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The

Geographical Journal.

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A JOURNEY IN CENTRAL BRAZIL.*

By Colonel the Hon. THEODORE ROOSEVELT.

This has been something that I have looked forward to, and the President in his more than kind and courteous remarks, while mentioning that he wrote to me as soon as he heard that I had emerged from the wilderness, did not mention that I had written to him also. When I came out of Africa your then President wrote to me asking me to give an address before the Society, and I wrote back that I could not, because I had nothing to say; that I had merely followed well-travelled routes, my work having been that of a field naturalist and not that of a geographer, and that it would not be fair for me to take up the time of the Society by going over what they already knew. I wished, however, to make this address for two reasons: first, because I felt that something had been done by the expedition of which I had the honour to be head which ought to be known to you as the foremost geographical body in the world; second, inasmuch as this Society is the parent of all similar societies in the English-speaking world, and possesses a far-reaching influence that no other society possesses, I wished to tell you something of the work done by the Brazilian explorers in the hitherto unknown interior of western Brazil. It is a very extraordinary work which has not received proper recognition, either in my country or in yours, or in any country of Continental Europe. As the President has said, as Sir Clements Markham in his friendly and generous letter has said, much remains to be done in the basin of the Amazon. There are plenty of blank spaces on the map down there, and there are men and women now engaged in filling these blanks. For instance, here on the map is the Tapajos river, her

* Royal Geographical Society, June 16, 1914. Map, p. 180.

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is another great river the Xingu. The country between is almost unknown. I met at Para the curator of the Museum of the Zoological Society at Para, a lady, Miss Snethlage, by birth a German, who has taken on foot the trip across this unknown hinterland from the Xingu to the Tapajos. When I was in Manaos I met Prof. Farrabee of the University of Pennsylvania, who had gone from Manaos up the Rio Negro and Rio Branco and then across on foot to the headwaters of the rivers going into British Guiana, he himself being for a short time on a stream that was entirely unknown. There is any amount of work to be done yet by men and women like Colonel Rondon, who was my associate, like Miss Snethlage, like Prof. Farrabee.

I undertook this exploring trip originally more or less by accident. I had wanted for some time to go to South America. When I went to Africa five years ago, Sir Harry Johnston urged me to go to South America on the ground that it was less well known. At that time the lion and the elephant exercised too strong an attraction for me to be able to resist them, but in 1913 I thought the chance had come when I could go up the Paraguay and across the central plateau of Brazil into the great Brazilian forest. When I began the trip it was in the interest of the American Museum of Natural History in New York. I took with me a couple of zoologists, intending to make the trip primarily a biological reconnaissance. When I reached Rio de Janeiro the Secretary of Foreign Affairs of the Brazilian Government informed me that the Telegraphic Commission of Brazil, which had been for years conducting a series of explorations into this highland region of western Brazil—the highland region from which the headwaters of the Tapajos and of the Madeira as well as of the Paraguay flow—had in the course of its work run across the upper courses of two rivers which it was of capital importance to explore. One of these rivers they had christened the Duvida, which means "the River of Doubt," because they did not know where it went. They felt equally in doubt as to the other and rather smaller river, to which they had given the more prosaic name of the "Pineapple" river. These two rivers flowed north. The Telegraph Commission could not tell where they came out, but from the lie of the land some of the members of the commission, including Colonel Rondon, were very doubtful about their going into either the Tapajos or the Gyparana, and believed that it was probable they emptied into the lower Madeira. If these streams ultimately entered into the lower Madeira, it meant that there was in that region a great river which was not only unknown, but the existence of which was unguessed at by cartographers, and incompatible with existing maps. Mr. Lauro Muller stated that the Brazilian Government would aid me in every way if I would undertake to be head of an exploring expedition to go down the river, clear up the doubt as to where it went, and thereby put it on the map. Up to that time I had been engaged on a biological reconnaissance in the interest of the American Museum of

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Natural History in New York; after that time if I closed with the kind offer of Mr. Lauro Muller the expedition would become as proposed by the Brazilian Government, the "Roosevelt-Rondon Scientific Expedition." I, of course, jumped at the chance and undertook to start on the expedition as soon as I had made certain addresses in Southern Brazil, in the Argentine and Chile.

I have here a map, furnished me through Mr. Arthur Lee by this Society, as one of the best modern maps they could get. Its date is 1911, and it is published in Brazil. It represents the best modern information, and is substantially like the map which was furnished me by the American Museum—one of Bartholomew's maps, published in Edinburgh. Were this map accurate no such river as that which we went down could exist, because the course we actually followed, when put down on this map, is seemingly crossed by tributaries running direct into the Madeira river, and even by tributaries running into the Tapajos, not to speak of mountain chains. Moreover, the headwaters of the Tapajos are placed on this map with such incorrectness, that it is wholly impossible for me to put down the route we actually took with any degree of accuracy. I am not in any way blaming the mapmakers. None of the existing maps are materially better. But it is interesting to realize how inaccurate even the best maps of this great region still are.

When we started we knew of the existence of the upper stream of the Duvida. We also knew that in all probability the mouth through which its waters finally entered some known stream must be on some map, for, of course, the river went out somewhere, unless it was lost in a swamp. The point was that no one knew where this mouth was, or the course of the stream, or its length, or anything else about it. Where we actually did come out was on the stream known to the rubber men as the Aripuana. On this map there is no name given to the little bit of a dotted creek running into the Madeira which I suppose is meant for the Aripuana. On a few other maps, however, it appears, with its name as the Aripuna, as a very small creek indicated by a dotted line, entering into the Madeira. It is portrayed on these maps as smaller than several other insignificant tributaries, yet as a matter of fact, instead of being much smaller, it is very much larger. It is difficult to understand how it is possible that a great river, whose mouth and lower course were so well known to the rubber men, could have been left off the maps, or else put on as a tiny tributary with nothing to indicate its size or course.

Our trip was first up the Paraguay as far as we could go by steamer, and then up a tributary, the Sepotuba, in a launch with native trading boats lashed alongside. Then for thirty-seven days we went with mule-train and pack-oxen across the highland wilderness of western Brazil. The plateau was in places over 3000 feet high; it was a healthy country, although not a fertile agricultural country. It is sandy, with scrubby

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forests, beautiful clear streams and cool nights, a country in which European emigrants can thrive and prosper, a country which I believe will one day be filled with a great industrial population, making use of the extraordinary water-power furnished by the rivers that break from that plateau down over the edge into the valleys. It will be tributary to the immensely rich, immensely fertile lowland regions to the south and north, the basin of the Paraguay and the basin of the Amazon. Just as the nineteenth century has seen the extraordinary development of North America, so I believe the twentieth will see the great development of South America, and up on this plateau the development has not yet begun.

Let me parenthetically insert just one word to those who undertake to develop it. Let these men remember the disasters encountered by so many of the enthusiasts who, in the middle and early part of the last century, started to develop the western part of the United States, without any earthly understanding of what development of a raw frontier meant. Let all would-be emigrants remember that the frontier opens equally great chances for both success and failure.

As yet the country through which we passed is empty of settlers, but we found it interesting. We crossed, among others, two big rivers—I have not been able to find them on this map or the map that I took with me—the Sacre and Papagaio, which, within 10 miles of one another, fell over two great falls, one of close on 150 feet, the other of about 250 feet. In each case the whole river ran over a shelf of rock and then foamed away through a deep gorge. I do not know your European falls, but these falls can fairly be compared with the falls of the Yellowstone in the United States, one of them being, I think, with a larger volume of water and a higher fall.

I am not an ethnologist, but even a layman could not but be greatly interested in the tribes of Indians that we encountered on this plateau. They belong to two big bodies, the Parecis and the Nhambiquaras. The Parecis are a very high-grade, intelligent set of Indians, on the road to being absorbed in the general population of Brazil, but as yet with strongly individual tribal customs. One of their games is noteworthy.

They have developed "Association football"—what you call "Soccer football"—but they play it with their heads. The two sides are ranged as in soccer football. The round, hollow rubber ball is placed on the ground between them. A man runs towards it, throws himself flat on the ground, and butts it. It rolls towards a man on the other side, who flings himself on the ground and butts it back. Usually he catches it so as to make the ball rise, and then the men on each side in turn run, catch it on their heads, and send it to and fro without throwing themselves on the ground. The ball is only touched with the head, and it travels almost as if from a drop-kick or punt. It is really an interesting game, and they are absorbed in it.

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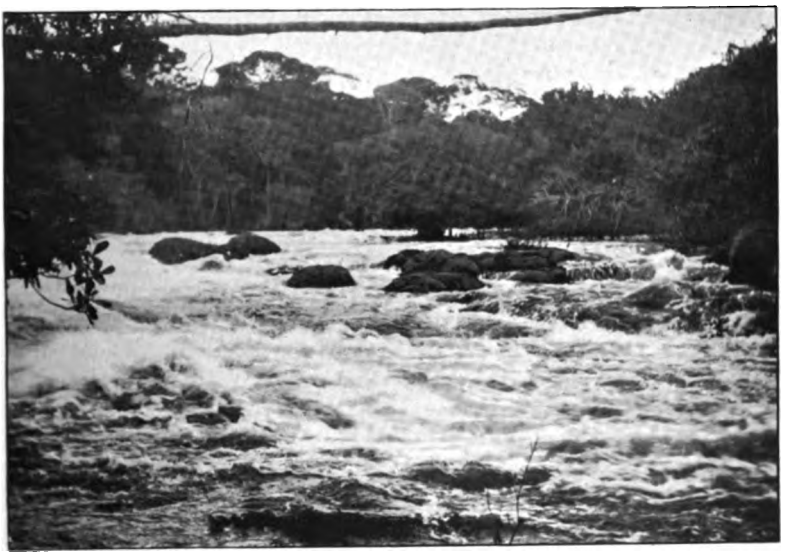
THE DUVIDA, TAKEN FROM THE TOP OF THE FIRST MOUNTAIN RANGE WHICH IT CUTS THROUGH, AND LOOKING TOWARDS THE SECOND WHICH IT CUTS THROUGH.



RAPIDS OF THE UPPER DUVIDA.

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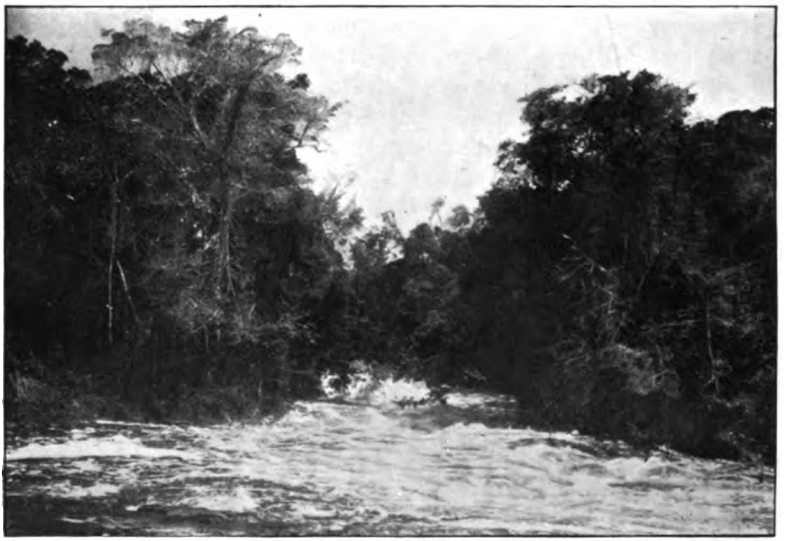

RAPIDS OF THE DUVIDA.

CHERRIE HOLDING HIS GUN ACROSS THE NAVAITE GORGE TO SHOW ITS NARROWNESS.

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The Nhambiquaras are literally naked savages, wearing no clothing whatever. They sometimes, though not often, build curious beehive huts, not unlike those of the Bantu tribes in Africa, and they are fairly good cultivators of the soil; but they have no livestock, no hammocks, no canoes, no blankets, no clothing of any kind. They are good archers, and use a bow 6 or 7 feet long, almost as powerful as the old English yeoman's bow. They are a very wild tribe, as with most of the Indians I saw, but they are not warlike as the Iroquois or Sioux were warlike. Of course there are vicious ones among them, but what the traveller has to be afraid of is their fear of him; they attack him because they are afraid of him, because they are in doubt as to the intentions of the new-comer; and if he can make them understand that they are to be treated well and fairly, there is practically no danger from them—unless, as sometimes happens, an innocent party pays for the outrages committed by some other party.

Our canoe-party left the mule train at the point where the line of the telegraph crosses, by a bridge, the Duvida—the River of Doubt. We started at about lat. 12° 1′ S. and long. 16° 15′ W. from Greenwich. The party consisted of six men—myself; Colonel Rondon, of the Engineer Corps in the Brazilian army; Lieut. Lyra of the Engineer Corps, who made the actual astronomical observations and did the actual cartographical work; Doctor Cajazeira of the Brazilian army; Mr. George K. Cherrie, ornithologist from the American Museum of Natural History; my son Kermit, who had for a year been engaged in structural steel-bridge building in Brazil, and on whom we had to rely for the bulk of the rope and pulley-work in getting the canoes down the worst rapids. There were sixteen "Camaradas," or paddlers, very good fellows indeed as a whole.

Colonel Rondon is the head of the Brazilian Telegraphic Commission. Our descent of this unknown river was merely capping the pyramid of which Colonel Rondon and his associates had laid the foundations deep and wide in the preceding seven years. Beginning with 1907, he with various other members of the Engineer Corps of the Brazilian army—three or four of whom were with me on my trip in one capacity or another—pushed westwards from the settled regions into the unknown wilderness of Matto Grosso, going further and further year after year until they reached the great tributary of the Madeira called the Gyparana, of which I have already spoken, and descended it. They found that big river nearly 2° of longitude out of place on the maps as they then existed (and still exist). When Colonel Rondon made his final push westward across the high plateau he arranged for one of his subordinates, Captain Amilcar, to ascend the Gyparana so as to meet Rondon's party when they came down it; but owing to the mistake in the degrees of latitude on the map, Amilcar went up one stream and Rondon down another, so they never met. In spite of this failure, the

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colonel deemed it wise to repeat the experiment in our case. Lieut. Lyra believed firmly that the Duvida entered the Gyparana: Captain Amilcar thought there was much possibility of its turning to the right and falling into the Tapajos; Rondon, however, while he knew that both of these were possibilities, yet, judging from what the rubber men had told him, believed that the Aripuana, the lower course of which had been known for years to the rubber men and had been ascended by the Amazonas Boundary Commission, was its most probable outlet. The rubber men had insisted that the Aripuana was the biggest river flowing into the Madeira, although it appears on the map as one of the smallest and most unimportant. Accordingly Colonel Rondon directed Lieut. Pyreneus to ascend the Aripuana until he came to the first big fork, its first big affluent running into it, and then to halt and see if we came down either branch. In what latitude this fork was no one had any idea. It proved to be in about 7° 34′; the steam launch was left below the first rapids, while Pyreneus come above them to the fork.

The first four days of our descent of the river were easy. We went slowly, because for the first month we accurately surveyed all the river. After four days we struck the uppermost rapids; this was in about lat. 11° 44′ S. From this point the rapids were almost continuous for about 150 miles of travelling. We spent forty-two days in covering 1° of latitude, making considerably less than 2 miles a day, on an average, in a straight line to the north. In that time there was no full day's journey between the rapids. Of course it is the rapids that make travelling on those rivers so difficult and so dangerous. The explorer also has to suffer from fever and from insects, which last are infinitely more formidable than any of the larger beasts. The danger of starvation on a river trip almost always comes directly or indirectly from the rapids; either because the boat is upset in the rapids and the provisions lost, or else because the time taken is so excessive that the party runs completely out of food. For various reasons we were not able to start with as much food as we ought to have had. We carried about fifty days' half-rations, which we eked out with what we could shoot, with the fish we caught, with a few nuts and fruits, and with palm-tops. Such a trip through a great forest is not favourable to hunting. Explorers have little time to hunt, and it is infinitely harder to get game in dense forests than on open plains. We did not get any big game. However, we killed a number of monkeys, which were edible, and some big birds, such as curassows, and also some parrots. The Brazil nut crop, upon which we had counted, failed, and for vegetables we had to rely mainly upon palm-tops. We at times caught a good many fish.

South America is a curious country; it entirely lacks the great beasts of Africa and India, but it possesses, in addition, its insect pests: bats no bigger than ordinary flitter-mice, which suck the blood of horses, cattle, and even of man himself; and fish no bigger than

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trout, which on occasions kill swimmers. These fish are called piranhás; they are silvery in colour, with big and sharp teeth. In some places they are not dangerous to human beings, whereas in others they will assail any one who enters the water. In this respect they are like sharks and crocodiles, which, as most field-naturalists know, are dangerous in some waters and not in others. There were waters in which we could go swimming without regard to piranhás, and other waters where it was a matter of danger to venture away from the bank. Colonel Rondon had his little toe taken completely off by piranhás, and Cherrie, the ornithologist, was bitten in the leg. In one lagoon which the dogs went into after a tapir, two of them lost the tips of their tails, which were bitten right off. One extraordinary incident in connection with these fish occurred in the swamps of the Paraguay. The swamps were drying up, and the ponds in them contained quantities of fish, including piranhás, and numbers of alligators living on the fish. One of these crocodiles, when shot, was at once attacked by the piranhás, for blood appeared to madden them. The fish, ordinarily the prey of the crocodile, drove that crocodile right out of the water; it came up on land, preferring to face its human foes rather than to remain in the water under the attacks of the fish. The piranhás are themselves good to eat, and they were the commonest fish we caught. There were other fish—curious things; you have not got them in this country—what we in the United States call catfish. These are fish with a smooth skin practically without scales, a very broad and big head, and a great gap of mouth. We caught a catfish about 3½ feet long on one occasion, and it had a monkey inside it. I asked one of the camaradas, an Indian, how these fish caught monkeys. He explained that the catfish is a ground-fish, and that when the monkeys come to drink from the end of the branches of the trees overhanging the water the fish come right up from beneath and seize them. The crocodiles in Africa sometimes catch monkeys, baboons, and even birds in similar fashion. On the lower Madeira and Amazon we saw stockades of poles built into the river where the villagers got their water, because they were afraid both of the crocodile, and even more of a huge, marauding ground-fish with an enormous mouth. This is a kind of catfish about 9 feet long, which is said by those people to be more dreaded by swimmers than even the crocodile, because the crocodile can usually be seen on the top of the water, whereas the giant catfish lies on the bottom, and there is no indication when he will make his attack.

We did not get enough game and fish to give us full rations. However, we were able to keep our men and ourselves in fair condition until we got through the forty-two days occupied in descending the rapids after we first struck them, covering, as I have said, about a degree of latitude. During that time, of the seven canoes with which we started we lost five in the rapids. We built three others, and lost one of those. A stay-at-home man, or a man that has only been on rivers that have been explored,

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will find it difficult to understand how canoes can be lost in such fashion. The difficulty comes from the fact that the river is unknown. An explorer comes to the head of a rapid: he does not dare to take too many chances; and yet if he doesn't take some chances, he will go so slowly that his food will be exhausted, and his party will be in peril of starvation. For instance, by the time we had been nearly six weeks in those rapids we were sure the river must find its exit somewhere well down in the lower Madeira, or even in the Amazon. We had used up four-fifths of our food, and we had only gone about one-sixth of the distance we had to go. We could not tell how long the rapids would continue. We had an aneroid, but we were not confident enough in its accuracy to feel sure what our elevation was, and moreover, as every man with experience in river work knows, the dangerous character of rapids depends just as much upon the conformation of the ground and the volume of water as upon the actual descent. If the bed of the river is smooth and the descent gradual, a fairly steep incline offers little real difficulty. On the other hand, a very slight incline, if there is a great volume of water and many rocks, is dangerous, exactly as a tidal bore is dangerous if it surges among the piles of a dock or among rocks. We lost three men; one man was drowned, my son being almost drowned at the same time, their canoe being upset in a bad stretch of broken water. Under the strain of the toil, danger, and uncertainty one of the men went completely wicked, stole food, murdered another man, and fled into the wilderness. We were obliged continually to lighten the canoes in every way. We had begun with rather too heavy tentage; all six of us ended by sleeping under a light fly that had been brought down by the naturalist from New York. We threw away everything except what we had on us. One change of underclothing, including socks and six handkerchiefs, was my spare baggage; and the day after I had thrown away the rest the ants ate up all my spare underclothing, so that I was reduced lower than I had expected to be; and they also ate up my hat. The ants, by the way, are a perfect curse, the white ants in particular, not to speak of the poisonous fire ants and the driver ants, which try to eat the man instead of the clothing.

The worst time we had was in about lat. 11° 12′, where the river went through two low mountain ridges only a couple of miles apart. I do not know the height of any of the British Islands mountains, so I cannot compare them with these ridges; roughly, they are like the lower ridges of the Alleghanies. They were only 400 to 500 feet above the channel, but they were steep, and the river cut through each in succession in what we in the Western United States would call a canyon; that is, a chasm with sheer walls. It was, of course, physically impossible to drag the heavy dug-outs over the mountain-tops. At first we thought we would have to abandon the canoes and make new ones below, which would have taken time we could ill spare in view of our shrinking food-supply.

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COLONEL ROOSEVELT AND COLONEL RONDON ON A CURIOUS ROCK FORMATION AT NAVAITE FALLS.

SALTO BELLO FALLS.

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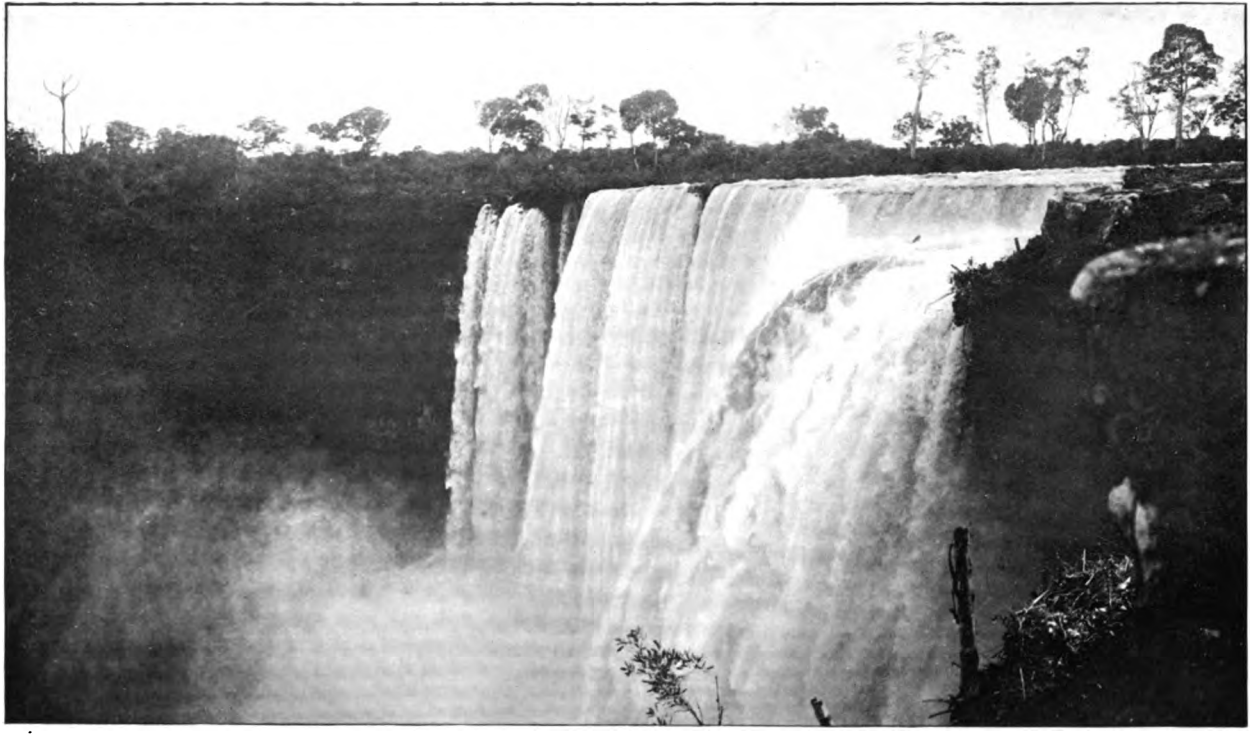

UTIARITY FALLS, KERMIT RIVER.

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However, we decided to make the attempt to pass and we succeeded, Kermit's work with rope and tackle being what enabled us to get through. The passage of each mountain chain cost us one dug-out. When we finally got out from the last of this long series of rapids, in about lat. 10° 45′, our difficulties were over. We ran a couple of days on the great broad stream, through magnificent equatorial tropical forest. Then in lat. 10° 24′, we came on the little house of the first rubber man, and from that point everything was easy. A dozen more days in the canoes took us down over three degrees of latitude to where we met the launch of Pyreneus. The rapids from this point came at long intervals, and we were able to hire rubber men as guides. No man can appreciate until he has actually tried it the infinite difference between descending even a dangerous river which is known and descending one where the man has to pioneer his own route.

We found that the rubber man called the stream we were on the Castanho. Every day or two we came to a rubber man's house, and on several days we passed two or three. They were always most kind and courteous, and gave us out of their poverty anything they could afford. Of course by this time we were having a good deal of fever, and I was rather laid out myself. But we had plenty of food, we usually camped in or near houses, we were much better able to protect ourselves against the insect pests, and we had no anxiety as to the future. In lat. 10° 58′ we passed the mouth of the first big affluent. It entered on the right; we named it the Cardoza. Three or four small rivers had already entered; but the Cardoza was nearly as big as the Duvida. In 9° 38′ the Rio Branco entered from the left. In lat. 7° 34′, the upper Aripuana joined from the right; it is of about the same size as the Castanho. The launch was reached in another day's swift running. We had then been sixty days in the canoes, to about lat. 7° 15′, then thirty-six hours' steaming took us to Manaos.

Let me define and illustrate what I mean when I say we put this river on the map. I am using the term as it would be used, to compare a small thing with a big thing, in describing what Speke and Grant and Baker did with the upper portions of the Nile. The river we descended is now on the map in the sense that the Victoria Nile and White Nile were for decades after their discovery and location by the three men I have mentioned. From the time of Ptolemy the great lakes of the upper Nile were vaguely known; but they were first "put on the map" by Speke and Baker, and the actual surveying was not done until many years later. The headwaters of the Niger and Congo were known long before it was known where or how these waters went to the ocean; but they were not put on the map until their course was, not surveyed, but located by a number of astronomical observations when the explorer actually went down or up the rivers. The Columbia was "put on the map" by Lewis and Clarke, although its mouth was already known, and

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although it was not surveyed for many years afterwards. On the Duvida we made a survey for about a degree after we started; then it became impossible to delay if we were to get out at all with our food supply, and we mapped the course day by day by compass, and took astronomical observations every degree or half-degree. We were in canoes for about 500 miles. The distance below the point where we left the canoes down to the Madeira, which we entered in nearly lat. 5° 7′ S. and long. 60° 23′ W., added to the distance of the non-navigable stream above where we embarked, would make a total length of about 870 or 930 miles, that is, a river about the length of the Elbe or Rhine.

As we came down, it seemed extraordinary enough that the part of the river which no civilized man had ever traversed should be absolutely unguessed at as far as any cartographer was concerned, but it was more extraordinary still when, lower down, we were on a stream practically of the volume of the Rhine which had been known for years to the rubber gatherers, and realized that on no map was there a hint of this great river's existence, except in so far as there appeared on some maps an inaccurate indication of the mouth. Whether the name applied to the new river includes the whole stream between the source and its entrance into the Madeira, or whether it ends at the junction of the Castanho and upper Aripuana, is a mere question of terminology. Precedent for one course is supplied by the principle followed in naming the Rhone and Saone; precedent for the other by the principle followed in naming the Mississippi and Missouri.

Before starting down the Duvida, we passed the headwaters of the Pineapple; I made preparations to descend the Pineapple if, as Lyra thought, it turned out that the Duvida in three or four days flowed into the Gyparana. The necessity did not arise; and the Pineapple has not been descended, and no one knows its course. It is not on the map, and will not be "put on the map" until some one goes down or up. It is possible that it empties into the Tapajos or the Canuma. It is more likely that it enters the Castanho in lat. 10° 58′, as the river Cardoza or, as is perhaps more probable, that it is the headwaters of the Aripuana proper. Now, if either of these probabilities is the fact, I went by its source, and by its mouth; but I did not "put it on the map," nor has it been "put on the map" by the rubber men who have probably ascended its one course. It will first be "put on the map" by the man who explores it, who shows where it really runs and by what mouth it actually enters some known stream.

On no existing map is there so much as a hint of the existence of this great river—this river as large as the Rhine—save as above indicated. It was not accurately surveyed by us excepting for one degree. As regards the Pineapple, which may be its main tributary, we do not know anything positive. There is ample work to be done in putting the Pineapple on the map, and in finishing the survey of the Duvida. If this

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Society will guarantee any man as fit for the work I will give him letters, and I think I can say that the Brazilian Government will also give him letters, which will ensure his having every facility, either to go down the Duvida more at leisure and map it carefully, or to go down the Pineapple and see where it comes out. Any man whom this Society will recommend to me I will put in the way of making, with less difficulty than we encountered, either expedition. If the man only wishes to ascend the lower two-thirds of the Duvida, or Aripuana and Castanho, the work will be simple, rather easy, and free from danger. I will give letters to the big rubber men which will enable him to purchase the proper canoes and provisions, and hire proper guides so that he can go up to the foot of the rapids in lat. 10° 44′ without any serious difficulties, and return to Manaos probably in about two months. Such a trip will need but very little preparation in advance and will not be unhealthy. If, on the other hand, the man wishes to ascend or descend the upper part—the hitherto unknown part—he will encounter some difficulty, perhaps some slight hazard to health and life; but nothing like what we encountered, for he will know, in the first place, exactly what is ahead of him, and in the next place he can probably procure as guides some of the men who went with me. If possible, provided he can get transportation I should advise him to take four big Canadian or American canvas and cement canoes. They are infinitely better than the dug-outs.

The PRESIDENT (before the lecture): In the presence of this large and distinguished assemblage, and after the greeting you have just given our guest, it can hardly be necessary for me to assure Mr. Roosevelt of the very great pleasure it gives us to see him here to-night. As soon as I heard he had emerged from the wilderness, my first act as your President was to invite him to come over and talk to us about his river. We are all deeply gratified that he has found himself able so promptly and so cordially to respond to the invitation sent across the Atlantic. Our only regret, the regret of the Council, is that, owing to a curtailment of Mr. Roosevelt's visit to England, the arrangements we had carefully made for the Queen's Hall fell through, and it was found impossible at short notice to obtain any large hall for any of the three nights, which were all he could place at our disposal. If any Fellows have suffered inconvenience they may rest assured it has been through no fault on the part of the Council.

No citizen of the United States, I believe, feels himself a stranger in London, least of all can Mr. Roosevelt be a stranger among us here, for in our Society he shares with a very limited number, I believe only eight others, the distinction of being one of our Honorary Members. But Mr. Roosevelt has other links with us in London. As a traveller he made what I at least consider a very good beginning, a bold start in life, by climbing, somewhere about 1880, the Matterhorn and the Jungfrau. He was promptly introduced by Leslie Stephen into the bosom of the Alpine Club, where he has ever since been my fellow-lodger. More recently we have watched him fresh (I think fresh is the right word) from years of the greatest responsibility, rush off for relaxation from his battles with politicians to encounter the hardly less formidable denizens of the wilds of East Africa. Latterly, as a prelude possibly to fresh struggles in the political arena, he has been facing perils by water and by fever in the unknown centre of South America.

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I shall not say, as some of my predecessors have, that we have nothing to do here with politics. I trust that in the present and in the future politics may not be so much divorced from geography as they have unfortunately sometimes been in the past. I would rather say we have nothing to do with *party* politics at home or abroad. Yet we may assuredly recognize in Mr. Roosevelt, not only the traveller and explorer, but the man whose boundless energy, as he has just proved, unabated by years, in whatever quarter it is spent, has always been spent in the study of nature, in the pursuit of knowledge, or in honest efforts for the betterment of his country and the world.

Some time ago I took occasion to point out that the upper region of the Amazons, in which our guest has been exploring, shares with the heart of Arabia and the interior of New Guinea the distinction of being one of the least thoroughly explored and the worst-mapped portions of the Earth's surface. It has been left as one of the refuges of the imagination. It is there that Sir Conan Doyle, in search of a field for romance, planted his ingenious tale of 'A Lost World.' It is there that in 'Westward Ho' Kingsley made his hero disappear for years. Its mysteries have been gradually revealed, the veil has been lifted in great part, but still more remains to be done. The work of Chandless and the American travellers who have given us accounts of the courses of the Madeira and Tapajos rivers, which are on either side of the river which Mr. Roosevelt has discovered, have enabled us to fill up with authentic detail portions of the map, but there have been regrettable gaps left: our raw material has been defective. The modern mapmaker does not, like his more picturesque predecessors, fill up such gaps with elephants and castles, with griffins and mermaids. His fancy hardly goes beyond hairy caterpillars and wriggling worms. The caterpillars and worms represent mountain ranges and hills, and these survive until the real explorer and surveyor comes along and says the map is all wrong, and substitutes reality for invention. He may dispel romance, but he gives a more vivid picture of the world, and opens up new fields to human enterprise. The scene of Mr. Roosevelt's adventures, the country discovered in his remarkable journey, touches on that made familiar to most of us, endeared to the memory of many of us, by the labours of our late Secretary, that most brilliant naturalist, a friend of Darwin and Wallace, Henry Walter Bates. We elders who still remember him cannot but wish he could have survived to be here to-night. What pleasure it would have given our old friend to hand down the title of "The Naturalist of the Amazons" to a worthy successor in Mr. Roosevelt! There is another of our old friends and officers, happily still with us, who is one of the greatest living authorities on the Amazons, Sir Clements Markham. I regret very much, and so does he, that his advancing years and the state of his health forbid him from coming here to-night, but he has addressed to me and asked me to communicate to the Meeting his appreciation of the arduous journey undertaken by Mr. Roosevelt, his sense of its geographical importance in filling up a considerable gap in our knowledge and our maps, and his warm congratulations to Mr. Roosevelt and his companions on their safe return. Had he been able to be present he would have been glad to point out in detail how little was known before Mr. Roosevelt's journey of the stretch of land between the Madeira and the Tapajos and its shy inhabitants. In his absence I will read you the concluding sentence of his note: "Mr. Roosevelt is right in saying that existing maps are quite misleading, for they appear to take the tributaries of the Madeira right across the region from near the left bank of the Tapajos, excluding any river flowing from south to north. It appears, then, that Mr. Roosevelt has made a very important addition to our geographical knowledge by discovering this longitudinal valley between the Tapajos and the Madeira, and he must have overcome great difficulties in making the discovery."

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To sum up, Mr. Roosevelt's claim to be the discoverer of this tributary river stands much on the same footing as that of Stanley's to a much greater river, the Congo. In both cases the head and the lower portion of the river were more or less known. Mr. Roosevelt, like Stanley, has been the first to pursue the stream through its whole or the greater part of its course, and to fix its position by observations. It is, therefore, as proper to speak of Roosevelt's river as of Stanley's river. And as to maps, they, like the curate's egg in *Punch*, are apt to be "good in parts." When it is said that a map is "all wrong" (and I have had to say it often myself), what is generally implied and understood is that it is wrong in the part the traveller has had to deal with.

I will not detain you longer, but will call upon Mr. Roosevelt to address us.

Viscount BRYCE (after the lecture): I rise in obedience to your President, but without any knowledge that the honour was going to be assigned to me of moving a vote of thanks to our most distinguished lecturer. Fortunately, very few words are needed to convey to him what you have already conveyed by your close attention and by your expressions of applause of the pleasure with which you have listened to his account, and the admiration you feel for the extraordinary enterprise and skill with which he carried through his exploration. As Mr. Freshfield has told you, I was never in that part of South America which Mr. Roosevelt has explored. I only visited the upper waters of some of these mighty streams, where they begin to descend from the great plateau of Peru and Bolivia, which he followed in their lower course. I have seen a little, and many here present must have seen much more of what are the difficulties which a tropical forest presents to the explorer, how closely intertwined are the creepers beneath and the climbing plants which hang among the trees and weave a dense web between their great trunks; how dense is the undergrowth; how often there are thorny and prickly bushes catch and tear the traveller, what a profusion of aggressive insect life exists there, and how many dangers the unhealthy conditions threaten to all but the most vigorous constitutions. It is an immense pleasure to Mr. Roosevelt's old friends, of whom there are many here, though I dare say hardly any one whose acquaintance goes back as mine does, to see that a man who has given such ample and such varied evidence of his intellectual gifts and dauntless courage in discharging the highest functions of statesmanship, should also display the gifts of an explorer and a naturalist, and should possess that physical strength without which all these brilliant capacities would have been of little use. I will venture to ask you, in passing a vote of thanks to Mr. Roosevelt for his extremely interesting lecture, to congratulate him not only on the important additions he has made to geographical knowledge, but the fresh proof he has given of his wonderful powers both of body and mind.

The PRESIDENT: In putting this vote, which I am sure will be passed unanimously, to the meeting I shall detain you but a few minutes. I must, however, say that Lord Bryce has a little disappointed me. Mr. Roosevelt made a distinct offer to any one who would follow in his footsteps and explore the other great tributaries of the Amazons. I had great hope that Lord Bryce would be the person to accept that offer—an offer made in the most liberal spirit and without reference to the Monroe doctrine. I think one useful point has been impressed upon us by the lecturer, it is this—that it would be a very good thing if cartographers were more often ready to confess ignorance. One of the great hindrances to good maps is the abhorrence of a blank in the ordinary cartographical mind. It is apt to insert or leave out glaciers in the most inappropriate manner, and it appears that with regard to rivers it is not less fantastic. I would add that nothing could have been more graphic than the picture of the hardships which Mr. Roosevelt and his party went through—hardships of the most disagreeable nature from their monotonous multiplication and

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daily recurrence over a month and a half. The journey described would have been a great trial to the hardiest explorer; that it has been accomplished by an eminent statesman like Mr. Roosevelt, who has reached middle life, is a most remarkable feat. I am sure we all congratulate Mr. Roosevelt upon it, and we hope that when he next undertakes a similar journey he will come here and give us an account of it.

Mr. ROOSEVELT: I wish to add one word. It would be more technically accurate to say that we were the first explorers, not the "discoverers," of the river, just as was true of those who first explored the upper Nile and Congo. We "discovered" the mouths of the various tributaries, which we did not explore; we explored the main river, of which the head and mouth were known, although there was no knowledge that they were the head and mouth of one river.

THE MENTAL TRAINING OF A TRAVELLER.*

By the Right Hon. VISCOUNT BRYCE, O.M.

WHEN the President asked me to give you an address this winter, I felt it impossible to refuse a request coming from so old and valued a friend as your President has been to me; but I did feel some little difficulty about a subject, because it occurred to me that on an occasion like this you might naturally wish that every address should be connected in some way with the geography of the war which is now proceeding in different parts of Europe and Asia, and, indeed, in Africa and the Pacific also. But he observed to me in reply, and it seemed to me his answer carried sense and reason with it, that it was not desirable that, when we were doing nothing but talk about the war on every other occasion from morn till night, the meetings of the Geographical Society should also be occupied with that subject only. In fact, he observed it is better that now and then our minds should have a little respite and rest from the one engrossing topic. So it struck me that since we cannot travel ourselves this winter, perhaps not even next spring or summer, we might, at any rate, occupy ourselves by thinking about travel. You recollect how Tennyson says that the Knights of the Round Table, when they were not engaged in a tournament, used to "walk about the gardens and the groves at Camelot and delight their souls with talk of knightly deeds." So we may occupy ourselves this winter at the rare moments when our minds can have rest from the obsessing topic in thinking about travel, in recording what we have gained through travel, and in suggesting to one another what it is that travel has to give. Hence I have chosen a topic which rose out of my conversation with your President, namely, how it is that we ought to prepare ourselves to get the maximum of enjoyment and of benefit from our habits of travel. And in speaking of travel I am not to-night thinking of exploration. It is, of course, primarily for the encouragement of exploration, and for hearing the accounts of exploration which the explorer is able to give, that this Society exists. Its most famous deeds have been those done in encouraging travel, and its most

* Royal Geographical Society, November 23, 1914.

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