

SCIENCE

NEW YORK, MARCH 25, 1892.

THE PUMA, OR AMERICAN LION.¹

THE puma is the only large, unspotted, native American cat. The general color of the fur is tawny, but on the under surfaces of the body it is whitish. The color of the central line of the back is darker than that of the sides and the end of the tail is dusky brown. The ears are black externally, with a central whitish area. The upper lip is white from the nostrils to the middle of the mouth, and at the latter point is a prominent black spot. The nostrils are flesh-colored. Baird compares the color of the puma to that of the Virginia deer, and states that it varies with the seasons as it does in the deer; that is, the summer coat is reddish and the winter coat grayish.

There is much variation in color among individuals of this species, but it has not been proven that this is correlated with the varying climatic conditions of its range. The occurrence of albino pumas in the Alleghany Mountains and in New Mexico has been reported, but not authoritatively.

Burmeister remarks on this point: "Very rarely individuals of this species of a brown, nearly black color have been found, while differences in color between yellowish-brown and yellowish-gray are not rare. I am aware that individuals nearly white and others nearly black have been observed, but I have never seen such myself."

New-born pumas are very different in appearance from the adults. Instead of being of uniform color, the back and legs are covered with large blackish-brown spots, and the tail is ringed with the same color. According to Dr. W. A. Conklin these markings disappear in about six months after birth.

The male puma in the National Museum is of the following dimensions: Head and body, measured along the curves, 53 inches; tail, $26\frac{1}{2}$ inches; height at the shoulder, $22\frac{1}{2}$ inches. Audubon and Bachman give the following dimensions of a male killed by J. W. Audubon at Castroville, Tex., Jan. 28, 1846. From point of nose to root of tail (whether measured along curves, not stated), 5 feet 1 inch; tail, 3 feet 1 inch; height of ear posteriorly, 3 inches.

The male puma measured by Azara was somewhat smaller, the head and body being $51\frac{1}{2}$ inches and the tail 29 inches. The system of measurement is not given.

The average dimensions obtained from these three individuals are: For the head and body, $55\frac{1}{4}$ inches, and for the tail, $30\frac{3}{4}$ inches; total, 85 inches.

I have found no authentic record of any individuals measured before skinning of which the dimensions were greater than those of Audubon's specimen mentioned above. The total length in that case was 8 feet 2 inches. There are, however, records of measurements of flat skins of greater size. I have myself measured a skin from Colorado in the National Museum, No. 19,906, of which the total length in a straight line is 8 feet 4 inches. Mr. Livingston Stone states that the skin of a puma killed on the McCloud River, California, "measured $8\frac{1}{2}$ feet when stretched." The average

total length of nine flat skins of adults in the possession of Mr. F. S. Webster of Washington is 7 feet 4 inches.

The area over which the Puma ranges extends from New England and British Columbia to the Straits of Magellan. On the Atlantic coast of North America the species has apparently not been found in the States of New Hampshire, Rhode Island, New Jersey, or Delaware. On our northern boundary I find no mention of its having been found in Michigan or Indiana. In Ohio it was extirpated prior to 1838, and probably more recently in Illinois and Indiana. I find no record of its occurrence in Nevada, but as it has been found in the surrounding States it seems improbable that it should be entirely absent there.

With these exceptions there are recorded instances, more or less numerous, of the occurrence of the puma in every State and Territory of the Union, dating from the beginning of the century. Like many other large American animals, however, the puma has retired before the advance of civilization, and in many of the more thickly populated States it is improbable that even stragglers could be found at the present day.

The puma occurs throughout Central America and in all parts of South America to the Straits of Magellan.

The first mention of the puma appears to be the remark in the letter of Columbus regarding his fourth voyage in 1502. In the narrative of his exploration of the coast of Honduras and Nicaragua he writes: "I saw some very large fowls, the feathers of which resemble wool, lions [*leones*], stags, fallow-deer, and birds."

There are also references to the occurrence of the puma in North America of very early date in the narratives of Laudonnière, Hariot, Coronado, Hawkins, and others.

The puma, regarded as a species, possesses in a remarkable degree the power of adapting himself to varied surroundings. He endures severe cold in the winter in the Adirondack Mountains and other parts of our northern frontier, and tracks his prey in the snow. He is equally at home in the hot swamps and canebrakes along the river-courses of our southern States. In South America he inhabits the treeless, grass-covered pampas as well as the forests. In the Rocky Mountains, as I am informed by Mr. William T. Hornaday, he ascends to the high altitudes in which the mountain sheep are found. Mr. Livingston Stone saw tracks of the puma on the summit of Mount Persephone in California, at an elevation of 3,000 feet. Similarly, Darwin states that he saw the footprints of the puma on the cordillera of central Chili, at an elevation of at least 10,000 feet. According to Tschudi, the puma is found in Peru in the highest forests and even to the snow-line (though seldom here). A writer in the "Encyclopædia Britannica" states that "in Central America it is still common in the dense forests which clothe mountain ranges as high as 8,000 or 9,000 feet above the sea-level."

In these different regions the puma always selects for his abode such spots as afford some shelter, but we find him in the thickets and copses, rather than in the great forests. "Those panthers that we have observed," writes one of the naturalists of the Mexican Boundary Survey, "were always

¹ Abstract of a paper in the latest Report of the National Museum

found in the most solitary places, generally where there were thick bushes, and in the vicinity of rocky spots, affording caverns for secure concealment, and in which to bring forth their young."

The puma seeks his prey chiefly at dawn and twilight and under cover of night, but he also sometimes hunts by day. The different species of American deer are his principal quarry, but he preys also upon smaller mammals. He will even feed upon the different species of American porcupines, despite their quills, which lacerate his mouth and face. Audubon and Bachman state that raccoons and skunks, as well as birds, form a part of his food, and that he will eat carrion when hard pressed by hunger. To this list Brehm adds the South American coati, agouti, and paca, and the rhea, or American ostrich. Dr. Coues and Yarrow state that in New Mexico and Arizona the puma kills hundreds of wild turkeys and has indeed broken up many of the former breeding-places. Pennant asserts that the wolf serves the puma for prey. This is improbable. Nevertheless, he reports that there was in the Museum of the Royal Society of London the skin of a puma which was shot shortly after it had killed a wolf.

Of the larger domestic animals, such as the horse and cow, the puma attacks only the young, but he will carry off a full-grown sheep from the fold, and not unfrequently preys upon the llama in South America.

In the less settled portions of America the puma has proved at times a great hindrance to stock raising. Kennerly states that in Sonora, Mexico, it kills many colts and calves, and is poisoned with strychnine by the herdsmen. Mr. C. H. Townsend remarks, in 1887: "It is practically impossible to raise colts in the Shasta County hills, California, on account of these pests. They destroy many hogs and young cattle also, but do not present so serious an impediment to the keeping of these animals as in the case of horses." I have recently received similar reports from other sources.

The puma does not ordinarily attack men, but, on the contrary, when surprised attempts to flee from them. Nevertheless it seems probable that some individuals, when strongly pressed by hunger, or moved by other unusual circumstances, may be emboldened to make such attacks. Hensel affirms that such is the case. Darwin states that he had heard of two men and a woman who were killed by pumas in Chili. McMurtrie mentions that a woman was killed by a puma in Pennsylvania, January, 1830. That the puma sometimes kills the hunter who has wounded him is doubtless true, as any wounded animal is likely to turn upon its persecutor, but this is quite different from an unprovoked assault.

It is the habit of the puma to spring upon his prey from an eminence, such as a ledge of rock or a slight rise of ground. If he fails to strike his victim, he seldom pursues it for any considerable distance. In northern regions, however, he sometimes pursues the deer when they are almost helpless in the deep snow. It was reported to Darwin that the puma killed its prey by jumping upon the shoulder and turning the head back with its paw until the vertebræ of the neck are broken or dislocated. Azara ascribes the same habit to the jaguar.

The female brings forth her young in some secluded spot. In the Adirondacks, according to Dr. Merriam, "the lair is usually in a shallow cavern on the face of some inaccessible cliff or ledge of rocks." "In the Southern States," says Audubon, "where there are no caves or rocks, the lair of the cougar is generally in a very dense thicket or in a cane-brake. It is a rude sort of bed of sticks, weeds, leaves, and grasses

or mosses, and where the canes arch over it, as they are evergreen, their long pointed leaves turn the rain at all seasons of the year.

From two to five young are born at a time. Bartlett states that in captivity the number is usually two, but sometimes one. Their young are reared without difficulty. They are brought forth at the close of winter or early in spring in the northern parts of the United States, and at the beginning of summer in South America, that is at the end of December. The period of gestation is from thirteen to fourteen weeks. The young first open their eyes when nine or ten days old. Their total length when born is from 10 to 12 inches. Dr. Merriam is of the opinion that in the Adirondacks the puma does not breed oftener than once in two years.

The age which the puma attains in the state of nature is unknown. It may be remarked, however, that one lived in the Zoological Garden at Frankfort, Germany, sixteen years, one month, and nine days. It died from injuries received by accident, Oct. 13, 1878. Dr. W. A. Conklin states that the various species of cats live in captivity fifteen or sixteen years, but show signs of decay at twelve years.

Authoritative writers upon the habits of the puma in North America agree that the adults do not commonly or frequently make use of trees except when traversing precipitous cliffs or when pursued by dogs. Under the latter circumstances they do not climb into a tree, but jump upon the nearest branch, even though it be at a considerable distance from the ground. Rengger, in his "Travels in Paraguay," however, states that both the puma and the ocelot climb well, and that in the forest they make their flight not only on the ground, but also by springing from tree to tree. He tells us in another place that he once saw a puma chase a troop of monkeys through the forest by jumping from bough to bough among the trees. However incredible this may at first appear, it becomes less so when we consider the wonderful denseness of the South American forests, described by Humboldt and other writers.

The puma, like the cat, has the habit of scratching the bark of trees with its claws, for the purpose of sharpening or smoothing them. Having mentioned this habit as possessed by the jaguar, Darwin writes: "Some such habit must also be common to the puma, for on the bare, hard soil of Patagonia I have frequently seen scores so deep that no other animal could have made them."

Many reliable authorities are agreed that the puma does not ordinarily emit loud cries or screams, but Kennerly, one of the naturalists of the Mexican boundary survey, states that on one or two occasions the cry of the puma was heard at a distance, and Schott writes as follows: "After dark his mournful note is heard resounding through the solitudes of the deserts. The note, listened to once attentively, is apt to make a deep, lasting impression. The different native names, as pronounced in Spanish, sound very appropriately to the note, and it is likely that the cry of the animal forms the base of its names. The note itself is often several times repeated, with intervals of from two to four minutes. As night advances the cry is heard but rarely." He also writes: "A puma was killed on the Rio Bravo, between Fort Duncan and Laredo. During his struggle with the hunters and dogs he raised a terrible cry, twice or thrice, to express his rage, and perhaps also to give his family the notice of danger." Dr. J. A. Allen reports that he once heard the puma's cry near his camp in Montgomery, Colorado. Elliot likewise states that he heard the cry of the puma at night, while camping on the St. John's River, Florida. He did not, how-

ever, see the animal. Darwin states that the puma does not often utter cries. He writes: "It is a very silent animal, uttering no cry, even when wounded, and only rarely during the breeding season."

In captivity the puma purrs when pleased, after the manner of the cat, and the female has been heard to utter a mewling sound.

The flesh of the puma is eaten by certain of the South American Indians, and was likewise eaten by the natives of North America, according to Catesby. Darwin, who tasted it himself, states that it is white in color and has the flavor of veal. Numerous other explorers and travellers make the same comment. Azara says on this point: "I have known my peons to eat it in preference to beef, even when that meat was to be had in abundance."

The puma is known under a multiplicity of English names. Among these are panther, painter, cougar, catamount, wild cat, American lion, California lion, silver lion, mountain lion, and tiger.

The word *puma* is the native Peruvian name, according to Garcilasso de la Vega, La Condamine, Tschudi, and other authors.

Cougar is an English form of the word *couguar*, which Buffon derived by abbreviation from *cuguacu-ara*. This latter word, lengthened to *cuguacuarana*, is, according to Markgrave, the native Brazilian name. Azara, however, states that the ancient name, used by the Guarani Indians of Paraguay was *güazüará*. Others called it *yagüá-Pitá*, meaning red *yagüá*, or *yagüatí* meaning white *yagüá*.

The word "painter" is a corruption of panther. It is unfortunate that this latter name has gained general acceptance in the United States, since the true panther is a spotted, Old World cat, very different in appearance from the puma.

The name mountain lion is not altogether inappropriate, as the puma somewhat resembles the female lion in color and general form. From the earliest days the puma has been called the lion (*Leon*) by Spanish Americans and the name is still used.

The names catamount, or catamountain, and wild cat have no special applicability to the puma. They have been used by English writers to designate the European wild cat (*Felis catus*) and lynxes, and by Americans have been applied to the lynxes of this country.

Besides those names which are in common use, there are some which have been invented from time to time by various authors, and are known to zoologists as "book-names." Buffon's name *Couguar* really belongs to this class, as do also the names Brazilian cat (die brasilianische Katze of Müller), the brown tiger of Pennant, and the red tiger (*Tigre Rouge* of Barrère).

As already stated, the puma is called the lion (*Leon*) by Spanish-Americans, while the jaguar is styled the tiger (*Tigre*). Early Spanish writers, however, did not always distinguish between the two, and sometimes mentioned the puma under the name of tiger, or used the name in some modified form, as red tiger, etc. Molina states that it is called *Pagi* in Chili, and according to Clavigero, it was known to the Mexicans as *Mitzli*.

The puma is the *Felis concolor* of Linnæus. This name has been adopted by subsequent authors, almost without exception. Schreber, however, has two figures of the species in his work on mammals, one of which is styled *Felis discolor*.

Molina, in 1782, gave it the name of *Felis puma*, and Lesson, that of *Felis unicolor*.

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ASTRONOMICAL NOTES.

A New Comet.

A VERY faint comet was discovered by Denning of Bristol, England, on March 18. Its position is, R.A. 22 h., 44 m., Dec. + 59°. The daily motion is north, preceding. The comet has been observed by Spetator of Vienna, and the following is his position: March 19.4338 G.M.T., R.A. 22 h., 46 m., 47.1 s., Dec. + 59°, 17', 43".

Winnecke's Comet.

Winnecke's periodical comet has been found and observed. The observation is from Vienna, and the following is the position: March 18.4041 G.M.T., R.A. 12 h., 43 m., 27.5 s., Dec. + 30°, 35', 38". It is of the twelfth magnitude.

New Planets.

A planet of the twelfth magnitude was discovered by Wolf on March 18. The following is the position: R.A. 11 h., 7 m., 20.6 s., Dec + 4°, 44', 49". A planet of the eleventh magnitude was discovered by Palisa on March 19. The following is the position: R.A. 13 h., 27 m., 0.0 s., Dec. + 9°, 55', 9".

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VENEZUELA AND COLOMBIA.¹

M. CHAFFANJON, in a paper read before the Paris Society for Commercial Geography (*Bulletin*, Tome xiii., No. 4), has given a description of these countries and a narrative of the journeys he made there during the years 1889-91. Venezuela has about 750 miles of coast-line. From the mouth of the Essequibo to Guiria Point, known also as Cape Peñas, opposite Trinidad, the coast is low and sandy, whereas from this point westward to the Gulf of Maracaibo it is in general high and skirted by mountains rising in some places to a considerable elevation. The chief exports of the country are coffee, cocoa, and tobacco, cattle, copper and gold. Colombia is very favorably situated, possessing about 600 miles of coast on the Atlantic and nearly as much on the Pacific. Its harbors are certainly not very accessible, but Cartagena might be converted into a safe and important port. The coasts are low and dry, or else swampy. The Sierra Nevada produces excellent coffee and cocoa, and travellers speak very hopefully of its minerals. Gold, copper, nickel, mercury and coal have been found. In the neighborhood of Lake Maracaibo and the peninsula of Coro coal is abundant, and rich springs of petroleum exist. At a distance from the coast the country consists of immense savannahs, on which grow here and there, like oases in the desert, clumps of the palms known in this part of America as *moriches*, which send down their roots perpendicularly into the soil, and by capillary action draw up the water to the surface, making the ground around them muddy and even dangerous. If from any cause these trees disappear, the soil soon becomes extremely arid. Large fortunes are made by cattle grazing, and the cultivation of sugar is also an important industry, herdsmen eating as much as three or four pounds daily of a kind of loaf made of sugar. On the high plateaus wheat, oats, maize, and potatoes are grown. Caoutchouc and resins of various kinds may be collected in the forests.

¹ From the Scottish Geographical Magazine.