

## Alexander von Humboldt and the Casiquiare River

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University of Maryland - College Park, fall semester 2000. by Christopher Chrzanowski.

"A freak of nature" can best describe the Casiquiare River, however, it is much more interesting, and much more important than that. The Casiquiare, also spelled Cassiquiare, is a body of water located in southern Venezuela. It is approximately 140 miles in length, meandering southwestward from the Orinoco River, to meet with the Rio Guainía at the Venezuela-Colombia border, to form the Rio Negro. ("Casiquiare" Britannica, Rand McNally 247)

What makes the Casiquiare peculiar is its beginning. Twenty miles downstream of the small Venezuelan town of La Esmeralda, the Orinoco River splits into left and right branches. However, unlike other examples where a river may split and rejoin, as in the case of the Amazon River flowing around Ilha do Careiro just east of Manaus to form a small island, or also in the case of the Amazon delta, splitting into hundreds of branches to form Ilha de Marajó, these two branches of the Orinoco never rejoin. The left branch, taking with it about one third of the water at that point, becomes the Casiquiare River; the right branch remains the Orinoco. The Orinoco continues to flow westward, then northward to the town of Puerto Ayacucho, and then gradually eastward for a total of about 1000 miles, to its delta at Venezuela's eastern border with Guyana at the Atlantic Ocean. The Casiquiare, like stated, flows generally to the southwest to meet with the Rio Negro. The Rio Negro, in turn, flows to the southeast for about 700 miles to meet the Amazon River at the Brazilian port city of Manaus. (Rand McNally 247).

In short, this means that the two greatest river systems of South America are connected. It means that markets in central Brazil have a "highway" to the Caribbean coast. It means that you could travel from Iquitos, Peru, to Caracas, Venezuela, without having to cross the Andes Mountains. The Casiquiare is, in effect, a natural canal. However, these opportunities wouldn't have been known until the river was discovered and accurately plotted, and in the middle of the dense Amazonian rainforest, that would not be an easy task. The credit for first truly discovering and charting the course of the river goes to Alexander von Humboldt in the year 1800.

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Alexander von Humboldt was born in September 1769 in Berlin, Germany (Prussia, at the time). His father, an officer under the army of Frederick the Great, died before Humboldt turned thirteen. His mother was a member of the French Huguenot family, but was hardly interested in court life, and after her husband died, was strictly concerned with her two sons' upbringing and education. Humboldt was therefore very lucky in terms of education, being able to travel around Europe, specifically to and from France, even though France and Prussia were at war. (Meyer-Abich 13-14)

Humboldt first attended the University of Frankfurt, and then University of Berlin, where he discovered a keen interest in research science, especially botany. But then he moved on to the School of Mines in Saxony in 1790, where he was able to conduct mineralogical research on the Rhine, and in 1792 received an appointment to the Prussian

Mining Department, and did much field work. However, he never fully intended mining to be his career; this was simply an outlet for scientific discovery, and he resigned from the post in 1796. ("Humboldt" Britannica)

Humboldt spent the next several years doing personal research and studies within Europe, but strongly wanted to leave the continent to make new discoveries elsewhere. He very nearly set off on several voyages of a Captain Baudin, including cruises to the upper Nile and around the southern tip of South America, however due to the end of the French Revolution, and the finicky Napoleon Bonaparte in power, the voyages were unable to fully materialize. However, while in Paris negotiating these trips, Humboldt met friend, botanist, and future partner, Aimée Bonpland, and the two decided to venture to Spain, to attempt to find any boat that could possibly take them the Africa, to at least begin some sort of work. But, by chance, they met an ambassador and friend of King Charles IV, and were able to get the King's permission to study the Spanish colonies in America. Delighted, Humboldt and Bonpland began their journey on 5 June 1799, and set sail for Venezuela, landing on 15 July at the town of Cumaná, a thriving port of entry within the Orinoco delta. (Hagen 90-99)

Humboldt and Bonpland's primary first goal was to discover the natural link between the Orinoco and Amazon. "The existence of this link was well known to many missionaries and Indians on both sides of the border and parts of it had been visited by the Spanish expedition of Iturriaga and Solano in 1756. [Also], La Condamine had placed it on his map on the strength of conversations with Indians who claimed it to be there." (Furieux 100)

Sir Walter Raleigh was also one of the first early explorers to officially note the existence of the connection, but the maps of his 1596 voyage up the Orinoco to find the famed El Dorado show that river parallel to the Amazon, never actually meeting, but with a large body of water between them, that he named the Lake of Manoa, that in some maps was labeled as the Orinoco's source. But Raleigh was never able to come to any conclusion, as the current gradually grew too strong, and his crew too weak, to proceed on his journey. Arrowsmith, a celebrated English cartographer of Humboldt's time, had placed that lake on his maps, and that misconception continued right up to the point of Humboldt's voyage. (Hagen 112-114)

To clarify, Humboldt was not actually trying to discover much of anything new on this trip, "but to rediscover what was known only by a few, to subject his findings to a more thorough scientific analysis that they had received before, and to sift the mass of facts, theories, and nonsense through his sieve of remorseless logic." (Furieux 101)

The journey up the Orinoco would not be an easy one, and it would take several months. And, of course, it would be unlike Humboldt to proceed through new territory for him without taking observations and conducting experiments along the way. Therefore, it can be interesting to note several of the most important "rediscoveries" he made for western science, as a prelude to reaching the Casiquiare.

Humboldt and Bonpland admired the botany of the river system, of which both were highly interested in, but also the lives and customs of the Indians, of which Humboldt's "biogeographic" interests played. With one tribe at the village of Barbula, they discovered

the "cow tree," a distant relative of the rubber tree, so called because it provided a liquid from its bark similar to a cow's milk. One of Humboldt's servants reported that he drank from it everyday, "and Humboldt, not to be outdone ... filled a calabash with the white thick liquid, raised the gourd to his eyes in a mock toast, ... then took a deep draught." Bonpland just stared in disbelief. (Hagen 108) However, one other servant, "less fortunate, vomited up rubber balls for several hours." (Furneauux 102)

The two conversed with Indians about "curare," a local medicine and poison. "They were aware of the theory that curare could only kill if taken intravenously," a fact utilized by the Indians with poison-tipped darts and arrows, and to test that theory, both drank small bits of it. Humboldt wrote in his narrative, "Its taste is of an agreeable bitter. The Indians consider the curare, taken internally, as an excellent stomachic." (Furneauux 102)

Humboldt conducted research on the piranha, or caribe, and found it to be much less vicious than previous reports, as well as more recent exaggerations, have indicated. He wrote, "It attacks bathers and swimmers, from whom it often carries away considerable portions of flesh. When a person is only slightly wounded, it is difficult for him to get out of the water without receiving a severer wound. The Indians dread extremely these caribes, and several of them showed us the scars of deep wounds in the calf of the leg, and in the thigh, made by these little animals." (Furneauux 102)

However, possibly the most interesting experiments the pair conducted were on that of the electric eel. The world of electricity was still very new and very exciting in the year 1800, only recently having seen the work of Volta and Galvani prove some important concepts. In the region of Calabozo, the locals reported that the small streams overflowed with these eels, and since most people were extremely afraid of them, the gathering of the eels for experimentation proved to be a somewhat difficult process. The solution, at a price of about one dollar payment per man, was to run about thirty horses into the river, stirring up the bottom where the eels lay. Disturbing them, the eels began to discharge, and both because water is a good conductor, and that the eels would literally swim up to the horses' undersides, the horses ran wildly about in the water, trying to avoid the pain. With the Indians forcing them to stay in the water with harpoons, some horses were knocked unconscious, others lost complete control of their legs. In all, two of the thirty drowned before the rest were able to escape, but importantly, the eels had either been trampled upon, or simply got exhausted to the point where the Indians could easily harpoon them from the shore. (Hagen 109-111)

Humboldt was then able to conduct his experiments, noting that most eels ranged from three to five feet long, were cylindrical in cross-section, devoid of scales, and had one long fin on their backs from head to tail. But, while observing these on the shore, he inadvertently stepped on one of them. He wrote, "I do not remember ever having received a more dreadful shock from the discharge of a large Leyden jar, than which I experienced. ... I was affected the rest of the day with a violent pain in the knees, and in almost every joint." Humboldt also wrote of continued experiments,

"[I] often tried, both insulated and uninsulated, to touch the fish, without feeling the least shock. When M. Bonpland held it by the head, or by the middle of the body, while I held it by the tail, and, standing on the moist ground, did not take each other's hand, one of

us received shocks while the other did not. ... If two persons touch the belly of the fish with their fingers, at an inch distance, and press simultaneously, sometimes one, sometimes the other will receive the shock." (Furieux 103)

By this point, Humboldt and Bonpland were reaching the mountains of southern Venezuela, and things began to get a little tricky. They decided, instead of continuing upstream the Orinoco towards the east, to head straight south via a small stream, and then a short trip overland to the upper reaches of the Rio Negro. This would enable them to see more of the country. Then, upon sailing down the Negro, with help from Spanish missionaries along the river, careful avoidance of the Brazilian/Portuguese land of which they had to right to trespass upon, and some simple trial and error, on 10 May 1800, they were able to find where the Casiquiare reaches the Rio Negro. From there, they planned to head upstream and reach the Orinoco.

Humboldt and Bonpland were able to make several other scientific observations specific to the Casiquiare, which include that the shores were composed of excellent soil of "granitic sand, of a blackish-brown colour," more fertile than that of the Negro, where rice, beans, cotton, and sugar could all be grown. (Humboldt 417) However, the insects and ants were the most prolific problem, of which he wrote, "We found at Mandavaca the good old missionary, who had already spent '20 years of mosquitoes in the forests of the Cassiquiare,' and whose legs were so spotted by the stings of insects, that the colour of the skin could scarcely be perceived." (411)

He also wrote in his narratives of the relative loneliness of the river, compared to that of the Orinoco. "The state of the Christian settlements is in general so miserable, the in the whole course of the Cassiquiare, on a length of almost 50 leagues [150 miles], not 200 inhabitants are found." (411)

Eleven days later, on 21 May, the explorers did reach the Orinoco. Along the way, and also by proceeding slightly upstream of the bifurcation, Humboldt was able to more fully disprove some of the geographical myth of the region, that El Dorado and its accompanying Lake of Manoa, or Lago de Parimé according to Solano's 1756 voyage, were nowhere to be found. (Hagen 122) But also by this time, feeling great joy and satisfaction that he was able to chart the river, began to do some forward thinking. He wrote that the Casiquiare equaled the Rhine in terms of breadth and navigability, and he envisioned grain trade from New Grenada to the Rio Negro, and boats traveling from the Rio Napo to the mouth of the Orinoco. (431) He also stated, "The phenomenon, which will one day be so important for all the political connections of nations, unquestionably deserves to be carefully examined." (432)

Humboldt's final statement on the river before proceeding back to Caracas, then Cuba, and then down the Pacific coast of South America, did not come quite to the fruition he envisioned. Today the Casiquiare is fully charted, and local boats can and do pass through it, although it has not become the major "highway" Humboldt was imagining. Simply, the current is slightly too fast, and the bed not quite deep enough for the large ships of the 21st century. However, as recent as 1995, there have been talks between the Venezuelan and Brazilian governments about the future of the Casiquiare, specifically the feasibility of dredging and widening the river to allow vessels of up to 100 tons. This would

undoubtedly open the region to greater mining, logging, and ranching, and environmentalists have been vocal in protecting the Amazonian and Orinoco rainforests. ("Threat..." R.A.N.)

For now, it appears as if things will not change much, especially with the 1993 christening of the "Alto Orinoco-Casiquire Biosphere Reserve," an 83,830 km<sup>2</sup> park, protecting the natural flora and fauna of the region. Environmental concerns and regulations would make it difficult for anyone to attempt such a large project to modify the Casiquiare River for larger ships to pass through. ("Reserva..." CI-UNESCO)

Alexander von Humboldt, and Aimée Bonpland as well, clearly can be likened to a Christopher Columbus team of the Orinoco basin. "They had been in the Americas a little less than a year, and in that short space of time they had made known more than had been unearthed in centuries." (Hagen 126)

At a time of some many other amazing scientific discoveries, Humboldt isn't often remembered as he should be. In his time, some claimed him "the greatest man in the world," and "his massive intellect, his phenomenal memory, and his truly Teutonic industry made him the master of all branches of science at the last moment in history when this was possible for a single human being." (Furneaux 97) Future scientists and explorers are unlikely to surpass Humboldt's determination, audacity, and utter intelligence.

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