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A Hunter-Naturalist in the Brazilian Wilderness

A Jaguar-Hunt on the Taquary

THE morning after our arrival at Corumbá I asked Colonel Rondon to inspect our outfit; for his experience of what is necessary in tropical travelling has been gained through a quarter of a century of arduous exploration in the wilderness. It was Fiala who had assembled our food-tents, cooking-utensils, and supplies of all kinds, and he and Sigg, during their stay in Corumbá, had been putting everything in shape for our start. Colonel Rondon at the end of his inspection said he had nothing whatever to suggest; that it was extraordinary that Fiala, without personal knowledge of the tropics, could have gathered the things most necessary, with the minimum of bulk and maximum of usefulness.

Miller had made a special study of the piranhas, which swarmed at one of the camps he and Cherrie had made in the Chaco. So numerous were they that the members of the party had to be exceedingly careful in dipping up water. Miller did not find that they were cannibals toward their own kind; they were "cannibals" only in the sense of eating the flesh of men. When dead piranhas, and even when mortally injured piranhas, with the blood flowing, were thrown among the ravenous living, they were left unmolested. Moreover, it was Miller's experience, the direct contrary of which we had been told, that splashing and a commotion in the water attracted the piranhas, whereas they rarely attacked anything that was motionless unless it was bloody. Dead birds and mammals, thrown whole and unskinned into the water were permitted to float off unmolested, whereas the skinned carcass of a good-sized monkey was at once seized, pulled under the water, and completely devoured by the blood-crazy fish. A man who had dropped something of value waded in after it to above the knees, but went very slowly and quietly, avoiding every possibility of disturbance, and not venturing to put his hands into the water. But nobody could bathe, and even the slightest disturbance in the water, such as that made by scrubbing the hands vigorously with soap, immediately attracted the attention of the savage little creatures, who darted to the place, evidently hoping to find some animal in difficulties. Once, while Miller and some Indians were attempting to launch a boat, and were making a great commotion in the water, a piranha attacked a naked Indian who belonged to the party and mutilated him as he struggled and splashed, waist-deep in the stream. Men not making a splashing and struggling are rarely attacked; but if one is attacked by any chance, the blood in the water maddens the piranhas, and they assail the man with frightful ferocity.

At Corumbá the weather was hot. In the patio of the comfortable little hotel we heard the cicadas; but I did not hear the extraordinary screaming whistle of the locomotive cicada, which I had heard in the gardens of the house in which I stayed at Asuncion. This was as remarkable a sound as any animal sound to which I have listened, except only the batrachian-like wailing of the tree hyrax in East Africa; and like the East African mammal this South American insect has a

voice, or rather utters a sound which, so far as it resembles any other animal sound, at the beginning remotely suggests batrachian affinities. The locomotive-whistle part of the utterance, however, resembles nothing so much as a small steam siren; when first heard it seems impossible that it can be produced by an insect.

On December 17 Colonel Rondon and several members of our party started on a shallow river steamer for the ranch of Senhor de Barros, "Las Palmeiras," on the Rio Taquary. We went down the Paraguay for a few miles, and then up the Taquary. It was a beautiful trip. The shallow river—we were aground several times—wound through a vast, marshy plain, with occasional spots of higher land on which trees grew. There were many water-birds. Darters swarmed. But the conspicuous and attractive bird was the stately jabiru stork. Flocks of these storks whitened the marshes and lined the river banks. They were not shy, for such big birds; before flying they had to run a few paces and then launch themselves on the air. Once, at noon, a couple soared round overhead in wide rings, rising higher and higher. On another occasion, late in the day, a flock passed by, gleaming white with black points in the long afternoon lights, and with them were spoonbills, showing rosy amid their snowy companions. Caymans, always called jacarés, swarmed; and we killed scores of the noxious creatures. They were singularly indifferent to our approach and to the sound of the shots. Sometimes they ran into the water erect on their legs, looking like miniatures of the monsters of the prime. One showed by its behavior how little an ordinary shot pains or affects these dull-nerved, cold-blooded creatures. As it lay on a sand-bank, it was hit with a long 22 bullet. It slid into the water but found itself in the midst of a school of fish. It at once forgot everything except its greedy appetite, and began catching the fish. It seized fish after fish, holding its head above water as soon as its jaws had closed on a fish; and a second bullet killed it. Some of the crocodiles when shot performed most extraordinary antics. Our weapons, by the way, were good, except Miller's shotgun. The outfit furnished by the American museum was excellent—except in guns and cartridges; this gun was so bad that Miller had to use Fiala's gun or else my Fox 12-bore.

In the late afternoon we secured a more interesting creature than the jacarés. Kermit had charge of two hounds which we owed to the courtesy of one of our Argentine friends. They were biggish, nondescript animals, obviously good fighters, and they speedily developed the utmost affection for all the members of the expedition, but especially for Kermit, who took care of them. One we named "Shenzi," the name given the wild bush natives by the Swahili, the semi-civilized African porters. He was good-natured, rough, and stupid—hence his name. The other was called by a native name, "Trigueiro." The chance now came to try them. We were steaming between long stretches of coarse grass, about three feet high, when we spied from the deck a black object, very conspicuous against the vivid green. It was a giant ant-eater, or tamanduá bandeira, one of the most extraordinary creatures of the latter-day world. It is about the size of a rather small black bear. It has a very long, narrow, toothless snout, with a tongue it can project a couple of feet; it is covered with coarse, black hair, save for a couple of white stripes; it has a long, bushy tail and very powerful claws on its fore feet. It walks on the sides of its fore feet with these claws curved in under the foot. The claws are used in digging out ant-hills; but the beast has courage, and in a grapple is a rather unpleasant enemy, in spite of its toothless mouth, for it can strike a formidable blow with these claws. It sometimes hugs a foe, gripping him tight; but its ordinary method of defending itself is to strike with its long, stout, curved claws, which, driven by its muscular forearm, can rip open man or beast. Several of our companions had had dogs killed by these ant-eaters; and we came across one man with a very ugly scar down his back, where he had been hit by one, which charged him when he came up to kill it at close quarters.

As soon as we saw the giant tamanduá we pushed off in a rowboat, and landed only a couple of hundred yards distant from our clumsy quarry. The tamanduá throughout most of its habitat rarely leaves the forest, and it is a helpless animal in the open plain. The two dogs ran ahead, followed by Colonel Rondon and Kermit, with me behind carrying the rifle. In a minute or two the hounds overtook the cantering, shuffling creature, and promptly began a fight with it; the combatants were so mixed up that I had to wait another minute or so before I could fire without risk of hitting a dog. We carried our prize back to the bank and hoisted it aboard the steamer. The sun was just about to set, behind dim mountains, many miles distant across the marsh.

Soon afterward we reached one of the outstations of the huge ranch we were about to visit, and hauled up alongside the bank for the night. There was a landing place, and sheds and corrals. Several of the peons or gauchos had come to meet us. After dark they kindled fires, and sat beside them singing songs in a strange minor key and strumming guitars. The red firelight flickered over their wild figures as they squatted away from the blaze, where the light and the shadow met. It was still and hot. There were mosquitoes, of course, and other insects of all kinds swarmed round every light; but the steamboat was comfortable, and we passed a pleasant night.

At sunrise we were off for the "fazenda," the ranch of M. de Barros. The baggage went in an ox-cart—which had to make two trips, so that all of my belongings reached the ranch a day later than I did. We rode small, tough ranch horses. The distance was some twenty miles. The whole country was marsh, varied by stretches of higher ground; and, although these stretches rose only three or four feet above the marsh, they were covered with thick jungle, largely palmetto scrub, or else with open palm forest. For three or four miles we splashed through the marsh, now and then crossing boggy pools where the little horses labored hard not to mire down. Our dusky guide was clad in a shirt, trousers, and fringed leather apron, and wore spurs on his bare feet; he had a rope for a bridle, and two or three toes of each foot were thrust into little iron stirrups.

The pools in the marsh were drying. They were filled with fish, most of them dead or dying; and the birds had gathered to the banquet. The most notable dinner guests were the great jabiru storks; the stately creatures dotted the marsh. But ibis and herons abounded; the former uttered queer, querulous cries when they discovered our presence. The spurred lapwings were as noisy as they always are. The ibis and plover did not pay any heed to the fish; but the black carrion vultures feasted on them in the mud; and in the pools that were not dry small alligators, the jacaré-tinga, were feasting also. In many places the stench from the dead fish was unpleasant.

Then for miles we rode through a beautiful open forest of tall, slender carandá palms, with other trees scattered among them. Green parakeets with black heads chattered as they flew; noisy green and red parrots climbed among the palms; and huge macaws, some entirely blue, others almost entirely red, screamed loudly as they perched in the trees or took wing at our approach. If one was wounded its cries kept its companions circling around overhead. The naturalists found the bird fauna totally different from that which they had been collecting in the hill country near Corumbá, seventy or eighty miles distant; and birds swarmed, both species and individuals. South America has the most extensive and most varied avifauna of all the continents. On the other hand, its mammalian fauna, although very interesting, is rather poor in number of species and individuals and in the size of the beasts. It possesses more mammals that are unique and distinctive in type than does any other continent save Australia; and they are of higher and much more varied types than in Australia. But there is nothing approaching the majesty, beauty, and swarming mass of the great mammalian life of Africa and, in a less degree, of tropical Asia;

indeed, it does not even approach the similar mammalian life of North America and northern Eurasia, poor though this is compared with the seething vitality of tropical life in the Old World. During a geologically recent period, a period extending into that which saw man spread over the world in substantially the physical and cultural stage of many existing savages, South America possessed a varied and striking fauna of enormous beasts—sabre-tooth tigers, huge lions, mastodons, horses of many kinds, camel-like pachyderms, giant ground-sloths, mylodons the size of the rhinoceros, and many, many other strange and wonderful creatures. From some cause, concerning the nature of which we cannot at present even hazard a guess, this vast and giant fauna vanished completely, the tremendous catastrophe (the duration of which is unknown) not being consummated until within a few thousand or a few score thousand years. When the white man reached South America he found the same weak and impoverished mammalian fauna that exists practically unchanged to-day. Elsewhere civilized man has been even more destructive than his very destructive uncivilized brothers of the magnificent mammalian life of the wilderness; for ages he has been rooting out the higher forms of beast life in Europe, Asia, and North Africa; and in our own day he has repeated the feat, on a very large scale, in the rest of Africa and in North America. But in South America, although he is in places responsible for the wanton slaughter of the most interesting and the largest, or the most beautiful, birds, his advent has meant a positive enrichment of the wild mammalian fauna. None of the native grass-eating mammals, the graminivores, approach in size and beauty the herds of wild or half-wild cattle and horses, or so add to the interest of the landscape. There is every reason why the good people of South America should waken, as we of North America, very late in the day, are beginning to waken, and as the peoples of northern Europe—not southern Europe—have already partially wakened, to the duty of preserving from impoverishment and extinction the wild life which is an asset of such interest and value in our several lands; but the case against civilized man in this matter is grewsomely heavy anyhow, when the plain truth is told, and it is harmed by exaggeration.

After five or six hours' travelling through this country of marsh and of palm forest we reached the ranch for which we were heading. In the neighborhood stood giant fig-trees, singly or in groups, with dense, dark green foliage. Ponds, overgrown with water-plants, lay about; wet meadow, and drier pastureland, open or dotted with palms and varied with tree jungle, stretched for many miles on every hand. There are some thirty thousand head of cattle on the ranch, besides herds of horses and droves of swine, and a few flocks of sheep and goats. The home buildings of the ranch stood in a quadrangle, surrounded by a fence or low stockade. One end of the quadrangle was formed by the ranch-house itself, one story high, with whitewashed walls and red-tiled roof. Inside, the rooms were bare, with clean, whitewashed walls and palm-trunk rafters. There were solid wooden shutters on the unglazed windows. We slept in hammocks or on cots, and we feasted royally on delicious native Brazilian dishes. On another side of the quadrangle stood another long, low white building with a red-tiled roof; this held the kitchen and the living-rooms of the upper-grade peons, the headmen, the cook, and jaguar-hunters, with their families: dark-skinned men, their wives showing varied strains of white, Indian, and negro blood. The children tumbled merrily in the dust, and were fondly tended by their mothers. Opposite the kitchen stood a row of buildings, some whitewashed daub and wattle, with tin roofs, others of erect palm-logs with palm-leaf thatch. These were the saddle-room, storehouse, chicken-house, and stable. The chicken-house was allotted to Kermit and Miller for the preparation of the specimens; and there they worked industriously. With a big skin, like that of the giant ant-eater, they had to squat on the ground; while the ducklings and wee chickens scuffled not only round

the skin but all over it, grabbing the shreds and scraps of meat and catching flies. The fourth end of the quadrangle was formed by a corral and a big wooden scaffolding on which hung hides and strips of drying meat. Extraordinary to relate, there were no mosquitoes at the ranch; why I cannot say, as they ought to swarm in these vast "pantanals," or swamps. Therefore, in spite of the heat, it was very pleasant. Near by stood other buildings: sheds, and thatched huts of palm-logs in which the ordinary peons lived, and big corrals. In the quadrangle were flamboyant trees, with their masses of brilliant red flowers and delicately cut, vivid-green foliage. Noisy oven-birds haunted these trees. In a high palm in the garden a family of green parakeets had taken up their abode and were preparing to build nests. They chattered incessantly both when they flew and when they sat or crawled among the branches. Ibis and plover, crying and wailing, passed immediately overhead. Jacanas frequented the ponds nearby; the peons, with a familiarity which to us seems sacrilegious, but to them was entirely inoffensive and matter of course, called them "the Jesus Christ birds," because they walked on the water. There was a wealth of strange bird life in the neighborhood. There were large papyrus-marshes, the papyrus not being a fifth, perhaps not a tenth, as high as in Africa. In these swamps were many blackbirds. Some uttered notes that reminded me of our own redwings. Others, with crimson heads and necks and thighs, fairly blazed; often a dozen sat together on a swaying papyrus-stem which their weight bent over. There were all kinds of extraordinary bird's-nests in the trees. There is still need for the work of the collector in South America. But I believe that already, so far as birds are concerned, there is infinitely more need for the work of the careful observer, who to the power of appreciation and observation adds the power of vivid, truthful, and interesting narration—which means, as scientists no less than historians should note, that training in the writing of good English is indispensable to any learned man who expects to make his learning count for what it ought to count in the effect on his fellow men. The outdoor naturalist, the faunal naturalist, who devotes himself primarily to a study of the habits and of the life-histories of birds, beasts, fish, and reptiles, and who can portray truthfully and vividly what he has seen, could do work of more usefulness than any mere collector, in this upper Paraguay country. The work of the collector is indispensable; but it is only a small part of the work that ought to be done; and after collecting has reached a certain point the work of the field observer with the gift for recording what he has seen becomes of far more importance.

The long days spent riding through the swamp, the "pantanal," were pleasant and interesting. Several times we saw the tamanduá bandeira, the giant ant-bear. Kermit shot one, because the naturalists eagerly wished for a second specimen; afterward we were relieved of all necessity to molest the strange, out-of-date creatures. It was a surprise to us to find them habitually frequenting the open marsh. They were always on muddy ground, and in the papyrus-swamp we found them in several inches of water. The stomach is thick-walled, like a gizzard; the stomachs of those we shot contained adult and larval ants, chiefly termites, together with plenty of black mould and fragments of leaves, both green and dry. Doubtless the earth and the vegetable matter had merely been taken incidentally, adhering to the viscid tongue when it was thrust into the ant masses. Out in the open marsh the tamanduá could neither avoid observation, nor fight effectively, nor make good its escape by flight. It was curious to see one lumbering off at a rocking canter, the big bushy tail held aloft. One, while fighting the dogs, suddenly threw itself on its back, evidently hoping to grasp a dog with its paws; and it now and then reared, in order to strike at its assailants. In one patch of thick jungle we saw a black howler monkey sitting motionless in a tree top. We also saw the swampdeer, about the size of our blacktail. It is a real

swamp animal, for we found it often in the papyrus-swamps, and out in the open marsh, knee-deep in the water, among the aquatic plants.

The tough little horses bore us well through the marsh. Often in crossing bayous and ponds the water rose almost to their backs; but they splashed and waded and if necessary swam through. The dogs were a wild-looking set. Some were of distinctly wolfish appearance. These, we were assured, were descended in part from the big red wolf of the neighborhood, a tall, lank animal, with much smaller teeth than a big northern wolf. The domestic dog is undoubtedly descended from at least a dozen different species of wild dogs, wolves, and jackals, some of them probably belonging to what we style different genera. The degree of fecundity or lack of fecundity between different species varies in extraordinary and inexplicable fashion in different families of mammals. In the horse family, for instance, the species are not fertile inter se; whereas among the oxen, species seemingly at least as widely separated as the horse, ass, and zebra—species such as the domestic ox, bison, yak, and gaur—breed freely together and their offspring are fertile; the lion and tiger also breed together, and produce offspring which will breed with either parent stock; and tame dogs in different quarters of the world, although all of them fertile inter se, are in many cases obviously blood kin to the neighboring wild, wolf-like or jackal-like creatures which are specifically, and possibly even generically, distinct from one another. The big red wolf of the South American plains is not closely related to the northern wolves; and it was to me unexpected to find it interbreeding with ordinary domestic dogs.

In the evenings after dinner we sat in the bare ranch dining-room, or out under the trees in the hot darkness, and talked of many things: natural history with the naturalists, and all kinds of other subjects both with them and with our Brazilian friends. Colonel Rondon is not simply "an officer and a gentleman" in the sense that is honorably true of the best army officers in every good military service. He is also a peculiarly hardy and competent explorer, a good field naturalist and scientific man, a student and a philosopher. With him the conversation ranged from jaguar-hunting and the perils of exploration in the "matto grosso," the great wilderness, to Indian anthropology, to the dangers of a purely materialistic industrial civilization, and to Positivist morality. The colonel's Positivism was in very fact to him a religion of humanity, a creed which bade him be just and kindly and useful to his fellow men, to live his life bravely, and no less bravely to face death, without reference to what he believed, or did not believe, or to what the unknown hereafter might hold for him.

The native hunters who accompanied us were swarthy men of mixed blood. They were barefooted and scantily clad, and each carried a long, clumsy spear and a keen machete, in the use of which he was an expert. Now and then, in thick jungle, we had to cut out a path, and it was interesting to see one of them, although cumbered by his unwieldy spear, handling his half-broken little horse with complete ease while he hacked at limbs and branches. Of the two ordinarily with us one was much the younger; and whenever we came to an unusually doubtful-looking ford or piece of boggy ground the elder man always sent the younger one on and sat on the bank until he saw what befell the experimenter. In that rather preposterous book of our youth, the "Swiss Family Robinson," mention is made of a tame monkey called Nips, which was used to test all edible-looking things as to the healthfulness of which the adventurers felt doubtful; and because of the obvious resemblance of function we christened this younger hunter Nips. Our guides were not only hunters but cattle-herders. The coarse dead grass is burned to make room for the green young grass on which the cattle thrive. Every now and then one of the men, as he rode ahead of us, without leaving the saddle, would drop a lighted match into a tussock of tall

dead blades; and even as we who were behind rode by tongues of hot flame would be shooting up and a local prairie fire would have started.

Kermit took Nips off with him for a solitary hunt one day. He shot two of the big marsh-deer, a buck and a doe, and preserved them as museum specimens. They were in the papyrus growth, but their stomachs contained only the fine marsh-grass which grows in the water and on the land along the edges of the swamps; the papyrus was used only for cover, not for food. The buck had two big scent-glands beside the nostrils; in the doe these were rudimentary. On this day Kermit also came across a herd of the big, fierce white-lipped peccary; at the sound of their grunting Nips promptly spurred his horse and took to his heels, explaining that the peccaries would charge them, hamstring the horses, and kill the riders. Kermit went into the jungle after the truculent little wild hogs on foot and followed them for an hour, but never was able to catch sight of them.

In the afternoon of this same day one of the jaguar-hunters—merely ranch hands, who knew something of the chase of the jaguar—who had been searching for tracks, rode in with the information that he had found fresh sign at a spot in the swamp about nine miles distant. Next morning we rose at two, and had started on our jaguar-hunt at three. Colonel Rondon, Kermit, and I, with the two trailers or jaguar-hunters, made up the party, each on a weedy, undersized marsh pony, accustomed to traversing the vast stretches of morass; and we were accompanied by a brown boy, with saddle-bags holding our lunch, who rode a long-horned trotting steer which he managed by a string through its nostril and lip. The two trailers carried each a long, clumsy spear. We had a rather poor pack. Besides our own two dogs, neither of which was used to jaguar-hunting, there were the ranch dogs, which were well-nigh worthless, and then two jaguar hounds borrowed for the occasion from a ranch six or eight leagues distant. These were the only hounds on which we could place any trust, and they were led in leashes by the two trailers. One was a white bitch, the other, the best one we had, was a gelded black dog. They were lean, half-starved creatures with prick ears and a look of furtive wildness.

As our shabby little horses shuffled away from the ranch-house the stars were brilliant and the Southern Cross hung well up in the heavens, tilted to the right. The landscape was spectral in the light of the waning moon. At the first shallow ford, as horses and dogs splashed across, an alligator, the jacaré-tinga, some five feet long, floated unconcernedly among the splashing hoofs and paws; evidently at night it did not fear us. Hour after hour we shogged along. Then the night grew ghostly with the first dim gray of the dawn. The sky had become overcast. The sun rose red and angry through broken clouds; his disk flamed behind the tall, slender columns of the palms, and lit the waste fields of papyrus. The black monkeys howled mournfully. The birds awoke. Macaws, parrots, parakeets screamed at us and chattered at us as we rode by. Ibis called with wailing voices, and the plovers shrieked as they wheeled in the air. We waded across bayous and ponds, where white lilies floated on the water and thronging lilac-flowers splashed the green marsh with color.

At last, on the edge of a patch of jungle, in wet ground, we came on fresh jaguar tracks. Both the jaguar hounds challenged the sign. They were unleashed and galloped along the trail, while the other dogs noisily accompanied them. The hunt led right through the marsh. Evidently the jaguar had not the least distaste for water. Probably it had been hunting for capybaras or tapirs, and it had gone straight through ponds and long, winding, narrow ditches or bayous, where it must now and then have had to swim for a stroke or two. It had also wandered through the island-like stretches of tree-covered land, the trees at this point being mostly palms and tarumans; the taruman is almost as big as a live-oak, with glossy foliage and a fruit like an olive.

The pace quickened, the motley pack burst into yelling and howling; and then a sudden quickening of the note showed that the game had either climbed a tree or turned to bay in a thicket. The former proved to be the case. The dogs had entered a patch of tall tree jungle, and as we cantered up through the marsh we saw the jaguar high among the forked limbs of a taruman tree. It was a beautiful picture—the spotted coat of the big, lithe, formidable cat fairly shone as it snarled defiance at the pack below. I did not trust the pack; the dogs were not stanch, and if the jaguar came down and started I feared we might lose it. So I fired at once, from a distance of seventy yards. I was using my favorite rifle, the little Springfield with which I have killed most kinds of African game, from the lion and elephant down; the bullets were the sharp, pointed kind, with the end of naked lead. At the shot the jaguar fell like a sack of sand through the branches, and although it staggered to its feet it went but a score of yards before it sank down, and when I came up it was dead under the palms, with three or four of the bolder dogs riving at it.

The jaguar is the king of South American game, ranking on an equality with the noblest beasts of the chase of North America, and behind only the huge and fierce creatures which stand at the head of the big game of Africa and Asia. This one was an adult female. It was heavier and more powerful than a full-grown male cougar, or African panther or leopard. It was a big, powerfully built creature, giving the same effect of strength that a tiger or lion does, and that the lithe leopards and pumas do not. Its flesh, by the way, proved good eating, when we had it for supper, although it was not cooked in the way it ought to have been. I tried it because I had found cougars such good eating; I have always regretted that in Africa I did not try lion's flesh, which I am sure must be excellent.

Next day came Kermit's turn. We had the miscellaneous pack with us, all much enjoying themselves; but, although they could help in a jaguar-hunt to the extent of giving tongue and following the chase for half a mile, cowing the quarry by their clamor, they were not sufficiently stanch to be of use if there was any difficulty in the hunt. The only two dogs we could trust were the two borrowed jaguar hounds. This was the black dog's day. About ten in the morning we came to a long, deep, winding bayou. On the opposite bank stood a capybara, looking like a blunt-nosed pig, its wet hide shining black. I killed it, and it slid into the water. Then I found that the bayou extended for a mile or two in each direction, and the two hunter-guides said they did not wish to swim across for fear of the piranhas. Just at this moment we came across fresh jaguar tracks. It was hot, we had been travelling for five hours, and the dogs were much exhausted. The black hound in particular was nearly done up, for he had been led in a leash by one of the horsemen. He lay flat on the ground, panting, unable to catch the scent. Kermit threw water over him, and when he was thoroughly drenched and freshened, thrust his nose into the jaguar's footprints. The game old hound at once and eagerly responded. As he snuffed the scent he challenged loudly, while still lying down. Then he staggered to his feet and started on the trail, going stronger with every leap. Evidently the big cat was not far distant. Soon we found where it had swum across the bayou. Piranhas or no piranhas, we now intended to get across; and we tried to force our horses in at what seemed a likely spot. The matted growth of water-plants, with their leathery, slippery stems, formed an unpleasant barrier, as the water was swimming-deep for the horses. The latter were very unwilling to attempt the passage. Kermit finally forced his horse through the tangled mass, swimming, plunging, and struggling. He left a lane of clear water, through which we swam after him. The dogs splashed and swam behind us. On the other bank they struck the fresh trail and followed it at a run. It led into a long belt of timber, chiefly composed of low-growing nacurý; palms, with long, drooping, many-fronded branches. In

silhouette they suggest coarse bamboos; the nuts hang in big clusters and look like bunches of small, unripe bananas. Among the lower palms were scattered some big ordinary trees. We cantered along outside the timber belt, listening to the dogs within; and in a moment a burst of yelling clamor from the pack told that the jaguar was afoot. These few minutes are the really exciting moments in the chase, with hounds, of any big cat that will tree. The furious baying of the pack, the shouts and cheers of encouragement from the galloping horsemen, the wilderness surroundings, the knowledge of what the quarry is—all combine to make the moment one of fierce and thrilling excitement. Besides, in this case there was the possibility the jaguar might come to bay on the ground, in which event there would be a slight element of risk, as it might need straight shooting to stop a charge. However, about as soon as the long-drawn howling and eager yelping showed that the jaguar had been overtaken, we saw him, a huge male, up in the branches of a great fig-tree. A bullet behind the shoulder, from Kermit's 405 Winchester, brought him dead to the ground. He was heavier than the very big male horse-killing cougar I shot in Colorado, whose skull Hart Merriam reported as the biggest he had ever seen; he was very nearly double the weight of any of the male African leopards we shot; he was nearly or quite the weight of the smallest of the adult African lionesses we shot while in Africa. He had the big bones, the stout frame, and the heavy muscular build of a small lion; he was not lithe and slender and long like a cougar or leopard; the tail, as with all jaguars, was short, while the girth of the body was great; his coat was beautiful, with a satiny gloss, and the dark-brown spots on the gold of his back, head, and sides were hardly as conspicuous as the black of the equally well-marked spots against his white belly.

This was a well-known jaguar. He had occasionally indulged in cattle-killing; on one occasion during the floods he had taken up his abode near the ranch-house and had killed a couple of cows and a young steer. The hunters had followed him, but he had made his escape, and for the time being had abandoned the neighborhood. In these marshes each jaguar had a wide irregular range and travelled a good deal, perhaps only passing a day or two in a given locality, perhaps spending a week where game was plentiful. Jaguars love the water. They drink greedily and swim freely. In this country they rambled through the night across the marshes and prowled along the edges of the ponds and bayous, catching the capybaras and the caymans; for these small pond caymans, the jacaré-tinga, form part of their habitual food, and a big jaguar when hungry will attack and kill large caymans and crocodiles if he can get them a few yards from the water. On these marshes the jaguars also followed the peccary herds; it is said that they always strike the hindmost of a band of the fierce little wild pigs. Elsewhere they often prey on the tapir. If in timber, however, the jaguar must kill it at once, for the squat, thick-skinned, wedge-shaped tapir has no respect for timber, as Colonel Rondon phrased it, and rushes with such blind, headlong speed through and among branches and trunks that if not immediately killed it brushes the jaguar off, the claws leaving long raking scars in the tough hide. Cattle are often killed. The jaguar will not meddle with a big bull; and is cautious about attacking a herd accompanied by a bull; but it will at times, where wild game is scarce, kill every other domestic animal. It is a thirsty brute, and if it kills far from water will often drag its victim a long distance toward a pond or stream; Colonel Rondon had once come across a horse which a jaguar had thus killed and dragged for over a mile. Jaguars also stalk and kill the deer; in this neighborhood they seemed to be less habitual deer-hunters than the cougars; whether this is generally the case I cannot say. They have been known to pounce on and devour good-sized anacondas.

In this particular neighborhood the ordinary jaguars molested the cattle and horses hardly at all except now and then to kill calves. It was only occasionally that under special

circumstances some old male took to cattle-killing. There were plenty of capybaras and deer, and evidently the big spotted cats preferred the easier prey when it was available; exactly as in East Africa we found the lions living almost exclusively on zebra and antelope, and not molesting the buffalo and domestic cattle, which in other parts of Africa furnish their habitual prey. In some other neighborhoods, not far distant, our hosts informed us that the jaguars lived almost exclusively on horses and cattle. They also told us that the cougars had the same habits as the jaguars except that they did not prey on such big animals. The cougars on this ranch never molested the foals, a fact which astonished me, as in the Rockies they are the worst enemies of foals. It was interesting to find that my hosts, and the mixed-blood hunters and ranch workers, combined special knowledge of many of the habits of these big cats with a curious ignorance of other matters concerning them and a readiness to believe fables about them. This was precisely what I had found to be the case with the old-time North American hunters in discussing the puma, bear, and wolf, and with the English and Boer hunters of Africa when they spoke of the lion and rhinoceros. Until the habit of scientific accuracy in observation and record is achieved and until specimens are preserved and carefully compared, entirely truthful men, at home in the wilderness, will whole-heartedly accept, and repeat as matters of gospel faith, theories which split the grizzly and black bears of each locality in the United States, and the lions and black rhinos of South Africa, or the jaguars and pumas of any portion of South America, into several different species, all with widely different habits. They will, moreover, describe these imaginary habits with such sincerity and minuteness that they deceive most listeners; and the result sometimes is that an otherwise good naturalist will perpetuate these fables, as Hudson did when he wrote of the puma. Hudson was a capital observer and writer when he dealt with the ordinary birds and mammals of the well-settled districts near Buenos Aires and at the mouth of the Rio Negro; but he knew nothing of the wilderness. This is no reflection on him; his books are great favorites of mine, and are to a large degree models of what such books should be; I only wish that there were hundreds of such writers and observers who would give us similar books for all parts of America. But it is a mistake to accept him as an authority on that concerning which he was ignorant.

An interesting incident occurred on the day we killed our first jaguar. We took our lunch beside a small but deep and obviously permanent pond. I went to the edge to dip up some water, and something growled or bellowed at me only a few feet away. It was a jacaré-tinga or small cayman about five feet long. I paid no heed to it at the moment. But shortly afterward when our horses went down to drink it threatened them and frightened them; and then Colonel Rondon and Kermit called me to watch it. It lay on the surface of the water only a few feet distant from us and threatened us; we threw cakes of mud at it, whereupon it clashed its jaws and made short rushes at us, and when we threw sticks it seized them and crunched them. We could not drive it away. Why it should have shown such truculence and heedlessness I cannot imagine, unless perhaps it was a female, with eggs near by. In another little pond a jacaré-tinga showed no less anger when another of my companions approached. It bellowed, opened its jaws, and lashed its tail. Yet these pond jacarés never actually molested even our dogs in the ponds, far less us on our horses.

This same day others of our party had an interesting experience with the creatures in another pond. One of them was Commander da Cunha (of the Brazilian Navy), a capital sportsman and delightful companion. They found a deepish pond a hundred yards or so long and thirty or forty across. It was tenanted by the small caymans and by capybaras—the largest known rodent, a huge aquatic guinea-pig, the size of a small sheep. It also swarmed with piranhas, the

ravenous fish of which I have so often spoken. Undoubtedly the caymans were subsisting largely on these piranhas. But the tables were readily turned if any caymans were injured. When a capybara was shot and sank in the water, the piranhas at once attacked it, and had eaten half the carcass ten minutes later. But much more extraordinary was the fact that when a cayman about five feet long was wounded the piranhas attacked and tore it, and actually drove it out on the bank to face its human foes. The fish first attacked the wound; then, as the blood maddened them, they attacked all the soft parts, their terrible teeth cutting out chunks of tough hide and flesh. Evidently they did not molest either cayman or capybara while it was unwounded; but blood excited them to frenzy. Their habits are in some ways inexplicable. We saw men frequently bathing unmolested; but there are places where this is never safe, and in any place if a school of the fish appear swimmers are in danger; and a wounded man or beast is in deadly peril if piranhas are in the neighborhood. Ordinarily it appears that an unwounded man is attacked only by accident. Such accidents are rare; but they happen with sufficient frequency to justify much caution in entering water where piranhas abound.

We frequently came across ponds tenanted by numbers of capybaras. The huge, pig-like rodents are said to be shy elsewhere. Here they were tame. The water was their home and refuge. They usually went ashore to feed on the grass, and made well-beaten trails in the marsh immediately around the water; but they must have travelled these at night, for we never saw them more than a few feet away from the water in the daytime. Even at midday we often came on them standing beside a bayou or pond. The dogs would rush wildly at such a standing beast, which would wait until they were only a few yards off and then dash into and under the water. The dogs would also run full tilt into the water, and it was then really funny to see their surprise and disappointment at the sudden and complete disappearance of their quarry. Often a capybara would stand or sit on its haunches in the water, with only its blunt, short-eared head above the surface, quite heedless of our presence. But if alarmed it would dive, for capybaras swim with equal facility on or below the surface; and if they wish to hide they rise gently among the rushes or water-lily leaves with only their nostrils exposed. In these waters the capybaras and small caymans paid no attention to one another, swimming and resting in close proximity. They both had the same enemy, the jaguar. The capybara is a game animal only in the sense that a hare or rabbit is. The flesh is good to eat, and its amphibious habits and queer nature and surroundings make it interesting. In some of the ponds the water had about gone, and the capybaras had become for the time being beasts of the marsh and the mud; although they could always find little slimy pools, under a mass of water-lilies, in which to lie and hide.

Our whole stay on this ranch was delightful. On the long rides we always saw something of interest, and often it was something entirely new to us. Early one morning we came across two armadillos—the big, nine-banded armadillo. We were riding with the pack through a dry, sandy pasture country, dotted with clumps of palms, round the trunks of which grew a dense jungle of thorns and Spanish bayonets. The armadillos were feeding in an open space between two of these jungle clumps, which were about a hundred yards apart. One was on all fours; the other was in a squatting position, with its fore legs off the ground. Their long ears were very prominent. The dogs raced at them. I had always supposed that armadillos merely shuffled along, and curled up for protection when menaced; and I was almost as surprised as if I had seen a turtle gallop when these two armadillos bounded off at a run, going as fast as rabbits. One headed back for the nearest patch of jungle, which it reached. The other ran at full speed—and ran really fast, too—until it nearly reached the other patch, a hundred yards distant, the dogs in full cry immediately behind it. Then it suddenly changed its mind, wheeled in its tracks, and came back like a bullet

right through the pack. Dog after dog tried to seize it or stop it and turned to pursue it; but its wedge-shaped snout and armored body, joined to the speed at which it was galloping, enabled it to drive straight ahead through its pursuers, not one of which could halt it or grasp it, and it reached in safety its thorny haven of refuge. It had run at speed about a hundred and fifty yards. I was much impressed by this unexpected exhibition; evidently this species of armadillo only curls up as a last resort, and ordinarily trusts to its speed, and to the protection its build and its armor give it while running, in order to reach its burrow or other place of safety. Twice, while laying railway tracks near Sao Paulo, Kermit had accidentally dug up armadillos with a steam-shovel.

There were big ant-hills, some of them of huge dimensions, scattered through the country. Sometimes they were built against the stems of trees. We did not here come across any of the poisonous or biting ants which, when sufficiently numerous, render certain districts uninhabitable. They are ordinarily not very numerous. Those of them that march in large bodies kill nestling birds, and at once destroy any big animal unable to get out of their way. It has been suggested that nestlings in their nests are in some way immune from the attack of these ants. The experiments of our naturalists tended to show that this was not the case. They plundered any nest they came across and could get at.

Once we saw a small herd of peccaries, one a sow followed by three little pigs—they are said to have only two young, but we saw three, although of course it is possible one belonged to another sow. The herd galloped into a mass of thorny cover the hounds could not penetrate; and when they were in safety we heard them utter, from the depths of the jungle, a curious moaning sound.

On one ride we passed a clump of palms which were fairly ablaze with bird color. There were magnificent hyacinth macaws; green parrots with red splashes; toucans with varied plumage, black, white, red, yellow; green jacmars; flaming orioles and both blue and dark-red tanagers. It was an extraordinary collection. All were noisy. Perhaps there was a snake that had drawn them by its presence; but we could find no snake. The assembly dispersed as we rode up; the huge blue macaws departed in pairs, uttering their hoarse “ar-rah-h, ar-rah-h.” It has been said that parrots in the wilderness are only noisy on the wing. They are certainly noisy on the wing; and those that we saw were quiet while they were feeding; but ordinarily when they were perched among the branches, and especially when, as in the case of the little parakeets near the house, they were gathering materials for nest-building, they were just as noisy as while flying.

The water-birds were always a delight. We shot merely the two or three specimens the naturalists needed for the museum. I killed a wood-ibis on the wing with the handy little Springfield, and then lost all the credit I had thus gained by a series of inexcusable misses, at long range, before I finally killed a jabiru. Kermit shot a jabiru with the Lüger automatic. The great, splendid birds, standing about as tall as a man, show fight when wounded, and advance against their assailants, clattering their formidable bills. One day we found the nest of a jabiru in a mighty fig-tree, on the edge of a patch of jungle. It was a big platform of sticks, placed on a horizontal branch. There were four half-grown young standing on it. We passed it in the morning, when both parents were also perched alongside; the sky was then overcast, and it was not possible to photograph it with the small camera. In the early afternoon when we again passed it the sun was out, and we tried to get photographs. Only one parent bird was present at this time. It showed no fear. I noticed that, as it stood on a branch near the nest, its bill was slightly open. It was very hot, and I suppose it had opened its bill just as a hen opens her bill in hot weather. As we rode away the old bird and the four young birds were standing motionless, and with gliding flight the other old bird was returning to the nest. It is hard to give an adequate idea of the wealth

of bird life in these marshes. A naturalist could with the utmost advantage spend six months on such a branch as that we visited. He would have to do some collecting, but only a little. Exhaustive observation in the field is what is now most needed. Most of this wonderful and harmless bird life should be protected by law; and the mammals should receive reasonable protection. The books now most needed are those dealing with the life-histories of wild creatures.

Near the ranch-house, walking familiarly among the cattle, we saw the big, deep-billed Ani blackbirds. They feed on the insects disturbed by the hoofs of the cattle, and often cling to them and pick off the ticks. It was the end of the nesting season, and we did not find their curious communal nests, in which half a dozen females lay their eggs indiscriminately. The common ibises in the ponds near by—which usually went in pairs, instead of in flocks like the wood ibis—were very tame, and so were the night herons and all the small herons. In flying, the ibises and storks stretch the neck straight infront of them. The jabiru—a splendid bird on the wing—also stretches his neck out in front, but there appears to be a slight downward curve at the base of the neck, which may be due merely to the craw. The big slender herons, on the contrary, bend the long neck back in a beautiful curve, so that the head is nearly between the shoulders. One day I saw what I at first thought was a small yellow-bellied kingfisher hovering over a pond, and finally plunging down to the surface of the water after a school of tiny young fish; but it proved to be a bien-te-vì king-bird. Curved-bill wood-hewers, birds the size and somewhat the coloration of veeries, but with long, slender sickle-bills, were common in the little garden back of the house; their habits were those of creepers, and they scrambled with agility up, along, and under the trunks and branches, and along the posts and rails of the fence, thrusting the bill into crevices for insects. The oven-birds, which had the carriage and somewhat the look of wood-thrushes, I am sure would prove delightful friends on a close acquaintance; they are very individual, not only in the extraordinary domed mud nests they build, but in all their ways, in their bright alertness; their interest in and curiosity about whatever goes on, their rather jerky quickness of movement, and their loud and varied calls. With a little encouragement they become tame and familiar. The parakeets were too noisy, but otherwise were most attractive little birds, as they flew to and fro and scrambled about in the top of the palm behind the house. There was one showy kind of king-bird or tyrant flycatcher, lustrous black with a white head.

One afternoon several score cattle were driven into a big square corral near the house, in order to brand the calves and a number of unbranded yearlings and two-year-olds. A special element of excitement was added by the presence of a dozen big bulls which were to be turned into draught-oxen. The agility, nerve, and prowess of the ranch workmen, the herders or gauchos, were noteworthy. The dark-skinned men were obviously mainly of Indian and negro descent, although some of them also showed a strong strain of white blood. They wore the usual shirt, trousers, and fringed leather apron, with jim-crow hats. Their bare feet must have been literally as tough as horn; for when one of them roped a big bull he would brace himself, bending back until he was almost sitting down and digging his heels into the ground, and the galloping beast would be stopped short and whirled completely round when the rope tautened. The maddened bulls, and an occasional steer or cow, charged again and again with furious wrath; but two or three ropes would settle on the doomed beast, and down it would go; and when it was released and rose and charged once more, with greater fury than ever, the men, shouting with laughter, would leap up the sides of the heavy stockade.

We stayed at the ranch until a couple of days before Christmas. Hitherto the weather had been lovely. The night before we left there was a torrential tropic downpour. It was not

unexpected, for we had been told that the rainy season was overdue. The following forenoon the baggage started, in a couple of two-wheeled ox-carts, for the landing where the steamboat awaited us. Each cart was drawn by eight oxen. The huge wheels were over seven feet high. Early in the afternoon we followed on horseback, and overtook the carts as darkness fell, just before we reached the landing on the river's bank. The last few miles, after the final reaches of higher, tree-clad ground had been passed, were across a level plain of low ground on which the water stood, sometimes only up to the ankles of a man on foot, sometimes as high as his waist. Directly in front of us, many leagues distant, rose the bold mountains that lie west of Corumbá. Behind them the sun was setting and kindled the overcast heavens with lurid splendor. Then the last rose tints faded from the sky; the horses plodded wearily through the water; on every side stretched the marsh, vast, lonely, desolate in the gray of the half-light. We overtook the ox-carts. The cattle strained in the yokes; the drivers wading alongside cracked their whips and uttered strange cries; the carts rocked and swayed as the huge wheels churned through the mud and water. As the last light faded we reached the small patches of dry land at the landing, where the flat-bottomed side-wheel steamboat was moored to the bank. The tired horses and oxen were turned loose to graze. Water stood in the corrals, but the open shed was on dry ground. Under it the half-clad, wild-looking ox-drivers and horse-herders slung their hammocks; and close by they lit a fire and roasted, or scorched, slabs and legs of mutton, spitted on sticks and propped above the smouldering flame.

Next morning, with real regret, we waved good-by to our dusky attendants, as they stood on the bank, grouped around a little fire, beside the big, empty ox-carts. A dozen miles down-stream a rowboat fitted for a spritsail put off from the bank. The owner, a countryman from a small ranch, asked for a tow to Corumbá, which we gave. He had with him in the boat his comely brown wife—who was smoking a very large cigar—their two children, a young man, and a couple of trunks and various other belongings. On Christmas eve we reached Corumbá, and rejoined the other members of the expedition.