ALEXANDER
VON HUMBOLDT

THE COMPLETE DRAWINGS
FROM THE AMERICAN
TRAVEL DIARIES
Eduard Ender

*Alexander von Humboldt and Aimé Bonpland on the Orinoco*, 1856

Oil on canvas, 110 × 143 cm

Berlin-Brandenburg Academy of Sciences
INTRODUCTION

Alexander von Humboldt’s Image-Worlds:
When Images Learned to Move

A Spectacular Journey, a Fascinating Traveler

Alexander von Humboldt’s travels to the American tropics, the “Voyage aux régions équinoxiales du nouveau continent,” which he undertook from 1799 to 1804 in the company of Aimé Bonpland, was a sensation not only in Prussia, France, and Europe but across the globe. Humboldt had already tried to reach as large an audience as possible during the remarkable course of this exploration, which led him through the territories of today’s Venezuela, Cuba, Colombia, Ecuador, Peru, and Mexico and which he bankrolled himself: “Part of the writer’s office is to ring bells.” Because Humboldt always concerned himself with the societal impact of his ideas, it was no coincidence that this phrase had been his motto since 1792. It is not surprising, then, that interim reports of Humboldt’s journey often circulated in Europe and in the Americas and also that a very favorable reputation hurried on ahead of him from the very start of his travels.

Alexander von Humboldt knew that growing fame accompanied him. He enjoyed it and used it, especially because it opened many doors for him – in the Spanish colonies and in the USA. The young Prussian, who socialized at the viceregal court of New Spain and with the US president Thomas Jefferson, wanted to change the view of the “New World” fundamentally and globally. These changes have stood the test of time.

Humboldt quickly set to work and rang bells resoundingly, during his travels and well thereafter. He had much to do. Barely three weeks after his return to France, he began to speak about his grand voyage in several lectures at the Institut de France in Paris. As a speaker, Alexander von Humboldt was enthusiastic and inspiring. Humboldt and Bonpland’s voyage soon eclipsed all prior transatlantic travelers. As always, Paris was a feast for Humboldt. But other journeys, this time in Europe, followed, especially to Italy, where he wished to visit his brother and Mount Vesuvius and where he also made contact with many artists who were to lend his voyage visibility.

In the eyes of the busy scientist and scholar who admitted in his Confessions that he could “only be happy” when he did not rest on his laurels but, “filled with restlessness and excitement,” anticipated what was yet to be done (“namely, three things at once”2). The dimensions of the great work on the Americas he had planned grew each day, and with that vision grew the efforts, difficulties, and expenses. In contrast to his role model Georg Forster, who, together with his father, Johann Reinhold Forster, had accompanied the Briton James Cook on his second journey around the world, Humboldt was under no pressure to publish his travel narrative because of competing reports by fellow travelers. But time literally ran away from him, since he

1 Humboldt 1973, p.170.

2 Alexander von Humboldt, “Mes confessions, À lire et à me renvoyer un jour,” in Le Globe (Geneva), 7 (January-February 1868), p. 188; cited here after the German-language edition by Kurt-R. Biermann; see Humboldt 1987, p. 60. (Unless otherwise noted, all English translations of quotations are by Vera M. Kutzinski.)
SURFACE AND INTERIOR OF THE EARTH

PETROLOGY, MINERALOGY, AND FOSSILS

THE EARTH’S MAGNETIC FIELD

CARTOGRAPHY OF MOUNTAINS AND RIVERS

HYDROLOGY OF OCEANS AND LAKES

PASIGRAPHY AND ROCK FORMATIONS
HYDROLOGY
OF OCEANS AND
LAKES
“At times of a strong breeze, even on the coast in the direction of the breeze and near Isla fuerte, the corriente [current] is often 3 millas per hora [miles per hour]. This is why the ocean between Cartagena and Portobello is most often calmer during gusts than during weak, changing winds. In the latter case, the current is frequently opposite to the direction of the winds. This afternoon, we found the sea very high, because winds from the north were very weak. How hollow the beating of the waves sounded! The corriente that moves upward or toward the east is, by the way, a general coastal phenomenon that local circumstances change in one way or another. If one travels upstream on rivers that have strong currents, one always hugs the shore. There, the current is not only weaker, but also often runs in the opposite direction and thus is favorable. I have seen this especially with the furiously ripping current of the Casiquiare, Rio Negro, and Atabapo. Each current (through contrast) causes an opposite one, the way + Elect. negative and an idea produce an opposite one; this phenomenon likely results [sketch] from the fact that rivers and seashores have protruding angles against which the water pushes and in which it is backed up por remolinos [through eddies]."
Humboldt measured the temperature of hot springs on the southern slope of the mountain chain on the coast of the Captaincy-general of Venezuela and recorded the results in the sketched-out pool. He labeled the drawing of the space between two parallel mountain ridges, marked through cross-hatches, as "gorge Aguas Calientes." He comments: "Visited hot springs on February 16. I call them this on the southern slope of the coastal chain (Cordillera de la Costa) to distinguish them from the inland chain that runs parallel to it from the Savanna de Ocumare north of the Morro de S. Juan and on the southern shore of the lake from east to west; on the southern slope of the coastal chain, there are hot springs at 3 locations, near Maracay, Cura, and between Valencia and Portocavellò – this is a true peculiarity of the coast here, because more in the direction of the province of New Barcellona and Andalusia, one notices them at Brigantin, in the Gulf of Cariaco, and at Carupano, that is, always on the southern slope which must have been slight originally. Farther down I noticed 3 similar pools, of which the lower ones are probably 2–3 feet in diameter and 15 inches in depth. They are interconnected and form a small stream that grows as it flows. The first pool has [a temperature of] 35° (only R[éaumur]), the second 45°. The third has 47.2°. But one 30 feet deeper, as the third pozo [water well] has barely more warmth than 39°. Measured very carefully, with the thermometer held completely down in the water, and once again with [unreadable] extended, so that there was no cooling down. Breathing in so much sulphured hydrogen made me nauseous and gave me vertigo" (III, p. 40, 21 vf.).
From the Belvedere of the Hacienda Mocundo, Humboldt overlooked the lake of Valencia and its coastal chain with gaps at the Zamora (Captaincy-general of Venezuela): “View of the coastal chain. It extends exactly to Tuy, 5.7 hours and all gaps (valleys are break-outs toward the sea 8 hours), likewise in the valley of Caracas. Valley probably exacerbated by the rock having been struck, but why the gaps 8 hours. What power from the southeast. Phenomenon generally from Quebr. de Tocume near Pitarez to Portocavello.”
"The last very arid eight years have accelerated the drying out of the lake significantly. Who knows whether a wet season might not follow, in which the lake might grow slightly larger, to the fright of the quickly established conucos [little farms] on newly won land. About this: the decrease in water seems large, when in a single year 12 toises of land are won. But one should take into account that the land is almost level and that, for this reason, a water level that is an inch lower in b can yield 12 toises of shore, when the same inch in a is not \( \frac{1}{2} \) toise. Therefore, a general calculation of how much land is won is also not possible. But it is possible [to measure] the water level on pillars!"
Lake Vasiva is located very near the Casiquiare River, which connects the two larger streams Río Negro and Orinoco in the Captaincy-general of Venezuela. This sketch was included as “Plan du Lac de Vasiva” [Map of Lake Vasiva] in the *Geographischer and physischer Atlas der Äquinoktial-Gegenden des Neuen Kontinents* [Geographical and Physical Atlas of the Equinoctial Regions of the New Continent] as an inset in the lower left corner of Plate 16: “Route map of the course of the Orinoco, Atabapo, Casiquiare, and Río Negro, showing the forking of the Orinoco and its connection with the Amazon River. Drawn on-site in 1800 and on the basis of Alexander von Humboldt’s astronomical observations. Drawn by A. von Humboldt in Quito 1802, completed in 1814 by J. B. Poirson in Paris, etched by Blondeau, writing by L. Aubert. [Inset:] Map of Lake Vasiva drafted by A. von Humboldt on May 14, 1800.”

Source: Humboldt 2009, p. 214
"Laguna Chica is an impressive port, like Laguna Grande and del Obispo, just less gashed, created by earthquakes with a narrow entrance but 20–30 brazas deep. One sees clearly on the plain that delimits the Laguna to the north that the water has already pulled back here as well. This year, beautiful vegetation in this plain and in Punta Araya, as well as around Manicuárez, because this year brought unusually large rainfalls here and in Margarita."
Ocean current in the Gulf of Mexico (m.) observed by Humboldt from the ship during his passage from Veracruz to Havana, March 1804

Humboldt used arrows to illustrate the direction of the current in the gulf, which is outlined with a simple line, and the western tip of Cuba suggested to the right: "the water enters at the Sonda de Campeche and exits at the Sonda de Tortue." In the text, Humboldt writes about the possibilities of ship navigation in the gulf, taking into account the effect of the current.
Areas of different temperatures (m. l.) in the Gulf Stream, measured and drawn during the sea passage from Havana to Philadelphia, May 1804

Humboldt measured the water temperatures of the Gulf Stream and recorded the results in the sketch as different dotted and striped areas that run vertically. These zones are not strictly separated from one another. Rather, the dotted lines suggest a permeability and an openness of the different temperature sectors. Below the sketch, he jotted down a work task: "Complete this drawing of the areas with the correct longitudes and their mutual latitudes!"
CARTOGRAPHY OF MOUNTAINS AND RIVERS
Between remarks in ink about the American tiger (top paragraph) and turtles (bottom paragraph), there is—in the middle of a map of the island of Trinidad sketched in pencil—a passage about the increase in the cost of living in Cumaná. Next to the outline of the island, Humboldt made a note in ink of the names of the promontories: “Punta de la Galera, Pta de la Balandra, Pta de Manzanilla, Pta de Guantamo, Pta de la Blanguizanes.” In the interstices, he wrote notes about the toponymy of these places and refers, among other things, to historic maps and writings by Antonio Caúlin (1719–1802), Jodocus Hondius (1563–1612), Christopher Columbus (1451–1506), and Jean François Marie de Surville (1717–1770). This diary entry is exemplary of the way in which Humboldt’s thinking brought together the most diverse of fields. In sketching the map, he appears aware of the present spatial situation and the historicity of the representations of Trinidad. The cartographic history of the island is placed in relation to the contemporary economic situation of the mainland. Notes about tigers and turtles expand the view to the relation between humans and animals in this region. While the tiger that lives on the mainland is both hunter and hunted alike, the sea turtle is caught because of its valuable shell, which is sold to Englishmen at a high price. History, economics, topography, human, and animal are as intimately connected as the drawing is to the words.
“First draft of the course of the Río Grande de la Magdalena,” 1801

Ink and pencil on paper, 324 × 203 mm, Diary Vila & Viib, 220 r

Under the heading in the margin next to the sketch of the course of a river, Humboldt makes notes about how one should continue to work on this map:

“To complete this map, observe that the sketch shows only the directions (the angles taken from the magnetic meridian / with the Freiberg compass). Start by placing the astromically determined points, such as Pisco, Mompox, on the latitudes and longitudes [...] then fixate the points where only the longitude could have been measured with a chronometer, as in the case of el Cotoreo, Makater [...] by substituting the longitude for the latitude and the direction (compass), or if the course is long, longitude and distance [...] If necessary, one can consult the map of the province of Cartagena by Don Juan Lopez [of] 1787, which is quite poor when it comes to the longitudes and latitudes of the miles but sufficiently correct about names and details.”
Map of the Río Grande de la Magdalena (Viceroyalty of New Granada), 1801

Ink and pencil on paper, 325 x 203 mm, Diary VIIa & VIIb, 220 v

This map belongs thematically to the first draft of a map of the course of the Río Magdalena (see p. 271, cat. no. 239), which is on the front side of the same sheet.
View of the volcano Cotopaxi (Viceroyalty of New Granada), April 1802

Ink on paper, 220 x 141 mm, Diary Vilbb & Vlcc, 364 r
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*View of the snow-covered cone of the volcano Cotopaxi (Viceroyalty of New Granada), April 1802*

Ink on paper, 177 x 216 mm, Diary VIIbb & VIIc, 365r

"View of the snow-covered cone of the Cotopaxi and the head of the Inka (I), drawn east of the volcano from the roof terrace of the Sienaga."
View of the peak Guagua Pichincha near Quito (Viceroyalty of New Granada), 1802

"The Cacumen lapidum [rocky peak] of Guaguapichincha viewed from Chillo through the large Dollond telescope."
View of the volcano Corazón and one of the peaks of the Iliniza (Viceroyalty of New Granada) showing the snow line, April 1802

"Contours of the Nev[ado]. du Corazon with one of the peaks of the Iliniza, viewed from the hill of Poingasi near Quito. The 2 Nevados [snowy mountains] seem to lie above the western slope of the Atacazo (the black color in this drawing is the snow)." Next to the summit of the Corazón, Humboldt wrote the word "snowline." He added in pencil where in the atlas Views of the Cordilleras and Monuments of the Indigenous Peoples of the Americas this drawing was used: "Plate 51 in the Views of the Cordilleras."
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Drawing related to the volcanoes of Mexico by Luis Martin, November 1803

Ink and pencil on paper, 179 × 486 mm, Diary VIlbb & VIlc, 411 v’5
Humboldt labeled this drawing, center left, “drawn by Luis Martin,” and, near the middle, “Volcanoes of Mexico.” He noted the names of the volcanoes of the wide panorama: “The Sierra Nevada of Puebla or Iztaccihuatl”; to the right: “The volcano of Puebla or Popocatepec.” The note in the left bottom margin (partially cut off) clarifies the context in which this gray-washed drawing originated: “Volcanoes of Puebla drawn by Don Luis at the Mining Academy in November 1803.”
View of the cone Los Ladrillos (t.) and of the peak Rucu Pichincha (b. l.) with a profile of the Guagua Pichincha (b. r.) near Quito (Viceroyalty of New Granada), 1802

Ink and pencil on paper, 216 × 156 mm, Diary VII bb & VII c, 417r

"Plate III. Los ladrillos, or the cone that I measured barometrically. See Voyage to S. Fe, p. 251. Drawn from the perspective of Chillo viewed through the Dollond telescope." In the profile drawing Guagua Pichincha at the bottom right, the Pico de los Ladrillos sketched above as a view is located at "t." At the bottom left, Humboldt adds a view of the "snow-covered part of the Rucupichincha or of the volcano."
View of Los Ladrillos, the cone of the peak Guagua Pichincha near Quito (Viceroyalty of New Granada), March 1802

Ink and pencil on paper, 211 × 139 mm, Diary Vilb & Vlc, 423 r

"Plate IV. The cone of Guaguapichincha, which is called los ladrillos, which I measured barometrically [and] drew from a distance of 500 toises during the trip to the volcano, MSS p. 251, the same as in Plate III."
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View of the volcano Pichincha from the valley of Chillo (Viceroyalty of New Granada), March 1802

Ink and pencil on paper, 227 x 322 mm, Diary Vllb & Vllc, 418r
“Plate I. Drawing of the volcano Pichincha as seen from the valley of Chillo at a distance of 14,000 toises – a the western peak, the volcano or Rucupichincha, c Tablampa, t the cone that I measured barometrically on April 14, 1802, or Picacho de los Ladrillos, d the cacumen lapidum [rocky peak] of the Guaguapichincha, t the summit with the cross? See the Voyage to the Pichincha and the calculations during the trip to Quito, pp. 250 and 225. Since Chillo, the Moon has been at a 52° angle with magnetic north to the west. Humboldt in Chillo March 1802.” Vegetation suggested in the bottom margin is labeled with the words “forest” and “trees.” In the drawing of the volcano, Humboldt marked the “lower snowline at gxn, double elevation angle 8° 30′” on the left peak; near the top middle, he elaborated: “Double elevation angles, as indicated on the sextant without correction.” He further noted the meanings of the toponyms as he understood them: “Cotop[axi] King, Illinissa Queen, Coraz[ón] the son.”
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Detailed view of Los Ladrillos, the cone of the peak Guagua Pichincha near Quito (Viceroyalty of New Granada), n.d.

Ink and pencil on paper, 117 × 149 mm, Diary VIIbb & VIlc, 427r
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Detailed view of the peak of the Cotopaxi (Viceroyalty of New Granada), n.d.

Ink and pencil on paper, 113 x 147 mm, Diary Vllb & VIIc, 428r

This Humboldt drawing was used as a copper etching for the atlas *Vues des Cordillères et monuments des peuples indigènes de l’Amérique* [Views of the Cordilleras and Monuments of the Indigenous Peoples of the Americas] and appears there unchanged as Plate 10.
Coastal view of the island Orchilla
(Captaincy-general of Venezuela), November 1799

From the ship, Humboldt observed the island located in the Caribbean Sea off the coast of the Captaincy-general of Venezuela with the telescope and drew its shape: "Through the telescope, one can make out thick quartz deposits in the gneiss, which descends clearly toward the northwest here, and I believe that the white sand that distinctly identifies the bay in the south with its nice anchorage originated in the quartz [silica]. On the shore, one sees dense hardwood on the rocks, but the umbrella palm is rather rare. With a sea smooth as glass [and] this appealing grassland, one complains that the land is unpopulated." Below the sketch, he explained the label: "Orchille viewed from a distance of 3 miles from the southern coast, the ship r on the meridian of D. The angle arb = 4°, brc = 23°12′, crd = 18°24′, dre = 42°10′, erf = 26°18′. The longitude of the eastern cape (c) is 68°16′15″. The part of the eastern cape that protrudes the most appeared at r as 41′, the western cape at 1°30′, the cone g, which gives off a singular white reflection, at 13′, the eye at 10 feet elevation above sea level." At the bottom right on the same page, he adds: "The seafarers claim that the Orchilla has no springs. The way the island looks suggests the opposite. [...] It is also true that the volume of rain in the tropics renders islands without [natural] springs (Islas virgenes) quite uninhabitable."
VIEWS OF COASTLINES, MOUNTAINS, AND VOLCANOES
Coastal view of the Cabo Blanco, Callao (Viceroyalty of Peru), December 1802

Ink on paper, 323 x 210 mm, Diary VIII, 2 v
Coastal view of the island Santa Clara
(Viceroyalty of New Granada), ca. December 31, 1802

“Ink on paper, 336 x 208 mm, Diary VIII, p. 7, 6 r.”

“El amortazado, the Muerto or the island of Santa Clara, viewed from a distance of 5 miles.”
400

Views of the volcanoes Popocatépetl (C) and Iztaccíhuatl (B), as well as an angle measurement of the Nevado de Toluca (Viceroyalty of New Spain), November 1803

Ink on paper, 335 × 203 mm, Diary VIII, p. 118, 60 v
View of the playas of the volcano Jorullo (t. m.) in the Viceroyalty of New Spain, with survey points and a list of the measured angles, September 18, 1803

Ink on paper, 330 × 207 mm, Diary IX, 23 r \
La règle toute dans cette pièce et elle partait avec une pointe de fer qui laissait un
trait tout droit sur le papier. Elle est large de 35 cm. Elle a une longueur
de 2 mètres. Elle est fixée avec un boulon de 2 cm de diamètre.

La règle est utilisée pour mesurer et tracer des lignes droites dans les
ateliers de construction. Elle est également utilisée en mécanique
pour mesurer les pièces métalliques. La règle est un outil indispen-
sable pour tout travail manuel. Elle se compose de deux parties:
la règle en elle-même et le boulon de fixation.

Les marques de longueur sont gravées sur la règle avec une épaisseur
de 0,1 cm. Elles sont séparées par des intervalles de 1 cm. La règle
peut être utilisée pour des mesures précises. Elle est également
utile pour tracer des lignes droites et horizontales dans les dessins.

La règle est un outil essentiel pour tous les travaux manuels et
il est nécessaire de la conserver soigneusement pour une utilisa-
tion continue et efficace.
"The hornos [ovens] are partial elevations in the landscape in the shape of ovens, bubbles, or blunted cones. The smoke that usually appears a little below their summit justifies the name of hornitos [little ovens] even more. Thousands of them surround the volcano; from a distance, it looks like a settlement of inhabited huts. At first glance, one might take these hornos to be basaltic spheres with concentric layers. Nothing of the sort, it is only iron-rich black clay, perhaps the result of decomposed basalt [lava] that had been muddy and wet prior to being expelled (the ancient ones say so) and that afterward they decreased in size and hardened in concentric layers. This formation of spheres in hardened earth; this gravitational pull of different centers in the same horno; this curving of slat-like layers of basaltic clay all strike me as a very noteworthy matter. See the drawing of the volcano made since Mapais. The central spheres, which functioned as centers of pull in equal measure, are 1–5 feet in diameter and are typically either elongated or spherical. Around them, one often counts 22–28 concentric layers. Some of those hornos sink when a mule trots across them; they have less solidity than the termite structures (cones) near Neiva. It should be noted that there are no rocks baked into the hornos; I believe that only mud was spewed out, like the small volcanoes of Turbaco. I inserted the thermometer into several gaps in the hornos. It rose to 76° Reaumur at the point up to which I could insert the scale. How hot is must be on the inside!"
Humbloldt wrote that the hummingbird (Trochilus thomantias) has a rather large heart in relation to the size of its body and that its pectoral muscles are very strong. At the end of the note, to the left of the sketch, we find the Spanish word for hummingbird: “Chupaflor.”
Worm (m.) found by Humboldt while dissecting a rattlesnake, ca. 1799

While dissecting a rattlesnake from Cumaná (Captaincy-general of Venezuela), Humboldt found in its lung, abdominal cavity, and esophagus a worm that he depicted in his diary in a side view and in detail. He recorded the length of the animal; described the body structure in Latin and arrived at the conclusion that this was a new species, which he called “Echynorynchus crotali.” In the left margin, he referred to another, separate drawing of the animal and its anatomy, which is no longer present in the diaries. This sketch of the worm served as a model for the images in the zoological travel writings in the Recueil d'observations de zoologie et d'anatomie comparée, Vol. 1, Plate. XXVI, Fig. 2 (“Side view of the front part of the intestinal worm”) and Fig. 5 (“Front part of the Haeruca”). The plate and the text of this section in the zoological travel work carry the subtitle “Porocephalus crotali.”

Explaining this name change, Humboldt wrote that he first believed the worm to be an Echinorynchus, about which he had read in the work of the entomologist Johan Zoega (1742–1788). Upon closer inspection, however, he found that the hooks of the intestinal worm he had dissected are found only on the underside of its head, while they enclose the entire body of the Echinorynchii. In the case of the helminths, on the other hand, they emerge from five small holes. By comparing a helminth with Humboldt’s drawings of the Haeruca and the Echynorynchus (Plate XXVI, Figures 5 and 6), or with those in the work of Jean-Guillaume Bruguière (1750–1799) (Plate 79, Figures 1–32, and Plate 30, Figures 1–4), one realizes that such a classification would run afoul of all the rules of zoological taxonomy, because one cannot place in the same class animals whose shape and internal organization are fundamentally different from one another. The new class “Porocephalus,” which Humboldt created in accordance with the traits of the helminths inside the rattlesnake of Cumaná, finds its place between the Haeruca of Peter Simon Pallas (1741–1811) and Bruguière’s Proboscidea (see Recueil d'observations de zoologie et d'anatomie comparée, Vol. 1, pp. 299–300).
This sheet presumably belonged to a red booklet, mentioned by Humboldt, about the voyage to Paria (Captaincy-general of Venezuela) and which contains an article about birds and the anatomy of the Cuba flamingo (see III, p. 148, 72 v). In the text that goes with this sketch, Humboldt described how he approached the anatomical dissection of the head of the Cuba flamingo (Latin: Phoenicopterus): “The brain of this bird differs significantly from that of other birds and approaches that of mammals. It is very large, has more than a cubic inch of medullary substance, [and] the nerves (which, according to Sömmering, prove the intelligence of these animals) are very small in proportion to the size of the brain. The latter consists of 5 parts, of which 4 are paired; two large cerebral hemispheres (F. 1–2) and a cerebellum F. 3, which are supported by two small round cusps F. 4, and 5, which rest upon the cranial base. When one opens up of the skull, one discovers what the first figure depicts.”
Grid-like pattern (b.r.) as distinctive mark on the back of the snake coral macho, 1799

Ink on paper, 223 x 170 mm, Diary III, p. 116, 55 r
Anatomical depiction (b. r.) of the brain of an iguana (Lacerta iguana), 1799

Ink on paper, 223 x 170 mm, Diary III, p. 148, 73r
Conical shape of an iguana scale and enlarged jowl scale (b.l.) with flexible stinger, 1799
Bladder (b.r.) of an electric eel, 1799

Ink on paper, 223 × 172 mm, Diary III, p. 195, 96 v
Experimental setup with electric eels and experiments following Alessandro Volta, 1799

Ink on paper, 224 x 171 mm, Diary III, p. 199, 98 v
Guavina or erythrinus, a fish from the lake of Tacarigua (Captaincy-general of Venezuela), 1799

Ink and pencil on paper, 171 x 223 mm, Diary III, p. 102, 47 v.
Electric eel in profile, 1799

Ink and pencil on paper, 223 × 173 mm, Diary III, p. 139, 67 v

"Body of the Gymnotus electricus.

a. eight bundles of back muscles in concentric layers.
b. fat.
c. spine.
d. swim bladder.
e. two small muscles.
f. four transverse muscles.
g. odd muscle inserted into the middle fin.
h. fin.
k. l. the two electrical organs, each divided into two lobes of equal size. See p. 197."
On the margin of the sketch, Humboldt identifies the traits of the crocodile in Latin and describes the shape of the scales. Several pages later, he notes: “I observed sleeping caimans from a distance of 6 footsteps, a frightful view, so dreadfully hideous and the jag on the tail so dragon-like” (IV, 20r).
“Crocodiles. All of them have black-green spots on the tail and the abdomen, thus [sketch]. These behemoths live together very peacefully. At the Canno del Marati, I saw 4 large old crocodiles lying on top of one another, with their tails interlaced. Color grass-green, grayish-white because of age. Some of the squamae [scales] toward the tail are black. [The animal] is thus mottled like a chessboard.”
"Cavia capybara, a strange animal, a cross between a pig, bear, and hare. Torso bristly hair of a pig, the hind paws and the wading gait of a bear, sitting at play with the cleft lip or running at a short gallop when hunted, but awkwardly escaping like a hare. In countless numbers of rivers, swamps, and in the flooded savanna, feeding on grass and fish, which often damages the pasture because of their numbers [...] they take the best grass away from the horses [...]."
Rhombic structure (t. r.) of the molars of the capybara, 1800

Ink on paper, 206 x 160 mm, Diary IV, p. 230, 21 r

“The mouth seems small from the outside, but the jaw is terribly long and the molars [go] all the way to the uvula. Furthermore, the molars are mangled and grown together. The crown is completely even and creates figures in the form of rhombs [sketch], which comes from the lamellas, almost like an elephant. At the sides, however, each lamella protrudes with a sharp edge, and each side has 18 such lamellas or corners. Cuvier’s description is far better than Linné’s.”
Piranha (b. m.), also called “Carib fish,” 1800

Ink and pencil on paper, 204 x 159 mm, Diary IV, p. 235, 23 v

Carib. Three kinds of this terrible species. Large, medium, and very small, about 4 inches long. The medium type and the smallest [are] the cruelest.” Humboldt added in the teeth of this fish with a pencil.
Swim bladders (t. l.) of the piranha, 1800

Ink on paper, 205 × 159 mm, Diary IV, p. 236, 24 r

“These two swim bladders do not communicate with anything other than a canal that Bonpland accurately identified, [a canal] that comes from the stomach b and goes into the first swim bladder at a but continues to the second swim bladder at c. There is probably a sphincter muscle at b, because the air exists only when the first bladder opens, and then [the air] exits both of the 2 swim bladders at the same time. This proves that the swim bladder is connected to the stomach. Fischer saw that it opens onto the esophagus. It is nitrogen that comes from the digestion; it is an organ that belongs to nutrition!”
Humboldt provided the first scientific account of the night monkey, today known by the scientific name Aotus trivirgatus, in 1811 in volume 1 of the zoological travel work *Recueil d’observations de zoologie et d’anatomie comparée*, which appeared in Paris as a quarto edition with plates. In addition to the sketch of the head in the diary, Humboldt addressed the appearance, effect, and behavior of the animal, which he also calls, among other things, “Simia trivirgata” and “Tití tigre”: “The monkey imperfectly described on p. 216 is called Ouavapari. Add: [Lat.: add to this]: body [has] a slightly grayish-white chest and the stomach is even whiter. The head [is] humanoid, very long or, rather, tall. The stripes on the back a dark ashen-gray. Back of the head gray-black. The brow high, white. [...] The ears have white hairs, humanoid, a fantastically ugly face, a very tame, frolicsome animal that sets out every day in Maypure, grabbing the first available pig or cat. [...] Nov. Spec.” Above the head, Humboldt writes of the animal’s habitat: “lives on the upper Orinoco.”
Seated eastern three-striped night monkey from the Orinoco region (Captaincy-general of Venezuela), 1800

Ink on paper, 206 x 165 mm, Diary IV, (p. 490), 173 v
Sketch of the pavon fish from the Río Negro, 1800

Ink on paper, 213 × 150 mm, Diary IV, p. 271 b, 50 r

“Fish. Pavon in the idiom of the Caridaquere Indians: saupa (in the same language, the Carib fish are called umaí). [...] Different species. The Indians claims it is one species. The same shape, but instead of the spots 4 angular black areas golden at the edge. In the entire Orinoco, but tender for eating only at the caño[s], which in the Atabapo carry very clear and especially pleasant-tasting water.”
The carxaro fish (t. m.) and palometta (b. m.), 1800

Ink on paper, 211 × 151 mm, Diary IV, 50v

“Carxaro, the great fish of the Orinoco, which grunts like a pig, a bit tough when eaten.” In the bottom margin, there is a small sketch of a fish, about which Humboldt wrote: “Palometta caught in the upper Orinoco opposite Pao, new even to the Indians.”
The sketch in the right margin shows the inner compartments of the tree *Cecropia pal-tato* (Jaunumo), which have been eaten away by ants: “In South America, a whole human life would not suffice to describe the ant varieties and their economy, and yet, because their numbers, their voracity, and their industry are so great, this analysis is so very important and its impact on the general natural economy largely unknown. […] The most terrifying numbers are in *Cecropia paltato* (Jaunumo), namely in the interior. Resin on the caps of the *Squamis foliorum junior* attracts them; they eat the inner sections (com-partments), and thus kill the tree; for this reason, one sees *Cecropia* and no old trees anywhere up to R. negro.” In the left margin, there are sketches relating to this very ant species, which transforms plant matter into the highly flammable *jesca*, which Humboldt also called “ant tinder”: “The ant that produces the *jesca* is called *puji* in Maypuri; [It is] small, grass-green, shimmering like silk, with 2 protruding stingers on the neck [sketch]. *jesca*; the Indians claim that the animal lives only on the *guari* tree [sketch], whose large leaves are subtus sericca, and the velli of these leaves worked by ants is *jesca*."

Tree compartments (m. r.) eaten away by ants, ant antennae, and the guari tree (b. l.), 1800

Ink on paper, 208 x 164 mm, Diary IV, S, 335, 87 v
In the text next to the profile sketch of a bird, Humboldt speculates: "perhaps a Ramphastos." This was the name given to birds of the toucan species after Carl von Linné’s (1707-1778) first scientific description in 1758. The local name is written below the sketch: “Odopei, in the Caridaquere [Indians’] language.”
Three fish from the Orinoco:
palometa, barbanche, caparro, 1800

Ink on paper, 206 × 163 mm, Diary IV, p. 488, 172 r
The images of the upper body (1) and the underbelly (3) of a stingray, along with the details of the stinger on the tail (2), drawn by François Désiré Roulin (1796–1874) and engraved by Vittore Pedretti (1799–1868), are found on Plate 3 in the separately bound excerpt from volume XVI of the *Annales des sciences naturelles*, published in Paris in 1829. This pamphlet, inserted as a loose item into Humboldt’s diary, includes an essay by M[onsieur] Roulin entitled “Description of a river stingray from the Río Meta (Humboldt stingray).”