

# REFLECTIONS

Robert Silverberg

## TWO CHEERS FOR PILTDOWN MAN

Science used to be a lot simpler when I was a boy, back in the days when Franklin D. Roosevelt was president. The atom was made up of just three particles—the proton, the electron, and the neutron—plus the neutron was a ghostly particle that existed in theory but which nobody seemed able to find. As for the evolution of the human race, the story began with Java Man, *Pithecanthropus erectus*, the first primitive hominid that was more like a man than an ape, and continued on through a handful of other fossil species—basically, just Peking Man, Heidelberg Man, and Piltdown Man—to our extinct cousin, Neanderthal Man, and eventually down to us, *Homo sapiens*, the only extant human species.

How different it all is today! Physicists have peered into the heart of the atom and found more new subatomic particles than you can shake a boson at—the pi meson, the mu meson, the lambda particle, the sigma particle (positive, negative, and neutral varieties), the xi particle and the xi-zero particle, and I know not how many others. And the list of proto-human species is now vastly more elaborate than it was in the old days when everything started with *Pithecanthropus erectus*: out of Africa has come a host of predecessor species, *Homo habilis*, *Homo rudolfensis*, *Homo ergaster*, and so on along to *Homo naledi*, discovered just a couple of years ago, plus some others, such as *Homo antecessor*, *Homo cepranensis*, *Homo rhodesiensis*, etc., which are known mostly from a few fossil fragments and may simply be variants of such long-known species as Java Man (which we now call *Homo erectus*) and Heidelberg Man.

But one name is missing from the list of proto-human ancestors that I knew about when I was a boy. We don't hear anything about Piltdown Man any more.

One of the treasured books of my boyhood—I still own it—is a sturdy paperback called *The Coming of Man*, by the Yale University Curator of Anthropology, George Grant MacCurdy, which was published in 1935 and which my father bought for me at New York's American Museum of Natural History about a decade later, when I was ten. Dr. MacCurdy has this to say about Piltdown Man:

“From 1911 to 1913, important discoveries were made by Charles Dawson, a local lawyer, and others in a gravel pit at Piltdown Common near Fletching (Sussex), England. The finds included part of a human cranium, part of a lower jaw with two molar teeth *in situ*, a canine, and nasal bones. In the same deposit were found remains of fossil animals and crudely chipped flint tools. . . . The cranial walls of the man of Piltdown were exceedingly thick, resembling in this respect those of the man of Peking. In other respects the cranium approaches more nearly to the modern type. On the other hand, the lower jaw and the canine tooth are more apelike than is the cranium of the Peking man.” MacCurdy goes on to tell us that Piltdown Man, which had received the scientific name of *Eoanthropus dawsoni*, “Dawson's Dawn Man,” can best be understood as a transitional form linking the thick-boned and ape-like Peking and Java men with our more fine-boned *Homo sapiens* species: in fact, he was our direct ancestor, the much-heralded Missing Link that demonstrated the evolutionary point in prehistory when ape-like creatures crossed the boundary that separated them from men.

And so everybody believed for decades, although no one could quite understand why, half a million years ago when the Piltdown deposits had been laid down, a creature with so human a skull and so primitive a jaw had walked the Earth. But by

2011, when the hundredth anniversary of the Piltdown discovery had rolled around, there were no celebrations of the event, because by then poor Piltdown Man had been exposed for the hoax he was, taking several important scientific reputations with him.

Among the casualties of the Piltdown hoax was Arthur Smith Woodward, head of the department of geology at the British Museum. Woodward, a long-time friend of Charles Dawson's, had journeyed to Sussex in 1912 to inspect Dawson's discoveries. Dawson had altered the color of the nine skull fragments, which had been stained a deep brown by the presence of iron oxide in the ground, by bathing them in potassium dichromate, a preservative. In short order Woodward and Dawson excavated another skull fragment, and then an extremely primitive lower jaw. Both of these had the iron-oxide staining, but the jaw bore the preservative stain also! For reasons we will never know, Woodward did not find it at all remarkable that a fossil buried for eons should come from the ground already neatly prepared as a laboratory specimen.

In December 1912, Woodward told the Geological Society of London that the Piltdown cranium seemed quite human. Its walls were very thick and the brain it had held must have been a small one, but there were no jutting Neanderthal-like brow ridges or other primitive characteristics. On the other hand, the jawbone, chinless and underslung, looked like that of an ape.

Woodward's report caused a great uproar. It seemed that at the dawn of human life man had had a noble forehead and an ape's jaw. What weird evolutionary mixture was this? That serenely human skull, that brutish jaw, upset everyone's idea of what early man should have looked like. More Piltdown discoveries followed: some further skull fragments, another tooth, and an assortment of fossil animal bones that some scientists jokingly called the "Piltdown Zoo." The "Zoo" created some confusion of its own, for it was a jumble of creatures that had lived millions of years apart, the mastodon and the early rhinoceros in the same stratum as recent animals like the beaver, red deer, and modern horse. With them was a cudgel-like object bearing various carvings. Woodward said it had belonged to Piltdown Man, which would make it the oldest known human tool.

Dawson died in 1916, but Woodward went on defending the authenticity of the Piltdown finds for many years, despite the skepticism of such scientists as the one who argued that it was about as sensible to match the jaw and the skull as it was to link "a chimpanzee's foot with the bones of an essentially human thigh and leg." Piltdown Man was generally accepted, though; he got his section in MacCurdy's 1935 book and other studies of fossil man, and I saw a plaster cast of the Piltdown skull when I visited New York's Museum of Natural History around 1945.

A few years after that, though, the Piltdown saga began to unravel with the aid of modern technological methods for determining the age of fossil specimens. Kenneth P. Oakley, a British Museum geologist, obtained a few tiny slivers of bone from the Piltdown specimen and, in association with Wilfred E. Le Gros Clark and J.S. Weiner of Oxford University, tested them for fluorine content and found that the skull contained about as much fluorine as fossil bones from the Upper Pleistocene, about fifty thousand years old. The jaw, though, was quite recent: it could not have been in the ground more than a few decades. And the teeth, examined under a microscope, showed fine scratches, as though they were ape teeth that had been filed down to give them a more human appearance.

Further chemical testing confirmed these findings. The Piltdown skull was relatively ancient, though dating from a time when *Homo sapiens* had already evolved, but the troublesome Piltdown jaw was that of a modern ape, most likely an orangutan, skillfully stained with "a tough, flexible, paint-like substance" to make it appear ancient. As for the flint tools found at the Piltdown site, they turned out to have

been shaped quite recently and given an artificial appearance of age through staining. Piltdown Man's bone cudgel had come from the femur of an early species of elephant, but a metal knife had been used to carve it into the shape of a weapon. J.S. Weiner's 1955 book, *The Piltdown Forgery*, set forth all the data in a conclusive way: Piltdown Man was a fake and had to be removed from the sequence of fossil human ancestors.

Who was the perpetrator, though, of one of the greatest scientific hoaxes of all time?

Arthur Woodward, the chief scientific defender of Piltdown Man's authenticity, was quickly eliminated as a suspect. He had too sturdy a reputation for integrity. He had let his enthusiasm run away with him, yes, for he had wanted so much to believe that Piltdown Man was genuine that he had forced himself to ignore the improbable aspects of the find. He had been a dupe, not a hoaxer.

Another possibility was Sir Arthur Conan Doyle, creator of Sherlock Holmes, who had been a neighbor and friend of Charles Dawson, and a fellow fossil collector. Conan Doyle had been a doctor before turning to writing, and had the technical knowledge to have managed the hoax; and his novel, *The Lost World*, published the year of the Piltdown finding, had proposed that dinosaurs and prehistoric humans had survived into modern times in a remote corner of South America. But no evidence actually linked him to the hoax.

Weiner eventually eliminated everyone except Dawson himself, whose collection of antiquities proved to include thirty-eight forged specimens of all sorts: fraudulent Roman and Anglo-Saxon relics, a fake Chinese bronze vase, and the supposed teeth of a reptile-mammal hybrid that had been filed down in the same way as the Piltdown teeth. But Dawson was long dead and could not be called in to testify; and his collection of fakes might simply demonstrate that he was unusually gullible, the victim of hoaxers rather than a hoaxer himself. More recently, a paleontologist named Martin Hinton, who held a grudge against Arthur Smith Woodward over unpaid wages and a known practical joker, has been put forth as the culprit. Significant evidence found in the 1970s among Hinton's possessions, including fossil bones stained the same way as the Piltdown bones, support the Hinton theory. But we will never know for certain.

Since I was a fan of Piltdown Man at the age of ten, I do regret his demise. Alas, a search for modern-day believers that such a creature ever existed, though, turns up nothing. There are people in our very own era who believe that our Moon landings were faked by Hollywood technicians in the Arizona desert, some who think that the Moon and stars themselves are just special effects, and others that the world is flat. But nobody has spoken up in favor of the authenticity of Piltdown Man. Which is a pity, I think; and though I am no believer in his genuine status myself, I can only offer, as a tribute to all those who once saw him as the true Missing Link, two faint cheers for Piltdown Man even now.