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- A surprise ending!

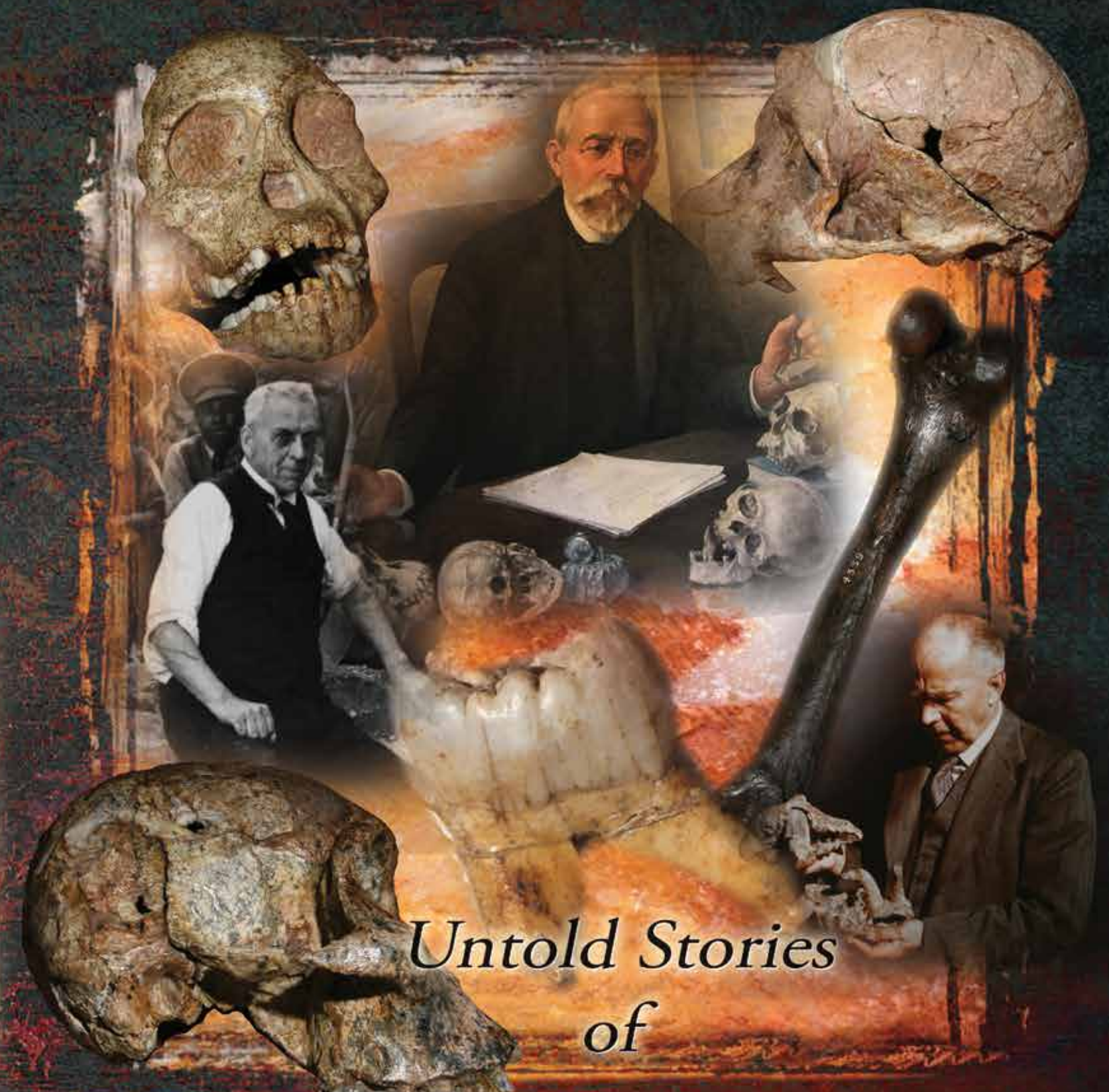
LEARN THE ANSWERS

- What famous scientist discovered four ape-men, three of which turned out to be created with monkey bones?
- Which scientist at the American Museum of Natural History in New York abandoned the idea that humans evolved from apes?
- What famous scientist made an ape-man out of a horse toe bone, a cat leg bone, and a monkey skull bone?
- Which scientist found a procyonid (raccoon family) leg bone and said it was from an upright-walking ape-man?
- Which museum curator found a dolphin bone and promoted it as an ape-man?
- Which three scientists in Spain said a donkey skull was the skull of an ape-man?

Audio Visual Consultants, Inc.

Human Evolution THE GRAND EXPERIMENT

Vol. 3
Werner



Untold Stories of HUMAN EVOLUTION THE GRAND EXPERIMENT VOL. 3

—Dr. Carl Werner—

Untold Stories of Human Evolution



Australopithecus africanus (Sts 71) (real bone)
Ditsong National Museum of Natural History.
Photo by Carl Werner

Evolution: The Grand Experiment Vol. 3

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Paranthropus robustus (SK 46) (real bone)
Ditsong National Museum.
Photo by Carl Werner

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Front cover photos: Dr. Florentino Ameghino (top), Dr. Raymond Dart (right) and Dr. Robert Broom (left). The three skulls are the Taung Child (top left), Mrs. Ples (top right), and Sts 71 *Australopithecus africanus* (bottom left). The femur is *Tetraprothomo argentinus* and the tooth is Sts 54. **Back cover photos (top left, counterclockwise):** Sts 35 back teeth, Taung Child skull in hand, Taung Child hard palate and teeth, Sts 52 facial bones, ODK bone tool in hand.

Acknowledgements

The author, Dr. Carl Werner, and the principal photographer, Debbie Werner, would like to thank the paleoanthropologists, curators, and fossil preparators who worked to collect and display the fossils photographed for this book. The process of preparing a single museum-quality specimen sometimes takes years. Their efforts and those of others, including the museum administrative staff and technicians, are greatly appreciated.

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Debbie and I would like to thank the governmental institutions overseeing the dig sites, museums, and national parks where we filmed, including South African Heritage Resources Agency (SAHRA), Gauteng Department of Economic Development, South Africa; City of Orce, Spain; the Regional Government of Andalusia, Spain; and the Federal Governments of South Africa, England, Germany, Belgium, Spain, Argentina, and the United States of America. Thanks to Tshepiso Mokoka and Khumoetsile Tsatsimpe for assistance at the Sterkfontein Cave site.

We feel a great indebtedness to Carl's writing assistant and copy editor, Carla Azzara, whose writing and editorial skills continue to transform his ideas into written form. Her array of abilities have been invaluable in guiding this project to completion. Thank you for your dedication to this project over the last eighteen years. For this, we will be forever grateful.

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ABOUT THE AUTHOR



*Dr. Carl Werner received his undergraduate degree in biology, with distinction, at the University of Missouri, graduating summa cum laude. He received his doctoral degree in medicine at the age of 23. Formerly he was an Adjunct Assistant Professor in the Department of Surgery at Saint Louis University. Dr. Werner is the author of the **Evolution: The Grand Experiment** book series and the executive producer of the **Evolution: The Grand Experiment** video series, which has played on seven television networks in 70 countries.*

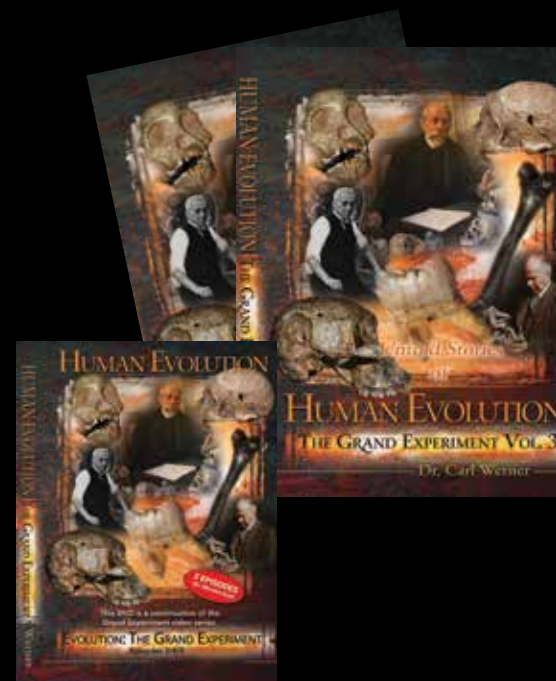
Evolution: The Grand Experiment Volume 1 - The Quest for an Answer



Evolution: The Grand Experiment Volume 2 - Living Fossils



Evolution: The Grand Experiment Volume 3 - Untold Stories of Human Evolution



Evolution: The Grand Experiment Volume 4 - Nine Categories of Overturned Ape-Men



*Debbie Werner, principal photographer of the **Evolution: The Grand Experiment** book series, and principal videographer and producer of the **Evolution: The Grand Experiment** video series, received her Bachelor of Science in Nursing from Excelsior College in Albany, New York, and Master of Science in Nursing from Saint Joseph's College, Standish, Maine. She is an amazing photographer, an avid naturalist, and the wife of Dr. Carl Werner.*

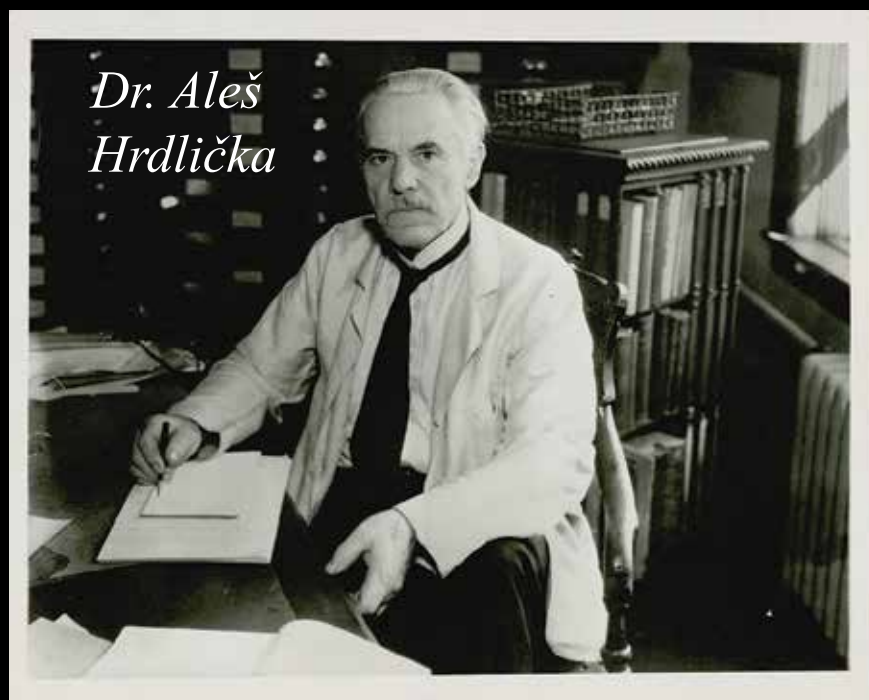


In the early 20th century, Dr. Aleš Hrdlička, Curator of Physical Anthropology at the Smithsonian Institution (National Museum of Natural History), learned of five new ape-men found in Argentina, South America. Unlike his colleagues who accepted these ape-men claims at face value, Dr. Hrdlička and his associate, Bailey Willis, were more cautious. They ventured to Argentina and spent *months* visiting the dig sites, interviewing the scientists involved in the discoveries, and photographing the newly discovered ape-men fossils to confirm their authenticity. Hrdlička's 403-page report, a book entitled *Early Man in South America*, reads like a detective story in

which all the evidence is scrutinized and no stone is left unturned. His thorough examination of the South American dig sites and artifacts resulted in a reinterpretation of these five ape-men, which has withstood the test of time.

I have dedicated this book to Dr. Hrdlička as his method and style of investigation serve as a model for how to approach purported ape-men fossil discoveries. Dr. Hrdlička's story is the first presented in this volume and introduces the reader to the field of paleoanthropology and the common pitfalls to avoid.

Dr. Carl Werner



CHAPTER 1

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Dr. Florentino Ameghino, founder of the Museum of Anthropology and Paleontology at the National University of Córdoba and the Director of the National Museum of Natural History in Buenos Aires, found the remains of an ape-man, along with stone tools and evidence for the controlled use of fire, at a dig site at Mount Hermoso, Argentina. He named the creature *Tetraprothomo argentinus*. His discovery made national front-page news and drew the attention of other scientists from around the world. But when his fossils and artifacts were investigated by Dr. Aleš Hrdlička, Curator of Physical Anthropology at the Smithsonian Museum in Washington, D.C. (previous page), problems emerged.

CHAPTER 3

The Ape-Man of the Western World (<i>Hesperopithecus haroldcookii</i>)	41
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When Dr. Henry Fairfield Osborn, President of the prestigious American Museum of Natural History in New York City, reported he had found a bone-tool using ape-man in the Western United States, *The New York Times* and *The Illustrated London News* printed full-page articles about the discovery. Osborn wrote that this “Ape-Man of the Western World,” apparently could sew, make necklaces out of animal bones, and used animal bones to tattoo other ape-men. But, when Dr. Osborn later abandoned his belief that humans evolved from apes (“*Let Us Abandon the Ape-Human Theory*”), he admitted that there was a problem with his “Ape-Man of the Western World.” What he revealed next was astonishing.

CHAPTER 4

The Ape-Man of 2001: <i>A Space Odyssey</i> (<i>Australopithecus prometheus</i>)	89
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Dr. Raymond Dart, Chairman of Anatomy at the University of the Witwatersrand, finally found solace after discovering his second ape-man, *Australopithecus prometheus*, at Makapansgat Cave in South Africa. (Dart had suffered a nervous breakdown when scientists bitterly rejected his first proposed ape-man, the Taung Child.) His second ape-man was accepted because of an impressive array of corroborating artifactual evidence found near the skull. Dart demonstrated that his ape-man controlled the use of fire, lived in caves, participated in group hunting, ate big game, and used stone and bone tools. Dart reported in *The New York Times* that this creature had a human-sized brain. Eventually his ape-man was featured in the Hollywood movie, *2001: A Space Odyssey*. But at the end of his life, Dart made a startling “confession” to his close colleague (Dr. Robert Brain) that caused all of his life’s work to seemingly evaporate.

CHAPTER 5

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Dr. José Gibert, founder of the Museum of Prehistory and Paleontology in Orce, Spain, and Director of the prestigious Catalan Institute of Paleontology in Barcelona, found evidence of an ape-man in Southern Spain. He discovered an ape-man skull, two arm bones, and a tooth, along with stone tools, just outside of Orce. In *National Geographic* magazine, he provided evidence that this ape-man had emigrated from Africa into Europe across the Strait of Gibraltar. But when his fossil skull was finally cleaned and the inside features could be seen, a most embarrassing discovery was made.

CHAPTER 6

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Dr. Noel Boaz, Assistant Professor of Anatomy and Anthropology at New York University and later founder of the Virginia Museum of Natural History, found in the Libyan Sahara Desert, North Africa, the earliest (oldest) ape-man ever known. This pre-human evolutionary missing link was featured in the American Museum's *Natural History* magazine and many prestigious scientific publications. He suggested this ape-man from Libya could walk upright and had a human-like collarbone and a human-like ankle bone. But when Dr. Boaz went on the offensive—and tried to take down the famous ape-man “Lucy” (discovered by Dr. Donald Johanson)—things began to fall apart for Dr. Boaz.

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A surprise ending!

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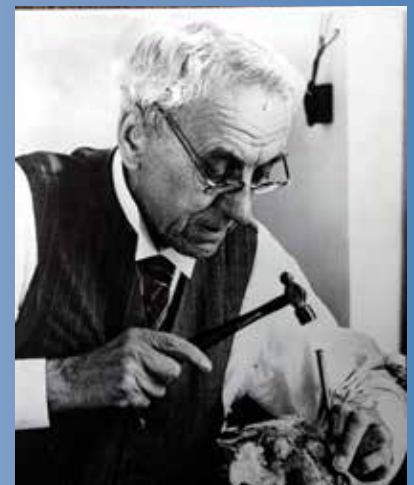
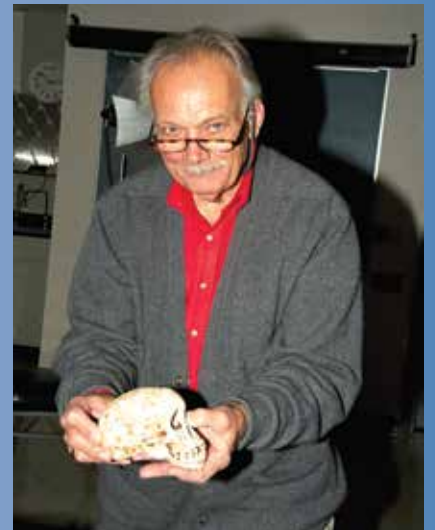
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CHAPTER 1

INTRODUCTION





Dr. Luis Gibert, Spain, Photo by Debbie Werner

“Well, in general, society is very interested in our origins, and it’s demonstrated that people are especially interested in human paleontology. It’s one of the topics that generates a lot of excitement in society, in people. So, every time you supply a new piece, a new fossil, that helps to understand our origins, this generates a lot of enthusiasm, publicity, [and] interest by a lot of people.”¹

—Dr. Luis Gibert
Professor of Geology
University of Barcelona

Would it shock you to learn...

--that a former president of one of the world’s most prestigious science museums (the American Museum of Natural History in New York City) abandoned the idea that humans evolved from apes?²

--that a professor of anthropology at a national university interpreted five *recently buried* humans as five different species of ape-men?³

--or that the latest fossil evidence offered for human evolution is controversial, even among evolution scientists?⁴

This book challenges what many have presumed to be the *fossil* proof for human evolution. Written in an easy-to-understand style, the reader will be privy to a formerly inaccessible fossil history of five ape-men discoveries on four continents. With photographs, interviews, and articles, you will experience the enthusiasm generated when these ape-men were first reported in newspapers, popular science magazines, and science journals. Then, in a unique story-behind-the-story approach, you will follow the evidence *through time* and learn about the rarely

publicized *reinterpretations*, better known as the “*Untold Stories of Human Evolution*.”

When you are finished and have read the surprise ending, it is the author’s hope you will have the tools by which to properly judge the fossil evidence offered by scientists in support of Darwin’s ape-to-human theory.

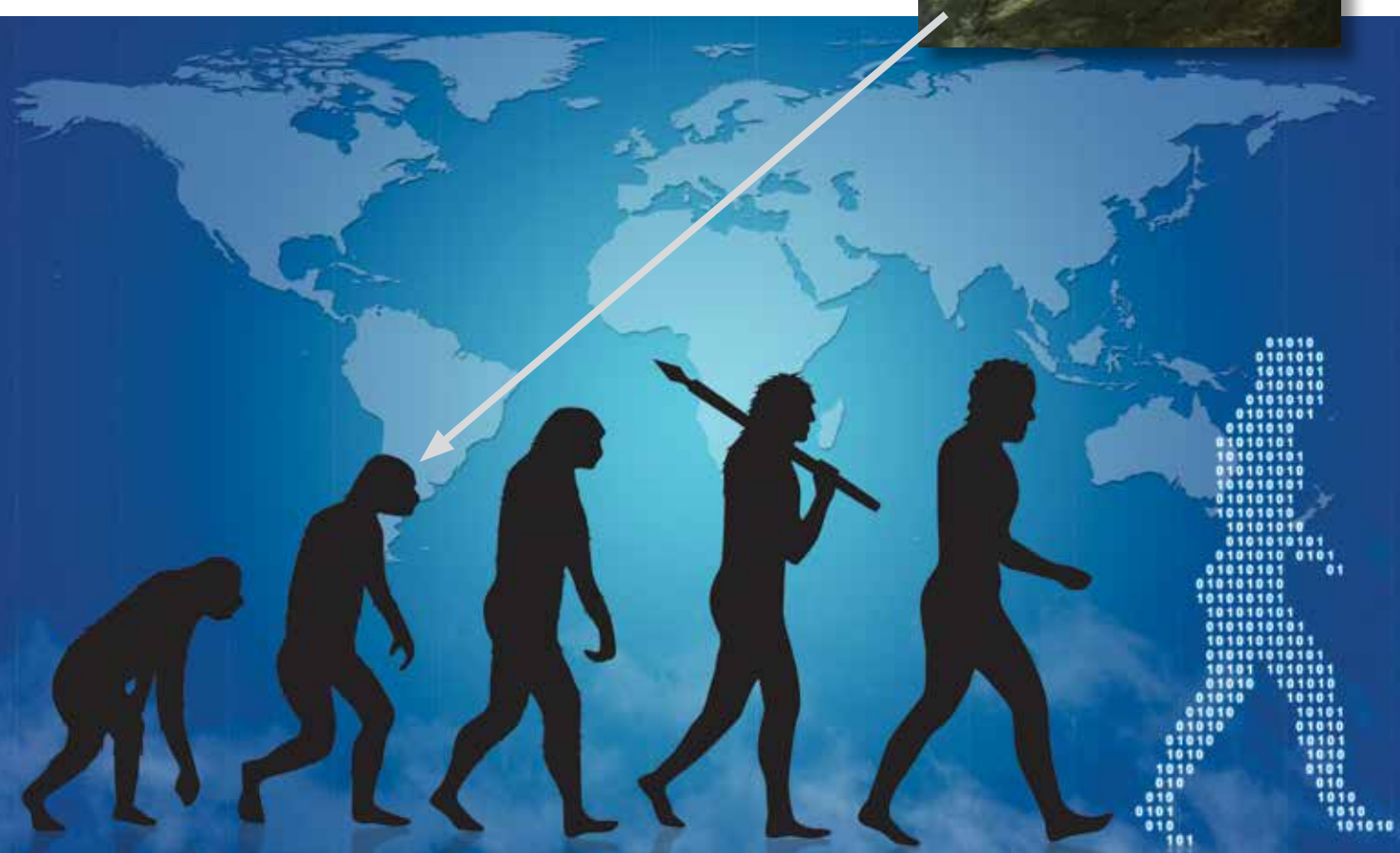
For those wanting more information, further resources are available. For now, sit back and enjoy these five incredible stories.

Note to Readers: To make this book more affordable, the large, 107-page Bibliography has been moved to Volume 5 of this series entitled *Human Evolution Bibliography*.

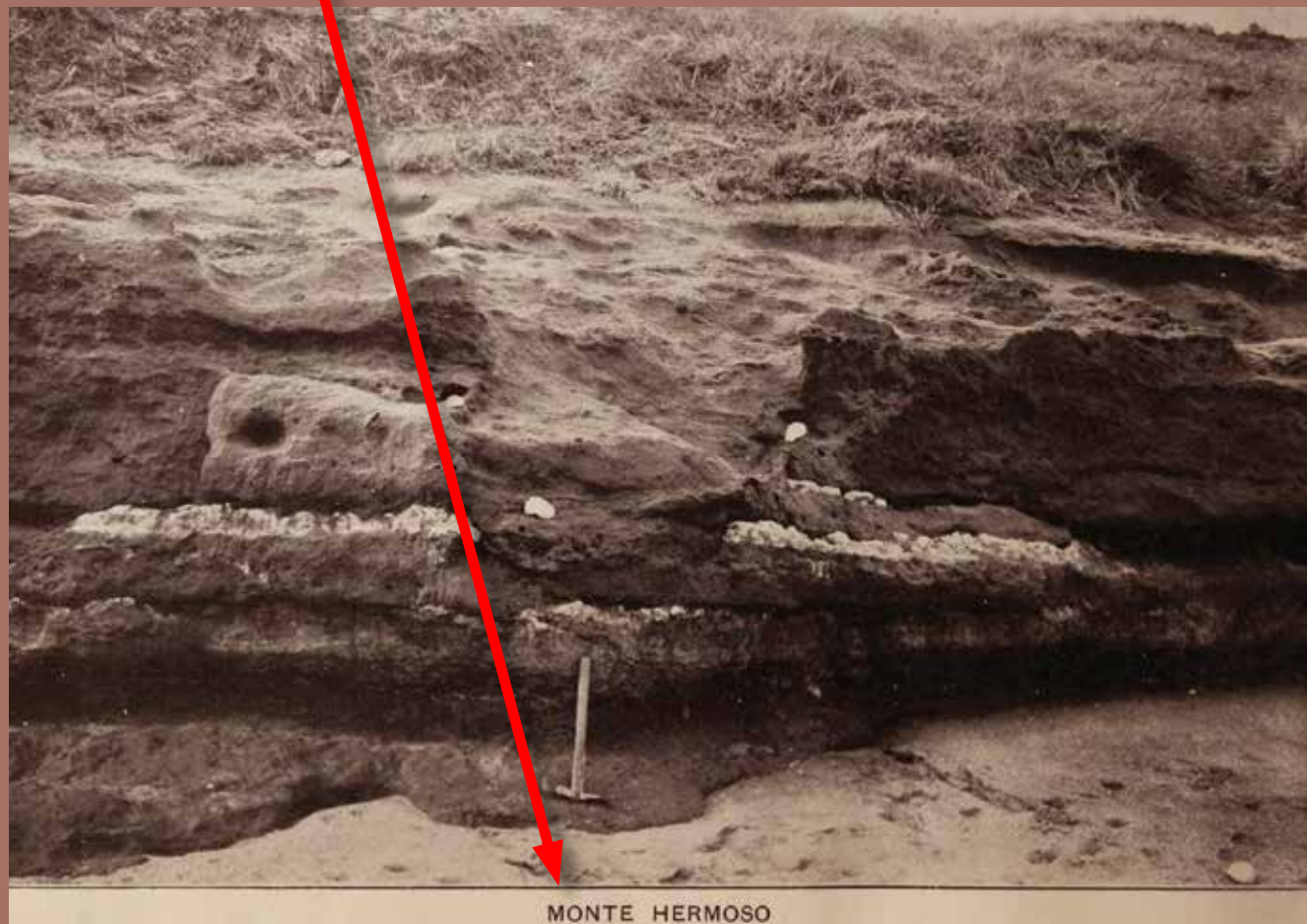
“A picture is worth a thousand words.”

Below: This chart, in its original form, was produced by Dr. F. Clark Howell and appeared in the 1965 *Time-Life* book entitled *Early Man*. It has since been repudiated.⁷ All of these animals turned out to be ordinary apes and ordinary humans. From left to right: *Dryopithecus* (an ordinary ape), *Oreopithecus* (an ordinary ape), *Ramapithecus* (an ordinary ape), Cro-Magnon Man (an ordinary *Homo sapiens*), and modern man (*Homo sapiens*). There are no ape-men in this diagram!

Below: Fossil of *Oreopithecus*. The interpretation of this fossil has changed over time from an ape-man to an ordinary (extinct) ape.^{5,6}

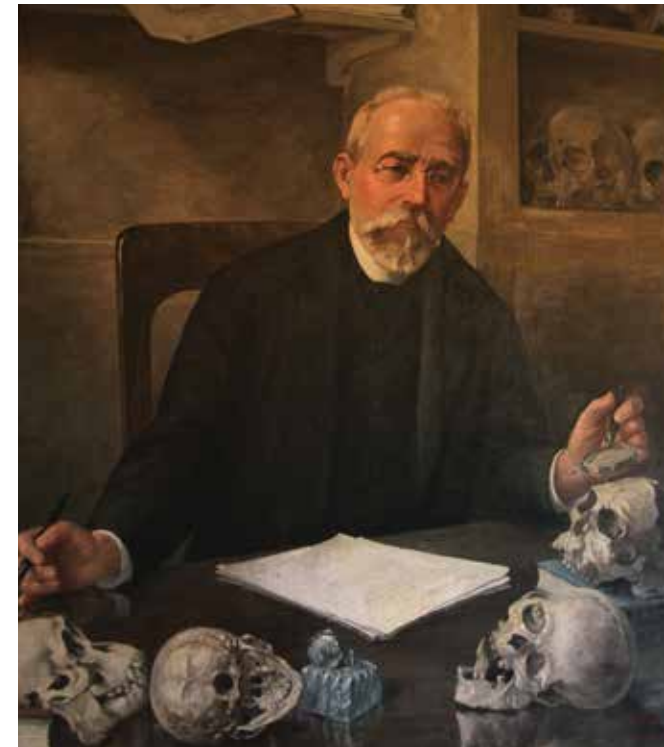


CHAPTER 2

*Tetraprothomo
argentinus*The Ape-Man From
Mount Hermoso

MONTE HERMOSO

Dr. Florentino Ameghino

Dr. Florentino Ameghino
1854-1911¹

Geologist, Paleontologist, Anthropologist, and Zoologist

Dr. Florentino Ameghino was considered “one of the most eminent geologists and paleontologists of his day and discovered many fossil fauna.”² His colleague, Alfredo Torcelli from the National Museum of Natural History in Buenos Aires, described him as a “sage,”³ and a “wise man, whose moral virtues were as eminent as his scientific genius.”⁴ One measure of his scientific gravitas is the



Above: Some of Dr. Ameghino's publications

considerable volume of his technical writings which fill 15,000 pages (above).¹

In his lifetime, Dr. Ameghino named *three* of the twenty-nine orders of mammals living today—an incredible accomplishment.⁵ He also discovered two extinct genus groups in the raccoon family^{6,7} and more than a thousand new fossil species of animals.^{8,9} Ameghino named five species of ape-men of which *Tetraprothomo argentinus* was his most famous.

In addition to being a paleontologist, geologist, and anthropologist, Dr. Ameghino founded the Museum of Anthropology and Paleontology at the National University of Córdoba (below).¹ He lectured in Europe on the topic of human evolution^{10,11,12} and published scholarly articles in many American and European science journals.¹³

Right: In 1885, Dr. Ameghino founded the Museum of Anthropology and Paleontology at the National University of Córdoba. In 1940, long after Ameghino's death, the university moved the Museum of Anthropology to this location in Córdoba.



Ameghino Makes Bold Prediction

In 1884, long before Dr. Ameghino found his first fossil ape-man, he predicted what the *earliest* ape-man might look like. In his book *Filogenia* (right), he suggested that, anatomically, it would be intermediate between a chimpanzee and a human. Its height would measure 39 to 51 inches; brain capacity would be between 400 and 700 cc; and arm length would be intermediate between an ape and a human. He boldly named this yet-to-be-found creature *Tetraprothomo* (or the fourth ancestor before man).¹⁴



Artifacts Found

Three years later (1887), Ameghino fortuitously unearthed four types of cultural artifacts at Mount Hermoso, Argentina, 400 miles south of Buenos Aires, including: Stone tools (right), crudely carved bones (newspaper article next page), remnants of fireplaces (below left and right),¹⁵ and burnt bones (not shown).¹⁶ Because these artifacts were thought to be millions of years old, they were considered remarkable. Within a week of his discoveries, the national newspaper in Argentina, *La Nacion*, printed a lengthy front-page story (next page). Soon, other geologists and collectors confirmed his findings by uncovering similar stone tools and fireplaces in these ancient rock layers. The rush was now on to locate the prehistoric creature responsible for making these artifacts.^{16, 17}



Drawings of stone tools

Dr. Ameghino: "Quartzite hull obtained by intentional percussion, seen from both of its faces, from the Monte Hermoso deposit (Upper Miocene). Natural dimensions."¹⁸

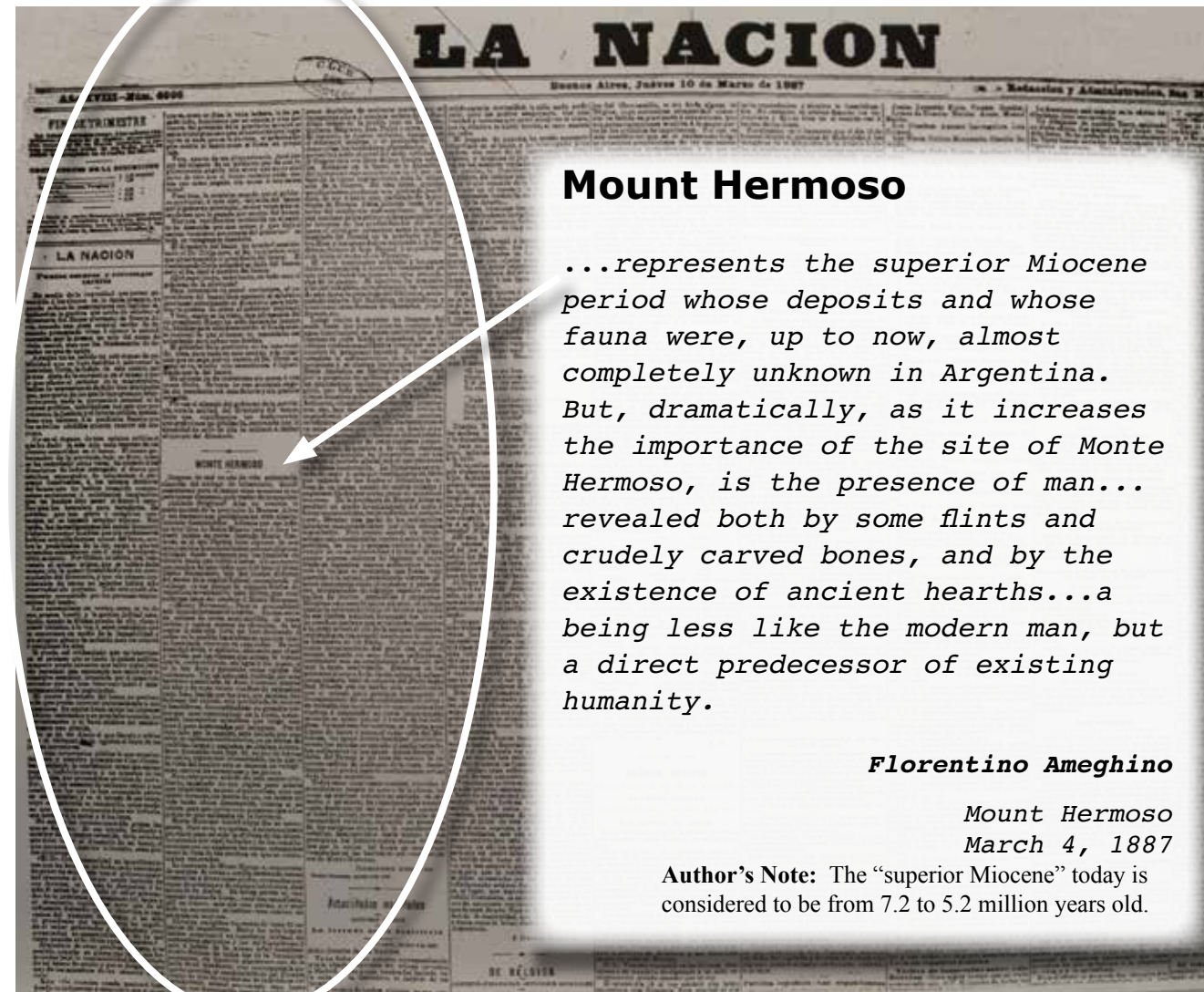
Photos by Debbie Werner, Museum of La Plata



Above: Remnant from fireplace, called *tierra cocida* (baked clay from heat of fireplace), found by Ameghino at Mount Hermoso



Above: Remnant from fireplace, called *scoriae* (slag or melted rock from heat of fireplace), found at Mount Hermoso



Mount Hermoso

...represents the superior Miocene period whose deposits and whose fauna were, up to now, almost completely unknown in Argentina. But, dramatically, as it increases the importance of the site of Monte Hermoso, is the presence of man... revealed both by some flints and crudely carved bones, and by the existence of ancient hearths... a being less like the modern man, but a direct predecessor of existing humanity.

Florentino Ameghino

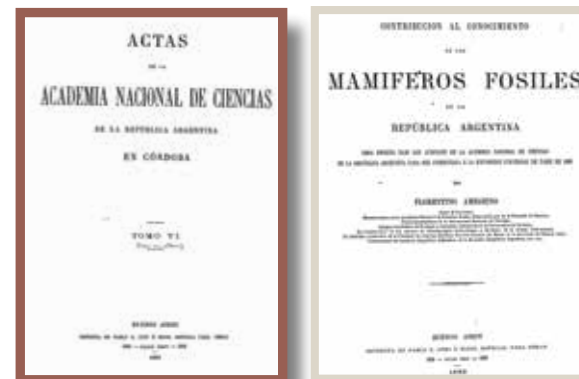
Mount Hermoso
 March 4, 1887

Author's Note: The "superior Miocene" today is considered to be from 7.2 to 5.2 million years old.

Newspaper printed from microfilm at the General Archive of the Nation (Argentina)

Ameghino Files Formal Scientific Report

In 1889, two years after Dr. Ameghino's *La Nacion* article was published (above), he submitted a formal scientific report to the National Academy of Sciences on the stone tools and fire artifacts. He concluded, based on a number of lines of evidence, that the creature who made the stone tools and used the fire pits at Mount Hermoso was *not* modern man (*Homo sapiens*) but a "precursor" of man.¹⁹



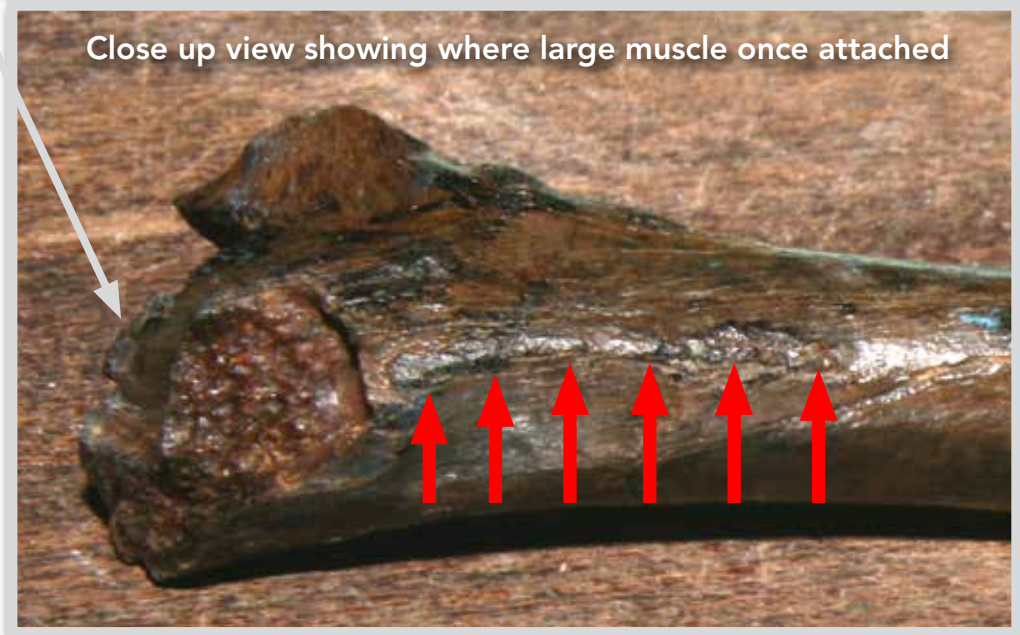
Femur Found at Mount Hermoso

Seventeen years after finding the first cultural artifacts at Mount Hermoso, an upper leg bone (called a femur) was found at the same location by Dr. Ameghino's brother, Carlos.²⁰ The left femur was nearly complete, but the hip joint was missing (see white arrow below). Utilizing his expertise in zoology and anthropology, Dr. Ameghino determined that the femur was from a primate which stood between 41-43 inches tall.²¹ Based on this and other measurements, he eventually concluded the femur was

from *Tetraprothomo*, the predicted ape-man which he wrote about years earlier in his book *Filogenia*.

From the large scars on the leg bone where the muscles once attached (red arrows below), Dr. Ameghino could tell the animal was very muscular, more like an ape than a human. He wrote, "It is also to be borne in mind that the femur of the *Tetraprothomo* indicates a body of proportionately stouter than that of man."²²

National Museum of Natural History Buenos Aires, Photo by Debbie Werner

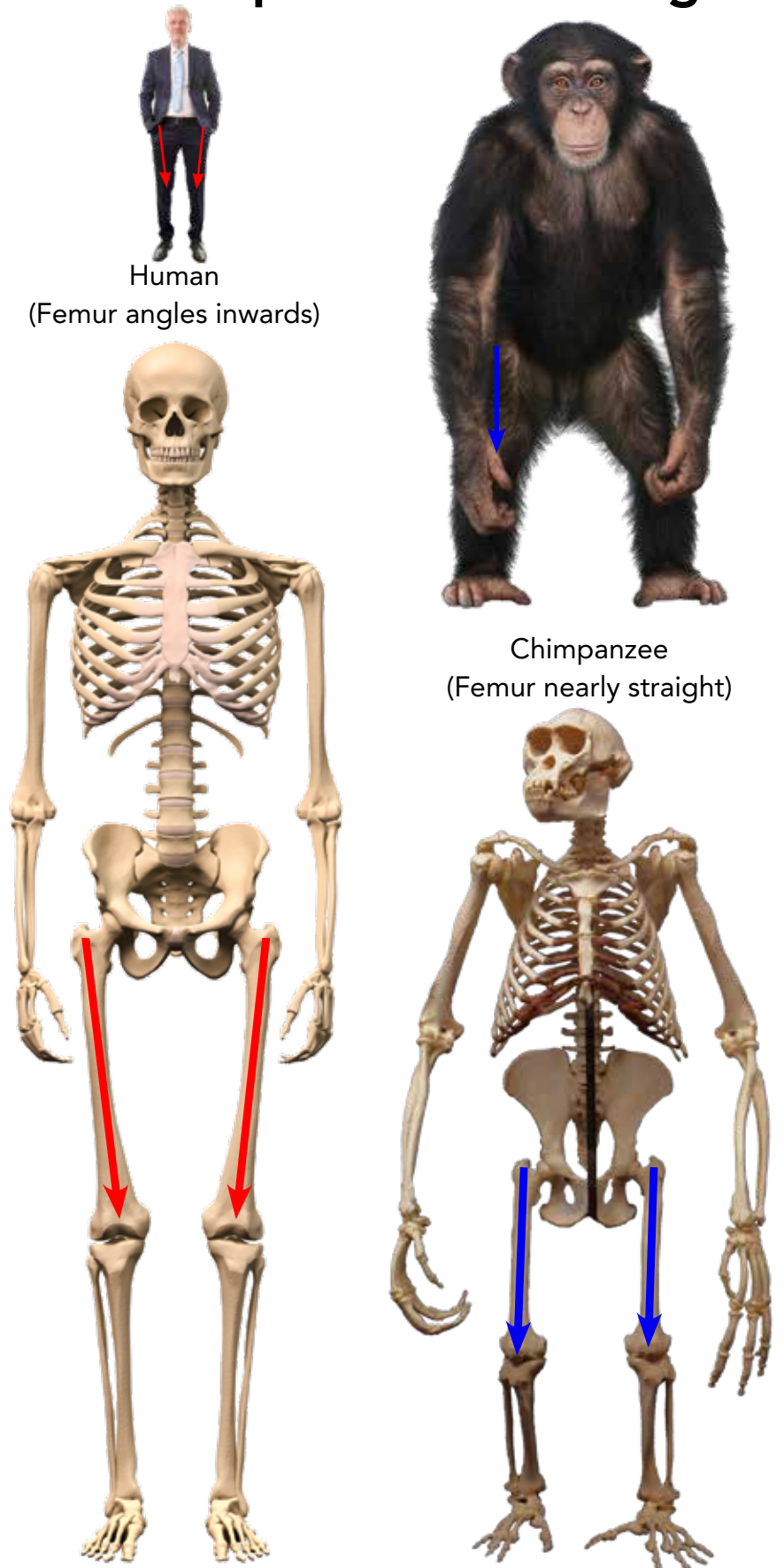


Tetraprothomo: A Biped With an Angle

Humans are habitual bipeds, which means they naturally run/walk on *two feet* and their spine is erect. In contrast, apes are habitual quadrupeds, meaning they preferentially run/walk on their *hands and feet*, and their spine is more parallel to the ground. (Apes can stand up and run briefly on two feet but this does not make an ape a biped as this is not their preferred mode of locomotion.)

In humans, the femurs do not go straight up and down, but angle inwards about 9 degrees from top to bottom (red arrow). In contrast, the femurs of an ape are nearly straight up and down and angle in only about 2 degrees (blue arrow).^{23, 24}

After inspecting the leg bone, Ameghino concluded *Tetraprothomo* was a biped with an erect posture based on the angle of the femur.^{25, 26, 27, 28} He wrote, "...it is deducted that in the *Tetraprothomo* both femurs were convergent downwards and inwards as in the human being and, consequently, it was of perfect erect position."²⁹



Tetraprothomo's Leg Bone: 12 Features of a Biped



*Dr. Florentino Ameghino, Director,
National Museum of Natural History Buenos Aires*

In total, Dr. Ameghino identified 12 anatomical features which demonstrated that *Tetraprothomo* walked upright like a human. Although highly technical and difficult to understand, it is good to quickly read over the evidence presented by Dr. Ameghino. He wrote, “Regarding the femur, such position is confirmed, not only for its general structure similar to that of the human being, but also for several features considered up to this moment exclusive of the latter and which are related to the erect position, namely: [1] the apparent greater length of the internal condyle [the end of the femur which makes up the inside half of the knee joint] compared to the external condyle [the end of the femur which makes up the outside half of the knee joint] and the resultant convergence of the femurs downwards; [2] the remarkable inversion of the



National Museum of Natural
History Buenos Aires
Photo by Debbie Werner

internal condyle inwards; [3] the great development of the knee internal lateral ligament; [4] the great development of both calves, but particularly the internal one; [5] the crossed grooves of the lower articular surface of the distal extremity; [6] the anterior-posterior and lateral longitudinal curves layout; [7] the existence of a rough line [línea áspera], its development degree and structure; [8] the remarkable development of the gluteus maximus insertion line; [9] the subtriangular contour of the bone body middle section and its greater diameter in the anterior-posterior direction; [10] the remarkable deviation of the articular femoral head forwards and the one of the internal condyle backwards; [11] the helical torsion of the femur body; and [12] the sagittal line sigmoid shape of greater crossed convexity of the anterior side.”³⁰

Dr. Ameghino's Scientific Gravitas



*Founder of the Museum of Paleontology and
Anthropology at the National University of
Córdoba in 1885¹*



*Professor of Zoology at the National
University of Córdoba in 1885¹*



Subdirector at the Museum of La Plata in 1886¹



*Vice-Dean of the Veterinary School at La Plata
University in 1897 and then Professor and Section
Chief of Geology at the National University of La
Plata in 1906¹*



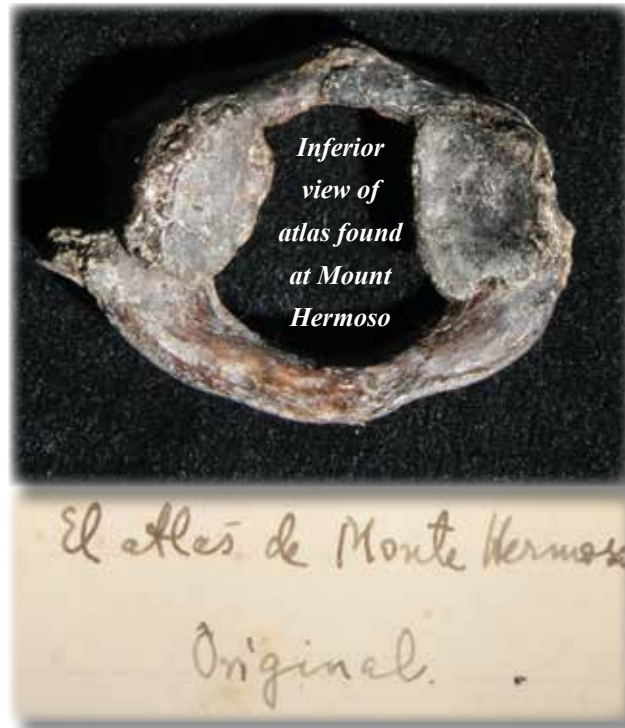
*Director of the National Museum of Natural
History Buenos Aires in 1902¹*



*Professor of Anthropology at the National
University of Buenos Aires in 1905¹*

Neck Bone Also Found at Mount Hermoso

In the 1880s, a museum worker by the name of Santiago Pozzi (right) found another important fossil at Mount Hermoso, a neck bone (an atlas). Thinking it was an ordinary human neck bone, Mr. Pozzi brought the bone back to the Museum of La Plata, showed it to one of the curators (Dr. Francisco Moreno), and placed it in an out-of-view storage area where it was soon forgotten.³¹ The fossil (below) lay dormant on a shelf at the museum for two decades.



Museum of La Plata, Photo by Debbie Werner



Mr. Santiago Pozzi
Museum of La Plata

Then one fateful day, Dr. Lehmann-Nitsche, Director of Anthropology at the Museum of La Plata,¹ happened to show the neck bone to Dr. Ameghino. Upon seeing it, Dr. Ameghino immediately concluded it was not a human neck bone but from the ape-man *Tetraprothomo*. Dr. Ameghino later wrote, “As soon as I saw it [the neck bone], I recognized that we were in the presence of the precursor of the man of Monte Hermoso of whom I had predicted the discovery 20 years ago.”³²



1907

“This bone does not belong to the genus *Homo*, but on the other hand it approximates so closely to the atlas of man that it doubtless comes from a form which was man’s precursor, and this could have been no other than the *Tetraprothomo*.”³³

—Dr. Florentino Ameghino



Above: The uppermost neck bone of the vertebral column is called the atlas, or the first cervical vertebra, or C1.

The Atlas Neck Bone



Superior view of atlas found at Mount Hermoso
Museum of La Plata,
Photo by Debbie Werner



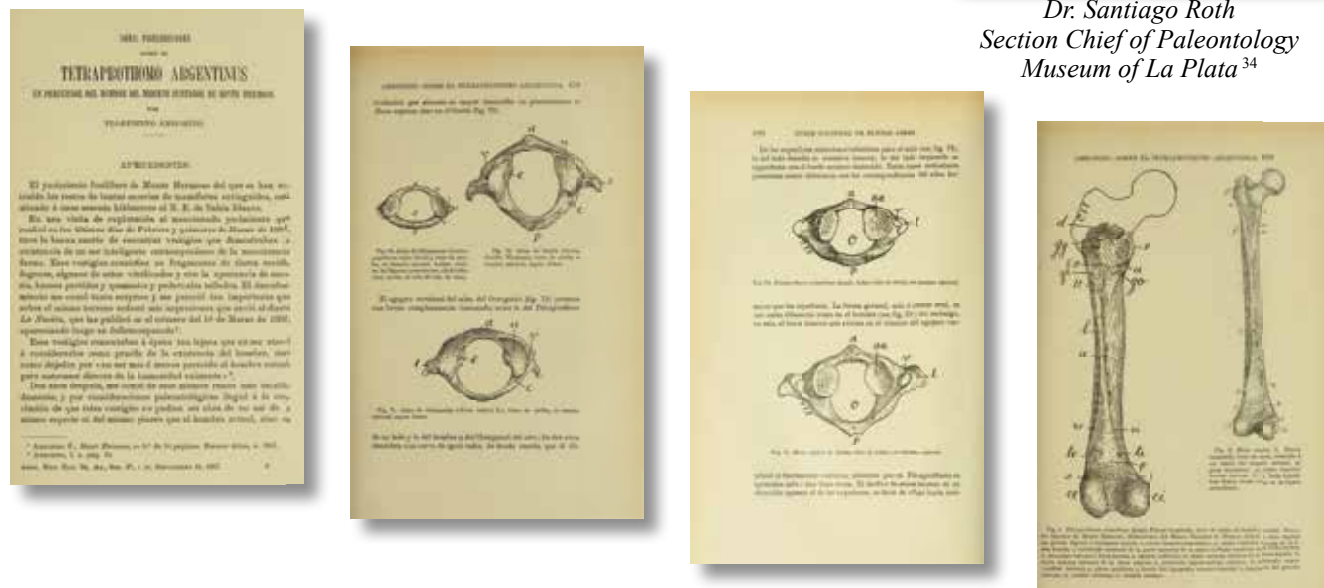
Above: Atlas is the name of the mythological creature who held a celestial sphere—the earth—on his neck. The first vertebra of the neck is called the “atlas” because it supports the head.

Dr. Ameghino Explains Why Neck Bone is Not Human

In a later discussion with Dr. Santiago Roth (right), Sectional Chief of Paleontology at the Museum of La Plata, and his associate Dr. Lehmann-Nitsche, Ameghino itemized the numerous anatomical characters which made this neck bone a precursor of man (not *Homo sapiens*).³² Ameghino then wrote a 137-page technical report entitled *Notas preliminares sobre el Tetraprothomo argentinus* (below) analyzing the neck bone, the leg bone, and the cultural artifacts found at Mount Hermoso. As can be seen (below), Dr. Ameghino compared the fossil bones of *Tetraprothomo* to primates (chimpanzee, gorilla, orangutan, and human) and demonstrated that *Tetraprothomo* was an animal partly evolved between an ape and a human.



Dr. Santiago Roth
Section Chief of Paleontology
Museum of La Plata³⁴



Dr. Lehmann-Nitsche Agrees: Neck Bone Not Human



Dr. Lehmann-Nitsche
Head of the Anthropology Section
Museum of La Plata¹

Not to be outdone by Dr. Ameghino, Dr. Lehmann-Nitsche (left), head of the Anthropology Section at the Museum of La Plata,¹ conducted his own investigation of the Mount Hermoso atlas. While his description is difficult to understand, Lehmann-Nitsche listed five anatomical reasons for why the Mount Hermoso neck bone is not from *Homo sapiens*. He wrote, “[The] notable characteristics of the atlas of Mount Hermoso, which are **never** found in the same bone of the South American natives [modern *Homo sapiens*] with which it was compared, follow: [1] The entire form is remarkably small and heavy; [2] the posterior arch is extraordinarily broad and its external surface elevates itself in the form of a rectangular ridge

up to the median longitudinal line; [3] the form of the superior articular facets is that of an irregular ovoid and rather short and broad; [4] its longitudinal axis diverges very slightly backward; and [5] the inferior articular facets are large, proportionately to the whole vertebra.”³⁵

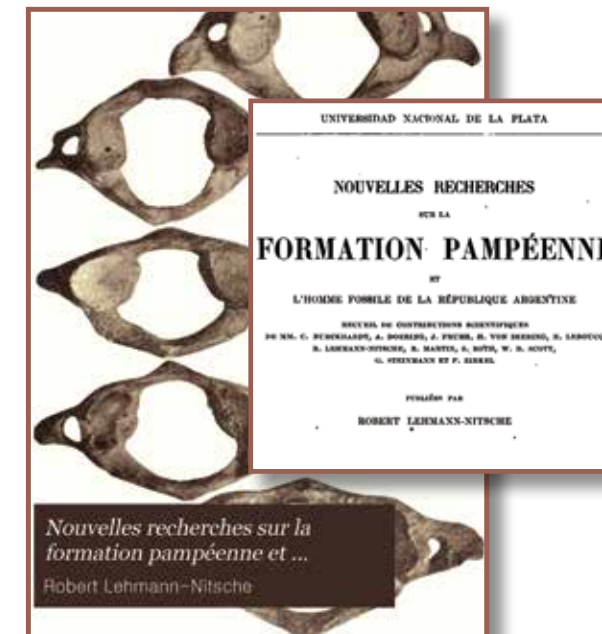
While Drs. Lehmann-Nitsche and Ameghino agreed the neck bone was not *Homo sapiens*, they disagreed as to where it fit on the evolutionary line between apes and humans.

Lehmann-Nitsche believed the neck bone was more closely related to humans than to apes, placed it in the genus of man (*Homo*), and called it *Homo neogaeus* (man of the New World).³⁶

Ameghino argued it was more closely related to apes than humans, placed it in a new genus (*Tetraprothomo* or fourth ancestor before man), and called it *Tetraprothomo argentinus*.

After Lehmann-Nitsche released his report, Ameghino wrote, “But all that is of only secondary importance. That which is truly exceedingly important, and in which I am very happy to find myself in accord with Dr. Lehmann-

Nitsche, is that he recognizes the existence of the precursor of man at Monte Hermoso, and the age of the deposit as at least Pliocene.”³⁷



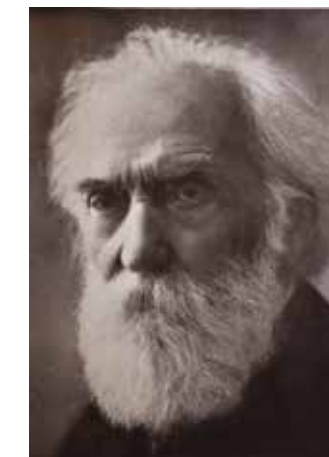
Above: Dr. Lehmann-Nitsche described the Mount Hermoso neck bone in this publication entitled *New Research on the Pampas Formation and Human Fossils of Argentina*. (This is the English translation of the above title.)

Dr. Sergi Agrees: Neck Bone Not Human



Dr. Giuseppe Sergi (right), Chair of Anthropology at the University of Rome, also agreed that the neck bone was not *Homo sapiens*. He sided with Ameghino, who had suggested that the neck bone was not from the genus *Homo*.

Dr. Sergi’s opinion carried much weight since he was “perhaps the most eminent anthropologist”³⁸ of the time and founder of the *Journal of Anthropological Sciences*.¹



Dr. Giuseppe Sergi
1841-1936¹

In the article above, Dr. Sergi wrote: “According to the atlas [neck bone] of Monte Hermoso, Lehmann-Nitsche would like to constitute [a new species name], a *Homo neogaeus*, but I believe that this is not admissible because this atlas does not belong to man [to the genus *Homo*].”³⁹



Stone Tools Found

Museum of La Plata,
Photos by Debbie Werner

Tools of the Broken-Stone Industry (Discovered 1887)

Dr. Ameghino found two types of stone tools along the coast of Argentina. He named one type the “Broken-stone Industry” (above) and the other the “Split-stone Industry” (right). He regarded both types as primitive and hitherto unknown.^{40, 41, 42}



Tools of the Split-Stone Industry (Discovered 1908)

Four More Ape-Men Found

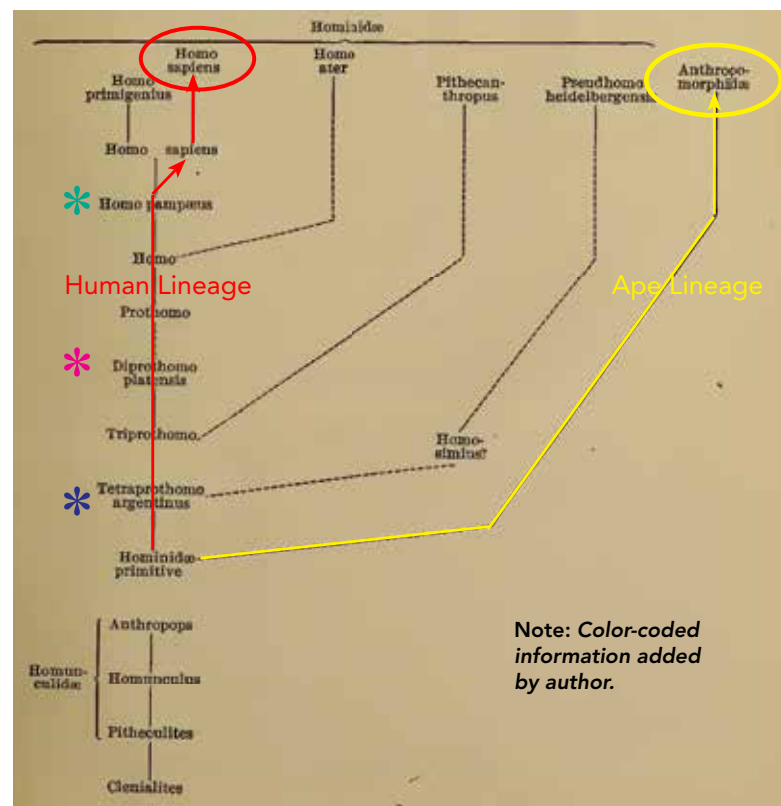
As seen in the chart (below left),⁴³ *Tetraprothomo* (blue asterisk*) lived shortly after the human lineage (red line) split from the ape lineage (yellow line).

In addition to *Tetraprothomo*, Dr. Ameghino named four other ape-men found in Argentina: *Diprothomo platensis*,* *Homo pampaeus*,* *Homo sinemto*,* and *Homo caputinclinatus*.⁴⁴ These five ape-men progressed from *Tetraprothomo*,* an ape-like form in the Miocene rock layers, to more advanced human-like forms in the younger Pliocene rock layers. Modern

humans (red circle) were found above these in the Quaternary rock layers.

Ameghino not only found five ape-men, but also their tools, their fire pits, and other artifacts; and each ape-man was discovered in a different rock layer, demonstrating change over millions of years.

Because of Dr. Ameghino’s work, South America was now “on the map” for human evolution. His ape-man discoveries were hailed as “epoch making.”⁴⁵



Note: Color-coded information added by author.

Period	Epochs and stages	Remains extant
Quaternary	Recent	
	Pleist. Quaternary transgression	
	Post-Lojanien hiatus	<i>Homo sapiens</i> *
	Lojanien and corresponding marine transgression	Skulls of Artaxite and Ovejuna
Pliocene	Post-Douarouen hiatus	
	Barrancón superior (inferior)	Feminista, Arroyo de Pina, Samborombán, Escudero; Choelet skulls and skeletons
	Belgrano transgression	Industrial vestiges
	Post-Euzenades hiatus	
	Capital Euzenades	<i>Homo pampaeus</i> , or <i>Prothomo</i> ; Miramar (La Tigra), Neurocrania skeletal remains
	Inter-Euzenades transgression	Stone industry
	Barr. Euzenades	Industrial vestiges
	Pre-Euzenades	<i>Diprothomo platensis</i> skull
	Post-Pachon hiatus	
	Pachon and corresponding transgression	Industrial vestiges
Superior Miocene	Post-Chapadense hiatus	
	Chapadense *	Industrial vestiges
Lower Miocene	Post-Hermsen hiatus	
	Hermsen	<i>Tetraprothomo argentinus</i> , skulls and bones *
		Industrial vestiges (?)
Oligocene		Industrial vestiges
Upper Eocene	Patagonian	Industrial vestiges of man's precursor



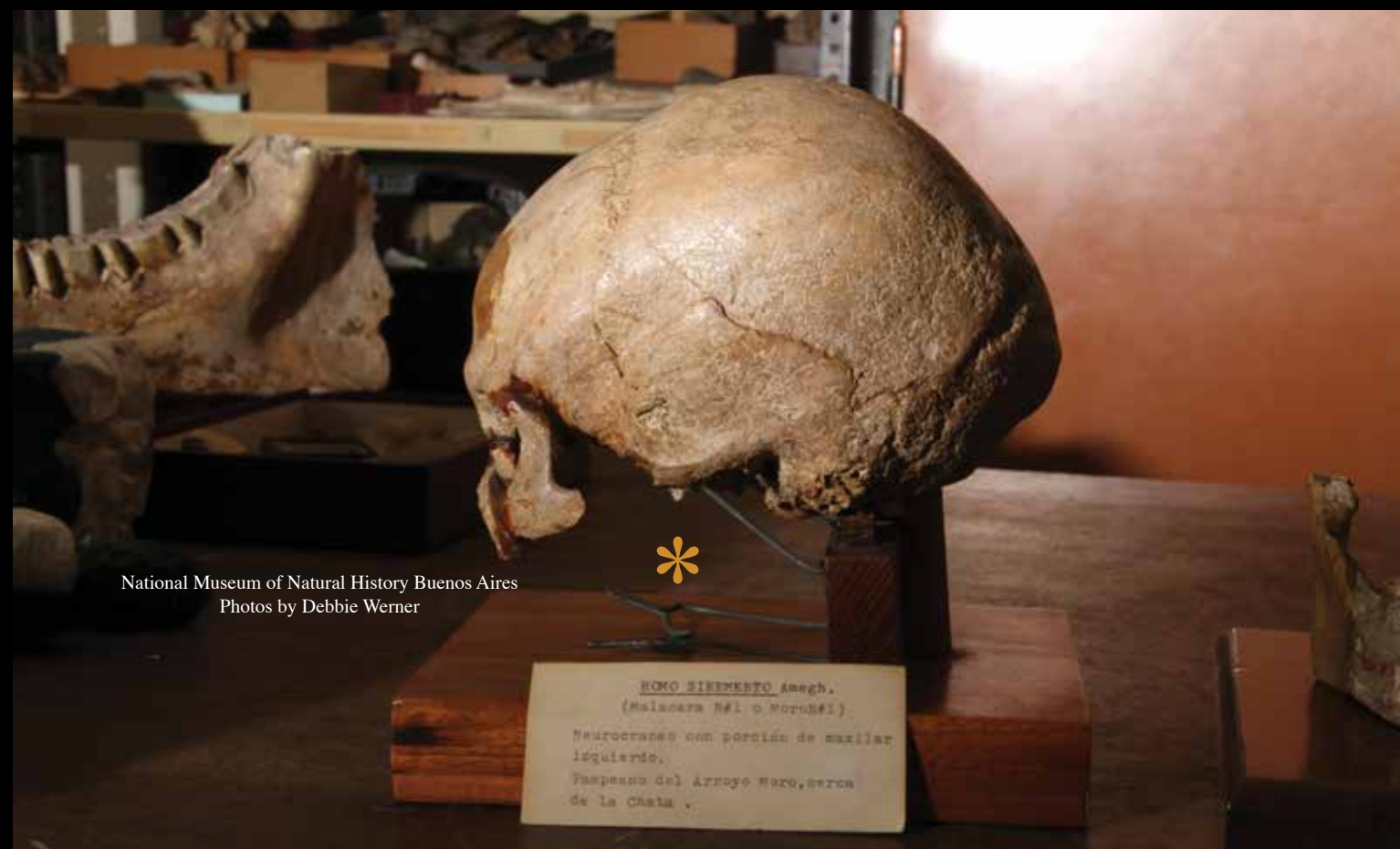
Diprothomo platensis



HOMO pampaeus Amegh.



HOMO CAPUTINCLINATUS Amegh.
Neurocraneo
Arroyo Siango, Bs. As.
Pampeano superior.



National Museum of Natural History Buenos Aires
Photos by Debbie Werner

HOMO SINEMTO Amegh.
(Malacara N°1 o N°1081).
Neurocraneo con porción de maxilar izquierdo.
Yaspeano del Arroyo Negro, cerca de la Chata.

Ape-Men Out of Africa, Asia, or South America?

Among the scientists who ascribed to the theory of human evolution, there were disagreements as to where man originated—Africa, Asia, or South America? In his 1871 book *The Descent of Man*, Charles Darwin suggested man evolved in Africa since man's presumed closest relatives, the gorillas and chimpanzees, lived there (see below). In 1907, Dr. Ameghino proposed that man originated in South America where *Tetraprothomo* was found.⁴⁶ Later, in 1927, Dr. Henry Fairfield Osborn from the American Museum of Natural History submitted that man began in Eurasia where

the struggle for existence was more severe, promoting the survival of the fittest.⁴⁷

According to both Darwin and Ameghino (below), it would be difficult to know if a living or fossil animal species found on one continent had originated at that location or had migrated from another continent. In other words, monkeys and apes from Africa could migrate to South America and vice versa. The question of where man originated would not be answered during Ameghino's lifetime and would be left for the next generation of anthropologists to solve.

1871

*"It is therefore probable that Africa was formerly inhabited by extinct apes closely allied to the gorilla and chimpanzee; and as these two species are now man's nearest allies, it is somewhat more probable that our early progenitors lived on the African continent than elsewhere. But it is useless to speculate on this subject...there has been ample time for migration on the largest scale."*⁴⁸

—Charles Darwin
The Descent of Man



1907

*"Until now, science has not been able to state which point in the Earth's surface has been the primitive cradle of mankind; consequently, there is no reason at all to make the human being migrate from the old to the new world, since migration could have been rather in the reverse direction."*⁴⁹

—Dr. Florentino Ameghino
National Museum of Natural History Buenos Aires



1927

*"Consequently, it is to the northern regions of Eurasia that we must look for the unknown homeland of the higher races..."*⁴⁷

—Dr. Henry Fairfield Osborn
American Museum of Natural History

Smithsonian Scientists Come to Investigate

Dr. Ameghino's new hypothesis—that humans evolved "out of South America" (the New World)—ran contrary to Darwin's theory that man evolved out of Africa (the Old World). These two opposing ideas prompted Dr. Aleš Hrdlička (right), Curator of Physical Anthropology at the Smithsonian Museum in Washington, D.C.,⁵⁰ to travel to Argentina to investigate.

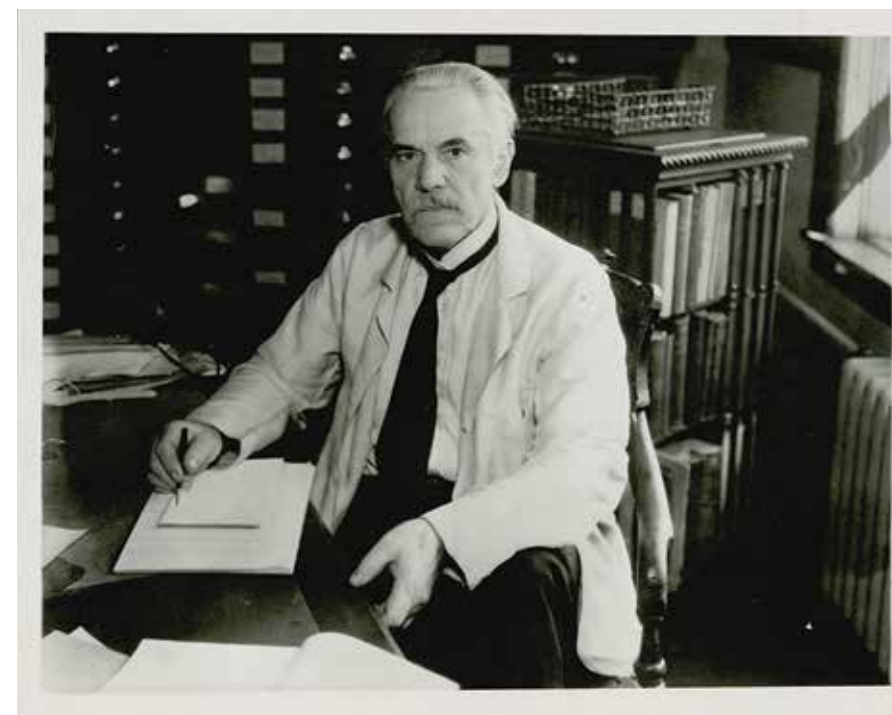
Unlike most European and North American scientists who accepted Dr. Ameghino's five ape-men without seeing the fossils and dig sites first hand, Dr. Hrdlička and his



associate, Bailey Willis (left) from the United States Geological Survey, spent months in Argentina inspecting and photographing the fossils and cultural artifacts, interviewing those who discovered them, visiting the dig sites, viewing the rock layers, and reading all the pertinent scientific articles and newspaper accounts.⁵¹

Dr. Hrdlička arrived at the Museum of La Plata in 1910 to inspect the *Tetraprothomo* neck bone. He expected it to be fossilized, heavy, and rock-like (since Dr. Ameghino had written that it was found embedded in rock), but when Dr. Hrdlička tapped it against his teeth, the neck bone was *unfossilized, lightweight, and very soft*.⁵²

All this was very odd and unexpected since Dr. Ameghino had previously written: "*The cervical vertebra [neck bone] I made reference to above is an almost perfect atlas [neck bone], which is kept in the La Plata Museum, and which was brought from Monte Hermoso by Mr. Santiago Pozzi when he was a museum staff member. Dr. Francisco P. Moreno [Director of the La Plata Museum], as he has told me [Dr. Ameghino]*



Dr. Aleš Hrdlička
1869 - 1943
Curator of Physical Anthropology
Smithsonian Museum

*personally a few days ago, saw the vertebra still embedded within the rock...Since then, said vertebra stayed forgotten during quite a long time, until Dr. Santiago Roth, chief of the Paleontology Section of the La Plata Museum, found it among the Monte Hermoso fossil collections, still wrapped in the same rock..."*⁵³

When Dr. Hrdlička spoke with Dr. Moreno about the neck bone during his museum visit in 1910, Moreno "*expressly stated to the writer [Hrdlička] that it [the neck bone] was [found embedded] in 'earth,'*"⁵⁴ not rock. Similarly, Dr. Roth told Dr. Hrdlička the bone was found in "*loess*" [earth].⁵⁴ Hrdlička now had evidence that Ameghino was fraudulently misquoting his sources to make the case he found an ape-man.

For Dr. Hrdlička, finding a *soft, lightweight, non-fossilized* bone in dirt, not rock, raised the possibility that the *Tetraprothomo* neck bone was a recently buried bone (hundreds of years old) and not millions of years old.

Dr. Hrdlička's Comparison Photographs

Next, in order to determine what type of animal this neck bone represented, Dr. Hrdlička assembled the uppermost neck bones (atlases) of a monkey (baboon), three great apes (a chimp, gorilla and orangutan), and eight recently deceased human beings and compared their sizes and shapes with *Tetraprothomo* (tan circle below).

As you can see from this photograph, some modern humans have a thin posterior arch (see ● below) while others have a thick arch (see ● below). Some modern humans have protuberances (called anterior tubercles) on the front of the neck bone (* below) while others do not (* below). Some

modern humans have protuberances (called posterior tubercles) on the back of the neck bone (▲ below) while others do not (▲ below). Some modern humans have a bony ring covering the vertebral artery (# below) while others do not (# below).

Upon completing these comparisons, Dr. Hrdlička realized that the "*Tetraprothomo*" neck bone fell within the range of normal variations of a modern human atlas. Since the bone was found in dirt and not fossilized, Dr. Hrdlička concluded the neck bone was from a recently buried South American native Indian (*Homo sapiens*).



Colored symbols added by author.

Washington: We have a problem!

Smithsonian scientist Dr. Hrdlička then turned his attention to the leg bone of *Tetraprothomo argentinus* stored at the National Museum of Natural History Buenos Aires. Unlike the neck bone, the leg bone was fossilized. After comparing the *Tetraprothomo* leg bone with the leg bones of other types of animals, Dr. Hrdlička determined it was from the order Carnivora (which includes dogs, cats, bears, and raccoons) and not from the Primate order (which includes monkeys, apes, and humans). He suspected the leg bone was from the cat family.⁵⁵

Over the years, other scientists have offered opinions as to what the *Tetraprothomo* leg bone represents. In 1942, after comparing these two bones shown in the photograph below, Professor Alejandro F. Bordas from the National Museum of Natural History Buenos Aires^{56,57} determined that Ameghino's leg bone was a procyonid (a member of the raccoon family).⁵⁸ This interpretation has not been challenged since.

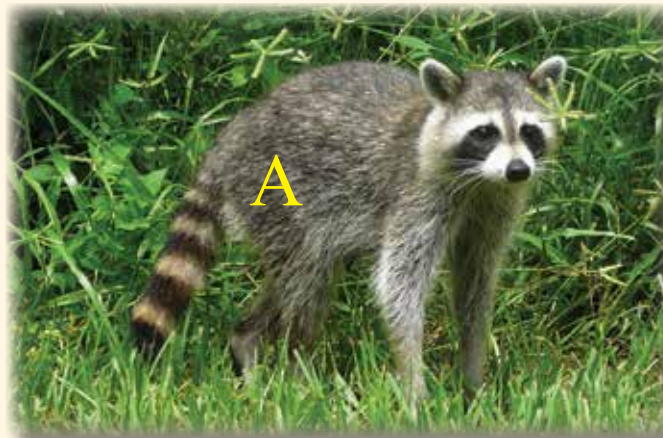
Below: Dr. Bordas compared Ameghino's *Tetraprothomo* femur (left) to this procyonid leg bone (right). Although the ball of the hip joint is missing from Ameghino's femur (red arrow), the similarities are obvious.



National Museum of Natural History Buenos Aires, Photo by Debbie Werner

Living Procyonids

Order: Carnivora Family: Procyonidae



Raccoon (*Procyon lotor*)



Ringtail (*Bassariscus astutus*)

From top left: There are six living *genus* groups of the Procyonidae family: **A.** *Procyon* (raccoons), **B.** *Bassariscus* (ringtails), **C.** *Nasua* (coatis), **D.** *Bassaricyon* (olingos), **E.** *Potos* (kinkajous), and **F.** *Nasuella* (mountain coatis).⁵⁹



Coati (*Nasua nasua*)



Bushy-tailed olingo (*Bassaricyon gabbii*)



Kinkajou (*Potos flavus*)



Mountain coati (*Nasuella olivacea*)

Extinct Procyonids

(Dr. Ameghino's Area of Expertise)



Extinct procyonid (*Chapalmalania*)

In addition to the six *living* genus groups of Procyonidae, there are two *extinct* genus groups from South America, both of which were studied and named by none other than Dr. Ameghino. **G.** *Chapalmalania* and **H.** *Cyonasua*.^{6,7}

It is ironic that Dr. Ameghino, one of the world's leading experts on South American procyonid fossils, misinterpreted the leg bone from one of these quadrupeds as that of an upright-walking, bipedal ape-man.



Extinct procyonid (*Cyonasua*)



Left: The dark brown fossil bone in this photo is Ameghino's leg bone. The light tan leg bone on the right is *Cyonasua longirostris*, a member of the procyonid genus that Dr. Ameghino named. Notice their similarities.

See Appendix B – The Naming of Procyonid Fossils – for species names and further details.

National Museum of Natural History Buenos Aires
Photo by Debbie Werner

European Scientists React



1913

*“Finally, the atlas and femur of *Tetraprothomo argentinus*, of supposed Upper Miocene age, have been subjected to a searching analysis by Hrdlička, with the result that there is nothing to distinguish the former from the atlas of a modern Indian, and the femur is that of a carnivore....”*⁶⁰

—A. C. Haddon
Cambridge Anthropology

1923

*“As to the femur it could be attributed neither to a Man nor to a Primate; it was a femur of a Carnivore... It is indeed pitiful to see a naturalist of Ameghino’s gifts end his scientific career, so meritorious in many respects, with a series of works which exhibit such a disordered imagination and an altogether fantastic interpretation of morphological facts.”*⁶¹

—Dr. Marcellin Boule
Director of Institute of Human Paleontology, Paris



1957

*“As to the femur, it could be attributed neither to a man nor even to an ape. It belongs to a small mammal, very probably one of the *Procyonidae* [raccoon family].”*⁶²

—Dr. Henri V. Vallois
Director of Institute of Human Paleontology, Paris

Dr. Hrdlička’s Final Five Blows

No Ape-Men

After these startling revelations regarding the leg and neck bone of *Tetraprothomo*, Dr. Hrdlička looked critically at the other four ape-men described by Dr. Ameghino. He concluded that *all* of Dr. Ameghino’s ape-men (*Homo sinemento*, *Homo caputinclinatus*, *Homo pampaeus*, *Diprothomo platensis*, and *Tetraprothomo argentinus*), which appear in his evolution chart on page 16, were recently buried local South American native Indians (*Homo sapiens*) less than 600 years old.^{63, 64, 65, 66, 67} Because of this, Dr. Hrdlička placed quotation marks around the word “*fossil*” twenty-one times when he wrote about Dr. Ameghino’s ape-men in his book, *Early Man in South America*.

No Ancient Rock Layers

Mr. Bailey Willis, the geologist who accompanied Dr. Hrdlička on this fact-finding mission, determined that Dr. Ameghino also misinterpreted the rock layers. The “Miocene” rock layers of Mount Hermoso, were actually recently formed sand dunes.^{68, 69} This is astonishing since Dr. Ameghino was the Sectional Chief of Geology at the National University of La Plata. A geologist should be able to distinguish a sand dune less than a few thousand years old from a Miocene rock layer thought to be millions of years old.

Below: The *Homo sinemento* dig site turned out to be the grave of a modern South American, not a primitive ape-man.⁷⁰



No Evidence of Fire

Anthropologists are experts in the artifacts of fire at human occupation sites. Even though Ameghino was a professor of anthropology, his fireplaces and evidence for use of fire at Mount Hermoso were also overturned.⁷¹ Samples of Ameghino's "fireplace remnants" (page 6) were brought for chemical and physical analysis to the Carnegie Institution's Geophysical Laboratory in Washington, D.C., and determined to be ordinary rocks.^{72, 73} The so-called "scoriae" were ordinary pieces of lava rock.¹⁶ The so-called "tierra cocida" were just rocks.^{71, 72}

No Split Bones

Ameghino reported finding split bones at Mount Hermoso¹⁵ and other dig sites indicating that these ape-men used stone tools to break open animal bones in order to eat the marrow.^{74, 75} But Dr. Hrdlička determined that all the "split bones" were simply naturally broken bones, not the work of ape-men, and that the parallel "scratch marks" on the bones were from the two front teeth of rodents having chewed on the bones.^{76, 77}

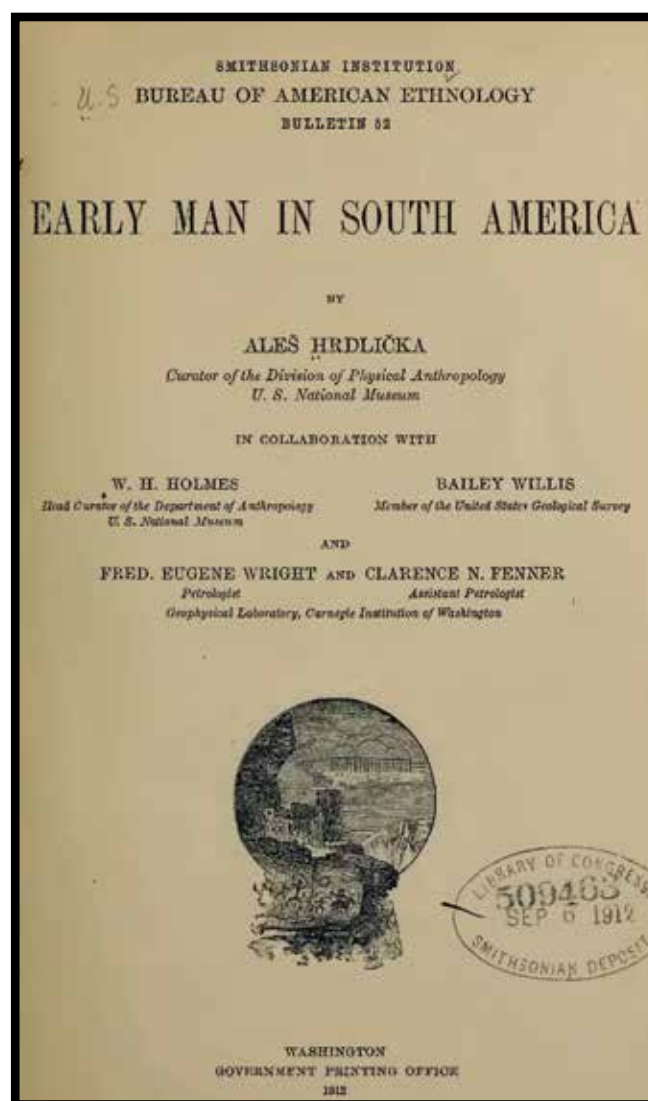
Dr. Hrdlička's book, critical of Ameghino's work, was not released until 1912, the year *after* Ameghino died.

No Ancient Stone Tools

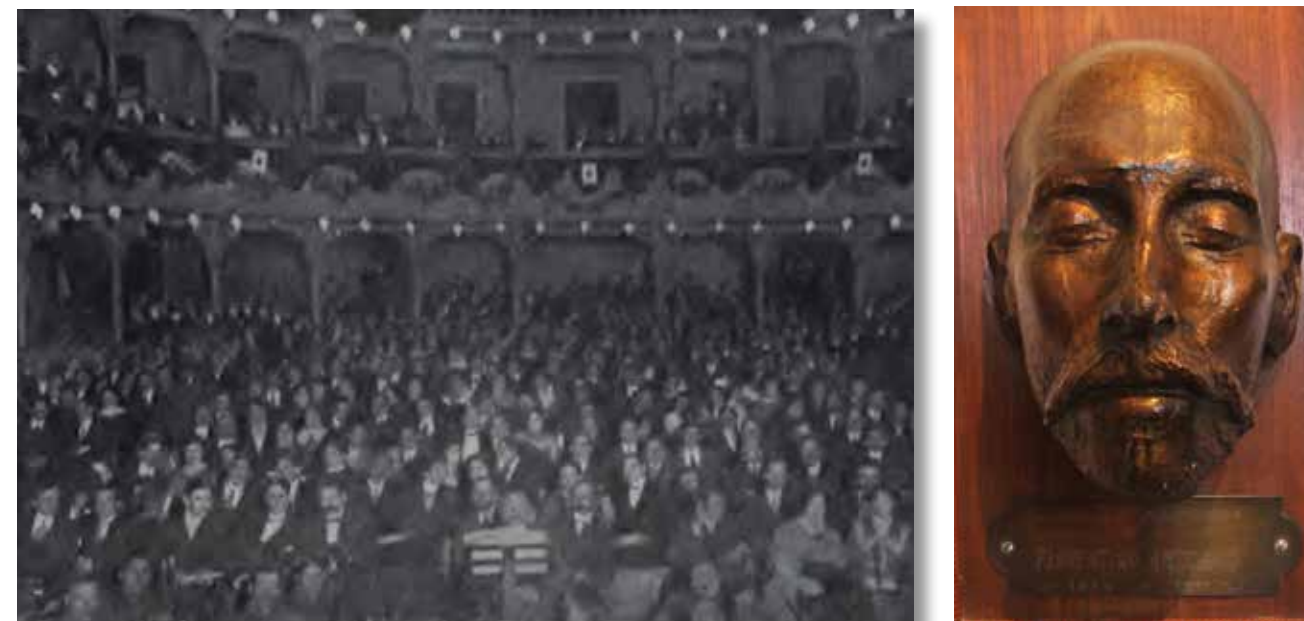
According to Dr. Hrdlička, the primitive stone tools, described by Dr. Ameghino as being part of the Broken-stone Industry and the Split-stone Industry, were "*not of great antiquity and certainly not of geologic antiquity.*"⁷⁸

Summary

While reading Dr. Hrdlička's investigative report, it does not take long to realize that Dr. Ameghino, considered by some to be one of the world's greatest scientists and whose "*moral virtues were as eminent as his scientific genius,*"⁴ was sadly mistaken about his evidence for human evolution.⁷⁹

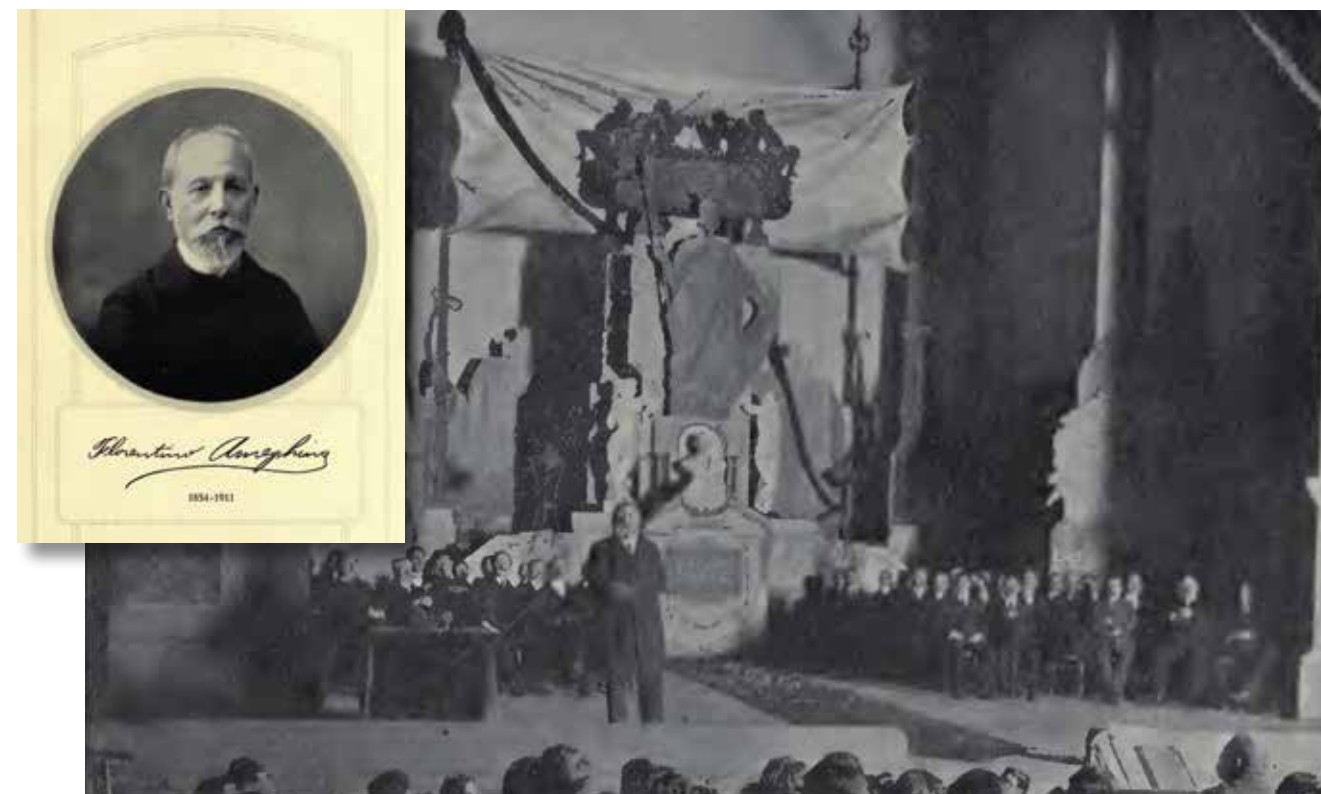


Ameghino's Funeral for a King



Dr. Ameghino died August 6, 1911 as the result of complications from diabetes. His funeral (above left) had the trappings of a king, including the creation of this bronze death mask (above right), which is now on display at his childhood home museum in Luján (see Appendix C).

Below: Lengthy speeches were delivered at Dr. Ameghino's funeral recognizing his leadership in science, paleontology, and human evolution research in South America.





Above and Below: Six paths converge at Dr. Ameghino's grave in this cemetery in La Plata, Argentina. Prominent families of La Plata bury their loved ones in mausoleums along these paths.

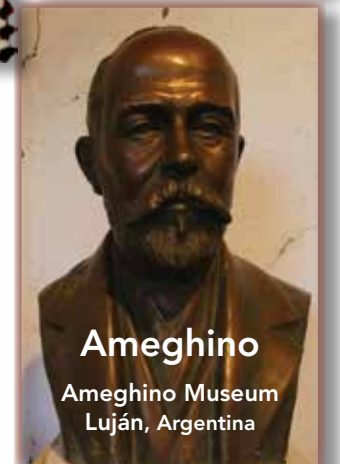
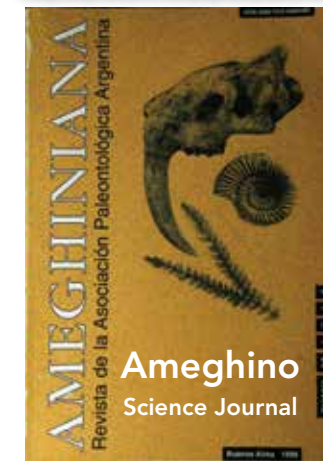
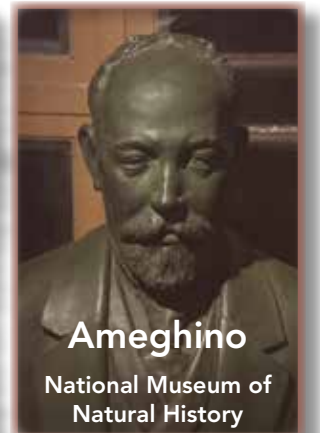
Cemetery of La Plata, Photos by Dr. Carl Werner



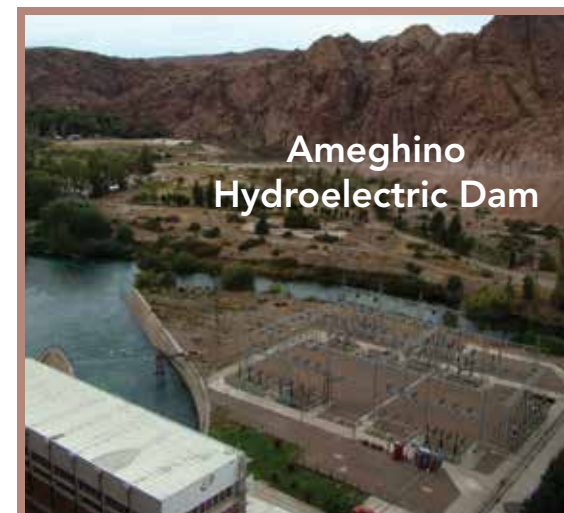
Posthumous Acknowledgements

Dr. Ameghino remains a respected and symbolic figure even after Dr. Hrdlička exposed his mistakes. Here are some of his posthumous honors:

- In 1956, the postal service of Argentina issued this stamp (right) commemorating the 100th anniversary of Dr. Ameghino's birth.⁸⁰
- In 1957, the Argentina Paleontology Association (APA) started a new science journal named *Ameghiniana* (right) in honor of Dr. Ameghino. This is the official journal of the APA today.⁸¹
- In 1963, a hydroelectric dam and reservoir were completed, named, and dedicated in honor of Dr. Florentino Ameghino (below).⁸²
- In 1976, the International Astronomical Union (IAU) named a crater on the moon to honor Dr. Ameghino (below right).⁸³



In addition, schools, libraries, a petrified forest, and a city in Argentina have been named after this man of science.





130 Años  Biblioteca Florentino Ameghino
Facultad de Ciencias Naturales y Museo

 UNIVERSIDAD NACIONAL DE LA PLATA

Above: Florentino Ameghino Library at the Museum of La Plata



Above: The National College of Florentino Ameghino in Mercedes In Argentina, high schools are called colleges.

Below: Florentino Ameghino School in La Plata with a commemorative statue of Dr. Ameghino holding fossil



From Episode 3:
Untold Stories of Human Evolution

Below: Florentino Ameghino School in Luján near his childhood home



Photos by Debbie Werner



A
1972



B
1928

Clockwise from top left: **A.** Bronze plaque currently on display at Ameghino's childhood home museum (see Appendix C) with words befitting a deity: "Honor and Glory The Great Sage and Argentina Naturalist Florentino Ameghino." **B.** Bust at the National Museum of Natural History Buenos Aires. **C.** Bust on display at the National College of Florentino Ameghino in Mercedes, Argentina. **D.** Bust of Florentino Ameghino outside school in Luján, Argentina.

Photos by Debbie Werner



D
1936



C
1931



1915

1938

1953

1954

1962

1954

1962

1965

1981

1986

1986

1988

1999

2009

Ameghino remains a national hero. Each statue or plaque is typically presented with a ceremony.

Interesting Facts: Doctor Ameghino's Training



Above and right: Primary school in Mercedes, Argentina, where Dr. Ameghino taught children, ages six to ten years old.



Photos by Debbie Werner

DIRECTOR DEL MUSEO NACIONAL
DOCTOR FLORENTINO AMEGHINO

It is interesting to note that Dr. Ameghino did not graduate from high school. At age 15, he began working as a teacher's assistant in this primary school (left and below). One inspector who reviewed his work reported he was "a disaster."⁸⁴ At age 23, he became the director of this school.

In 1885 (at age 31), even though he did not attend college, he founded the Museum of Anthropology and Paleontology at the University of Córdoba and was given the titles Professor of Zoology and Curator of Anthropology.¹ One year later, in 1886, he was awarded an honorary doctorate degree from the same institution.⁸⁵ Going forward, Ameghino identified himself as "Doctor Ameghino."

Below: Title page from the 1908 Annals of the National Museum of Buenos Aires

2015

"There are many reports of Ameghino as a teacher that mention he was not a good teacher...A report written by an inspector (the school inspector sent to Mercedes) describes the school. And he devoted two lines to Ameghino, the helper [teacher's assistant], saying that he was a disaster."⁸⁴

—Dr. Irina Podgorny
Historian of Science
National University of La Plata, Argentina



How Reliable is Scientific Confidence?

The following statements reveal how confident Dr. Ameghino was in his analysis of the *Tetraprothomo* ape-man leg bone, even though it was later determined to be from the raccoon family, a quadrupedal mammal. He wrote:

The femur of *Tetraprothomo* shows "...all the distinct curves of the **human femur**... [and it] can be regarded with **certainty** as proceeding from a **primate of erect position**."⁸⁶

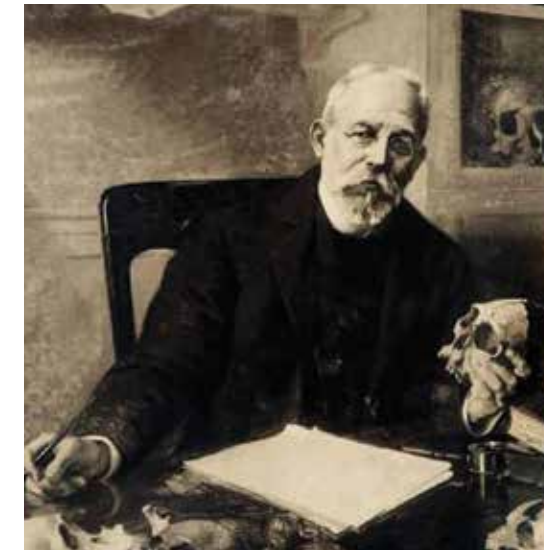
"The lateral torsion of the body of the bone and the remaining characteristics which accompany the same, are encountered **only in the femur of man**...."⁸⁶

"In the femur of the *Tetraprothomo*, the *linea aspera* in its general form is **identical with that of the human femur**...."⁸⁶

Although Dr. Ameghino was sincere in his efforts and confident in his findings, his unwarranted assumptions led to the wrong conclusions.

1912

"As to the *atlas* [the neck bone of *Tetraprothomo*], ...it falls among the class of ill-starred specimens which have been dragged into the service of otherwise unsupported notions relating to the dawn of human history, only to be subsequently dropped of necessity into obscurity as having no bearing on the subject."⁸⁷



"The agreement in conformation between this bone and the corresponding one of man, is nearly perfect, although this great similarity does not become at once perceptible because of the enormous differences in size."⁸⁶

"The condyles are disposed very similarly to those in the **human femur**...consequently the being had an entirely erect position."⁸⁶

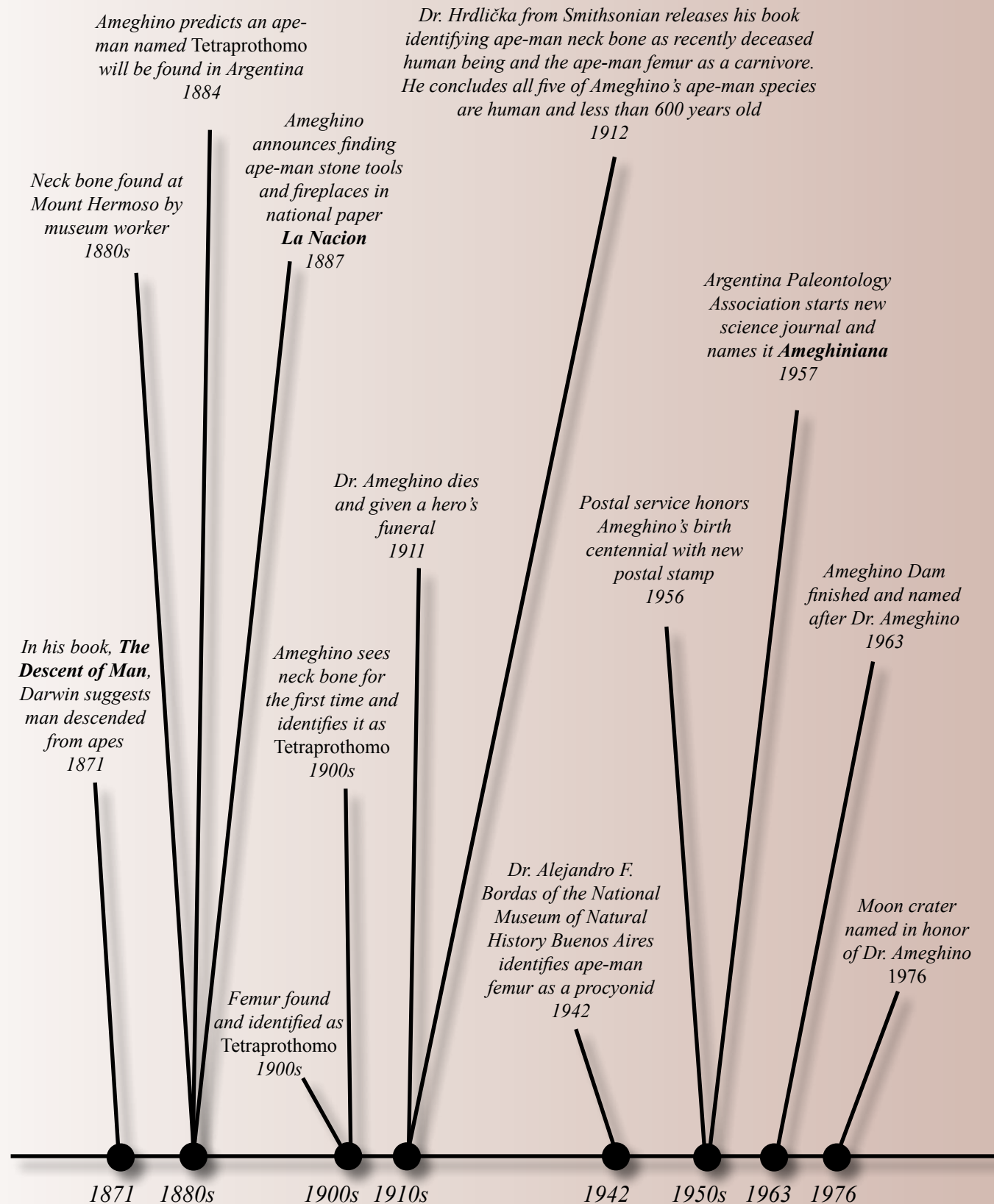
"...*Tetraprothomo* occupies evidently an **intermediary position between man and the apes**. Moreover, it is easy to perceive that in the *Tetraprothomo* this region [the femur] was on the way of transformation in the direction toward the form characteristic of man."⁸⁶

The trochanteric fossa "...presents the same vascular perforations as in the human femur...."⁸⁶



—Dr. Aleš Hrdlička
Curator of Physical Anthropology
Smithsonian Museum

Timeline of *Tetraprothomo argentinus*



Ameghino's Ape-Men Discoveries

Ameghino's Discoveries	Ameghino's Interpretations	Hrdlicka's Interpretations
Fireplaces (1887)	Fire remnants and baked clay (Ape-man fireplace)	No evidence of fire
Split Bones (1887)	Ape-man split animal bones with stone tools to eat marrow	Bones naturally broken (Scratches from rodent teeth)
Stone Tools (1887)	Ancient "Broken-stone Industry"	Not of great antiquity, recent
	Ancient "Split-stone Industry"	Not of great antiquity, recent
Neck Bone	Ape-man: <i>Tetraprothomo</i>	Modern Man: <i>Homo sapiens</i>
(Found 1880)	Millions of years old	Less than 600 years old
(Ameghino sees in 1900s)	Evolutionary precursor to man	Modern human
	Found imbedded in "rock"	Found in dirt (loess)
	Fossil	Unfossilized bone
Leg Bone	Ape-man: <i>Tetraprothomo</i>	Raccoon family (Procyonidae)
(Found 1900s)	Primate mammal order	Carnivora mammal order
	Biped	Quadruped
	Upright posture	Horizontal posture
	12 unique human traits	No unique human traits
Ameghino's Other Ape-Men*		
(1888) ⁸⁸	Ape-man: <i>Homo pampaeus</i>	Modern human: <i>Homo sapiens</i>
(1896) ⁸⁹	Ape-man: <i>Diprothomo platensis</i>	Modern human: <i>Homo sapiens</i>
(1909) ⁹⁰	Ape-man: <i>Homo sinemento</i>	Modern human: <i>Homo sapiens</i>
(1910?) ⁹¹	Ape-man: <i>Homo caputinclinatus</i>	Modern human: <i>Homo sapiens</i>

* These dates represent the year the fossils were found by others. Dr. Ameghino later named and reported these skeletal remains as ape-men.

Analyzing Evidence for Human Evolution

Lessons Learned From Dr. Ameghino

If the following lessons are learned and applied, the public will be less likely to accept inaccurate reports about ape-men in newspapers and popular science magazines. Perhaps, too, scientists could use these operational rules to scrutinize the conclusions of their colleagues presented in scientific journals and meetings.

Lesson Concerning the Use of Non-Articulated Bones. Dr. Ameghino assumed that two bones, a neck and a leg bone found at the same dig site, were from the same animal. As it turned out, they were not. *Unless bones are found physically connected to each other and form a connecting joint (for example the upper arm bone is connected to the lower arm bone and the elbow joint is intact), one should be skeptical that two bones found in close proximity to each other are from the same animal.*

Lesson Concerning the Use of Partial Skeletons. Dr. Ameghino generated too much information from two bones—a neck bone and a leg bone. He determined that the animal was an upright-walking ape-man, which is completely incongruent with the facts. *The reliability of a fossil interpretation is proportional to the completeness of the skeleton.* In other words, interpreting what an animal is, using just one or two bones, is less reliable than using a more complete skeleton.

Lesson Concerning Interrupted Excavations. In this case, a neck bone and a leg bone were found at the same dig site by two different diggers (Santiago Pozzi from the Museum of La Plata and Dr. Ameghino's brother, Carlos Ameghino) 25 years apart. They were then assumed by a third party (Dr. Florentino Ameghino) to be from the same animal. Unless meticulous records are kept, it would be difficult to know if these two bones were from the same rock layer and same location at the dig site. *The longer the interruption between discoveries, the less reliable the interpretation of the evidence.*



Lesson Concerning Tools Found Near Fossils.

Ameghino assumed that the stone tools, found near a leg and neck bone at Mount Hermoso, were made and used by this animal. Obviously, a raccoon-like animal could not make stone tools. *The only way to know if an animal used a tool is to observe the animal using it, which, of course, is impossible at prehistoric sites.* An analogy offered by one anti-evolution scientist, Dr. David Menton, follows: *“If a modern land-filled garbage dump was excavated, we might find chicken bones in close association with plastic spoons and forks, but this is hardly evidence that the chicken was the ‘tool maker.’”⁹²*



Above: Tools of Broken-stone Industry

Lesson Concerning the Use of One-of-a-kind Evidence. This particular combination of a leg bone, a neck bone, flint tools, fireplaces, and split bones was interpreted by Dr. Ameghino as an important discovery, but no one else had previously found this unique grouping of bones and artifacts. A one-of-a-kind discovery may actually be a false interpretation. *Without multi-site verification, one-of-a-kind evidence should be considered tentative.*

Lesson Concerning the Use of New Evidence. It took 40 years (1900s-1942) for the femur bone to be correctly identified despite hundreds of highly-trained scientists seeing the leg bone in scientific publications. *Using this length of time as an initial benchmark, any fossil interpretation less than this should be considered tentative, since it may take this long for scientists to correct the mistakes of their colleagues.* As this book series progresses, other fossil examples, such as Neanderthal Man and *Homo erectus*, will extend this benchmark past 90 years.

Lesson Concerning Errant Anatomical Interpretations. The public tends to blindly accept highly technical anatomical interpretations of fossils offered by trained scientists. In this case, Dr. Ameghino identified 12 anatomical reasons for why this leg bone was from an upright walking, bipedal, human-like creature, none of which were true.

In order to be less vulnerable, the public should ask themselves if *they* can personally verify what a scientist claims regarding a fossil. Does the scientist show comparisons to a wide variety of similar bones from other animals? Or, does the scientist only show bones from a few select animals to help make his case that the animal is an upright walking ape-man? In general, if a scientist does not offer adequate and detailed photos of a wide variety of pertinent animal bones, the interpretation is more likely to be spurious and eventually overturned.

Lesson Concerning the Use of a Single Bone to Determine Form of Locomotion. After analyzing the upper leg bone of *Tetraprothomo*, Dr. Ameghino concluded this animal walked erect on two legs (like a human). The leg bone was actually from a raccoon-like animal that walked on four legs (a quadruped).

The only way to confidently determine how an animal walks is to observe the animal walking. Since this is not possible in prehistoric animals, *one should be wary of any interpretation determining form of locomotion using a single bone.*

Lesson Concerning the Use of the Femur Angle. The angle of the femur is measured in a living subject by drawing one line from the pelvic bone to the kneecap and then drawing another line from the kneecap to the lower leg bone. The angle of the intersection of these lines is called the femur angle.

In order to measure the femur angle (also called the Q-angle), you need a pelvis, a femur bone, a knee cap, and a lower leg bone naturally attached to each other. Dr. Ameghino had just one leg bone (without muscles, ligaments, or other bones attached) and made unverifiable assumptions regarding the femur angle. Dr. Hrdlička analyzed the same bone and came up with a completely different conclusion. *Determining the angle of the femur using a single femur bone is unreliable.*

Lesson Concerning Evidence of Fire. Finding evidence of the controlled use of fire at a dig site can be used to argue that the animal at that site was culturally advanced. At Mount Hermoso, pieces of rock, called scoriae and tierra cocida, were found and interpreted by Dr. Ameghino to be evidence for the use of fire, but scientists at the Carnegie Institution's Geophysical Laboratory in Washington, D.C., determined these to be just ordinary rocks. *Short of finding partially burned logs in a fire pit lined by a circle of stones, one should be leery of interpretations concerning the controlled use of fire at a dig site.*



Above: Remnant from fireplace, called scoriae, found at Mount Hermoso was actually lava

Postscript: Who promoted Ameghino after his death?

2015

Question: *Who was behind the promotion of Florentino Ameghino after he died (including numerous commemorations, statues, a postage stamp, and naming a crater on the moon after him)?*

Dr. Podgorny: *“After Florentino Ameghino’s death, there were many movements trying to promote Ameghino as a national hero, icon, or symbol... You have, on one hand, the Socialist Party. On the other hand, you have the Argentinean teachers, the Argentinean scientists, or even the Argentinean artists who were trying to have Ameghino as a kind of founding father....*

The Argentinean Socialist Party, the Left Party—who, during...the first World War, were trying to find a local figure to substitute [for] Ernst Haeckel, the German scientist who was the paradigm of science and materialism and all the values that the Socialist Party—wanted to promote [Ameghino] in its cultural fight against the Catholic Church....

Ameghino remained as a hero of the Left Parties, the Communist Party, the Socialist Party.... When the Soviet Union reestablished diplomatic relationships with Argentina, the first act in Argentina was a visit of the Ballet Bolshoi and the first act in Moscow was a Congress on Florentino Ameghino.

So, Ameghino...was even promoted in the Soviet Union when the diplomatic relations were reestablished.”⁸⁴

—**Dr. Irina Podgorny**
Historian of Science
National University of La Plata



Photo by Debbie Werner



Above: *The Catholic Church (National Basilica) in Luján, Argentina, near Ameghino’s childhood home*

Want more information? Read the 15-page bibliography for this chapter.