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NATURAL HISTORY MUSEUM OF
LOS ANGELES COUNTY

Join us for the unveiling of the **Dueling Dinosaurs!!**

DUELING DINOSAURS

Visitors to the Museum of Natural History in Exposition Park find it difficult not to be overwhelmed by the sheer size and vibrancy of the "dueling dinosaurs" that now grace the main foyer, thanks to a generous gift from Museum Fellows Dr. S. Jerome and Mrs. Judith D. Tamkin and the Tamkin Foundation. Towering above enthralled onlookers, *Tyrannosaurus rex*—the best known of all predacious dinosaurs—stoops to attack the rhino-like *Triceratops* in the re-creation of a scene that must have taken place frequently toward the end of the Cretaceous Period, some 65 million years ago. The installation of this new permanent display, which will be completed by the end of 1996, is the last chapter in a story that began some three decades ago.

Following the removal of the fine art collections to the Los Angeles County Museum of Art in 1964, Dr. Herbert Friedmann, then director of the Natural History Museum, decreed that the most pressing priority of his reconstituted institution was to create a new dinosaur hall. Responding to Dr. Friedmann's challenge, Museum Trustee William T. Sesnon funded a number of expeditions to Hell Creek in Montana for the purpose of locating Cretaceous dinosaur material complete enough to place on exhibition. Ace prospector Harley Garbani was retained to head the collecting team, which he staffed mainly with student volunteers.

Five consecutive collecting seasons in Montana between 1964 and 1969 yielded a wealth of dinosaurian material, including three duckbill skeletons *(Edmontosaurus)*, two *Triceratops* skulls—one associated with a partial skeleton, and the skull and foot of a *Tyrannosaurus*. One of the *Triceratops* skulls was complete, though partially crushed, and has been on permanent exhibit since 1970.

When discovered, the *Tyrannosaurus* skull had been disarticulated into many pieces, and it wasn't completely reassembled until 1973. By then it had become obvious that it was the largest and most complete *Tyrannosaurus* skull known to science, and it carried this distinction until just recently, when an even bigger *T. rex* skull was found by a party from the Black Hills Institute of South Dakota.

The *Tyrannosaurus* skull and foot were associated with additional limb bone fragments and vertebrae, some of which belonged to a second, smaller individual. The skull and foot were duly placed on display but with long-standing regret that we had nothing to fill the intervening space! Then, in the mid 1980s, we exchanged a cast of our skull for the cast of a headless *T. rex* skeleton that had been found by the Tyrrell Museum in Canada. In this way, both institutions acquired the material for a relatively complete (if partially fabricated) exhibit. The relocation of the Natural History Museum's Jurassic dinosaur skeletons from the main foyer to the Governors' Gallery in 1992 finally released a large enough space in which to display *Tyrannosaurus* to good effect.

LEFT

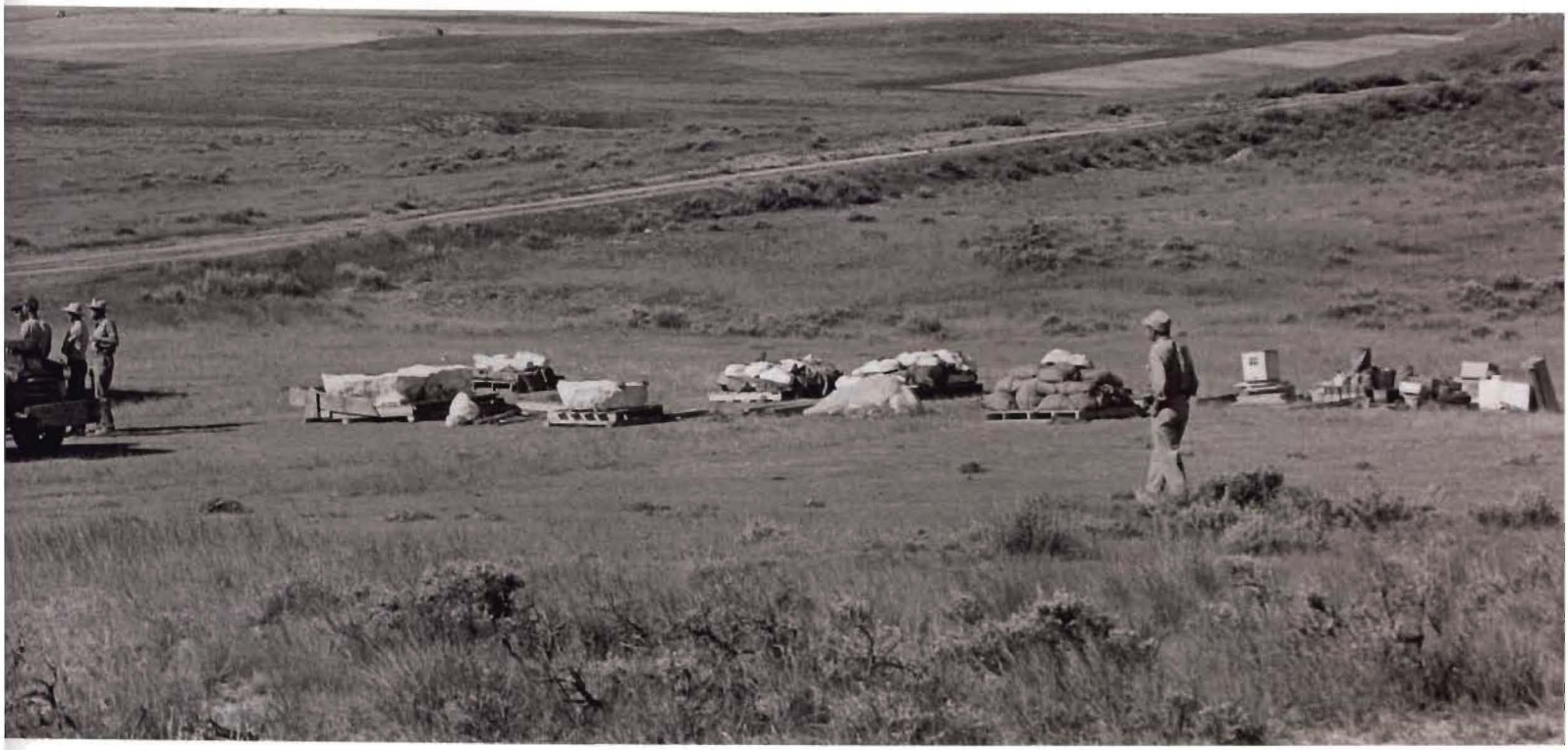
Tyrannosaurus rex bones being excavated from an ancient stream channel near Hell Creek, Montana, in 1969; a jaw fragment is visible at the left. Photograph by Walter Frisbee.

BOTTOM, PAGES 2 AND 3

At the end of the 1969 field season, plaster jackets containing dinosaur bones were loaded onto pallets for transportation back to Los Angeles. Photograph by Walter Frisbee.

COVER

The Tamkin Dueling Dinosaurs, *Tyrannosaurus rex* and *Triceratops,* now on display in the main foyer of the Exposition Park museum. Photograph by Dick Meier and Dan Watson.



The idea of having the *Tyrannosaurus* and *Triceratops* posed in interaction was the inspiration of Natural History Museum Modelmaker Michael Stokes, who prepared a model of his concept for consideration by Museum President and Director James L. Powell. Dr. Powell in turn showed the model to Dr. and Mrs. Tamkin: excited by the opportunity to provide the museum with a distinctive hallmark that would be particularly appreciated by our younger visitors, the Tamkins offered to underwrite its construction.

The armature or supporting framework for a skeletal mount can be either external or internal. A classic example of external armature can be seen on the museum's cast of the long-necked Chinese sauropod ***Mamenchisaurus*** (now on display in the Governors' Gallery). Here the neck, legs, and torso are held together by external metal bands, and the whole skeleton is supported upon three very visible vertical steel rods.

The Natural History Museum helped pioneer internal armature, where the skeleton is supported on a framework that lies inside the bones. This type of mount, which has been used on most of our other dinosaur and fossil mammal skeletons, provides for a much more realistic pose but has the disadvantage of necessitating drilling through and hence destroying part of the bone in the process. Even when the mounting technique does not harm the skeletal components, paleontologists are often unhappy at the prospect of putting real fossil bones in mounted skeletons because it is then difficult to study them. However, a compromise was reached when assembling the Dueling Dinosaurs.

We decided not to use the real *Tyrannosaurus* and *Triceratops* skulls in the mount—in part because we wanted them available for further scientific study and didn't want them drilled or otherwise damaged, but mainly because they are very heavy, each weighing almost a hundred kilograms (several hundred pounds). Clearly we did not want the skulls breaking off from the relatively slender and fragile necks in the event of a moderate to severe earthquake temblor!

Although they were replaced by casts in the completed mounts, the real skulls will be located in nearby display cases when the installation is complete so that visitors may study them close up. To complete the mounts, we incorporated as many real bones and bone fragments as possible: about 60 percent of the *Triceratops* is real bone, and about 15 percent of the *Tyrannosaurus*. (The finishing of the casts is so realistic that it is difficult to tell from a distance which element is real bone and which is cast.)

The Dueling Dinosaurs were assembled to our design by Research Casting International of Toronto, under the direction of Peter May, formerly of the Royal Ontario Museum. May's skilled team has mounted more than 300 fossil skeletons for museums throughout the world. Although Research Casting's experts are no strangers to *Triceratops* or *Tyrannosaurus* skeleton mounts, this was their first interactive mount of the two species. As far as they can tell, this is the only such mount in the world, and it is certainly one of which they are extremely proud—they rank it among their finest efforts to date.

The skeletons were mounted in modules in Canada—the *T. rex* divided into seven units, the *Triceratops* into six—and then shipped to Los Angeles for reassembly on site. The hip units of both animals were so large that we had to remove the doors at the museum's north entrance to get them into the building. We started unloading the shipment at 8 a.m. on Tuesday, April 2; in less than 24 hours, the two huge skeletons, each weighing 680 kilograms (1,500 pounds) were up and in place.

The display was, however, far from complete. Each skeleton sits on a solid steel base plate weighing 450 kilograms (1,000 pounds), and these needed to be welded together after the fine tuning of the combatants' positions and covered by a platform so that the feet of the dino-

THE DUELING DINOSAURS
will be unveiled as part of a day-long celebration on Saturday, October 26, 1996. Please see page 11 for additional information.

saurs will be resting on a flat surface rather than being suspended above the ground.

Finally, the inside walls of the foyer are being ringed with supporting exhibits about the people who made the concept possible, the different stages of the project, and the context in which the dinosaurs lived. Several displays will be devoted to other kinds of life present on earth at the end of the Cretaceous Period and on the natural history of the two animals. Was *T. rex* a predator or a scavenger? Was the *Triceratops* frill for display, defense, or temperature regulation? These and other intriguing questions will be addressed.

As the school year begins, we look forward to seeing visitors of all ages gazing up at the dueling titans and learning more about life on earth at the very end of the Age of Dinosaurs.

Dr. John M. Harris
Chief Curator, Paleontology

Opposite, top

During the 1969 excavations near Hell Creek, Montana, a block of river channel sandstone matrix containing *Tyrannosaurus* skull fragments is encased in plaster to provide reinforcement for the brittle bones while they are moved from the field to the Natural History Museum. Photograph by Walter Frisbee.

Above

Museum Modelmaker Michael Stokes refines his concept for the Dueling Dinosaurs. Photograph by Dick Meier.

Left

William T. Sesnon *(right)*, Mrs. Sesnon, and then Curator Reid McDonald examine the plaster jacket containing a *Triceratops* skull after it arrived at the museum at the end of the 1965 Hell Creek field season. Photograph from the Vertebrate Paleontology archive.