

PALEONTOLOGY

# Great Lion of La Brea

## Animals Larger Than Any on the African Veldt Fought Sabre-Tooth and Sank Into the Same Black Sepulcher

By DR. FRANK THONE

**B**IGGER by a fourth than the proudest lion that walks the veldt today were the tallest of the great lions of California a hundred thousand years ago. Rivalled in size only by the short-faced bears whose bones have been found with theirs in the La Brea tar-pits, they could confidently assert their first rights even over the terrible sabre-tooth cats that snarled against them in large numbers. What thunders of roaring shook the skies when giant lion and sabre-tooth faced each other over some luckless bison or camel mired in the asphalt, we can only imagine.

But that these rival killers did live in California at the same time, in the days when the northeastern part of this continent was weighted down under a mile's thickness of ice, is now quite solidly established. After years of study of their bones, taken in hundreds of thousands from the tar-pits of La Brea in Los Angeles, Dr. John C. Merriam, president of the Carnegie Institution of Washington, and Dr. Chester Stock, paleontologist of the Los Angeles Museum, have presented the results of their research in the newest Carnegie Institution monograph, which makes available to scientists and the public at large both a sweeping general view of the world these tremendous cats knew and an intimate and detailed knowledge of every bone in their bodies.

As a result of over a quarter-century of work on the vast spoil of perfectly preserved bones dug up out of the oozing pits of tarry asphalt, it is possible to make a certain number of reasonable inferences about the animal life of southern California a thousand centuries ago, and to get some idea of how this tremendous scientific quarry came to be.

Even before Dr. Merriam, as a young man, began to mine the bones out of them, the La Brea tar-pits were known, both as deposits of extinct animal remains and as death-traps for birds and animals of the present time. Observers had seen how wild-fowl, alighting in the shallow water that lay above the

See Front Cover treacherous sticky asphalt oozing up from the depths of the earth, were mired like flies stuck on fly-paper. They had also seen chickens, squirrels and other incautious animals venture out on the thin concealing layer of dust on its drier parts, and in their turn perish miserably. Finally, they had seen hungry cats and dogs, and even prowling coyotes, lured by what looked like easy prey unable to escape, fall into the same unrelenting death-grip of the oozy tar.

### The Pleistocene Veldt

What men saw in present-day California has been going on in these tar-pits for ages. But in California of Ice Age or pleistocene times the catch of the deadly pits was bigger. The land then was a rolling, grassy, well-watered plain, dotted here and there with trees, like the South African veldt of today, and like the veldt it supported uncountable herds of game—humpless camels, wild horses, elephants, antelopes and deer, giant bison, huge ungainly ground sloths: as remarkable a natural menagerie as ever trampled the earth.

Some of these came to the tar-pits, either attracted by the water shining innocently upon their treacherous surfaces, or perhaps just blindly blundering in. Beasts of prey and carrion birds, attracted by this vast array of living or newly-dead bait, swarmed in after them—and met the same doom. Their flesh and skin rotted and disappeared, their skeletons fell apart and were trodden into the soft tar by the struggling feet of new victims, and thus the pits gradually became veritable black charnel puddings, with bones for raisins. It has been the job of half a lifetime for scientists to dish up a part of that pudding, pick out the raisins and identify them, and then piece together their story.

And so we come to the great California lions, that were the rivals of the sabre-tooth cats for the flesh-pots of the California veldt.

There were not nearly so many of them around the tar-pits as there were of the sabre-tooth cats, Drs. Merriam and Stock have found in their analysis

of the millions of tar-pit bones. For every lion there were approximately thirty sabre-tooth cats. This does not necessarily mean that there were more sabre-tooth cats than there were lions, nor that the sabre-tooth killers had the better of the argument when they met. It is quite possible that the lions were more numerous out in the open, away from the deep earth fissures where the tar-pits bubbled, and that only occasional specimens went down into the pits to be trapped by the tar.

Indeed, there are points of support for such a theory, both in fossil finds elsewhere and in the anatomy of the lions themselves. Elsewhere in California, as well as in other parts of the country, remains of these lions are more numerous than are the fossils of the sabre-tooth cats. Bones of the latter are most frequently found in caves and fissures, indicating that they lived for choice in rough, broken country, while the lions chose the open plain, though probably ranging into forest and hill lands as well.

The general build of the two giant cats fits fairly well into this picture. The California lion has the same lines as the African lion of today: a massive body, but on long legs. The modern lion is a stalker. He creeps toward his prey, taking advantage of all cover that offers. Then, when he has got as close



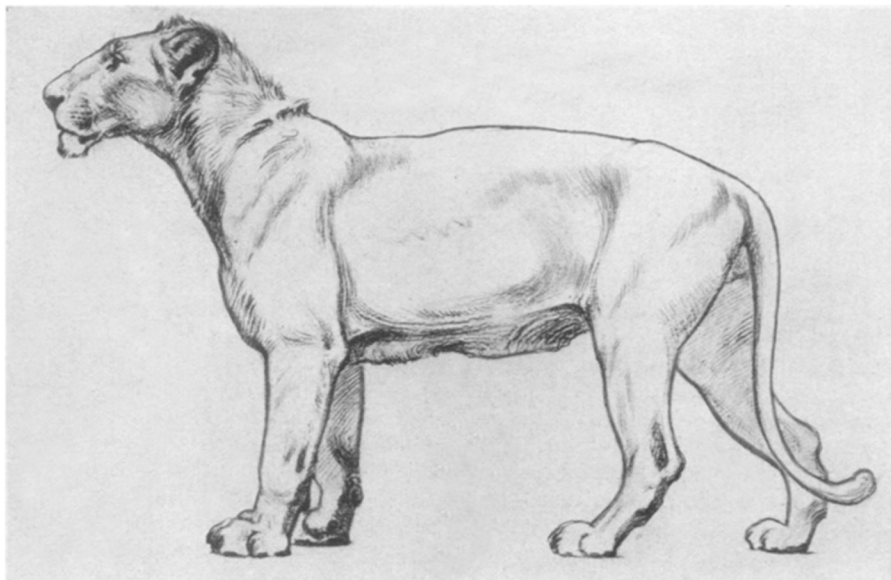
**EYETEETH**

Skull of the great sabre-tooth cat, showing how the lower jaw could be swung downward, leaving the enormous knife-like eye-teeth free to slash and stab. One of the great daggers has been broken off.

as he can by such cautious approach, he dashes out in a final sprint of fifty or a hundred yards, to leap upon the quarry and pull it down, hanging on terribly with forepaws and teeth. Sometimes the first rush brings down the victim with a broken neck, the vertebrae crushed between the powerful jaws. It seems reasonable to suppose that the California lion's hunting technique may have resembled that of his modern relative.

An alternative suggestion, that the California lion, may have been a tree-climbing hunter like the most formidable of present-day New-World cats, the jaguar, is considered by Dr. Merriam but dismissed as less likely. The California lion's very size would militate against a tree-dwelling life; moreover, his long-leggedness is a further argument in favor of a ground-dwelling habit. Whether or not he had a mane, like the modern male African lion, or whether he had a spotted skin, there is of course no present way of knowing. Nothing but bones have ever been found in the asphalt pits, and unless a lucky find of a piece of skin is made we shall be forever ignorant of the details of the external appearance of this great beast, as well as of the sabre-tooth cat. To be on the safe side, the scientific artist Charles R. Knight, who made restoration drawings of them under Dr. Merriam's direction, left their skins without markings.

The build of the sabre-tooth cat was as much adapted to "still" hunting as that of the lion to stalking. Although as large as a modern lion or tiger in his body, the sabre-tooth was decidedly shorter-legged—and, as though by some correlation, he was rather stumpy-tailed also. This short-leggedness would indicate, possibly, that he lurked in hiding along a game trail or near a water hole, and sought to bring down his quarry at a single pounce, being unable to run fast enough to overtake it in even a short chase. This lurking method of hunting would account for the remains of the sabre-tooth being usually found in caves and broken country, rather than in plains regions like those of the lion. It would also account for the great abundance of sabre-tooth bones in the tar-pits, which constituted a water-hole (albeit a treacherous and deadly one) in a rough area. Furthermore, the sabre-tooth's presumptive preference for unmoving prey might account for his willingness to attack the mired-down victims of the tar, while his relatively low intelligence would fail to warn him of the possibility of



ROAMED AMERICA 100,000 YEARS AGO

*Felis atrox*, great lion of California; the largest specimens of these tremendous felines were bigger by a fourth than the largest living lions.

his becoming a fresh victim himself.

The terrific knife-like tusks of the sabre-tooth cat, which made it impossible for him to bite anything in a normal fashion, have been the source of interminable speculation by scientists of all degree. It seems fairly certain, however, that he killed by stabbing and ripping, rather than by biting and hanging on. His lower jaw could be swung downward through a wide arc, leaving the points of his terrible upper eyeteeth clear to serve as daggers. Their serrated edges, tugged downward and back by the mighty muscles of the neck, must have made terrific wounds, that bled the victim to death in a few minutes.

#### Killers' Bones Predominate

Since the teeth were used thus for stabbing and slashing, the jaws could not be used for gripping, as in the true cats' mode of killing. To compensate for this lesser hold upon the prey, the forelimbs and shoulders were mightily reinforced; the sabre-tooth was so powerfully "chesty" that the bones of the hindlimbs seem slender by comparison, though they are quite as strong as those of a modern lion.

The lure of "easy meat" mired in the tar-pits must have been exceedingly strong in those cruel old days. A comparative census of the mammals whose bones were dug out of them shows only about a sixth of hunted and nearly five-sixths of hunters. Over half of all the animals represented belonged to the dog family. Most of them were the well-

named "dire wolves," *Canis dirus*, giant wolves bigger even than the biggest western "lobo" of today. Nearly a third of all the mammals—more than two-thirds of those remaining after the dogs are counted out, were cats. The cats were dominated by the sabre-tooth as the dogs were by the dire wolf; but prominent among them also was the great California lion, and there were also some smaller cats, including one or two forms closely allied to the modern puma, and a lynx or bobcat.

The scientific names of our two great cats were most happily chosen. Sabre-tooth boasts the title *Smilodon californicus*. That first Greek name has nothing to do with smiling. The first two syllables mean "carving-knife," and the "don" means "tooth." The California lion is called *Felis atrox*—and atrocious indeed he must have seemed to the terrified grass-eating animals on which he came roaring down; atrocious even to the sabre-tooth if it came to even fight between them. For while the average *Felis atrox* was no bigger than a large sabre-tooth, the biggest of the lions far outsized any sabre-tooth that ever walked, and indeed he had only one equal, the great cave lion that lived at about the same time in Europe.

Restoration drawings by Charles R. Knight, under direction of Dr. John C. Merriam.

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