

ANIMALS OF CENTRAL BRAZIL ¹

WHEN I contemplated going on this trip^o the first thing I did was to get in touch with Dr. Frank M. Chapman of the American Museum. I wanted to get from him information as to what we could do down there and whether it would be worth while for the Museum to send a couple 5 of naturalists with me. On any trip of this kind—on any kind of a trip I have ever taken—the worth of the trip depends not upon one man but upon the work done by several men in co-operation. This journey to South America would have been not worth the taking, had it 10 not been for the two naturalists from the American Museum who were with me, and for the Brazilian officers^o skilled in cartographical work who joined the expedition.

I thought of making the trip a zoölogical one only, when I started from New York, but when I reached Rio Janeiro 15 the Minister of Foreign Affairs, Mr. Lauro Müller, whom I had known before, told me that he thought there was a chance of our doing a piece of geographical work of importance. In the course of the work of the telegraph commission under Colonel Rondon, a Brazilian engineer, 20 there had been discovered the headwaters of a river running north through the center of Brazil. To go down that river, and put it on the map would be interesting, but he wanted to tell me that one cannot guarantee what may happen on unknown rivers—there might be some 25

¹ A lecture delivered before the members of the American Museum of Natural History, December 10, 1914. Reprinted by permission from the *American Museum Journal*, vol. xv, page 35, (February, 1915.)

surprises before we got through. Of course we jumped at the chance, and at once arranged to meet Colonel Rondon and his assistants at the head of the Paraguay, to go down from there with them.

5 We touched at Bahia and Rio Janeiro and then came down by railway across southern Brazil and Uruguay to Buenos Aires and went through the Argentine over to Chili. We traveled south through Chili and then crossed the Andes. That sounds a very elaborate thing to do, but
10 as a matter of fact it was pure pleasure. It was a wonderful trip. The pass through which we crossed was like the Yosemite, with snow-capped volcanic mountains all about. Afterward we went across Patagonia by automobile and then started up the Paraguay. Our work did
15 not begin until we were inside the Tropic of Capricorn. We took mules at Tapirapoan and went up through the high central plateau of Brazil—not a fertile country but I have no question but that great industrial communities will grow up there.

20 The hard work on the unknown river came during the first six weeks. In those forty-two days we made only an average of about a mile and a half a day and toward the end we were not eating any more than was necessary and that was largely monkey and parrot. The parrots were
25 pretty good when they were not tough but I can assure Mr. Hornaday that he could leave me alone in the monkey cage at the New York Zoölogical Gardens with perfect safety.

Both of the naturalists who were with me and I myself
30 were interested primarily in mammalogy and ornithology. We were not entomologists and studied only those insects that forced themselves upon our attention. There were

two or three types that were welcome. The butterflies were really wonderful. I shall never forget the spectacle in certain places on the Unknown River where great azure blue butterflies would fly about up and down through the glade or over the river. Some of the noises made by insects were extraordinary. One insect similar to a katydid made a noise that ended with a sound like a steamboat whistle.

We found the mosquitoes bad in only two or three places. On the Paraguay marshes there were practically no mosquitoes. In that great marsh country where I should suppose mosquitoes would swarm, there were scarcely any. Our trouble was chiefly with gnats. These little flies were at times a serious nuisance. We had to wear gauntlets and helmets and we had to tie the bottom of our trouser legs. When we stopped on one occasion to build canoes, two or three of our camaradas were so crippled with the bites of the gnats that they could hardly walk. The wasps and stinging bees were also very obnoxious and at times fairly dangerous. There were ants we called foraging ants that moved in dense columns and killed every living thing that could not get out of the way. If an animal is picketed in the line of march of these foraging ants, they are likely to kill it in short time.

There is also a peculiar ant called the leaf ant which doesn't eat a man but devours his possessions instead. I met with a tragedy one night myself. We had come down the Unknown River and had lost two or three canoes and had to portage whatever we had over the mountain. We had to throw away everything that was not absolutely necessary. I reduced my own baggage to one change of clothing. We got into camp late and Cherrie and I had

our two cots close together and did not get the fly up until after dark. My helmet had an inside lining of green and I had worn a red handkerchief around my neck. At night I put my spectacles and the handkerchief in the hat. The next morning I looked out of bed preparing to get my spectacles. I saw a red and green line. It was moving. There was a procession of these leaf-bearing ants with sections of my handkerchief and hat. I had had one spare pair of socks and one spare set of underclothing and I needed them both. By morning I had part of one sock and the leg and waistband of the underwear and that was all. It is amusing to look back at but it was not amusing at the time.

The most interesting fish that we became acquainted with was called the "cannibal fish," or the "man-eating fish." It is about the size of our shad with a heavily undershot jaw and very sharp teeth. So far as I know, it is the only fish in the world that attacks singly or in shoals animals much larger than itself. Cannibal fishes swarm in most of the rivers of the region we passed through, in most places not very dangerous, in others having the custom of attacking man or animals, so that it is dangerous for anyone to go into the water. Blood maddens them. If a duck is shot, they will pull it to pieces in a very few minutes.

This side of Corumba a boy who had been in swimming was attacked in midstream by these fishes and before relief could get to him, he had not only been killed but half eaten. Two members of our party suffered from them. Colonel Rondon after carefully examining a certain spot in the river went into the water and one of these fishes bit off his little toe. On another occasion on the Unknown

River,° Mr. Cherrie went into the water thinking he could take his bath right near shore and one of the fish bit a piece out of his leg.

One of the most extraordinary things we saw was this. On one occasion one of us shot a crocodile. It rushed 5 back into the water. The fish attacked it at once and they drove that crocodile out of the water back to the men on the bank. It was less afraid of the men than the fish.

We were interested one day in a certain big catfish, 10 like any other big catfish except that it had a monkey inside of it. I had never heard that a catfish could catch monkeys but it proved to be a fact. The catfish lives at the bottom of the water. The monkeys come down on the ends of branches to drink and it seems to be no un- 15 common thing for the fish to come to the surface and attack the monkey as it stoops to drink. Our Brazilian friends told us that in the Amazon there is a gigantic catfish nine feet long. The natives are more afraid of it than of the crocodile because the crocodile can be seen 20 but the catfish is never seen until too late. In the villages, poles are stacked in the water so that women can get their jars filled with water, these stockades of poles keeping out the giant crocodile and catfish. I had never seen in any book any allusions to the fact that there is 25 a man-eating fish of this type in the Amazon.

One day when we were going down the Unknown River Mr. Cherrie and I in the same canoe, we saw a flying fish. Of course everyone knows about the flying fish on the ocean but I had no idea there were flying fish on the 30 South American streams. I very much wish that some ichthyologist would go down to South America and come

back with not not only a collection of the fishes but also full notes on their life histories.

We did not see very many snakes, I suppose only about twenty venomous ones. The most venomous are 5 those somewhat akin to our rattle-snakes but with no rattles. One of the most common is the jararaca, known in Martinique as the fer-de-lance. One of the biggest is called the bushmaster and attains a length of about ten feet. These snakes are very poisonous and very dan- 10 gerous. The mussurama is another South American snake, and it lives on poisonous snakes. It habitually kills and eats dangerous reptiles, its most common prey being the jararaca. I saw the feat performed at a laboratory where poisonous snakes are being studied to secure 15 antidotes to the poisons and to develop enemies to the snakes themselves. Such an enemy is this mussurama which must be like our king snake—but larger. The king snake is a particularly pleasant snake; it is friendly toward mankind, not poisonous and can be handled 20 freely. The scientists at the laboratory brought out a big good-natured mussurama which I held between my arm and coat. Then they brought out a fairly large fer-de-lance about nine inches shorter than the mussurama and warning me to keep away, put it on the table. Then they 25 told me to put my snake where it could get at the fer-de-lance. I put down my snake on the table and it glided up toward the coiled fer-de-lance. My snake was perfectly free from excitement and I did not suppose it meant to do anything, that it was not hungry. It put its "nose" 30 against the body of the fer-de-lance and moved toward the head. The fer-de-lance's temper was aroused and it coiled and struck. The return blow was so quick that

I could not see just what happened. The mussurama had the fer-de-lance by the lower jaw, the mouth wide open. The latter struck once again. After that it made no further effort to defend itself in any way. The poisonous snake is a highly specialized creature and practically helpless when once its peculiarly specialized traits are effectively nullified by an opponent. The mussurama killed the snake and devoured it by the simple process of crawling outside of it. Many snakes will not eat if people interfere with them, but the mussurama had no prejudices in this respect. We wanted to take a photograph of it while eating, so I took both snakes up and had them photographed against a white cloth while the feast went on uninterruptedly.

Birds and mammals interested me chiefly, however. I am only an amateur ornithologist but I saw a great deal there that would be of interest to any of us who care for birds. For instance there are two hundred and thirteen families of birds very plentiful there, either wholly unknown to us, or at least very few of them known.

The most conspicuous birds I saw were members of the family of tyrant flycatchers, like our kingbird, great crested flycatcher and wood pewee. All are birds that perch and swoop for insects. One species, the bientevido, is a big bird like our kingbird, but fiercer and more powerful than any northern kingbird. One day I saw him catching fish and little tadpoles and also I found that he would sometimes catch small mice. Another kind of tyrant, the red-backed tyrant, is a black bird with reddish on the middle of the back. We saw this species first out on the bare Patagonian plains. It runs fast over the ground exactly like our pippit or longspur.

Curved-bill wood-hewers, birds the size and somewhat the coloration of veeries, but with long, slender sickle-bills were common about the gardens and houses.

Most of the birds build large nests. The oven-birds build big, domed nests of mud. Telegraph poles offer splendid opportunities for building nests. Sometimes for miles every telegraph pole would have an oven-bird's nest upon it. These birds come around the houses. They look a little bit like wood thrushes and are very interesting in that way they have all kinds of individual ways. The exceedingly beautiful honey creepers are like clusters of jet. They get so familiar that they come into the house and hop on the edge of the sugar bowl.

The people living on many of the ranches in Brazil make us rather ashamed for our own people. The ranchmen protect the birds and it is possible to see great jabiru storks nesting not fifty yards from the houses, and not shy.

Most of the birds in Brazil are not musical although some of them have very pretty whistles. The oven-bird has an attractive call. The bell-bird of the gray hue (contrasted with the white bell-bird) has a ringing whistle which sounds from the topmost branches of the trees.

The mammals were a great contrast to what I had seen in Africa. Africa is the country for great game. There is nothing like that in South America. The animals in South America are of interest to the naturalist more than to the person who is traveling through the country and takes the ordinary layman's point of view. Only two of the animals found there are formidable. One of these is the jaguar, the king of South American game, ranking

on an equality with the noblest beasts of the chase of North America, second only to the huge and fierce creatures which stand at the head of the big game of Africa and Asia. The great spotted creatures are very beautiful. Like all cats they are easily killed with a pack of hounds, 5 but they are very difficult to come upon otherwise. They will charge men and sometimes become man-eaters.

Another big mammal of the Brazilian forest is the white-lipped peccary. The white-lipped peccaries herd together in the dense jungles in packs of thirty or forty 10 or sometimes as many as two or three hundred. They are formidable creatures. The young ones may be no larger than a setter dog but they have tremendous tusks. They surge and charge together and I think that they may legitimately be called dangerous. On one occasion 15 Cherrie was hunting peccaries and the peccaries treed him. He was up there four hours. He found those four hours a little monotonous, I judge. I never had any adventure with them myself. They make queer moaning grunts. We spent a couple of days in getting the specimens that 20 we brought back. We had four dogs with us. The ranchman had loaned them to us although I doubt whether they really wished to let us have them, for the big peccary is a murderous foe of dogs. One of them frankly refused to let his dogs come, explaining that the fierce wild swine 25 were "very badly brought up" and that respectable dogs and men ought not to go near them. We might just as well not have taken any dogs, however. Two of them as soon as they smelled the peccaries went home. The third one made for a thicket about a hundred yards away and 30 stayed there until he was sure which would come out ahead. The fourth advanced only when there was a man

ahead of him. The dangerous little peccaries made fierce moaning grunts on their way through the jungle and rattled their tusks like castanets whenever we came up.

Armadillos were unexpectedly interesting because
5 they ran so fast. Once on a jaguar hunt we came upon two of the big nine-banded armadillos, which are called the "big armadillos." The dogs raced at them. One of the armadillos got into the thick brush. The other ran for a hundred yards with the dogs close upon it, wheeled
10 and came back like a bullet right through the pack. Its wedged-shaped snout and armored body made the dogs totally unable to seize or stop it. It came back right toward us and got into the thick brush and so escaped. Other species of armadillo do not run at all.

15 The anteaters, most extraordinary creatures of this latter-day world, are found only in South America. The anteater is about the size of a small black bear and has a long narrow toothless snout, a long bushy tail and very powerful claws on its fore feet. It walks on the sides of
20 its fore feet with the claws curved in under the foot. These powerful claws make it a formidable enemy for the dogs. But it goes very slowly. Anteaters were continually out in the open marshes where we got the two specimens that we sent to the Museum. They were always on muddy ground, and in the papyrus swamp we found them in
25 several inches of water. I do not see how they continue to exist in a country with jaguars and pumas. They are too slow to run away and they are very conspicuous and make no effort to conceal themselves.

The great value of our trip will be shown only when
30 full studies have been made of the twenty-five hundred and more specimens of birds and mammals brought back.

We will be able to give for the first time an outline of the mammalogy and ornithology of central Brazil.

Probably the most important feature of the trip was going down the Unknown River, because, of course, at this stage of geographical history it is a rare thing to be able to put on the map a new river, a river never explored, a river the length of the Rhine of which not a line is to be found on any map.

It was a journey well worth taking, a rough trip of course, but I shall always be more grateful than I can say to Professor Osborn and Dr. Chapman of the American Museum for having sent Mr. Cherrie and Mr. Miller with me, thus enabling me to take part in a zoö-geographical reconnaissance of a part of the Brazilian wilderness.

ROOSEVELT'S WRITINGS

SELECTIONS FROM THE WRITINGS
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