimal but irrefutable evidence that the man-apes wandered over from Asia into North America (Osborn, 1925b, pp. 800-801).

Its importance was so enormous that it became known as the million-dollar tooth in 1925:

. . . because of an accident which occurred while it was being X-rayed. The tooth, which had been guarded like so much radium, was taken to a dental laboratory. Professor Gregory handed it to a laboratory assistant and said: "Now be mighty careful. That tooth is worth a million dollars. The laboratory assistant began to tremble all over, the tooth slipped from his fingers, fell to the tiled floor and was shattered. There was boundless consternation for a time. The fragments were recovered and with the help of some cement the tooth was reconstructed and X-rayed. A great library of X-ray photographs of this and other teeth and studies of all kinds went eagerly ahead. It was found that the tooth, its crown being considerably worn, closely resembled a tooth of *Pithecanthropus*, the Java ape-man (*New York Times*, Feb. 20, 1928, p. 8).

Bryan's response to the discovery was that the *Hesperopithecus* tooth "is interesting not because it has any value or because it disproves the Bible, but because it shows that Darwin's hypothesis can paralyze the brain in an otherwise intelligent man" (Quoted in Blinderman, 1985, p. 48). He also stated that Osborn's:

. . . latest "newly discovered evidence" is a long lost witness captured in Nebraska. He would probably have declared it "irrefutable" . . . —but the fact that it was found in Nebraska, my home State for a third of a century, greatly multiplied its value. Some one searching for fossils in a sand hill came upon a lonely tooth. . . . The body of the animal had disappeared, and all the other pieces of "imperishable ivory" had perished; not even a jaw bone survived to supply this Samson of the scientific world with a weapon to use against the Philistines of today. But a tooth in his hand is, in his opinion, an irresistible weapon.

The finder of this priceless tooth, conscious that it could impose upon but a few, even among those

who prefer speculation to reason, wisely chose Professor Osborn. He hastily summoned a few congenial spirits, nearly as credulous as himself, and they held a postmortem examination on the extinct animal, which had at one time been the proud possessor of this "infinitesimal" and "insignificant" tooth. After due deliberation, they solemnly concluded and announced that the tooth was the long looked-for and eagerly longed-for missing link which the world awaited.

The Professor's logic leaks at every link, but is no worse than that of his boon companions who, having rejected the authority of the word of God, are like frightened men in the dark, feeling around for something that they can lean upon. True science is classified knowledge and is of incalculable use to man. Give science a fact and it is invincible. But no one can guess more wildly than a scientist, when he has no compass but his imagination, and no purpose but to get away from God. Darwin uses the phrase "we may well suppose" eight hundred times and wins for himself a high place among the unconscious humorists by his efforts to explain things that are not true. For instance, he assumed that man has a brain superior to woman's brain, and tried to explain it on the theory that our ancestors were brutes, and that the males, fighting for the females, increased their brain power. He also assumed that our ancestors were hairy animals, and tried to explain the disappearance of the hair on the theory that the females selected their companions, and, because of a deep-seated and universal preference, selected the least hairy and thus, in the course of ages, bred the hair off (Bryan, 1925, p. 105, 106).

As Blinderman (p. 49) concluded, the creationists then saw the "spat of recent hominid findings as a display of scientific quackery. They were not willing to accept fossils like Nebraska man and Java man as ancestral ape-men. They held that God created each creature [and that] . . . there could be no intermediate forms."

Although many of the leading paleontologists supported the validity of the hominid conclusion, or at least the conclusion that it was an anthropoid, some disagreed. Sir Arthur Keith, after evaluating the tooth carefully, concluded that its wear and crown pattern would not be expected in a primate, and that this evidence strongly argued against its being one (Keith, 1925, p. 476). He also notes Schlosser concludes the tooth is from an extinct horse (Keith, 1925, p. 476). Other anthropologists, such as Arthur Smith Woodward, curator of geology at the British Museum, pointed out other problems with the primate interpretation:

It [is] difficult for one who has not seen the tooth to understand why Prof. Osborn even refers it to a Primate; and the published figures are not very helpful. The crown may be described as nearly triangular in shape, with bluntly rounded angles, a slightly raised and partially crimped rim surrounding a gently concave surface. The root is very massive, and at a considerable distance below the crown it becomes bifid, the smaller portion extended beneath one margin of the crown, the larger portion beneath and inclined towards the

opposite apex. On one side of the root, between the bifurcation and the crown, there is an irregular indentation, from which Prof. Osborn supposes a third root-fang has been broken away. No stump of this third fang, however, is shown in the drawing. In determining the tooth to be an upper molar, Prof. Osborn regards the edge with the smaller portion of root as external, and the tapering opposite end with the larger portion of root as internal. The hypothetically restored piece of root thus becomes posterior. It is, however, equally reasonable to interpret the so-called external border as anterior and the tapering end as posterior. If, then, the indented lateral portion of the root never bore another fang, the tooth becomes a lower molar. If this interpretation be admitted, comparison should be made not with any Primate tooth, but with the last lower molar in the primitive bears. In general appearance and shape the crown is very suggestive of that of the last molar in the lower jaw of some species ascribed to *Hyaenarctos* and related genera. . . . The root of the last lower molar of *Hyaenarctos* unfortunately appears to be unknown; but in the modern *Ursus*, in which the tooth in question is extremely variable, the root is often bifid, as in the new fossil from Nebraska, while between the bifurcation and the crown there is a hollowing of its outer face. There is, indeed, some reason to suspect that *Hesperopithecus* has received an inappropriate name (Woodward, 1922a, p. 750).

Osborn, though was adamant: calling Woodward's criticism great incredulity (Osborn, 1922a, p. 281) and that:

In the whole history of anthropology no tooth has ever been subjected to such severe cross-examination as this now world famous tooth of *Hesperopithecus*. Every suggestion made by scientific skeptics was weighed and found wanting (quoted in Reader, 1981, p. 110).

Gregory and Hellman (1923, p. 526) also reviewed extensively the criticism, concluding that the *Hesperopithecus* identification is valid:

Professor Osborn's determination of the type of *Hesperopithecus* as a new genus of anthropoid apes has not been universally accepted. The following possible identifications of the type have been made by various persons.

1. Upper molar of an anthropoid ape, probably a new genus (American Museum staff).
2. Lower molar of *Hyaenarctos* or allied genus of ursid.
3. Upper molar of the same.
4. A "bear's tooth."
5. A molar of an otherwise wholly unknown type of carnivore.
6. An upper or lower molar of some carnivore allied with *Aeloropus*.
7. An upper molar of gigantic relative of the procyonid carnivore *Potos*.
8. An upper molar of a gigantic relative of such South American monkeys as *Pithecia* and *Lagothrix*.
9. The first upper deciduous premolar of a Pliocene horse.

10. An incus bone of a gigantic mammal.

We have considered each of these with unbiased minds and compared the type with the various specimens suggested, as well as with many others, but have returned with more confidence to the conclusions set forth above.

Eventually, Osborn, Harold Cook and others endeavored to quiet their critics by digging for more evidence. In 1925 they located several objects which they concluded were likely the ancient tools used by Nebraska man. Two years later, more such objects were found, many of which caused them to question the claims that they were human artifacts. Albert Thomson of the American Museum of Natural History staff collected samples at the Snake Creek beds in the summer of 1925, and in 1926 another anthropologist collected many new specimens, all which led scientists to doubt the identification of *Hesperopithecus* as an upper molar of an extinct primate (Reader, 1981, p. 110). The numerous teeth that they uncovered there were very similar to the original find, only in much better condition. They finally concluded that *Hesperopithecus* was "an upper premolar of a species of *Prosthennops*, an extinct genus related to the modern peccaries" (Gregory, 1927, p. 580).

This conclusion was based on the lower teeth which the field evidence indicated were associated with the upper premolars that were previously concluded to be *Hesperopithecus* but were "unquestionably the same or nearly the same as the corresponding lower teeth of *Prosthennops*" (Gregory, 1927, p. 581). The excavations in 1927 found a number of scattered upper and lower premolar and molar teeth, and every one appeared to be *Prosthennops* which were almost identical to the *Hesperopithecus* except that they were far less damaged. These enabled a more accurate identification to be made, eventually resulting in the almost universal conclusion that the tooth type was an upper premolar of an *Prosthennops*, a genus related to the modern peccary, a wild pig thought to be extinct. Peccaries are members of the family *Tayassidae*, the new world type of *suidae*. In 1972 Ralph Wetzel discovered a herd of the animals similar to the extinct peccary found in Nebraska by Harold Cook, named *Catagonus wagneri* (Wetzel, et al., 1975). The animals were consigned to the genus *Catagonus ameghino*.

An article in *Science* served as the formal obituary of *Hesperopithecus* (Gregory, 1927). The case along with Piltdown man is now often used as an example of the results of an attempt to impress one's preconceived ideas into the evidence. The infamous tooth which Bowden (1977, p. 46) calls "a classic case of excessive imagination" is now safely locked in the storage vault of the American Museum of Natural History, largely forgotten except to historians of science. As to the conclusion of the story, Reader summarizes some of the contemporary comments:

'An ancient and honourable pig no doubt, a pig with a distinguished Greek name,' commented *The Times* in a leader when the news was released, 'but indubitably porcine.' *The Times* wondered whether the worshipers who had so eagerly proclaimed themselves made in the image of *Hesperopithecus* were now left desolate; and concluded:

'If there is a place where the spirits of forsaken gods congregate . . . to condole with one another on ruined temples and smokeless altars, there also, aloft in the branches of a monkey puzzle tree overlooking the asphodel meadow, . . . conscious of his own distinction as one who has received the offering of unsuperstitious science, should sit the spirit of the Evening Ape.' Paleontologists had been badly bitten by the Nebraska tooth, Elliot Smith remarked later (Reader, 1981, p. 110).

The *London Times* also had this to say:

The zeal for the discovery of ancestors, which is so often observed in the newly ennobled, has been carried to its highest pitch by that new-comer to the aristocracy of science, the anthropologist. . . . One of the most notable examples of his skill was given to the world some six years ago, when a single tooth, which had been dug up in Nebraska, was identified as that of the founder of the family of Man. . . . From the one surviving molar science drew a complete portrait of the patriarch. He proved to be powerfully built; of homely countenance; a little heavy in the jowl, and not very wide of brow; and . . . he was "marvelous hairy "about the face." . . . What more auspicious beginning for the human family than the union of his daughter and heiress with the *novus homo*, *Eoanthropus*?

It is true that there were some who doubted. . . . A few, greatly daring, contended that the single tooth from which all had been derived was not quite sufficient evidence of the precise accuracy of every detail. But the skeptics were overruled: the creative imagination of the artist must be allowed to overlap gulfs that seemed impassable to more pedestrian minds. Let them but have faith in comparative morphology, accept their inheritance, recant their heresies, and be reconciled to the communion of the orthodox. And so all might have been well for them and for comparative morphology, if it had not occurred to one of the devotees that *Hesperopithecus* must have possessed other teeth. Accordingly he set out to find them, not being impelled by lack of faith, but moved rather by the pious desire to obtain further hagiological relics. Teeth . . . were found, and unmistakably from the same jaw as the first; but unhappily it was equally unmistakable that there were the teeth of a pig—an ancient and honourable pig no doubt . . . but indubitably porcine. Are the worshipers then, who so eagerly proclaimed themselves made in the image of *Hesperopithecus* left desolate? It is hard to believe that their devotion can be wholly barren. *Hesperopithecus* may not have, may never have had, a body, even a tooth; nevertheless by some process of emanation his adorers, out of their own vital force may conceivably have created for him a soul (quoted from *The London Times*, Feb. 25, 1928, p. 13).

Williams, in an article in the Feb. 20, 1928 *New York Times*, discusses what he believes may be the future significance for society, and specifically religion, due to dethroning *Hesperopithecus*. Writing as if he was

living a few hundred years from 1928 and looking back at the 1928 events, he writes:

Science in its proper sense: [was] the disinterested search after demonstrable Facts in all the fields of human thought. . . [but] became idolized and was set up as a Religion; a popular religion; supposedly one that was the rival and drastic opposite in all respects of the supernatural religion of Christianity. Long before the year 1928 by far the greater part of the Press was devoted to its service. 'Evolution' was the great shibboleth of this vast popular religion, the end of which was dogmatically asserted. . . .

More especially, the 'descent' of mankind from monkeys was the popular test of orthodoxy. How or why there was anything at all possessing life, or having existence, this popular science religion never bothered about: its sole preoccupation, its fundamental doctrine, was simply that 'there was (however it happened to be) something called 'matter,' which was simple in the beginning ('protoplasm' was its popular name); which then became somehow or other differentiated; passing into 'higher' and still 'higher' forms, till at last the monkey tribe appeared, out of which came man.

. . . The enormous efforts put forth by the American Museum of Science to establish the *haroldcookii* tooth as that of an ape-man, then, should be studied in their relations to the popular religions of 1928. No newspaper in the world, it may be added, had done more for the spread of the religion of Science than *The Times*. . . . on that historic Monday, February 20, 1928, was simply an isolated bubble of the great wave of mirth which finally did away with so many of the humbugs of an age which so proudly loved to call itself enlightened, but which now appears so pathetically mistaken (1928a, pp. 310-311).

The Bryan-Osborn Controversy

The whole Bryan-Osborn controversy over the tooth played a role in the history of the Scopes trial even though none of the scientific evidence was formally admitted, nor were the scientific expert witnesses allowed to testify. The judge concluded the only question was whether the law was violated, not the validity of any theory. As Gould (1991, p. 432) notes,

The main bout may have pitted Bryan against Clarence Darrow at the trial itself, but a preliminary skirmish in 1922, before any state legislature had passed an evolution law, had brought two equally formidable foes together—Bryan again, but this time against Henry Fairfield Osborn, the head of the American Museum of Natural History. In some respects, the Bryan-Osborn confrontation was more dramatic than the famous main event three years later. One can hardly imagine two more powerful but more different men; the arrogant, patrician, arch conservative Osborn versus the folksy, 'Great Commoner' from Nebraska. Moreover, Darrow maintained a certain respect, based on genuine affection for Bryan . . . I detect nothing but pure venom and contempt from Osborn.

Although Darrow selected Osborn as an expert witness in the Scopes trial, his primary strategy was, according to Gould, to show that it was possible for a religiously devout scientist to accept evolution. Osborn, a dedicated theist who viewed evolution as the finest expression of God's intent, wrote extensively about his views. This line of testimony, Darrow felt, would blunt Bryan's attack on evolution as intrinsically Godless (Gould, 1991, p. 433). Of course, Bryan's concern went far beyond this. He was much concerned with the effect of evolution on racism, human rights and the equality of man. And from our vantage point today, we now recognize that Osborn "advocated as Haeckel did, a racist view of Human Evolution" (Krishtalka, 1992, p. 405).

The skirmish resulted in the publication of their articles in various papers which argued for their respective viewpoints. Bryan, for example, in his *New York Times* (Feb. 26, 1922) article, according to Gould, showed, "some grasp of the tradition parries against Darwin . . . rested his case upon a supposed lack of direct evidence for the claims" of the evolutionist, asking the question,

The real question is, Did God use evolution as His plan? If it could be shown [that man], instead of being made in the image of God, is a development of beasts, we would have to accept it, regardless of its effect, for truth is truth and must prevail. But when there is no proof, we have a right to consider the effect of an acceptance of an unsupported hypothesis (Bryan, 1925, p. 375).

Osborn's response to Bryan's article was published in the *New York Times* on March 5, and then reissued on June 8, 1923 as a book called *Evolution and Religion*. Osborn called Bryan's article "able and carefully prepared" and notes that "the movement started by Mr. Bryan has become nation-wide . . ." (Osborn, 1923a, p. vii). He argued for evolution on the basis of the fossil and geological evidence, as well as the incompatibility of the theory with religion. He claims here that evolution is not part of modernism, but "goes back to the wise, learned, and observant founders of Christianity in Western Europe" (p. viii). Osborn also concluded that "man, instead of being made in the image of God, is a development of beasts" (p. 2). This view was a major concern of Bryan and the primary aspect of evolution that he objected to (Bryan, 1922). Osborn acknowledges that Bryan

has familiarized himself with many of the debatable points in Darwin's opinions, such as the theory of Sexual Selection, and it is not at all surprising, not being a specialist in biology, that he is extremely confused—as, in fact, many evolutionists are—by the radical differences in opinion as to the power of Natural Selection itself, expressed by recent writers such as John Burroughs and Professor Bateson. If it is difficult for biologists to think straight on this very intricate subject of evolution, how much more difficult must it be for the layman?" (1923, p. 3).

Osborn then adds that, in his opinion "Natural Selection is the only cause of evolution which has thus far been discovered and demonstrated" (1923, p. 4) and that

"no living naturalist, however, so far as I know, differs as to the immutable truth of evolution in the sense of the continuous fitness of plants and animals to their environment, and the ascent of all of the extinct and existing forms of life, including man, from an original and single cellular state" (pp. 4-5).

This response, although it was likely intended to refute Bryan, merely fueled Bryan's conclusion that great disagreement about the theory existed among biologists, and yet a common *faith* in evolution existed among them. He was specifically concerned about natural selection, which, according to Osborn, was the only cause so far discovered that has been shown that could cause evolution. It was this theory that Bryan was very concerned about because of his opposition to social Darwinism, racism and eugenics in general.

Osborn further supported Bryan's concern with such statements as ". . . while the shifting sands of human opinion are swept hither and thither both in Theology and in Science. Wrecked on these sands of opinion are many great names, both in Theology and Science" (Osborn, 1925b, p. 6). Osborn's argument that many devoutly religious persons have accepted evolution did not assuage Bryan's concern relative to the racism of natural selection, and the effects of the survival of the fittest theory, especially relative to the weak, Blacks and others.

Osborn also argues here that evolution should be taught in the schools, but only if it is "entirely separated from the opinions, materialist or theistic, which have clustered about it" (pp. 16-17). Of course, Bryan did not argue that it should not be taught as fact, only that the evolution of mankind, specifically atheistic evolution, should not be taught as fact (Bryan, 1922). Osborn used both Piltdown and Neandertal man as evidence for evolution, concluding that they "constituted the missing link between man and the lower order of creation" (1923a, p. 21). Many of his ideas here reflected his "old master, Huxley" the British "bull dog" of Darwin (Osborn, 1910, p. 5). Osborn (1910, p. 12) here again cited the Job 12:8 passage "Speak to the Earth, and it shall teach thee." He later expanded this part of his work which was published under the title *The Earth Speaks to Bryan* as a take off on this Scripture in Job. When the tooth was revealed to be that of a pig, Straton said,

I am writing to President Henry Fairfield Osborn respectfully suggesting in view of this fiasco, that he put this tooth in a handsome glass case in the Hall of the Age of Man at the Museum of Natural History, but change the name from *Hesperopithecus haroldcooky*, bestowed in honor of Harold Cook, discoverer of this miraculous tooth, from which a whole race of prehistoric men were created by fervid imagination of scientific enthusiasts, to *Hesperopigdonefoolen osbornicuckoo* in honor of Mr. Osborn himself, who defended the tooth heatedly and, cookoo-like said "Me too" after gleeful dogmatic opinions of Cook, Gregory and others.

I am also mildly and good naturedly suggesting to Mr. Osborn that he now apologize to Bryan's memory and to me for having called us jointly "bigots," demagogues of conduct, "foes of science,"

etc., in his Forum magazine article and book because we refused to reject the Bible teaching and kowtow to and swallow his pig tooth at the time he was serving that dish of pork camouflaged under an overwhelming Greek name, and trying to cram it down our throats willy-nilly in the awful name of science. (Straton 1928, p. 19).

The Meaning For Us Today

This case was not an aberration, but a pattern in the history of paleontology which, in Fix's (1984, p. 11) words was:

Possibly the most singular such case involved a creature that had been named *Hesperopithecus* by the discoverers of a solitary molar tooth [which] . . . , these experts decided, was close enough to man's to signal the presence of one of the legendary missing links. As usual, scientists and artists conspired to reconstruct the full creature, and portraits of the new species, male and female, brutish and slope-browed, were published in the *Illustrated London News*. With this favorable publicity heightening his significance, *Hesperopithecus*' tooth was introduced as evolutionary evidence in the Scopes "monkey trial" in Dayton, Tennessee, in 1925. But *Hesperopithecus*' career as a missing link was short-lived. In 1927 other parts of his skeleton were uncovered, a discovery paleoanthropologists are reluctant to celebrate: the molar had come from an extinct pig.

It has not been just an occasional opportunistic radical who has behaved in this way, but broad reaches of the profession. I am joined in this assessment by Sir Solly Zuckerman, a leading British scientist. Sir Solly complained that with the discovery of almost every new primate fossil the discoverer has attempted to present it as the chief ancestral link between the animals and man. Applying as much sarcasm as is possible in a technical paper, Sir Solly remarked, "It is . . . unlikely that they could all enjoy this distinction. . . ."

Many more examples of this exist in the attempts to prove human evolution (Reader, 1981). Fix (1984) summarizes some of the major examples of this pattern as follows: See Table.

This history vividly illustrates Gould's words as follows:

No myth deserves a more emphatic death than the idea that science is an inherently impartial and objective enterprise; objectivity has, after all, been battered by everything from Thomas Kuhn to Watergate. Yet it continues to thrive among working scientists because it serves us so well. It works within our profession by inspiring our students and sustaining us through inevitable periods of self-doubt; more crucially, it is the hallmark of our effort in public relations—a self-serving statement that enhances the social prestige and political clout of scientists. It also provides the rationale for America's scientific priesthood: The National Academy of Sciences (Gould, 1978, p. 344).

Proposed ancestors of mankind:	Discovered or proposed in:	Promoted by:	Career as missing link:
Neandertal	1856	Most early evolutionists	Abandoned as ancestral species by anthropologists in 1960s and 1970s.
<i>Homo erectus</i> (Java man, Peking man)	1891	Eugene Dubois Teilhard de Chardin Franz Weidenreich	Ancestral status made highly questionable by discovery of skull in 1972.
Pittdown	1912	Arthur Keith and most evolutionists	Exposed as hoax in 1953
<i>Hesperopithecus</i>	1922	Harold Cook, Harry Fairfield Osborn and others	Found to be an extinct pig in 1927.
<i>Australopithecus africanus</i>	1924	Raymond Dart Robert Ardrey Maitland Edey	Disqualified by the discovery of skull 1470 in 1972
<i>Australopithecus robustus</i>	1938	Robert Broom	Disqualified by discovery of <i>Homo habilis</i> in 1960s
Gigantopithecus	1946	Franz Weidenreich	Dropped by most anthropologists as too improbable by 1950.
Zinjanthropus	1959	Louis Leakey	Displaced by Leakey's discovery of <i>Homo habilis</i> in 1960s
<i>Homo habilis</i>	1960	Louis and Richard Leakey	Ancestral status still indeterminate
Ramapithecus	1964	David Pilbeam and Elwyn Simons	Found to be the ancestor of Orangutan in 1979
Lothagam man	1967	Bryan Patterson	Disqualified by new measurement in 1987.
<i>Australopithecus afarensis</i> "Lucy"	1979	Donald Johanson Timothy White Maitland Edey	Beset by many problems and mounting controversy in early 1980s

A major reason for the problem identified in this paper in the field of human origins is, as Fix (1984, p. 23) concludes:

Defenders of the tribe will no doubt protest that no one is infallible and that every profession has its share of embarrassments. But we are dealing here with more than an unfortunate minority who imbibe too deeply this heady mixture of enthusiasm and one-sided imagination. If we include not only those who produce the extrapolation but those who swallow it, then it would seem that most of the profession is similarly addicted. At least this is what we must conclude unless anthropology boasts a silent majority, because it is a matter of record that not a few, but most, of the ancestors of man endorsed by eminent students over the years have later had to be recalled.

Osborn specifically was guilty of this sin. Although a leading evolutionist, he "tailored the palaeontological evidence to fit . . . [his] views and values in his voluminous writings and in the enormous museum exhibitions and dioramas" (Krishtalka, 1992, p. 405—see Osborn 1923a, 1925c).

The method of arriving at the conclusion is detailed by Gregory (1927). After noting that there is extreme natural wear of the crown, they compared the chief characteristics that the *Hesperopithecus* tooth shared with both man and the anthropoid. They then utilized measurements of similar data for molars of chimpanzees and American Indians, "concluding that the *Hesperopithecus* type on the whole came nearest to the second upper molar of a chimpanzee." Of course taking measurements of a structure like a tooth, and deter-

mining that it falls in between a chimpanzee and an American Indian does not mean that the creature from which the tooth came likewise falls in between these two creatures structurally, evolutionarily or any other way. There are many structures and physiological processes which fall between two animals, but the animal they came from may be either much higher or much lower on the hypothetical evolutionary scale than either of the animals with which they are being compared.

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ARTICLE REVIEWS

From Beyond the Laboratory: A Theologian Looks at Science by Michael Bauman. 1992. Faculty Dialogue (*Journal of the Institute for Christian Leadership*) No. 17:131-145.

Reviewed by Don B. DeYoung*

Michael Bauman is Associate Professor of Theology and Culture at Hillsdale College, Michigan. This article gives an insightful look at modern science from the viewpoint of an outsider. Bauman's four points echo the same cautions that have been expressed for years in this *Quarterly*.

The first point compares the history of science with theology: Clearly, science answers are not secure and lasting. In theology, in contrast, the Apostles' Creed

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has endured for 15 centuries, in spite of liberal theologians of every age who have tried to erase it. Not so with science! The parade of scientific revolutions is endless: Ptolemaic, Copernican, Newtonian, Einsteinian, Post-Einsteinian. The false finality of science is clearly illustrated by the theory of evolution, "which gets treated almost universally not as theory but as established and unassailable fact requiring, at most, not proof, only further nuance" (p. 134). Shame on zoologist Richard Dawkins for a quote showing his ignorance of science history: "It is absolutely safe to say that, if you meet somebody who claims not to believe in evolution, that person is ignorant, stupid, or insane" (p. 131).

Bauman's second point, also reflected in the Dawkins quote, is that current science theories often become

unduly entrenched. There is an unrecognized dogmatism in science against change; too many scientists are "proof-proof." Dogmatism may be fine in theology, but for science, the track record shows the harm done by stagnant, false scientific ideas.

Third, the laboratory is neither a philosophy-free nor a theology-free zone. Purely empirical science simply does not exist, because all research proceeds according to certain presuppositions. For example, contemporary science has taken the position that God is altogether irrelevant, if not entirely absent (agnosticism and atheism respectively). This approach by no means limits God, but it *does* show the blindness and perhaps the self-destruction of modern science. "The fool has said in his heart that there is no God and too many scientists permit themselves to operate as if the fool were right" (p. 139). Bauman, a non-scientist, laments over the inevitable result: "The earth was not designed; the universe has no purpose; humans result from mindless natural processes" (p. 140). Perhaps this is a reason for the modern rejection of scientific integrity.

The fourth point concerns the tentativeness and limitations of all scientific models. Nature is imperfectly translated into numbers or categories, then manipulated by the experts. One of Bauman's examples concerns taxonomy: "While the beings that populate such categories most emphatically do, families, orders, classes and phyla, as such, *do not exist outside the taxonomist's mind*" (p. 141). Such artificial constructs may be useful, but we must beware of exchanging "useful" for "true" or for "real."

Bauman concludes that scientists would have greater success if they were more humble. He believes they desperately need to look outside their technical discipline, to theology, for guiding moral principles. "Science, to be kept serviceable and humane, must be kept humble, must be kept teachable" (p. 144). This article is an encouragement and compliment to the established work of the Creation Research Society.

Hydrothermal-Vent Communities of the Deep Sea by Verena Tunnicliffe. 1992. *American Scientist* 80: 336-349.

Reviewed by Jacqueline S. Lee*

Deep sea hydrothermal vents are the sites for a unique assortment of creatures, whose peculiarities both confound and fascinate the biologists who study them. Verena Tunnicliffe's article (1992) reveals some of the oddities of these communities and the evolutionary puzzle they present, a puzzle whose pieces may make more sense when rearranged in a creationist framework (Lee, 1992).

The earth's crust is very thin at deep sea spreading ridges, and seawater circulating through the fractured basaltic rock interacts with heat from magmatic energy, causing venting of mineralized, heated water at places along the ridge. Tunnicliffe, a professor at the University of Victoria, British Columbia, has written many articles on the unique biological communities

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that have been discovered around these hydrothermal vent systems.

One of the fascinating things she reveals is that the vents may not be as rare and isolated as once thought. Evidence of venting, such as chemical and temperature anomalies and dredged sulfides, has been found in every ocean. Only a few sites have been intensively investigated, because of the difficulty and expense of deep sea submersible diving.

Even so, the creatures recovered from dives were so new to scientists that specimens often had to be shipped from place to place before someone could properly identify them. New families, superfamilies and orders had to be created in order to classify over 40 percent of the species found.

One of these organisms, the giant tube worm (*Riftia pachyptila*), has been established as an entirely new class, a level of classification equal to the vertebrates. In my mind, this creature poses the most severe challenge to evolutionists, because it exists in a symbiotic relationship with chemosynthetic bacteria so unique and precise that there is no way the relationship can function unless every one of the components is present.

The chemosynthetic bacteria live in the tissues of the tube worm and produce organic carbon from oxygen-hydrogen sulfide reactions. They are supplied with carbon dioxide, oxygen, and hydrogen by the tube worm's special transport mechanism, which keeps the molecules from spontaneously reacting with each other, and also prevents the worm from being poisoned.

It is obvious that such a mechanism could not be evolved through a series of hit-or-miss "experiments." The danger of poisoning to the tube worm, or of molecular reaction, and possibly even combustion, before the molecules reach the bacteria, would eliminate any individuals who were "experimenting" with transport.

Another puzzle is that juvenile tube worms have a complete gut, then lose it to form the trophosome tissues that house the chemosynthetic bacteria. Why would an animal develop, through total random chance, such a complex and potentially dangerous feeding system as symbiosis with chemosynthetic bacteria, when gut feeding was already available?

The same question might well be asked about some of the other ingenious adaptations that Tunnicliffe examines. For example, some animals have metal-binding proteins that neutralize the toxic interference of dissolved heavy metals. Several worms exude mucus, apparently to cleanse their bodies of harmful particles and compounds, and some workers have suggested that one worm, which has filament-form bacteria growing in its skin, uses the bacteria to detoxify heavy metals or sulfides.

At the end of her article, Tunnicliffe devotes much space to the evolutionary problems of when these vent animals diverged from ancestral organisms to acquire the special adaptations necessary for survival at the vent sites. She does not, however, ponder the "why" or the "how" of the problem. After all, given the extraordinarily hostile conditions for life at the vents, including poisonous waters, high temperatures, and frequent lava flows, why would organisms move into these areas at all?

As a creationist, I find it much more believable that the living beings of the vent communities were specially created by the loving hands of a Maker, who gave them the "tools" they would need to survive at the vents. Why He chose to place life in such a harsh, seemingly desolate environment is not a question that I can readily answer. Perhaps to confound the evolutionary geologists who would someday find them during their quest to explore every niche and cranny of

the earth, perhaps to show creationists that He is capable of infinite variety and adaptation, or perhaps to give us a living parable about life; that it can survive and even thrive in the harshest of environments, when formed and guided by the hand of the Maker of Life.

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ADDITIONAL INFORMATION ON THE FREIBERG HUMAN SKULL COMPOSED OF COAL

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Abstract

Information available on the Freiberg East German skull is summarized. There is no evidence that this artifact contains fossil bone. The skull is not a fossilized human head; nor is it a carving. It was molded by somebody using particles of brown coal and other materials probably prior to the summer of 1813. Therefore it has little or no significance in creation/evolution considerations. There even is a suggestion that it was a late eighteenth or early nineteenth century hoax sculptured as "evidence" that humans existed before the Genesis Flood.

Introduction

The presence of a human skull composed of coal in Germany was brought to public attention by Whitcomb and Morris (1961, pp. 175-176). After a study of literature dealing with this artifact, Frair (1969) reported evidence indicating that the skull was an artistic fabrication. A review of this 1969 paper written by Anon. (1969, p. 4) left open the possibility that the artifact could be a "genuine skull."

Since 1969 some authors desiring to direct attention to the "puzzling human skull" have referred to material found in the Whitcomb and Morris (1961) book which includes a quotation from Stutzer (1940, p. 271). See Anon. (1975), Anon. (1982, p. 2), Bartz (1982, p. 1, 1985-1987), Beierle (1979, p. 33, 1980, p. 90), Daly (1972, p. 192), Jochmans (1979, p. 3), Mulfinger (1975, p. 3), Pearcey (1984, p. 6), Petersen (1990, pp. 130-131), Sharp (1986, p. 10), Tanner (1975, pp. 312-313), Taylor (1984, pp. 102-103, 448), von Fange (1974, pp. 16-17, 1981, p. 30), Wysong (1976, pp. 373,378). Some authors have embellished somewhat the primary source material but most have demonstrated some restraint in considerations of the significance of this skull as an "out of place fossil" with regard to dating and creation-evolution issues.

Certain authors have been somewhat less supportive of the idea that the skull could be genuine. For example in the 1977 German translation of the Whitcomb and Morris' 1961 book, Joachim Scheven wrote a footnote (p. 204) indicating that according to Roselt, the Freiberg skull clearly (or incontestably; Ger. *einwandfrei*) is an artificial product of unknown significance. Another more recent report (Williams, 1991, p. 29) indicates that the skull has been reported to be a fake; and Snelling (1991-1992, pp. 29-30) did not feel that the skull conclusively was a human fossil.

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In four of the above publications (Whitcomb and Morris, 1961; Daly, 1972; Tanner, 1975; Snelling, 1991-1992) there is reference to a suggestion that the skull could be a carving. However, the primary source literature on the skull does not specify "carving," but rather has terms like "artistic product," "falsification," or "skull molded from brown coal . . ."

Personal Observation of the Skull

During July, 1979, science teacher Helen Martin from the Unionville High School in Pennsylvania and I along with a German friend, Hermann Dybeok, visited the Royal Mining Academy in Freiberg. Here Martin and I spent about one hour in the office of Gerhard Roselt where we held the skull, macroscopically examined it carefully, and discussed it with Roselt. However, no photographs were permitted.

At that time I intended to write another paper about the skull, but Roselt strongly requested that I withhold doing so until after his forthcoming detailed report (Roselt, 1988). I agreed to abide by his desire and merely wrote a short note about previous unsuccessful attempts to get into the East German Freiberg museum and the fact that during the 1979 visit while examining the skull we were unable to find any indications of bone. See Anon. (1980).

Current Understanding

The best single source of information about the coal skull is Roselt's (1988) paper, "Regarding the coal skull in the Freiberg collections — conclusions until now and recent investigations." While preparing the following chronological series of important events relating to the skull, I relied upon Roselt's paper and personal communications from him. Also used to a lesser extent were papers by Stutzer, Kersten, and Frair.