



ERUPTION OF COTOPAXI, JULY 1880.



PLAN OF CAMP, JUNE 25-27, 1880.

A Tent. B Booth made by our Natives. Z The Animals.

THE  
ALPINE JOURNAL.

---

MAY 1882.

---

EXPEDITIONS AMONG THE GREAT ANDES OF ECUADOR.  
VI. By EDWARD WHYMPER.

June 7, 1880. *From Quito to Machachi.*—Left at 6.30 A.M. with J. A. Carrel, Campaña, David, and Cevallos. A few miles on our road we met a small knot of people who had assembled to bid our interpreter farewell, including his wife, who cried, and screamed, and fell on his neck as if he were going to execution.

Arrived at Machachi 3.30 P.M. Found the road was now several inches deep with dust, through absence of rain. Put up, as before, at the 'tambo' of Antonio Racines, and rejoined Louis Carrel.

- „ 8. *From Machachi to Camp on North Side of Illiniza.*—Left at 7 A.M. with two Carrels, Campaña, David, and Cevallos' man to make another attempt to ascend Illiniza. Took five beasts for riding or cargo, and borrowed a llama experimentally from David. This animal was well domesticated, and trotted alongside our party without being troublesome, wearing an amusing expression of demure self-satisfaction on its face, as if perpetually saying to itself, 'See how well I go! See how nicely I behave!' It was loaded with the photographic apparatus and other small matters, amounting in all to about 24 lbs., and it carried that amount easily.

Went southwards along the high road until 9.50 A.M., as far as the bridge called Chishinchi, and then turned off to the right through the premises of the hacienda of the same name. Made straight for the depression between the Great and Little Illiniza, and at 4 P.M. decided to camp at a place slightly lower than the level of the col. Established camp with assistance of the others (15,446 feet), and then sent all (excepting the Carrels) down to a place

2,000 feet lower, where there was wood and grass. Snow fell heavily on the tent for two hours, and it blew hard all night from E.S.E. Min. temp. in night, 26·5°.

*June 9. Attempt to ascend Illiniza from the North.*—At day-break temp. was 32°, and it was blowing hard from N.E. Started at 6.20 A.M., and followed a general S.W. by S. course towards the highest point. Rocks glazed and frosted, and exceedingly unpleasant to touch. Wind dangerously high, so that I was once blown out of my steps. Made fair progress, however, as we were exactly following the route taken by the Carrels on their ascent at the beginning of May; but had they not well marked the way we should have been unable to advance, as on this day we seldom saw more than 200 yards in any direction. At 8.30 A.M. we were higher than the summit of Little Illiniza, and on a difficult and steep ridge, with a complicated cornice which was very troublesome; and at 9 A.M. arrived at the foot of the terminal cliff of glacier which crowns the summit of the main peak. At a distance of about 250 feet below the summit I gave the order to turn, as there was more risk than I cared to encounter owing to the high wind, cold, insecure footing, and enormous and very rotten cornice immediately above us. After observing barometer,\* thermometer, and collecting specimens of the rocks, returned as quickly as possible to the tent, snow falling for great part of the way. Reached camp at 11.10 A.M., and soon after midday the others came up with the beasts, according to orders, and we then packed and descended to Machachi, getting there about 7 P.M. The Carrels, therefore, alone made a complete ascent of Illiniza. They told me after their ascent that the final point was very tough, and that it would be unwise to risk the barometers on it. Their ascent was made in fine weather, and in the 40 days which elapsed before they returned with me the cornice at the summit had developed prodigiously; and on June 9 the eastern side (the only direction in which it was assailable) was composed of an enormous

---

\* Height attained on this occasion was 16,925 feet. Reiss and Stübel's altitude obtained by  $\Delta$  is 17,405 feet. This appears to me to be too high, as we were certainly within 300 feet of the summit.

mass of icicles, many of which were fifty feet and upwards in length, and must have weighed many tons apiece. These broke away from time to time over the line of ascent taken by the Carrels, and for some distance before we turned we had been crawling amongst them and their débris, never knowing when another would come down. It was obvious that at least several weeks would be required to produce a change for the better; so we left Machachi without making any further attempt to ascend this mountain.\*

- June 10-11. *At Machachi, packing for Homeward Journey.*—On the 11th inst. walked six miles over measured ground on the high road to see what effect an altitude of 10,000 feet had upon my rate, J. A. Carrel taking times with chronometer. In another place details will be given, but want of space renders it impossible to say more here than that I found this moderate altitude caused a diminution in my rate of more than half a mile per hour.
- „ 12. *From Machachi to Latacunga, by the Old Road through Mulalo.*—This was a route different from that taken when we came north. Near the hill Callo visited the remains of the Inca house referred to by Humboldt. Left Machachi at 7.30 A.M., and arrived at Latacunga at 4.30 P.M., putting up, as before, at the hôtel of Pompeyo Baquero, near the central plaza.
- „ 13. *From Latacunga to Ambato.*—Returning over the ground traversed on January 24. Put up at the Hotel Nacional, a dirty place, at which we used to get dinner during our previous stay. The charges made at Ambato and at Latacunga when returning, under the management of Campaña, were about half those made when Mr. Perring was our interpreter. Left Latacunga at 9 A.M., and arrived at Ambato at 4.35 P.M., riding quickly part of the distance.
- „ 14. *Ambato to Riobamba via Mocha.*—As far as the village of Mocha the road was over ground we had already traversed. Left Ambato 6.20 A.M., and

---

\* The mountain Antisana can be seen from the front windows of the tambo at Machachi, and Illiniza from the back windows. Louis Carrel tells me that during his five weeks' solitary residence at this place he saw the former mountain only *four* times, and the latter only *twice*.

arrived at Mocha 11.5 A.M. A little to the south of this village the road to Riobamba leaves the main Quito road, and passing over a wild part of the Paramo (moor) of Sanancajas descends rather rapidly into the basin of Riobamba. Left our baggage train slowly trailing over the Paramo, and galloped into Riobamba with Campaña in search of lodgings, arriving at 6 P.M.\* The only tambo in the place was full of the train and baggage of M. le Baron Gabriel de Gunzburg, who was about to undertake a voyage of discovery to the east and to the head waters of the Amazons. He had engaged my ex-interpreters, Mr. Perring and Mr. Verity, had a French valet, a nice poodle, and was otherwise well provided for. There being no room at the tambo, we searched for a lodging elsewhere, and had much difficulty in finding anyone who would take us in. The baggage arrived at 8.30, before we had found a place, and ultimately we encamped in a vile den full of vermin.

*June 15. At Riobamba preparing for Journey to Altar.*—Shifted ourselves and baggage into another house, in the Calle de Bolivar, where we were fairly comfortable and very civilly treated. Riobamba is a large town, covering a considerable area, and is reputed to contain more than 20,000 persons; but, although there is probably accommodation for this number, I doubt if there are more than 7,000 in the place. It has a deserted and empty look. Food was tolerably abundant, and moderate in price. We got bread, meat, and potatoes from Indians on the Plaza, and sardines, Bass's ale, &c., in the little shops about the town. Met here the Yankee Jew whom I had seen at Cotocachi and Quito, who was dealing in everything which seemed promising. He was good enough at Quito to purchase my surplus medicines, including some dozen boxes of pills (three pills in a box), each pill being warranted to soften anything however adamantine. I heard that he had taken an entire box in order to make sure; it worked wonders, and prevented him from walking for several days. I asked him how he found the pills, and he

---

\* From numerous observations of merc. bar., the height of Riobamba appeared to be 9,038 feet. Reiss and Stübel say 9,180.

said with emphasis, 'Real fine medicine that, mister; no lying about that medicine, mister.' He wanted more, but I refused to trade, and let him have an ounce of bromide of potassium, used by photographers as a 'restrainer,' to counterbalance the too rapid 'development' of the pills.

June 16. *From Riobamba viâ Penipe to the Hacienda Candelaria.*—Left the bulk of the baggage at Riobamba, and several mules to recruit. Sent back several broken-down beasts with one man to Machachi.

Started this day at 7.40 A.M. on our way to Altar. We had only seen this mountain on one occasion (from Chuquiapoquio), and not at all from Riobamba. At the latter place some persons declared it was possible to reach the crater in 8 hours, and others that it would take 4 days. We could not learn anything as to the mode of approach, except that a route led through the village of Penipe, and we accordingly steered N.E. by N., and arrived at Penipe (8,100 feet) at 12.40. Brought a letter to the magistrate of the place (Jefe Político), and found he was the village tailor. Got some information about the route from him and others, and at 3 P.M. went on to a small farm called Candelaria (9,400 feet), a wretchedly poor place, where nothing eatable could be had. Arrived there at 6.15. The proprietor claimed to be the owner of the whole of the mountain Altar and all the country between it and Sangai. He readily agreed to come with us for eighteenpence a day and his food; but his readiness was due, we subsequently found, to his belief that we were going to discover 'much treasure' on his property. Camped in the tent outside this hut, and sent back the beasts for some distance, as there was no food for them.

„ 17. *From Hacienda Candelaria to Camp in the Valley of Collanes.*—Left at 6.45 A.M., and at 8.40 came to a patch of open ground in the middle of a forest, when the master of Candelaria, who acted as guide, said mules could go no further. For the remainder of the journey, until our return to this spot, everything was carried on men's backs. Left Cevallos behind in charge of his beasts. Party going on consisted of the Carrels, Campaña, David, and the young man Domingo, from Machachi, four porters from

Candelaria and their master—in all eleven persons. All the food required for the party had to be carried, as nothing could be procured on the spot.

Campaña had been in the valley which we were about to enter (Collanes) in 1872 with Reiss and Stübel, and he would have had us camp in the same spot as our predecessors. I objected to this, as the place was too close under the peaks of Altar to let us plan a route, and we accordingly camped in a little clump of trees (12,540 feet) at 4 P.M. outside the crater, and, as we afterwards found, not far from the foot of the highest point of the mountain. Part of the ascent on this day was over exceedingly steep ground, quite impracticable for beasts. Our porters carried on an average 70 lbs. apiece, yet walked away from us in fine style. They were the best porters we had on the journey. Min. temp. in night 29°.

- June 18. *In Camp in the Valley of Collanes.*—Finding that we were nearly under the highest peak, and that there seemed (from such glimpses as I could obtain through the clouds) very little chance that an ascent of it could be effected from the inside of the crater, I sent off J. A. Carrel with two men at 5.50 A.M. to go round to the outside of the highest peak, and Louis Carrel with another man in the exactly contrary direction to the outside of the second peak, to report on their appearance from the outside, and remained in camp myself. At 7 A.M. two lads came up the valley with more food. Soon after midday J. A. Carrel returned, reporting unfavourably; and at 4 P.M. Louis returned, saying that he had not been able to see the summit during the whole day, but that he thought we could go as far as he had seen. Determined to shift camp to the N. side of the mountain outside the crater if weather would permit. Min. temp. in night 33·5°.
- „ 19. *In Camp in Valley of Collanes.*—Terrible wind prevailed in the night and nearly blew tent down, though it was well protected by trees. The same state of things continued all day, and rendered it impossible to shift camp. Much new snow fell on Altar and down to our level. At night wind fell. Min. temp. 33·5°.
- „ 20. *From Camp in the Valley of Collanes to Camp in*

*the Valley of Naranjal.*—Broke up the camp and left at 7.25 A.M., crossed a small ridge running out of the N.W. end of the crater, and descended into a valley (Naranjal), where I spied a big rock surrounded by some small trees. Camped under it (13,053 feet). The second peak rose on the other side of our valley, almost exactly due E. of us. In afternoon went with J. A. Carrel to the crest of the ridge on our side of the valley to see if I could make out a route, and to try to get angles to fix our position. After waiting two hours enveloped in mist and seeing nothing, we descended to the camp, and found it surrounded with flames, Louis Carrel having set fire to the grass to amuse himself. All hands had to work for an hour to beat out the flames and cut down bushes, and we narrowly escaped being burnt out. Continued to be windy and misty all night, and nothing could be seen. Min. temp. in night 34°.

June 21. *From Camp in Valley of Naranjal to Penipe.*—In the morning it continued as before, fog right down to the bottom of the valley, and a wretched drizzle falling. Broke up camp in despair, as the master of Candelaria gave us no hope of improvement. Finding he was a large lauded proprietor, and that some of his land was well adapted for grazing, I asked him how much he would sell a tract we pointed out, equal to about twenty square miles. He said 100 pesos (14*l.*). Thought then that I would make a bid for Altar, and asked him how much he would take for the whole mountain. But he said he would not sell it at all; and being asked 'Why?' said he was convinced it contained 'much treasure.' This gentleman had no shoes or stockings, and was almost *sans culottes*.

Went rapidly down the valley of Collanes, our porters, as before, walking admirably. Picked up Cevallos and the beasts. Left Candelaria at 2.30 P.M., and arrived at Penipe at 5.5 P.M. The village tailor put himself and his house at our disposal, but recommended us to sleep outside, as he said, with unusual frankness, there were almost too many fleas inside for his own comfort. Obtained here numerous antiquities in good preservation.

„ 22. *From Penipe to Riobamba.*—Left at 7.30 A.M., and got back to Riobamba at 12.30 P.M., calling at

almost every Indian hut on the way in search of antiquities, but obtaining scarcely anything, as the country had been recently scoured by agents of Baron Gunzburg. At night saw Chimborazo from Riobamba by moonlight, perfectly unclouded, incomparably the finest sight we saw during the journey.

June 23-24. *At Riobamba.*—Preparing for journey to Carihuirazo, and for a tour of Chimborazo. Received a letter on the 24th from our Consul at Guayaquil, which he had written and despatched on April 3. All letters in this country are liable to be opened and delayed.

„ 25. *From Riobamba to Camp on Lower Slopes of Chimborazo, near Chuquipoquio.*—Despatched my party at 9.15 A.M., consisting of the Carrels, David, Campaña, Cevallos, Domingo, and 11 beasts, and followed at 11.15. Made straight for the depression between Chimborazo and Carihuirazo, and camped at 5 P.M. about 3 miles from the tambo of Chuquipoquio, a place which would have been more convenient as a resting-place, but which we declined to enter again, having been fleeced there in the previous January. Day rainy, and very heavy rain in night. Min. temp. in night 30.5°.

„ 26. *At Camp; Measurement on Road, &c.*—Sent out Domingo to cut firewood; despatched Campaña and David to Mocha and neighbouring villages to collect and to buy food; and went with the Carrels to measure on the high road. Measured more than 14,000 feet on a straight bit. On return to camp found that Domingo had been assailed by two men, who took his macheta (large knife) away, and he had ransomed it only by giving up the money he possessed. At dusk a horseman rode up from Chuquipoquio, and insolently demanded payment for camping there and for the grass our beasts were eating. Had it explained to him that if he did not take himself off he should be whipped off. He rode away shouting that he would come back at night and steal our animals. About 9 P.M. Campaña and David came in in a state of excitement, saying that a few miles off two men had spread a white cloth before their beasts, to try to frighten them, and had then rushed in. They had a tussle, and my men scampered off, with the loss of a few trifles.

The position of our camp was excellent for the defence of our animals, though it had not been selected with any such view. We had a torrent on the N. side, and a narrow but deep fissure (quebrada) on the S. These two united towards the E., and our camp was placed on the W., the only side upon which anyone could enter. To seize the beasts anyone must necessarily pass the camp. Kept awake till past midnight, and then roused Louis to keep watch for an hour; but before his time was half over he was snoring so loudly as to awaken me, and I determined to trust the watch to no one but myself. At 2 A.M. heard whistling and low voices of persons approaching; instantly jumped up and aroused the others, blew my whistle, and shouted to the thieves to come on. Apparently they thought better, and went off. Night being very dark, we saw no one. After this my people considered that it might be as well to keep watch, and I went to sleep. A windy and rainy night.

June 27. *From Camp near the High Road to Camp on the South Side of Carihuairazo.*—At 8.15 A.M. a muleteer from Machachi came in and told us that last night he had had eleven beasts stolen from him on the other side of Chuquiopoquio. Clouds were very low down on the mountains, and I was perplexed. If we went up we should see nothing, and if we remained below we were liable to the annoyances just described. The extreme inconvenience to which we should have been put by the loss of our beasts (and consequent loss of time) decided me to abandon the measurement and to move upwards out of the reach of the blackguard owner of Chuquiopoquio. At 1.30 P.M. we broke up camp, and proceeded up the valley between Chimborazo and Carihuairazo, called Yacularca. At 4.30 arrived opposite the junction of a small valley leading towards the summit of Carihuairazo, and went up it, encamping at 5.30 at a height of 13,377 feet. Very swampy and soft ground in this neighbourhood. Pitched the tent in a little clump of trees in the middle of the valley. Violent wind at night with a min. temp. of 33°.

„ 28. *In Camp.*—The weather utterly prevented a move upwards. Rain, sleet, and hail fell unceasingly from midday until 8 P.M. For a short time we saw the

stars, and then rain and snow recommenced and continued nearly all night. Prepared for an early start to-morrow, and determined to employ the Sara-Urcu tactics. Cut bundles of branches and twigs to mark the line of ascent.

June 29. *Ascent of the Western Peak of Carihuairazo.*—Started at 5.50 A.M. with the Carrels, David, and Campaña. The two latter were taken as I intended to try to get them up Chimborazo, and it was advisable to exercise them on snow beforehand. Rigged them out in some of our boots and socks, and made gaiters out of tarpaulin. Also had a volunteer, in the shape of a dog, which had followed us from Penipe. Tried to drive it back to camp, but it persisted in following us, and went to the top of the mountain.

During this expedition we did not see the summit until we were upon it, and seldom saw anything distant more than 150 feet. Got into deep new snow soon after leaving the tent, and made the entire ascent over snow. Steered by the compass, aiming for the highest point, and marked our track by sticks about every 200 feet.

Commenced by going up the hills to our W., and steered a N.W. course over them until 7 A.M., when we came to the ridge leading from Carihuairazo towards Chimborazo. From our reconnaissance in January last we knew that this ridge led towards the summit at which we were aiming. Course along it was N.N.E. Impossible to protect the eyes, and even without spectacles it was difficult to make out the footsteps. At 7.25 came to a steep bit like the final arête of Monte Rosa and roped. Ridge then died out, and we entered on a glacier which surrounds the final peak. The little crevasses were quite snowed up, and the big ones looked immense, looming through the fog. Glacier became steep, and steps had to be kicked as well as cut. Two or three large snow bridges were passed, and called forth exclamations of wonder from the Ecuadorians. The wall in front steepened until it became nearly or quite as rapid as the final slope of the Wetterhorn.

The dog wanted to give in at this point, and sat down and whined. Handed it up from one step to another. By a stroke of good fortune stumbled on

a snow bridge over the highest bergschrund. Too steep now to go straight up—the steps would have broken one into another. So we went up cunningly, over snow of admirable quality, letting itself be bent and beat about without giving way. Gigantic cornice loomed through the fog, indicating that we were approaching the summit. Another consultation, ending in going straight ahead, and again fortunately hitting off the most assailable part. In five minutes more we were assembled on a little snowy cone, which fell away in all directions, and peering into the unfathomable mystery of the depths at our feet. Arrived on summit at 10.35 A.M. (16,500 feet).

Temp. on summit ranged from 38° to 40°. The readings of the mercurial barometer giving much lower altitude than that assigned by Reiss and Stübel, and also less than I expected, I told the Carrels that I suspected we were not on the highest point, but so far as we could see there was nothing higher. Left summit at 11.45 A.M.; came down fast; never lost sight of the sticks we had planted (though in many instances they were nearly snowed up), and got to camp at 2.5 P.M., without halting. At 4 P.M., just as we were sitting down to dinner, the clouds opened, and we saw that we had been on the western peak of the mountain, which is distinctly lower than either of the eastern ones, which are apparently those measured by Reiss and Stübel.\* A few hours later we were all (including the dog) on our backs, incapacitated by snow-blindness. It was piteous in the extreme to hear the Ecuadorians wailing under their little booth of branches; for, not knowing what had befallen them, they imagined that they had lost their sight for ever.

*June 30.* At Camp on Carihuairazo.—Unable to move because of snow-blindness.

*July 1.* From Camp on Carihuairazo, across Abraspungo, to Fourth Camp on Chimborazo.—J. A. Carrel and Campaña were the worst attacked on this occasion, but all were able to move to-day, and we broke up camp at 10 A.M., descended to the bottom of the valley, and then crossed the depression called Abraspungo (14,480 feet), which is a col connecting

---

\* They assign 16,752 and 16,641 feet to these two points.

Chimborazo with Carihuairazo. There is a mule track (which does not appear to be frequently used) all the way across, leading in many places near or over very boggy ground. Arrived at col at 1.10 P.M., and left it at 2. Bore gradually round to the left until our course became S.W. by S. Stopped at 3.45 P.M. to collect wood, and encamped a few minutes later on the W.S.W. side of a huge lava-stream, close to a small torrent. This was one of our most comfortable camps (14,360 feet). Plenty of firing, good shelter, and a charming situation. Humming birds and butterflies fluttering all around us. The highest point of Chimborazo bore S. by E. from this camp. Photographed both mountain and camp, and collected actively. Min. temp. in night 30°.

- July 2. *From the Fourth to the Fifth Camp on Chimborazo.* -- We continued the tour of Chimborazo, mounting higher as we progressed; and encamped, at a distance of about  $2\frac{1}{2}$  miles from the fourth camp, against a huge block of trachyte (15,950 feet). All firing was brought up to this place. There was nothing for our beasts to eat; so they, with Cevallos and Domingo, were sent downwards, and went very low indeed, out of sight. We camped early in the day, and spent its latter part in perfecting arrangements for a second ascent of Chimborazo. Shelter was rigged up for David and Campaña, as the tent did not comfortably accommodate more than three persons besides the instruments and other valuables.
- „ 3. *The Second Ascent of Chimborazo.*—Min. temp. in night 25°; temp. at 4.30 A.M. 30°—before which time we were astir. Started at 5.15 A.M., with two Carrels, David, and Campaña, leaving the camp to take care of itself. Made for the ridge descending from the second summit towards N.W. by N. The morning lovely; Cotopaxi and Illiniza, more than 60 miles away, seen clearly. Cotopaxi at this time not smoking at all. In a short time a strong and very cold wind sprang up. Felt it severely, and stopped to beat hands and feet. Whilst doing so saw commencement of eruption from Cotopaxi. Column of inky black smoke rose with immense rapidity 20,000 feet above the lip of the crater; was then caught by an easterly wind, borne at right

angles to its former course; then was taken by a northerly wind and carried down upon us. The others had progressed so steadily that I did not catch them for nearly an hour. J. A. Carrel carried mercurial barometer, Louis the photographic apparatus, David the food, Campaña the etceteras, and I the theodolite and thermometers. Course at first was very direct along the crest of the above-mentioned ridge, and scarcely deviated at all from a straight line towards the second summit. Almost entirely over snow and stony débris. Angle moderate, and footing generally good. From 6.50 A.M. onwards course was entirely over snow. Roped up at this time. Ridge came to a termination against precipice at 8 A.M., and we then bore to the right, to a little patch of rock. Got there 8.35, and then breakfasted. Height 18,920 feet, or more than half way up from the tent to the summit in a little more than 3 hours. Went on again at 9.5 A.M., at this time distinctly seeing the sea through openings in the clouds, and a wonderful prospect over the country to our west. Snow deepened after this, and we did much zigzagging, on the whole bearing round to the right, *i.e.* to the south. At 11 A.M. David, being very much exhausted by floundering in the snow, wished to return. Refused to allow it. About 11.30 A.M. we were facing Guaranda, and struck our former route. Thence the two routes became identical. Steepest angles were at this point, and none probably exceeded  $35^{\circ}$ . Made, as before, for the plateau between the two domes, bending round to the north, and for the last part of the way to the east. Snow soft here, but not nearly so soft as on first occasion. Sank, however, up to the knees. Did not go on the second summit, and kept in the hollow between the two, until close under the highest point on the Riobamba (or eastern) side, and then went directly up to it. At 1 P.M., when close to the very highest point, we saw that the regular sweep of the snow on the apex of the dome was interrupted by something. At 1.20 arrived on the summit, and a grand clamour and cackling broke out amongst the men, for there was our flag-staff, still standing about 4 feet out of the snow, with tattered remnants of the red flag attached, and in connection with it there was the singular circumstance

that Nature had built a wall of ice on the eastern side, as if to protect it. This wall was six or seven feet long and two feet thick, and rose to the level of the top of the pole. We could scarcely have built it ourselves with greater regularity. The pole stood clear of it in front.

The ash which Cotopaxi had been vomiting out since 5.40 A.M. did not commence to fall on the summit of Chimborazo until shortly after our arrival, but it fell during our brief stay to such an extent as to blacken the plateau all over, so that it lost all resemblance to snow and looked like a ploughed field. This ash was wonderfully fine, and penetrated everything, filled the working parts of instruments, rendered photography a failure, and almost prevented us from eating, as our mouths became filled with grit directly we opened them. *Thus our last ascent in Ecuador, like the first one, and all intermediate ones, rendered no view from the summit.* Extraordinary and ghastly effects in the sky. Natives beginning to murmur about the effect of the eruption on Machachi and of no food for their beasts. When barometer was first set up, temp. was 20° Fahr. It fell as low as 15°. Strong wind from the north-east, which felt bitterly and dangerously cold. Had to stop in our operations incessantly to beat hands and feet. Having been slightly frost-bitten on the first ascent through handling the barometer screws, set the scale beforehand to about the point to which the mercury was expected to fall. It read 14.028 inches with temp. 15° Fahr.

Left summit 2.30 P.M. and descended quickly, in following order: Louis first, then David, Campaña, self, and J. A. Carrel. Campaña slipped about badly, but being a very light weight did no mischief. Ash from Cotopaxi continued to fall during the whole of the descent, and we found it fortunate that we had here (as on Sara-Urcu and Carihuairazo) planted sticks to mark the line of ascent. Unroped on quitting snow. J. A. Carrel and self went down faster than the others, arriving at camp at 5.10 P.M., and found the tent not only covered but filled with ash. Everything had to be taken out and beaten and shaken. This was the most notable day's mountaineering I have had. Everything was car-

ried out without a hitch and with precision. It was our last ascent in Ecuador.

- July 4. *From our Fifth to our Sixth Camp on Chimborazo, near Tortorillas.*—Waited to get angles and do other work, and left at 11.55 A.M. to continue the tour of Chimborazo. Steered N.W. (or away from the summit) until 12.35 P.M., and then bore round to S.W., S.S.W., S., and at S.E. by S., until we struck the valley up which we had gone when passing from the first to the second camp. At this time of the year we found the streams in it were quite dried up, and so we went down it until we found water, near Tortorillas. The house at this place being very filthy, the Carrels and I camped in the tent, about three-quarters of a mile away (13,350), but all the rest of our people went to the tambo.
- „ 5. *From Sixth Camp on Chimborazo to Camp about three miles beyond Chuquiopoquio.*—A squally night and snowing in the morning. Waited a long time to get angles, and then went by the Quito track through Tortorillas to Chuquiopoquio and about three miles beyond, encamping on the ground we had occupied on June 25–27. Got away at 11.45 A.M. and arrived at camp at 5.35 P.M. Took photographs at Tortorillas.
- „ 6. *From Camp to Riobamba; measurement on road, &c.*—Packed at an early hour and despatched Louis, with David, Domingo, Cevallos, and the greater part of the beasts, to Riobamba, and then continued measurement on the high road by the aid of J. A. Carrel and Campaña, right back to the tambo at Chuquiopoquio. We got at nightfall to Riobamba, and rejoined the others.
- „ 7. *At Riobamba.*—Packing for the journey to Guayaquil. Found that several of our beasts were unfit to go further, and vainly tried to replace them by others. Only succeeded in getting one animal, and had to trust two loads to an arriero, who was going by the ordinary route. We ourselves intended to proceed by what is termed the railway route. This was the only occasion during the journey on which we separated from any important part of our baggage, and doing so cost me a fortnight's detention at Guayaquil, as the loads had not arrived when we got there.

- July 8. *From Riobamba to the Village of Nanti.*—Started for the last journey at 2.30 P.M., intending to reach the town of Guamote. Could get no further than Nanti, and stopped in a small house at the upper end of the village (10,670 feet). A death in the family occurred during the night, and I was awake by requests for candles, as there were none in the house, and no means of getting a light.
- „ 9. *From Nanti through Guamote to Camp near the Hacienda of Galti.*—Got away at 5.15 A.M. It was now evident that we should reach Guayaquil in time for the steamer to Panama on the 13th only by a desperate struggle. Arrived at Guamote by 11 A.M., not having halted by the way. We had been told at Riobamba that this place was only four hours distant. Stopped a short hour to eat, and went on almost without a halt until 5.30 P.M., and then camped a little distance beyond the Hacienda of Galti (11,772). The road this day was over very undulating ground, and rose almost as high as 12,000 feet. Country extremely dismal and uninteresting. We met scarcely any people, and those we encountered gave the most contradictory reports of distances. Min. temp. at night, 39°. Bitterly cold wind.
- „ 10. *From Camp near Galti to Camp in the Forest about two hours above the Hacienda of Cayandeli.*—Left camp at 7.15 A.M., being much alarmed at the statements made to us that it would still take 2½ days to reach the railway. Passed town of Alausi, on the left bank of our valley, at 11.40 A.M. Stopped for 55 min. to eat, and then by advice of a native left the track we had been following, and tried to take a short cut across country. Crossed ridge after ridge of a most perplexing district. The course changed every few seconds. Mountains entirely in clouds. At 5 P.M. we came to what appeared to be the final descent towards the sea, and at this point there probably should have been a very fine view, but, as usual, haze covered everything we wanted to see. We could only make out that the descent was very rapid. Forest commenced about 500 feet down, and continued without intermission right down to the level of the sea. Went down as fast as possible, and encamped alongside the track at 7 P.M., through

inability to see anything in the dark. Had neither water nor anything of any kind to drink. Had not seen a house or a person since passing Alausi at midday.

- July 11. *From Camp in the Forest to the last Camp, near the Bridge of Chimbo.*—Heard voices in the night, and discovered a party of arrieros encamped about half an hour below, and learned from them that the nearest water was a good hour still further down. This we found was correct. Started at 7 A.M., and passed the hacienda of Cayandeli at 9. The descent was one of the most rapid I have traversed. From 7 to 9 A.M. the barometer rose  $3\frac{1}{2}$  inches. Very few persons were met with, and such as we came across gave the most contradictory information about distances. Continued moving until dusk, and then camped, not knowing whether we were near the end of the railway, or still a day's journey from it. The barometers gave us a better clue as to our whereabouts than any information we received.
- „ 12. *From Camp near the Bridge of Chimbo, and by the Railway to the Town of Yaguachi.*—In the night made up accounts with my people. Got beasts loaded by 5.30 A.M., and then sent out Campaña in one direction and Cevallos in another to learn whether we were on the right track. They reported that we were one hour from the railway, and we proceeded at once at our most rapid pace, and arrived at the bridge at 8.15 A.M. The rails came to an abrupt termination on the right bank of the river Chimbo. There was no station, no train, and no person visible. Sent out my people in various directions in quest of information, and found that a train might be expected about midday. If it did not come to-day, perhaps it would *mañana*. This was a great butterfly locality, and we captured 12 species whilst waiting. Train came in sight soon after midday. We were the only passengers, and our baggage was the only freight. The driver of the locomotive was an Englishman. Arrived at Yaguachi at 6.45 P.M., having lost an hour and a half through the locomotive running off the track.
- „ 13. *Arrival at Guayaquil.*—Got to Guayaquil before daylight, and found the steamer for Panama had not arrived. Found also that the two loads despatched

from Riobamba, and two boxes which had been sent from Quito, had not turned up. Determined to dispatch the Carrels to Europe alone, and to wait until the baggage was recovered. Steamer came in at midday. Arranged money matters with the Carrels, and paid them 60*l.* on account. Took a room for them at the hôtel called 'Nueve de Octubre,' and instructed them to be ready to go on board at 8 A.M. to-morrow. Slept at British Consul's.

- July 14. *At Guayaquil. Departure of J. A. and Louis Carrel for Europe.*—Went to the hôtel at 7.45 A.M. to ship the Carrels, and heard that J. A. Carrel and Campaña had not been in all night. After many inquiries discovered both locked up in the central police station, as they had been found in the streets at an early hour of the morning in altercation. J. A. Carrel had lost the whole of the money paid to him yesterday (40*l.*). Extricated him with difficulty, and shipped both just in time to save the steamer.
- „ 15-28. *At Guayaquil, &c.*—The goods from Riobamba came in in the course of a week, but the two boxes from Quito were still missing. Went on the 23rd by steamer to Bodegas in search of them (without result), and returned to Guayaquil on the 25th.
- „ 29-August 2. *From Guayaquil to Panama on board the 'Ilo.'*
- August 3-4. *At Panama.*—Made excursion to Old Panama with the acting British Consul.
- „ 5. *From Panama to Colon by the Panama Railway.*—The Panama railway authorities were on bad terms with their porters, and passengers consequently suffered. The whole of my heavy baggage was detained at Colon.
- „ 6-28. *From Colon to Southampton on board the 'Moselle.'*—Arrived in London 8.30 P.M., and received baggage by following steamer.

---

NOTE.—The height given on page 54 (and corrected on page 184) as the elevation of Chimborazo is that assigned by Humboldt. Mr. Whymoe's observations, however, reduce it to 20,517 feet.