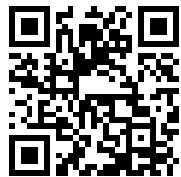
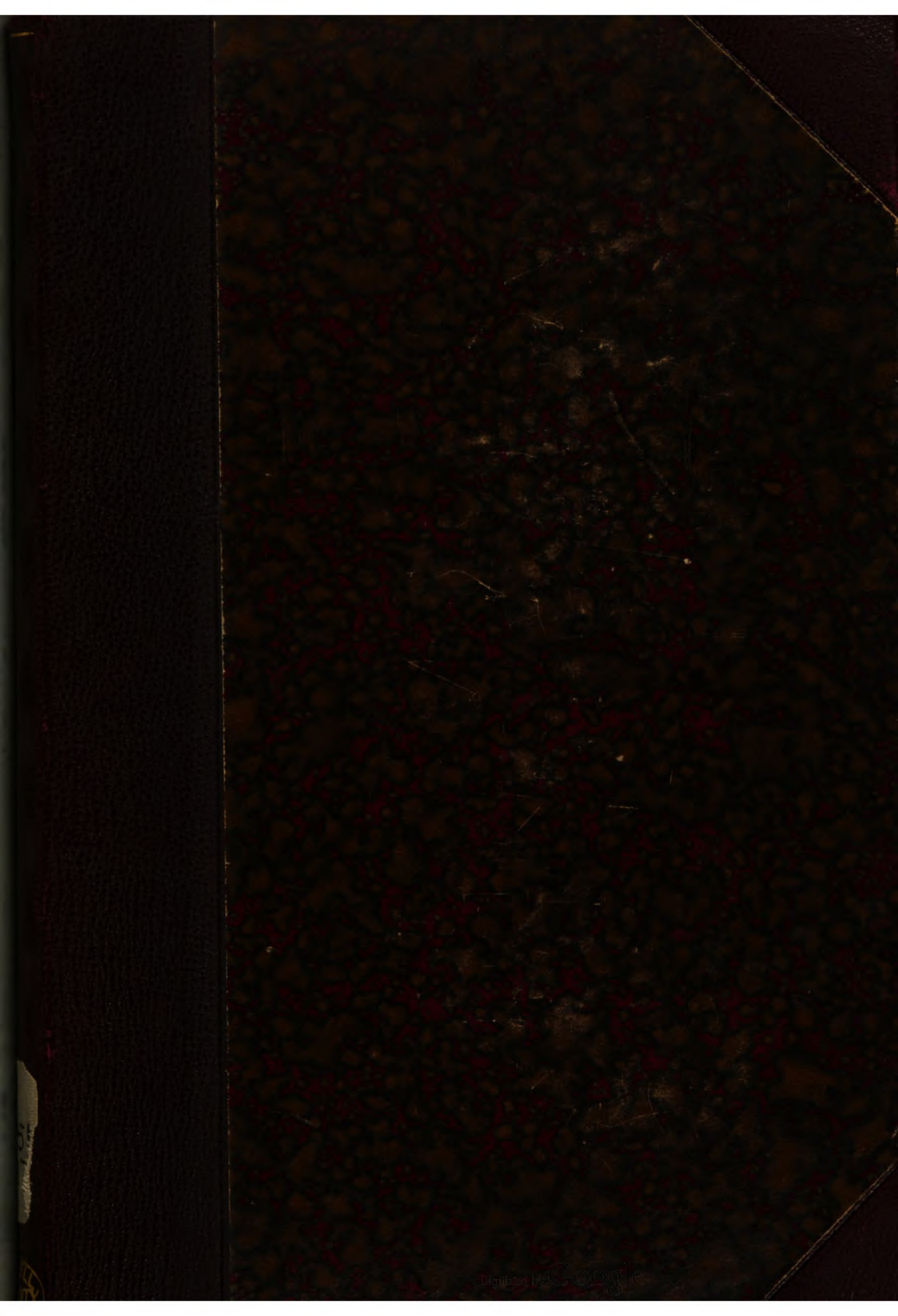

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TRANSACTIONS
 OF THE
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SOCIETY
 OF
QUEBEC.

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ARTICLE I.—NOTES OF A JOURNEY ACROSS THE
ANDES, IN PERU.—By *E. D. Ashe, Lieutenant,*
R. N., F. R. A. S.

[Read before the Society, 3rd April, 1861.]

It has been my good fortune never to have sailed in an uncomfortable vessel ; but the frigate that I belonged to when I crossed the Andes, had a rare combination of those elements requisite to make a happy ship.

In the first place, we had an excellent captain : and in the next, my messmates were composed of some of the best fellows in H.M. service. We all had our own peculiar line. There was no jarring or clashing amongst us. One sang an excellent song ; another told a capital yarn ; a third played the violin, another the flute ; a fourth played tricks upon cards, so that frequently those who have dined on board have found cards in their boots weeks afterwards. We had an inimitable Irishman, who made delicious bulls. Besides all this, we had a very good band, one of the greatest comforts on board a ship, the master of which said band was a talented creature, but alas ! he was too fond of sucking the monkey,—he drank. I had once occasion to speak to him, and plainly told him, “ Why, you are drunk, sir.” He looked

at me with a fishy eye and replied, "Well, sir, I know I am ; but not more so than a good musician ought to be." And lastly, our store rooms were well supplied with the choicest wines.

Just before leaving England, a lighter came round from the Thames ; and as she was being cleared, case after case was hoisted in, and the whole forenoon elapsed before she was sent away. On going to take leave of my friends, an old boatman, who was pulling me ashore, remarked to me in that free and easy way common to him as he knew his company, "Ah, sir, that will be a 'appy ship. I never seed so much licker go aboard a ship afore in my life." And certainly she was, albeit he was out in his reasoning though not in his reckoning.

As this happy ship was lying in Arica roadstead on the coast of Peru, several parties were formed to visit Tacna, a pretty Spanish town, containing about 7,000 inhabitants, situated in a fertile spot, watered by a rivulet formed by the melting snow of the Cordillera,—for wherever there is a moisture there the ground is covered with the richest verdure, and as it never rains in Peru, the coast presents nothing but a sandy desert, saving and excepting in the immediate vicinity of these mountain streams.

One party had returned from the place, and I

made up my mind to form one of another that was just about to start, and accordingly sallied on shore to find a mule that had some skin on its back. Arica is the seaport of Tackna, but roads and vehicles being in those days unknown, everything was carried on the backs of mules, a distance of forty miles across a desert, without a single drop of water or a blade of grass to cheer the way. It is truly marvellous how muleteers manage to secure some of the things which these animals have to carry on their backs, for the packages are of all sizes and shapes from a Collard and Collard piano-forte to a case of wine. The consequence of this state of affairs is, that from his first journey until his last, the poor mule has always a raw and bleeding back. No wonder that the track across this desert might generally be found by the skeletons of these poor animals.

I have often thought that if there is any truth in the theory of the transmigration of souls, great must that sinner be who has to expiate his crimes in the body of an Arica mule.

Our party started about eight in the morning, in high glee, and as the sun in the course of the day became nearly vertical, the only shadow each of us had was that of his sombrero ; but to prevent our faces from being blistered and losing all our good looks, we took the precaution to cover them with silk handkerchiefs.

About noon we halted among some rocks that made their appearance above the sand at a distance of fifteen miles from Arica ; and here we had recourse to the last of our moistening store that we had provided for the journey. Thus freshened up, we again started, but our party had lost their fun and frolic, too much had been taken out of us already. And, alas, so it was with our animals as well as ourselves ; for, sad to relate, about four in the afternoon my mule showed symptoms of breaking down ; and I persuaded the party not to think of me, but to go on ahead, and should they reach the place of destination to send back help.

Accordingly I was left, and the party out of sight, I endeavoured to urge my poor brute forward with all the power I had ; but in vain ; not even the muleteer's words,—“ Caramba ! cari carajo, maldita ! ” had any effect : he drooped his head as a signal for me to dismount. This done, I began to speculate on our condition as to which was the greater ass, the mule or I. But as I could not afford to pay for mule and saddle, I managed to urge the poor animal before me, so that at least when he drooped I should only have to saddle myself. Matters now were becoming serious. It was evident that I was in a scrape. A loose burning sand around us, my temples throbbing from heat and exhaustion and intense thirst, and having

to drive a poor sinking mule before me,—and yet not a hundred yards from me I thought that I could see a beautiful lake, and even the banks on the opposite side ; nay, I could even see the ripple on the water. Alas, what delusion !—this was only the effect of mirage, and I knew that instead of water I should find nothing but burning sand. In fact, if I had not kept myself up by remembering that my messmates would surely send help, I certainly should have sat down on the next skeleton of a mule among the many that mark the road, and added to its bones those of two other asses ! A multitude of such thoughts crowded on my mind even including this termination of the journey, when happily my reveries were broken by the sound of bells ; and on looking up I beheld a man on a mule coming on at a brisk trot, leading a horse. What relief this was I need not say. Often had I exclaimed, in despair of ever seeing it,—“ Oh, give me but my Arab steed !” but here was a steed as good for me as any Arabian. Soon, indeed, I was on his back, and with a good ambling speed in a short time he bore me in safety to the hospitable door of the English Consulate.

A warm bath, a slight stimulant, and I was ready for dinner at eight. The consul was as considerate as kind, he had invited all the beauty, and some of the principal merchants of the place

to meet us. What a change had a few hours made in my condition. Here I was enjoying the cool breeze as it was rustling amongst the leaves of adjacent trees, delicious claret, the most luscious fruit, and the sweet voices of charming ladies. No wonder that sailors are always in love. But time as usual always flying faster the happier we are, stole away a delightful evening sooner than he should have done, and those who could not be accommodated at the consulate were billeted off with the different merchants. It fell to the lot of a young German to receive me, and I was most fortunate in having a companion who had the musical talent of his country, with all the information of an European traveller.

On the following morning, having found my way to the consulate, while waiting for some of my companions, a handsome young man entered my room, and it soon appeared in our conversation that his visit was to take his farewell of the consul, being about to cross the Andes. "Cross the Andes!" I exclaimed; "how much I should like to accompany you." "I really wish you would," he replied; "for a companion on such an occasion is truly most desirable." At this moment the consul joined us, and hearing our conversation, remarked, "Why don't you go with Mr. Fernandez? He is going to Puno, situated on Lake Tetica-

ca, where the first Inca, Manco Capac, made his appearance. How could I resist, although there were certainly difficulties to overcome! In the first place, my leave of absence was but for a week, and I could not possibly return under a fortnight; in the next, I was totally unprepared for such a journey; and then, too, my friend started in two hours.

Well, it is often truly said, "where there's a will there's a way," and so it was on this occasion. The first difficulty was got over by a line to the senior lieutenant, informing him that as time did not admit of an answer it was useless to apply to the captain of the ship for leave, but that I should take the responsibility upon myself, as I was sure that he would only be too glad that one of his officers should take advantage of so rare an opportunity of seeing the country.

This being concluded, I rejoined my German friend, and quickly informed him of my new determination. At which he observed,—“You sailors are odd fish; but I can assist you, as I am about to purchase a very fine mule for the use of the house, and I beg you will take it for your journey,” adding, “you have no time to lose, so come along with me and I'll get you a fit out.” Nothing was to be bought ready made here, so he soon introduced me to a friend, and it was agreed before-hand

that I was to ask him to lend me his "breeches." I am not a very bashful man, but the very idea of asking a person that one has never seen before, for his "breeches," in order that one might live in them for the next fortnight, required more assurance than I could muster. But my good friend, the German, came to the rescue, and as nothing but leather could stand all the work I should have to go through, in an unguarded moment I popped the question; the friend in need (I forget his name) relieved me at once; he rather liked the idea, and brought them forth immediately, saying, that I should find them *very comfortable*; on which I took them under my arm, and beat a retreat, giving him no time to finish his apologies about a button that was off.

After this feat, the remainder of my outfit necessary for the cruise, was borrowed without a moment's hesitation by merely asking, so easy is it to get on after a beginning is once made,—indeed, as Fernandez and I loaded with botas, spurs, bridles, alforcas, ponchos, and breeches, returned to my quarters, I almost considered them my own property. However, we found lunch ready, and having accomplished his object, he left me with the promise that he would call for me in an hour. Of course I made a dinner of my lunch, and then retired to dress for the occasion. I found the "con-

tinuations" most comfortable ; and when I made my appearance before my worthy host, the consul, armed cap-a-pie for the journey, I really believe that I was equipped as if I were going on the stage to act the part of a brigand.

However, everything was ready, and at two, p.m., on February 16th, 1845, our party started ; consisting of a muleteer in charge, Fernandez and myself, with a baggage mule, and a horse that was going to be sold.

We had a most interesting journey before us. There was something exhilarating in the unexpected manner in which I had undertaken it ; young as I was, in the morning of life to start thus on an expedition where no danger or difficulty beset the way. nothing to check the ardour it inspired, was delicious. I was ready for any difficulty, to do anything ; but, alas, how different is the case when the shadows of life lengthen ! when you know that your brave, gallant messmates have dropped one by one from your side, and there is not a part of the globe in which you have not left some companion of your youth, in a lonely grave, far away from family ties ! you look back on those days, and memory lingers over the picture, loth to leave it until some unlooked for incident sweeps all away.

On glancing at my pencil notes whilst on the

back of a mule, I have recovered scenes and faces that were fast slipping away from my memory. It is like cleaning up an old oil painting, defaced by time, when the softest lights of the landscape are again brought forth.

The Andes, on the Pacific side, rise abruptly from the sea coast, whilst they slope on the Atlantic gradually down to the pampas, broken by plateaux. Immediately on leaving Tacna we commenced the ascent, gradually at first, until we reached a small village,—the name of which is as unimportant as itself,—about twenty miles distant. Here we stopped for the night, in a cottage next to the church, and the Padre soon joined our company. But supper over, Fernandez prepared his bed, which he brought with him in a water-proof case, kindly offering me half of it. Our muleteer coiled himself away in a corner, amidst bridles and saddles, and covered himself up with his poncho, and we were all of us soon sound asleep, notwithstanding that some dogs were howling in a more melancholy tone than is usual with such brutes in moonlight.

Long before it was daylight, the jingling of bells, and the noise of feeding the mules, told me it was time to get up; and after a rapid breakfast, our party was *en route* at half past five, a.m. We now were fairly at the foot of the Andes; our road—if

it must be called a road—was simply a dry water-course, up which the mules scrambled, and then along the sides of small hills that formed spurs to the great Cordillera, until another dry water-course was gained ; and in this manner did we toil until half past ten, a.m., when we reached Palca, an Indian village, situated in a ravine, about twenty-four miles from where we had slept.

Here is a church built by the Jesuits, but not in use now, and surrounded by a few huts. As all the mules to and from the interior pass here, the Indians make a livelihood by selling alfafa, (a kind of clover,) that grows in this valley which is watered by a rivulet. During our morning's ride we saw but little vegetation, and that only where some mountain rill moistened the surface, everywhere else the ground was dry and barren, and covered with stones. The thermometer ranged during the day from 64° to 60° ; and at Palca water boils at 183° Far., giving a height of 10,515 feet. (See process at the end of article.)

Arrived here, both man and beast were tired, and we enjoyed ourselves in this agreeable temperature exposed to the sun. Of course I availed myself of the opportunity to visit some of those towers seated on the summits of the principal hills that command a view of the setting sun. They are about eight feet square, and twenty in height,

composed of dry clay bricks mixed with straw ; they had been previously opened for the purpose of obtaining the gold ornaments generally found upon the corpse of the chief, buried in them, placed in a sitting position, facing the setting sun.

Our muleteer, who served also in the office of cook, prepared our meals ; which generally consisted of an *olla podrida*, formed of onions, potatoes, mutton, and beans ; but at this height he could not get the water hot enough to break the potatoes or boil the meat, and as none of us thought of fastening the lid on the saucepan, and thus getting high pressure steam, we had to eat raw potatoes and parboiled meat.

As our next day's journey was considered the most severe, we very early retired to rest. Shortly after five on the following morning our party was up and moving. I had concluded that after scrambling up water-courses and passing along the brinks of precipices on the previous day, we had surmounted most of the difficulties we had to encounter. But I soon found out that we had not yet commenced them ; and certainly what we went through on this day confirmed the stories of them. Again we had to climb the sides of water-courses, and on reaching the tops of those mountains that appeared so lofty from below, we saw others that reared their heads still higher, and

when the summits of these were reached, still there were mountains heaped upon mountains beyond. Frequently our track lay on the edge of a precipice where one false step of the mule would have lost both the animal and his rider, mangled and lacerated by the projecting rocks, as they would fall to a depth that the eye could not fathom. It was sublime to look down from our dizzy height and follow the condor soaring mid heaven far beneath us, a mist resting upon the tops of the mountains that were passed on the previous day. But the eye soon got familiar to these lofty heights, and that nervousness that must be felt by all who are placed in such a position for the first time, soon wears off.

The cactus and a rush, with two or three kinds of mosses, compose the scanty vegetation. We passed two or three droves of llamas, about fifty animals in each drove, laden with cases; they have no harness on, and the boxes are secured to their backs by a rope that passes round the body: they carry about 130lb. The Indian who drives them has a sling, and these nimble animals instead of keeping together are scattered on either side amongst the rocks, like goats, feeding on what they can pick up on their way. When any one lags behind or gets too far from the others, the Indian slings a stone at him, taking care not to

hit him, as he would probably break his slender legs ; but the stone drops just behind or between his legs, and the animal comes scampering down to the rest ; and in this manner by sling and stone, does he keep subordination in the flock. When he wants to unload for the night, he gets them together by calling, and then passes a string round all their legs and ties them in a bundle, where they remain until they are unloaded. They are then set loose to get their supper where best they can ; in the morning they are called, tied, and then loaded.

At noon of the third day we were about the highest part of the pass, and at the perpetual snow line. The sun was at its meridian height and nearly vertical. Numerous streams were running from the sides of the snowy peaks that were on either side. And as we looked eastward what a scene of desolation met the eye ; instead of the frightful precipices of the Pacific side, there were plains covered with loose stones, all of which had been thrown from volcanoes, and varied in size from large masses of many tons weight to small fragments. The ground was completely covered, and the road had been formed by filling up and levelling, by placing the smaller stones between the larger, and after all that trouble it is but a very rugged one. As far as the eye could reach were

snow-capped mountains, most of them volcanoes, amongst which were most conspicuous the Illemani and Sorata, that rise from the centre of a plain, and reach a height of 25,000 feet. Some of the volcanoes are active, and others have slept for ages.

We halted for a short time, but the cold was intense, and we had to wrap ourselves in our ponchas and cover our feet with the wool of the alpaca that we found in a hut at a place called Tarcora, a few miles to the eastward of the pass. Here there were two or three Indian huts, built of loose stones. Not a single person was to be seen. It is principally used as a halting place, and by those Indians who hunt the vacuna. They have a very primitive way of shutting up their houses, by building up the door way with stones. Our muleteer made an entrance into one, where we sheltered ourselves from a heavy hailstorm.

I was now beginning to suffer from the siroche ; my head aching, pain in the temples, and great sickness of stomach, far worse than sea sickness. I am not prepared to say what is the cause of this malady, or why ascending to a great height should produce it. Mules not unfrequently drop down dead, and sometimes man. A few months after my visit, a young Englishman was lost from this cause when on his road to Lapaz. Although I

had heard of the siroche, and was speaking about it the day before, it never occurred to me that I was then suffering from it ; no, I thought positively that I was dying. We again mounted our mules, and I was determined not to impede the party, but to ride on until I dropped from the saddle. Our road lay on the side of a mountain slightly descending, and covered with those loose stones. For twenty miles further did I sit in the saddle, thinking that each hour would be my last. Our mules were tired, the ice forming under our feet ; there was but one more hour of daylight for us, so our muleteer was now anxiously looking out for a halting place. Shortly we came to a place where there were three huts, built of loose stones, about six feet high, the roof covered with rushes. It was a very primitive affair. It could only afford one room, with a raised bank of earth at one end for a sitting or sleeping place. We found it unoccupied with the door built up ; so we let ourselves in and brought in our traps, then turned our luckless mules adrift for the night to sup as well as they could on a few rushes and a little moss.

Fernandez spread his bed on the raised seat, and the moment my spurs were off I was on my back, whilst my companions were making a fire with some rushes and the droppings of the llama that are always found in great abundance at these

halting-places. I did not join the festive board, but after supper Fernandez administered a little warm brandy and water. The water boiled at 164° , giving a height of 20,456 feet. Thermometer at noon, 52° ; 2h. p.m., 58° ; and at 7h. p.m., 28° .

I was alive in the morning, which was more than I had expected, but could not saddle my mule, and had to be lifted on to it. I wanted to be left behind to die, but this they would not hear of. Well, as they could bury me anywhere on the road under a heap of stones, I started. We were now about to descend upon one of those large plains that form a series of steppes until they reach the pampas; they are surrounded by the tops of mountains that look like hills from the plains. It is evident by the marks of water that they have all been lakes, until the water has found its way out by wearing a channel for itself through the rocks on the lowest side. Through the middle of each there runs a stream, that sometimes deserves the name of a river, and by the side of this stream the traveller passes through a mountain gorge from one plain to another. These gorges, or passes, are sometimes seven miles long, and the path through them is most difficult and dangerous. The mules have occasionally to be unloaded, as there is not room in some places for them to pass with any-

thing that protrudes from their sides. The sagacity shown by these animals in stopping on coming to a doubtful place is very remarkable. It frequently happens, nevertheless, that they are thrown down from great heights into the river by their loads striking against a projecting rock. On descending to the first plain I was immediately relieved from my sickness, and then it only occurred to me that I had been suffering from the *siroche*, which greatly relieved my mind, as I thought that I was seized with some malignant disease.

It has always been to me a more nervous work to go down a steep hill on the back of a mule than to ascend one, as in the latter case you do not see your danger, whilst in the former you have it always full before your face. In going up, one can most affectionately hug the mule round the neck ; whilst in descending one is afraid even to take hold of its tail for fear it should kick, which would certainly be its last kick. Sometimes these animals will place their fore feet together and sit down on their haunches, and then quietly slide down. On these occasions you do not attempt to interfere, but quietly sit still and trust to the good sense of your mule, which is not so great an ass after all.

These higher plains have a wild grandeur about them, and for rock scenery cannot be surpassed. We toiled across these rugged basins, our mules

carefully picking their steps, until midday, when we dismounted to enjoy a slice of sausage and a biscuit, as well as to rest ourselves by lying at full length on the ground, a great relief after being many hours on the back of a mule.

A little before sunset we observed a solitary hut before us, and finding nobody at home and the door built up as usual, we quickly made an entrance, brought in our saddles, &c., made up our beds, turned our mules adrift to get their supper—which they had a better chance of doing than on the previous night, then lighted a fire and commenced preparing our evening meal. I do not smoke, but certainly I must confess that when the Ariero and Fernandez got their steam up, a pipe appeared to be an invaluable thing ; it did me good to look at them.

After supper I took a short walk and found a few inclosures for alpacas and some scanty grazing in the neighbourhood, but very little soil fit for cultivation. The thermometer when we left, at 5h. a. m., was 32 ° ; at noon, 67 ; and at 5h. p.m., 44 ° . Water boiled at 179 ° , giving a height of 13,400 feet. After our hard day's ride we took to our rest directly after supper, and found that thirteen hours in the saddle was quite sufficient to make us sleep soundly.

We started again a little after 5h. a.m., and as

we descended each plain became more fertile, and soon we arrived at a level, where grass was permitted to grow, and then we met our old companions the buttercup and daisy. How gladly did I pick them ; nothing reminds an Englishman of home and childhood more forcibly than do these simple flowers. From the winding course of some of these streams, that are now as large as a small river, we had to cross and recross several times. Every one knows the old saying, " As stubborn as a mule." Unfortunately, on this day we had many proofs of its correctness. If the mule could not see the bottom of the stream that it had to pass, or had reason to think that it might be too soft for its weight, a scene was sure to take place. Mine was a good mule,—a very good mule, but on this one particular point it was perhaps a little too obstinate even for a mule. On arriving at a part of the river that was to be crossed, the two other mules and the horse generally went over without much difficulty, but my "ferry-boat" would put his nose close to the water and smell it ; then, with his long ears stuck forward, he would try to see the bottom through the muddy water. After giving him sufficient time to make up his mind, I used to try and persuade him with my spurs and a good stout cudgel, but they never had any effect on the brute. Poor Fernandez and the

Ariero would have to come back and place themselves one on either side, and then, inch by inch, force him over.

But, notwithstanding these drawbacks, as the day was fine and the temperature most agreeable we rather enjoyed travelling. A little before sunset we discovered a hut prettily situated near a rivulet at the entrance of a valley, and as there were llamas and alpacas grazing around it, we concluded that it was inhabited, so we dismounted and followed our Ariero, who, without the ceremony of knocking, opened the door. On entering we found a young Indian and his bride, who, it appeared he had just brought home. The muleteer could speak a little of their language, and at once told them to "Clear out." I am sorry that I do not recollect the Peruvian for this expression. However, these children of the sun quietly took the hint and gave up possession; on which we immediately took off our accoutrements, and made up three comfortable beds by spreading the wool of the alpaca and vacuna, which we found in great abundance in the hut. There was good pasturage for our mules, and for ourselves we found a fore-quarter of llama hanging up, which was instantly taken down and consigned to the pot for a jolly supper. Water boiled at 180° , giving a height of 12,960 feet. Thermometer at 5h. a.m., 40° ; noon 64° ; 5h. p.m., 52° .

Whilst the evening meal was preparing, Fernandez and the muleteer enjoyed their pipe, and I took a stroll. The scenery was very pretty : an undulating country, a great deal of cultivated land, wheat and other European grains, potatoes, and some other roots, but no timber only a few small bushes.

In the course of our ride we saw a great quantity of quail and some wild turkies, also an animal, in size and colour like a tabby cat, which they call a biscatio; but the game most prized and really valuable is the vacuna, the hair of which is so fine and soft that it is sold by the ounce; a great many were seen in the morning. The Indians catch them by placing a quantity of sticks at some yards distance apart supporting a line with pieces of black cloth attached to it. The vacuna are then driven into the enclosure, and are afraid to jump over or pass under the string with these pieces of black cloth shaking in the wind, and are thus easily taken. Shortly after our supper off the shoulder of llama (of which the least said the better) we retired to our beds : the beautiful soft material that they were composed of made our sleep doubly refreshing.

Next morning we started a little later than usual,—I suppose we were unwilling to leave those comfortable beds. On going outside the hut, at a little distance I observed the owners of our

mansion. They had been sleeping under a wall in the inclosure for the alpaca. Notwithstanding the lady was then making her toilet, my appearance did not in the slightest way incommode her. Her husband—the lord of the creation—was stretching himself and enjoying a good scratch.

We had to pass through a most remarkable break in the mountain, through which the river ran, called “La Estrecha de Angostura.” It is about seven miles long, and the water has cut the rocks into the most fantastic shapes imaginable. At this time of the year the mornings are clear and cloudless until about 2. p.m. The sky then becomes covered with thick clouds, and for about an hour the most tremendous thunderstorm rages. The lightning is terrific, and great loss of life occasionally occurs ; but to encounter a thunderstorm in this narrow pass generally proves fatal to some of the party.

The path follows the turns of river, sometimes on the top of cliffs and at others close to the water's edge. The heavy rains frequently displace large rocks, which fall down and block up the path completely, when the beasts have to be unloaded and the packages carried by hand, the mules being led until the difficulties are surmounted. On these lower plains there is good pasturage, and large

herds of cattle are seen here feeding. They of course belong to the Spaniards, and the Indians only have the care of them. It is about this altitude that the tree is found that produces the Peruvian bark. We met some small birds, one black and yellow, and also the cardinal. Thermometer at noon, 64 °.

About 4. p.m. we arrived at a village surrounded by hills that were cultivated. The plain was covered with flocks. In the evening the llama and alpaca come home, and are enclosed in pens for the night ; I have been in Italy, but I never witnessed so lovely a night as this. The moon was at her full, and, as she rose from behind a snow-clad mountain and threw her silver light over the scene, the high peaks, or rather truncated cones, of the volcanoes of Illimani and Sorata appeared close to us, although they were upwards of a hundred miles off. What a place for an observatory ! A few degrees further to the North and from this height both poles could be seen, and consequently every star in the heavens could be observed from one place. No other part of the world could offer such a site for the astronomer.

In the course of my observations I remarked that the locks on some of the doors here were exactly similar to those I had seen in Egypt. Instead of our latch-key, there was a flat piece of

wood with round pegs in it of different lengths, stuck up. The wards were holes placed at irregular intervals, and before the latch or bolt could be raised there must be an agreement of the pegs and holes. Then, again, as there was only a small hole for the key to enter, it is just as difficult to pick as our locks.

The Indians vary in height from four to five feet, long black coarse hair, no beard, olive complexion, long eye of the Mongolian, and good teeth. The men are always chewing the leaves of a plant called coco, which enables them to go through great fatigue and to do without food for a long time.

In the morning we started in good spirits, as we were to arrive at our journey's end in the afternoon. Our animals, considering what they had gone through, did not appear to have suffered much,—certainly no horse could have stood the fatigue so well. The horse that accompanied us had nothing to carry and only had to keep up with the mules; still it was completely knocked up, so much so that the speculation of bringing the animal proved a complete failure.

It was now the season in which bulls are in the most savage condition, and as I passed across some of those plains that were covered with cattle, it was not very soothing to my feelings

to see one of these gentlemen with short horns pawing the ground and tossing the earth into the air. So, as I wore a red poncho and my mule could hardly get out of a trot, any one who has seen a bull-fight and knows how these animals object to that colour, can easily imagine how I enjoyed my ride. We were now in a beautiful fertile plain, surrounded by undulating hills, all cultivated. The Indians were now met in great numbers. About noon we got sight of the lake of Titicaca ; and shortly afterwards we saw the town of Puno, beautifully situated on its margin.

The town of Puno contains about 9,000 inhabitants, not all pure Indians, but a mixed race, with many South Americans. They have a fine cathedral, market-house, and Governor's residence. Some of the merchants' houses are well built, and the streets are paved with curb stones.

The valley in which Puno stands is called the valley of Desaguadero, and extends some 600 miles. It contains several towns, and if the country were not in a continual state of revolution, would no doubt be thickly populated and well cultivated. But very little is really known about this part of Peru. Pentland visited it in 1836, and he gives the height of this town 12,000 feet, and it is on his authority that we have the height of the Sorata.

At a little after 4. p m. we entered the town, and drove to a posada, where, after seeing that our mules were well provided for, we enjoyed a good dinner.

The next day I called on the Governor-General Flores. Visited the market and saw some very fine-looking country girls selling fruit. They were dressed something like the Swiss,—short petticoat, with a head-dress similar to those worn by the peasants of that country. The town is about half a mile from the lake of Titicaca, which is the largest on the South American continent, and in many parts no bottom has been found. Two rivers run into it, and I believe a small one out of it; however, there is no well authenticated account of this part of the world. There is a silver mine close to the lake, that was shown to the Spaniards on their first coming to the country. The visitor enters it in a boat through a canal; there are several locks, and in this manner he is taken into the mountain about half a mile, when he gets on a railroad. It is owned by some Englishmen, and is tolerably remunerative.

The boats that are on the lake are made by lashing a quantity of reeds together in the shape of a hammock, and two of these hammocks form a boat; of course the passenger has to sit on them: they carry a sail made of matting. There

are a great quantity of water-fowl, and the scarlet ibis and also the other, are seen in great numbers on the shore. I had a day's shooting on the lake, and, although I did not do much execution, my companions made a good bag. I found that I was not the only sailor so far inland, for I saw my old friend the seagull doing remarkably well amongst ducks, teal, and widgeon. Those sailors make themselves at home everywhere. I think that I may say that, although I was not an admiral, yet certainly I was the highest naval officer *afloat*. Fancy being on a lake, as high in the air as Mount Vesuvius placed on the top of Mount Etna.

In some very pretty rides that I had it was most distressing to put my horse to a gallop; and I found also that when I accelerated my own steps to a run I soon lost my breath, and that it took a long time to regain it, during which time I was left gasping very much like a fish out of water.

It is said that one of the Incas, when he found so much trouble brought upon his people by the Spaniard's love of gold, threw a long and massive gold chain into the lake. I must confess that more than once I have looked at the bottom in the hope of seeing something glittering.

The older inhabitants state that the Indians know of many mines that were worked in the days of the Incas, but will not point them out for

fear of being made to work them by their present masters.

The object of Fernandez's trip was to purchase gold dust from the natives ; who, when they hear that a merchant has arrived to buy gold, come from the country to dispose of it. I was present at one sale. The Indian goes into the merchant's office, and after he has taken from his belt the precious ore, the merchant runs a magnet through it and clears it from any spurious metal ; he then weighs it, when he knows exactly what he can afford to give for it, and as the payment is made in goods, the merchant, I should say, has the best of the bargain.

About three centuries before the arrival of the Spaniards, Manco Capac and Mama Ocollo appeared on the banks of Lake Titicaca. These two personages, male and female, of gigantic stature and well clothed, declared that they were the children of the sun and sent to reclaim the human race from its misery, introduced a new language, and taught them to cultivate the soil. Who these two people were, or where they came from, is rather a difficult question to answer.

After staying three or four days at Puno, Fernandez told me that he could not go back as soon as he had intended, for he was obliged to go as far as Cuzco. I was very sorry to hear this, as it would

oblige me to return by myself, fearing that the formidable R. would be placed against my name on the ship's books if I staid any longer. But I found that two sick muleteers were about to start for the coast, so I joined their party, bought a small copper kettle and a Bologna sausage for my own use, and we laid in half a sheep, with some potatoes, for the party.

The next day at noon, our new party started, and having travelled eight leagues stopped at an Indian hut for the night, sharing it with some old women who crouched into a corner, leaving us the raised part for our bed. After supper I boiled water, and when I took my thermometer out to get the temperature, the old women who had been anxiously watching me, darted out of the small door as they saw me put the thermometer into the water, uttering a scream which betrayed their intense fright.

We started next morning at 8 a.m., returning by the route that I had come, and resting each night at the most convenient place. On one occasion we were overtaken, when amidst the highest peaks and crags of the Andes, by a thunder-storm, and had to make for a hut that was seen in the distance. The crash of the thunder was tremendous, each rock sending back the echo. The whole sky was covered by a dense thick cloud, the

lightning was blinding, and the hailstones were of a size too dangerous to be welcome. Never did I behold so grand a sight,—never did I feel so much impressed with the power of Almighty God,—and never did I feel more intensely than I did on that memorable occasion the utter insignificance of mortal man !

My friends, the sick muleteers, joined a party that was coming from La Paz, so I came down the Andes by myself in two days from the Pass. I saw a large rock that had hieroglyphics on it ; from whence the ocean could first be seen.

When I arrived at Tacna I returned the *breeches* with grateful thanks for the service they had rendered ; and when I got on board, the captain was very glad to see me, and still more so that I had had an opportunity of seeing a part of the world that so few Europeans have seen.

Thermometer Height.

My thermometer was one of those common ones mounted in tin. I took great care in getting the temperature of the boiling water, and carried on my observations until I arrived at the valley of the Desaguadero, whose height above the sea was determined by Pentland barometrically. I then found that my heights were 6,000 feet too high, and corrected them accordingly.

Example.

Upper station.

Lower station.

Thermometer in open air = t' t and T' T temp. of mercury.

Height of barometer corres-

ponding to boiling water. B' B

Palca, water boiled 183° = $B' = 16.312$; $B = 29.921$; $t' = 60$;
 $t = 80$.

	Log. D 9.419294	($t' \pm t$) =
B — 0.00870	C 0.000990	
Log. B' — 1.212507	A 4.797680	

1.213377		
Log. B 1.475976	4.217874 = 16,515 feet	
_____	_____ — 6,000 corr.	
D 0.262599	_____	
_____	_____	10,515 feet.

Pass of Tarcora, water boiled 164° ; $T' = 28$; $B' = 11.392$; $T =$
 80 ; $B = 29.921$.

	Log. D 9.620251	
B 0.002660	C 0.000900	
Log. B' 1.056600	A 4.801370	

1.058860		
Log. B 1.475976	4.422521 = 26,456 feet.	
_____	_____ — 6,000 corr.	
D 0.417116	_____	
_____	_____	20,456 feet.

First hut, water boiled 179° ; $T' = 44^{\circ}$; $B' = 14.913$; $T = 80$;
 $B = 29.921$.

B	0.001560	Log. D	9.478393	
Log. B'	1.173536	C	0.000900	
	—————	A	4.808670	
	1.175096		—————	
Log. B	1.475976		4.287963	= 19,400 feet.
	—————			—6,000 corr.
D	0.300880		—————	
	—————			13,400 feet,
			—————	

Indian hut, water boiled 180° ; $T' = 52^{\circ}$; $B' = 15.254$; $T = 80$;
 $B = 29.921$.

B	0.001220	Log. D	9.464445	
Log. B'	1.183384	C	0.000900	
	—————	A	4.812270	
	1.184604		—————	
Log. B'	1.475976		4.277615	= 18,960 feet.
	—————			—6,000 corr.
D	0.291372		—————	
	—————			12,960 feet.
			—————	

N.B.—As I started with only having two hours' notice, I was only able to get a thermometer before leaving, and therefore I could not get any of these heights in any other way.

E. D. ASHE.

