

ADVENTURES IN PATAGONIA

Field Museum paleontologists encounter more than fossils during their first expedition to South America, 1922-24.

By Larry G. Marshall



"It is said that there was open rebellion in this territory a year ago and some 400 men were executed. . . . Please do not communicate this to our families." So wrote Elmer S. Riggs, Field Museum paleontologist, on January 3, 1923, shortly after setting up base camp at Río Gallegos, in southern Argentina. A cause for anxiety? Probably so for the letter's recipient, D. C. Davies, then Field Museum's director. It had not been many years since another curator, anthropologist William Jones, had been murdered while doing field work in the Philippines.*

Now, Elmer Riggs and two Department of Geology preparators, John B. Abbott and George F. Sternberg, were beginning two years of field work in a new land. It

was to be an undertaking full of surprises and disappointments, as well as unexpected pleasures.

Their objective was to make extensive collections of fossil mammals from Argentina and Bolivia. And where to begin such an endeavor? Naturally, in a locale known for the presence of fossils of a particular geological age: in a place like Patagonia—the southernmost 900 miles of Argentina east of the Andes and north of the Straits of Magellan.

*See "Why Was William Jones Killed?" by Barbara Stoner, September 1971 *Bulletin*.



The great barranca, or cliff, in central Patagonia—the most important fossil locality in South America.

Larry G. Marshall

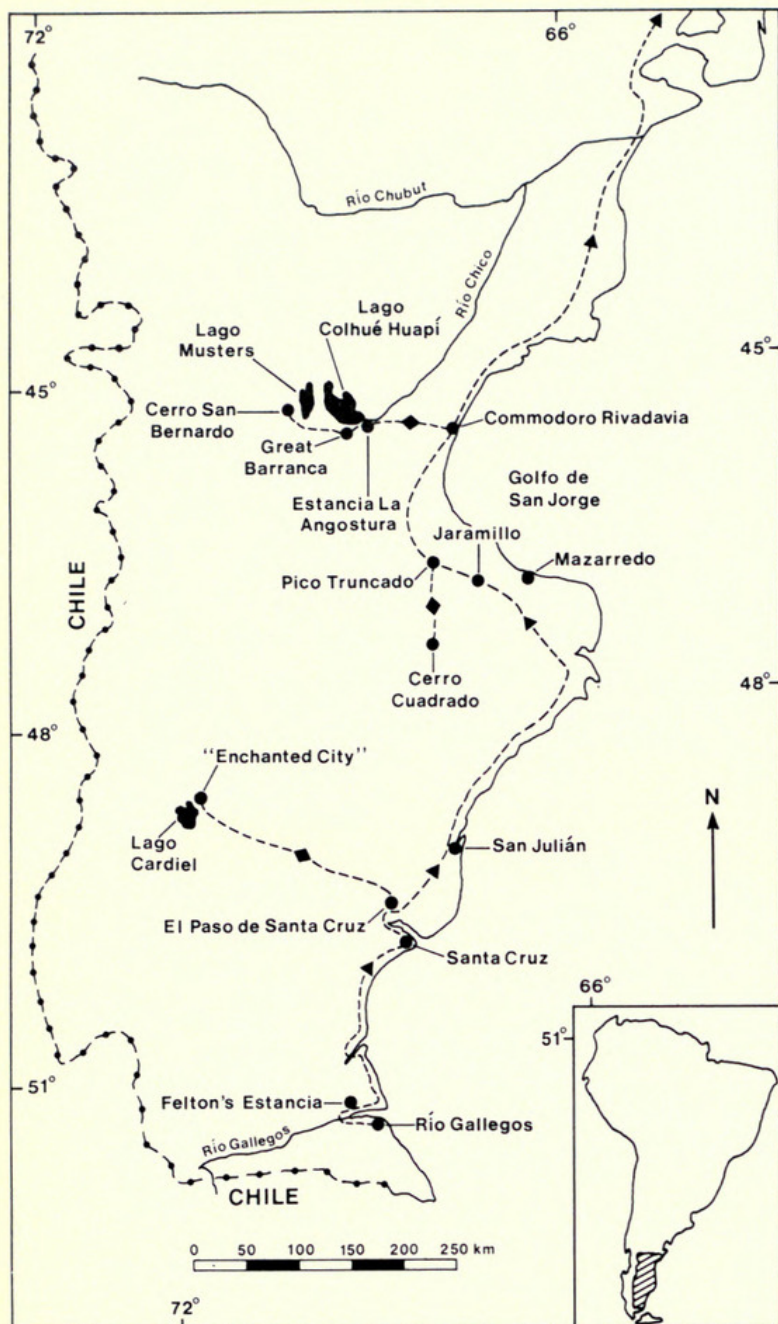
This part of the world, long viewed as a no-man's-land, first came under serious scientific scrutiny in 1833, when the H.M.S. *Beagle* sailed along the Argentine coast to do geodetic surveys. Aboard the *Beagle* was a young English naturalist, Charles Darwin, whose responsibilities included the collecting of natural history specimens. By the time the *Beagle* departed Argentine waters Darwin had accumulated an impressive array of fossil specimens that were entirely new to science. Subsequently, the specimens were classified and named by the eminent British anatomist, Sir Richard Owen.

Largely as a result of Darwin's discoveries, it was recognized that the Patagonian fauna was distinctly dif-

ferent from the fauna of the rest of the world, a fact which suggested that the region had been geologically isolated for a long period of time. Recent geological evidence supports the view that South America was, indeed, an "island continent" during most of the last 65 million years of earth's history.

However, not until the pioneering work of the Argentinian brothers Carlos and Florentino Ameghino, which took place more than 50 years after Darwin's visit,

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Patagonian itinerary of the Marshall Field Paleontological Expedition to Patagonia (1922-24).

did the world of science begin to appreciate the wealth of fossil mammals occurring in Patagonia. Carlos Ameghino, the younger brother, made 16 expeditions into Patagonia, the first occurring in 1887. Florentino, in turn, wrote voluminously on the collections made by his brother.

Beginning in 1896, paleontologists from other countries began collecting in the region. John Bell Hatcher, of Princeton University, made three expeditions between 1896 and 1899. André Tournouër, of France, made five trips to southern Argentina between 1899 and 1904,

collecting for the Paris Museum of Natural History. In 1904, Handle T. Martin of Topeka, Kansas, collected along the Río Gallegos. Many of his specimens are now in the University of Kansas Natural History Museum, at Lawrence.

The next major expedition to this region was Field Museum's "Marshall Field Paleontological Expedition to Patagonia (1922-24)," led by Riggs. When authorization for the Field Museum expedition came through in July, 1922, Riggs, Abbott, and Sternberg were on another fossil-hunting venture in Alberta, Canada. They lost no time in packing their specimens and hustled back to Chicago. On November 15 the expeditioners embarked at Hoboken, New Jersey, for a 17-day voyage to Buenos Aires.

Riggs had no sooner arrived in Argentina than he learned of a new law that could seriously restrict the collecting of fossil and archaeological specimens by foreign institutions. The law stipulated that field work could be prohibited in certain areas, that all collected material had to be inspected by Argentine officials before it could be shipped out of the country, that any specimens new to science could be confiscated, and that half of any series of desirable specimens could be withheld.

If rigidly enforced, such a set of regulations could greatly limit or vitiate Riggs' collecting efforts. He secured formal permission to proceed, but only after 23 days of wading through government red tape in Buenos Aires and satisfying Argentine officials that Field Museum's endeavor was an honorable one.

Following the route of Hatcher, Riggs established his first camp in January, 1923, at the estancia, or sheep ranch, of Don Charles Felton, on the north bank of the Río Gallegos, some 40 miles from the city of Río Gallegos. His first collecting was done along the north bank of the river in what is known as the Santa Cruz Formation, created during the early Miocene epoch, some 20 million years ago. Most fossils came from the lower 25 feet of the formation, which was exposed near the river's waterline.

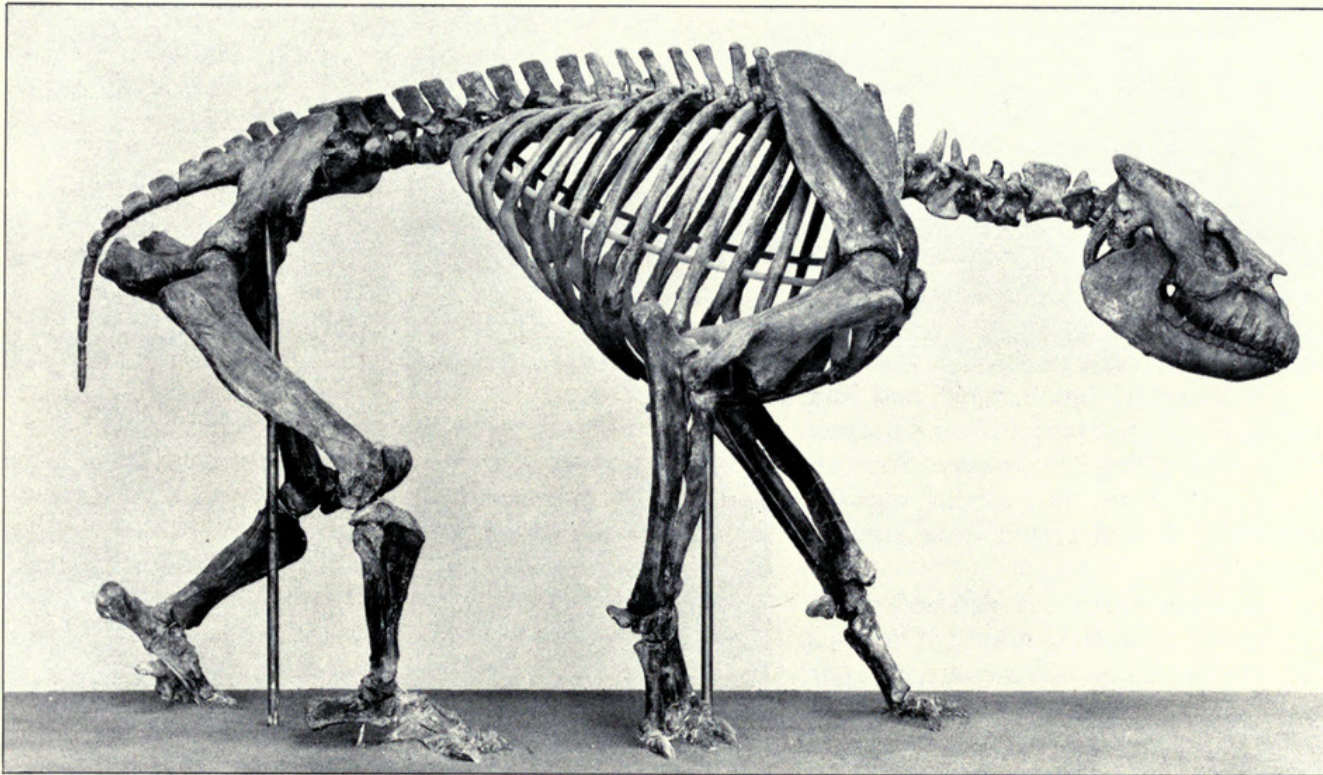
Two of the fossils discovered by Riggs in this formation—the herbivorous mammals *Astrapotherium* and *Homalodotherium*—are of particular interest because relatively complete skeletons of these animals were collected. (The reconstructions of these two fossils are on view in Hall 38.) *Astrapotherium* stood nearly five feet in height and was about 9½ feet long. It was large-headed and long-bodied, and its mouth was armed with four strong tusks somewhat like those of a wild boar. The forefoot had five toes which were probably enclosed in a fleshy pad like that of an elephant. The hind legs were more slender than the forelegs and the entire hindquarters were relatively light. Remains of this animal were found in lagoon and stream channel deposits. This fact, together with the features of padded feet and a kind of dentition suitable for chewing soft, lush vegetation, suggest that *Astrapotherium* was the South American "hippopotamus" of its time.

Homalodotherium was a sturdy, heavy-bodied, strong-limbed creature with the proportions of a bear and about as tall as an ox. Its head was similar in proportion to that of certain extinct members of the rhinoceros family. Its grinding teeth were of the sort associated with a vegetation diet, and it had neither tusks nor horns for defense. The hind legs were relatively short and stout, longer in the thigh and shorter in the lower leg. The bear-like hind feet could be firmly planted on the ground and were well adapted for supporting the body in an activity such as digging for roots or for rearing upright so that the upper limbs could pull down branches, presumably to feed on foliage or fruit.

SHORTLY AFTER RIGGS' ARRIVAL in Río Gallegos, a certain J. G. Wolfe introduced himself and offered his ser-

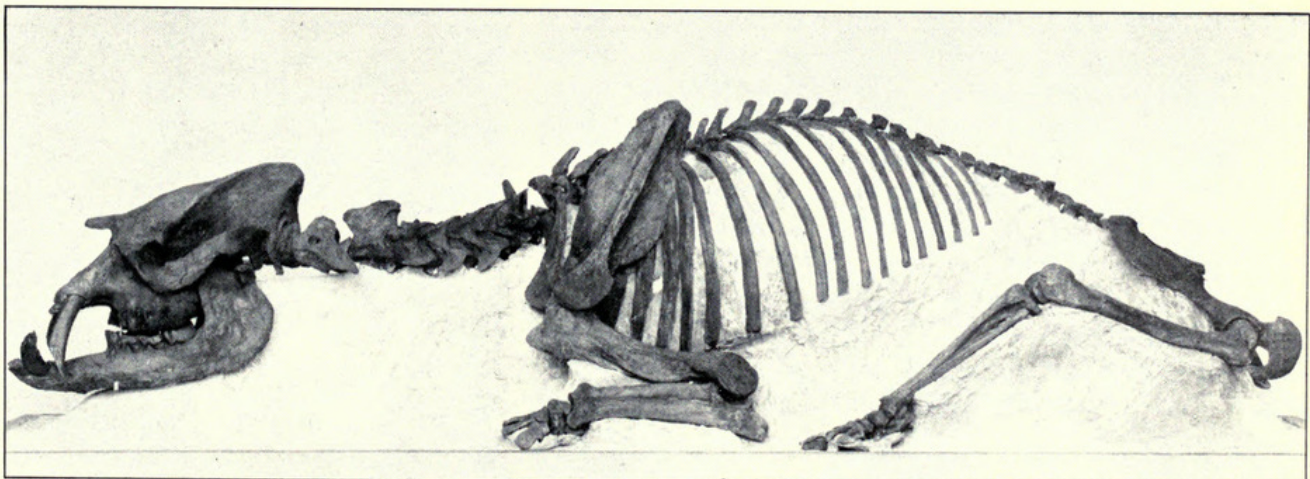
vices to the expedition. Wolfe claimed to have been a museum curator in Río Gallegos and to have held a commission in the Argentine army. But what aroused Riggs' interest, more than his credentials, was Wolfe's description of a "Tertiary human skull" and an "enchanted city." Riggs decided to investigate these curiosities, though with reservations.

They set out for El Paso de Santa Cruz, the settlement where the skull had apparently been found. The proprietor of a local hostelry recalled that the skull had first attracted notice about 1916 and had been discovered in a roadbed near town. The first person to suspect that it might be of scientific value was said to have been an English nurse, a Mrs. Vendrino, who had worked in the area for some years. She obtained custody of the skull and it was in her possession when Wolfe had examined it earlier.



Homalodotherium reconstruction on view in Hall 38. Like Astrapotherium, below, it lived in Patagonia during Miocene times. Both fossils were found by Riggs and his associates in 1923.

Astrapotherium reconstruction on view in Hall 38. Occurring some 20 million years ago in what is now Patagonia, it was the South American "hippopotamus" of its time.





◀ *Elmer Riggs examines fossil skull and jaw collected in Patagonia.*

Field Museum's Elmer S. Riggs, John B. Abbott, and George F. Sternberg (standing: second, third, and fifth from left) enjoy some South American hospitality while visiting an Argentine meteorological station at Colonia Sarmiento. Their hosts are seated.

John B. Abbott excavating dinosaur femur in January, 1924. This huge thigh bone is on permanent view in Stanley Field Hall, where it is designated the "touch bone."



In El Paso de Santa Cruz, Riggs—who was becoming increasingly suspicious of the alleged skull—was told that Mrs. Vendrino had recently “gone mad” and had been taken to Buenos Aires for treatment. She had taken her treasured, 22-pound skull along as a trophy. Eventually, Riggs was able to track down the “skull,” and his suspicions were confirmed: it was just a very curious stone, with a remarkable humanoid shape.

From El Paso, the Riggs party now proceeded 175 miles northwestward to Lago Cardiel, in search of Wolfe’s “enchanted city.” Once there, Riggs experienced another disappointment as the “city” proved to be nothing more than an intrusive bed of lava, or *dike*, as it is known in geological parlance. The “city” filled a fissure in the surrounding clays and had subsequently been laid bare by erosion. Local residents saw nothing unusual in it, for a number of similar structures were to be found in the area.

Perhaps naive, perhaps an eternal optimist, or possibly just the victim of a kind of salesmanship, Riggs was now intrigued by Wolfe’s account of an “ancient cemetery” of fossil mammals. They proceeded over a circuitous route to the camp of an amateur fossil collector, a man who had worked with paleontologist Carlos Ameghino some 25 years earlier. On the second night out, the party realized that they had travelled almost in a circle and were now six miles from their starting point. The search for the ancient fossil “cemetery” was forthwith abandoned and Riggs drew these belated conclusions about Wolfe:

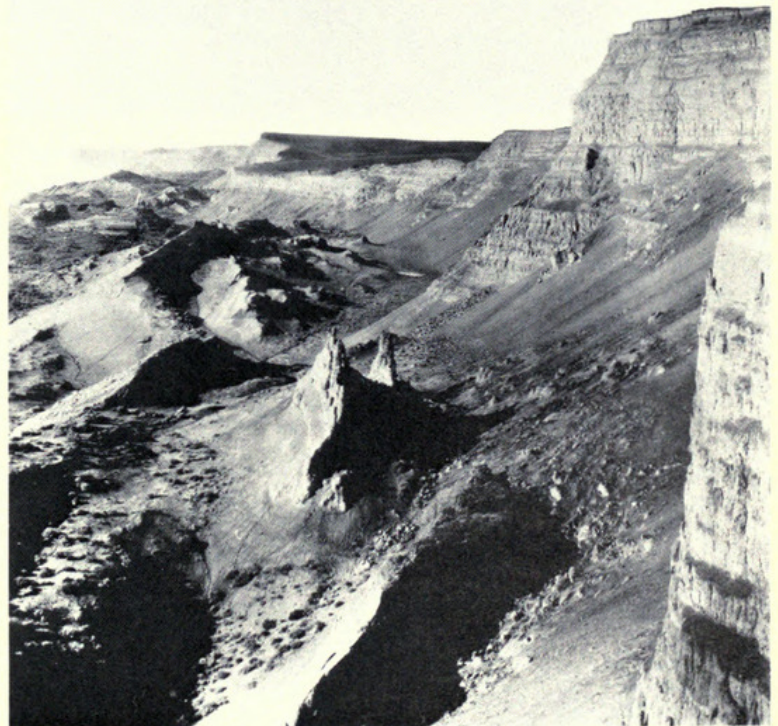




"He betrays no evidence of scientific training, [and] is particularly lacking in ability to recognize and interpret natural objects and to derive data from them. His method . . . has been to get theories from reading and then to cast about for some object to fit into the theory. . . . Dr. Wolfe has impressed us as an enthusiast with a wanderlust and no purpose beyond gratifying it. He studied law . . . but found that profession too tame and colorless to suit his fancy. He . . . apparently wrote extravagant stories in order to sell them. He is already, so he says, under fire of criticism of a leading scientist in Buenos Aires." When the party returned to Río Gallegos, Wolfe was dismissed.

Later in the year, the expedition set up camp near the Estancia La Angostura, on the south bank of the Río Chico del Chubut. Here, new surprises awaited them. They pitched camp not far from some bluffs of gray shale, and on the day of their arrival Abbott was already climbing about the bluffs and inspecting them. He hurried back to report the presence of dinosaur bones.

The next day, Abbott and Riggs examined the bluffs more thoroughly. Bones of large dinosaurs were indeed there—they had been dug out of the shale and



Although bleak and forbidding in aspect, the Santa Cruz Formation along Patagonia's Atlantic coast is good fossil country.

*Family of Welsh immigrants
posed in their Sunday best
before their Patagonian home.*



*"Bones of large dinosaurs . . .
had been dug out of the shale
and placed in orderly piles, . . .
with no mark of ownership and
exposed to the elements."*

▼



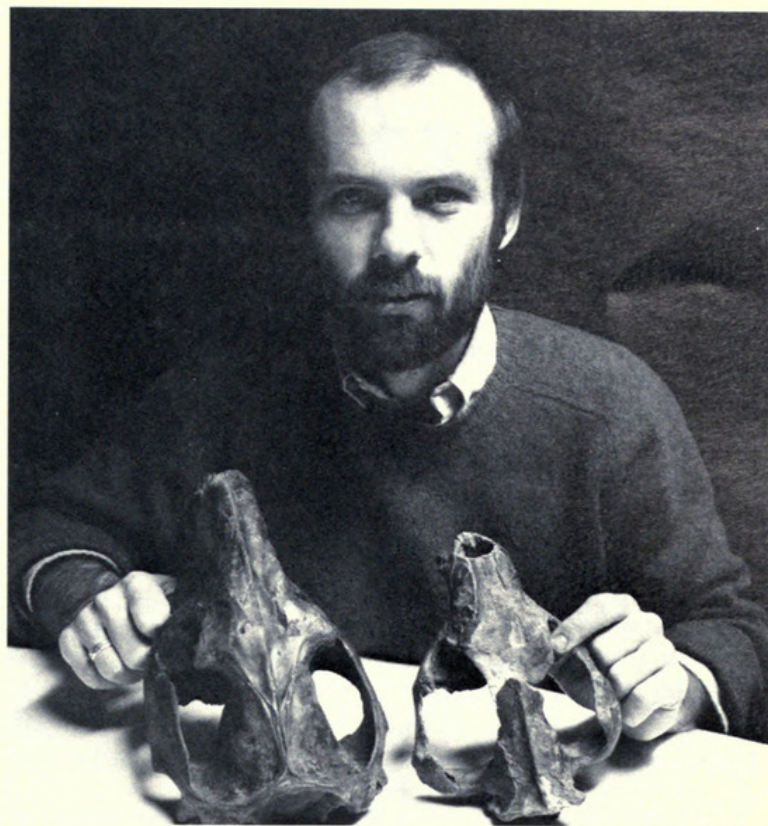
placed in orderly piles nearby! There the bones sat, with no mark of ownership and exposed to the elements. Sun, rain, and wind had weathered them so that they were now falling into decay. Three or four thousand pounds in all, this accumulation represented no small effort on the part of an earlier collector. Local residents remembered that some work had been done there about 20 years earlier, but no one knew who the fossil-hunter had been, where he had come from, or what fate had befallen him.

A few days later Riggs and Abbott discovered their predecessor's deserted camp. A ring of stones marked the outlines of a *tolda*, or bush shelter, such as those made in earlier times by Indians and which were still used by local shepherds as temporary camps. Bits of reed matting lay among the stones. A drift pick, shovel, and two hammers bore testimony to an earlier expedition—all carried the trade mark of a Sheffield, England, toolmaker; they also found a badly rusted ring bolt and the iron handles of a chest. These were the only clues to the identity of the man who had worked the bluffs two decades earlier, only to leave the fruits of his labor abandoned. Had he fallen ill and died? Had he abandoned his work in a fit of despair or when funds ran out? Had he been set upon by thieves?

The place had an eerie air about it, and besides, the expedition's main objective was mammals, not dinosaurs. In any case, the party soon packed up their gear and headed southwest about 20 miles to a particular barranca, or cliff, which has come to be recognized as the most important single fossil locality in all of South America. This barranca, south of Lago Colhué-Huapí, extends westward from the source of the Río Chico del Chubut to a point south of Lago Musters. The remarkable feature of this barranca is that faunas of four distinct, successive ages of land mammals occur there, superimposed one upon the other.

Toward the end of January, 1924—after more than a year in the field—the expedition moved westward to explore the terrain surrounding the San Bernardino Mountains west of Lago Musters. All of the fossil beds encountered in this area were Cretaceous in age (135 million to 63 million years old) and although the party encountered no fossil mammals, they did find dinosaurs. Several well preserved femurs (upper bones of the hind leg) were collected at a point 10 to 12 miles northwest of Cerro San Bernardino. One of these femurs (the "touch bone"), weighing nearly half a ton, is now on permanent display in Stanley Field Hall.

In May, 1924, Riggs headed southwest in search of a fossil pine forest in the vicinity of Cerro Cuadrado. The first indication of a bosque petrificado, or fossil forest, had come three months earlier, when Riggs was given a fossil pine cone by a country storekeeper midway between Lago Colhué-Huapí and Lago Musters. The specimen had been discovered "60 leagues southward." Riggs was later shown two similar cones at Mazarredo, on the south shore of the Golfo de San Jorge. These were said to have



Dave Walsten

Author Larry G. Marshall with skulls collected by Riggs from the Santa Cruz Formation. Left is an herbivorous notoungulate; right is a carnivorous marsupial.

come from "20 leagues to the west." More cones were seen at Jaramillo, about 6 miles north of the Río Deseado and some 40 miles east-southeast of the town of Pico Truncado. These came from "12 leagues to the southward."

Using a bit of elementary triangulation, Riggs calculated the general location of the legendary forest. With the owner of the Jaramillo specimen as guide, the party headed south. After six days of searching, they found the source of the cones, some 60 miles south of Pico Truncado. It was indeed a forest, with petrified stumps still standing and trunks and branches strewn about. Many were of the genera *Araucaria* or *Proaraucaria*, relatives of the Brazilian pine, a living species.

The forest, since designated a national monument by the Argentine government, is recognized as one of the world's two greatest petrified forests, the other being the Petrified Forest in Arizona's Painted Desert National Monument. Riggs was able to make a collection of 250 specimens of fossil cones, twigs, and branches.

In mid-May of 1924 the expedition moved north to escape the rigors of winter. Crossing the Río Negro, Riggs, Abbott, and Sternberg left Patagonia, never to return; they had more than satisfied their objectives. After a break of several months, Riggs was involved in phase II of the expedition, an enterprise that continued until October, 1927. But that's another story—to be recounted in a future *Bulletin*. □



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