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Journeys and Explorations on the Pilcomayo River

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women are not unpleasing in appearance, and, when young, graceful, their fine light coffee-coloured skins giving them a fresh complexion rarely seen in Malays.*

Of diseases, small-pox is by far the most serious, appearing in epidemic form, with such regularity (nine to twelve years) that the people use its recurrence as a measure of time. Leprosy exists, and those afflicted with it are kept apart in special houses. Syphilis, though of recent introduction, has done much mischief. A peculiar skin-disease prevails, and is specially virulent among children; gôitres are common.

Von Brenner describes the men as intelligent, though indolent and fond of gambling. Obstinate, suspicious, and cruel by nature, they yet evince a certain gentleness of feeling, and if once jealousy and suspicion are allayed, their fidelity is secured. Excitable by nature, anger, nevertheless, is rarely if ever shown; in fact, surprise and curiosity are the only emotions not under control. They are superstitious, somewhat shy, and nervous. They dreaded being photographed, as they thought that their "shadow and spirit would be caught and kept prisoner in the little box." Men love their families and homes; women are quiet and modest in presence of men, and are devoted mothers and faithful wives, though as girls they are allowed much liberty and licence. Bataks are talented speakers, and love talk and discussion. They are a civil, ceremonious people, never wilfully giving offence, and in conversation a multitude of courteous titles are used, which vary according to the speaker's rank and position; this holds good also between men and women, and complicated and manifold indeed are the terms of address between relatives.

(To be continued.)

JOURNEYS AND EXPLORATIONS ON THE PILCOMAYO RIVER.

By Lieut. O. J. STORM, late Hydrographer to the Argentine Government,
and Professor at the Naval School in Buenos Aires.

THE Pilcomayo is a tributary of the river Paraguay, and rises in the interior of the Bolivian highland, traverses afterwards the immense plains of the Gran Chaco in a south-easterly direction, and falls into the Paraguay river at 25° 21' S. lat. six miles below Asuncion, the capital of the Republic of Paraguay.

A glance at the map of South America will illustrate the importance of the Pilcomayo as a commercial high-road if it were navigable, and of late this river

* When considering the physical characteristics of the Bataks, future observers would do well to keep in mind two possibly important factors bearing on the question: (1) the periodical commercial visits of the Dyaks mentioned in Von Brenner's journal; and (2) the fact, also mentioned by him, that the Batak country is the usual refuge of Chinese coolies when they run away from the plantations. The majority of these poor fellows are killed and eaten, but a certain number escape and establish themselves among the people.

also claims attention as the boundary-line between the Argentine and Paraguayan Chaco.

Ever since the early days of Paraguay's discovery the Pilcomayo has excited a great interest, and innumerable have the attempts been to explore the river, but as yet no man has navigated it in its whole length, and the part comprised between 20° and 24° S. lat. is still practically unknown, and it is only in the few last years that we have an exact knowledge of the lower course of the Pilcomayo. The cause is partly the natural difficulties which the explorer has to contend with, such as shallowness and rapids, and partly the persistent and violent resistance of the Indians to the "white" man's invasion of their territory.

Space does not allow me here to give a *resumé* of the various endeavours made to explore the Pilcomayo river, and I shall only mention the expedition of Dr. Jules Crevaux of the French navy, which was undertaken at a comparatively recent date (1882), and created much sensation, both in South America and in France, on account of its tragical end. Dr. Crevaux started from Bolivia accompanied by fourteen men embarked in canoes, with the intention to descend the Pilcomayo. In the beginning all went well, and the Indians he met seemed to be of friendly dispositions, but they had already beforehand secretly resolved to kill the obnoxious white intruders. On his arrival at the Indian village Cabayú-repoti, not very far from the place of departure, Dr. Crevaux and his party were suddenly attacked by the savages, and he and all his companions, except a boy, were murdered.

Two years later (1884) the Argentine Government opened a military campaign against the Chaco Indians. Besides the main body that advanced by land under the command of the minister of war, there also were despatched two fluvial expeditions, one by the river Bermejo, and another by the Pilcomayo. The commander of the latter was Captain Feilberg of the Argentine navy, and, besides assisting in the military operations, the object of the expedition was at the same time to make a hydrographic survey of the river, for which purpose I was attached to the party. We penetrated some 300 miles, but were at last forced to retreat on account of low water.

The navigability of the Pilcomayo continued still to be an open question, though our experience from this expedition, as well as that of all others, proved pretty clearly that the river was not navigable for commercial purposes. This I also sustained in a lengthy controversy against the French traveller M. Thouar, who previously (1883) had crossed by land the Gran Chaco from Bolivia to Paraguay in company of a Bolivian expedition, and who ardently advocated the advantage of the Pilcomayo as a high-road to Bolivia. The question was finally submitted to the Institute of Geography in Buenos Aires, which, however, did not arrive at any decisive conclusion.

M. Thouar offered to take a vessel of eighty tons, drawing 2 feet, from Asuncion to Bolivia at any time of the year, while I contended that only under exceptionally favourable circumstances, and with a specially built boat, would it be possible to reach Bolivia by the Pilcomayo. Here the matter remained for several years, till in 1890, through the generous assistance of Mr. A. Busk, I was enabled to show practically the truth of my assertions. This gentleman volunteered to build a small steamer in case I would undertake a new exploration of the Pilcomayo, an offer I at once accepted. The steamer was built by Messrs. Cockrane & Co., and shipped to Buenos Aires in three sections. The *Explorer*, as it was named, was a flat-bottomed stern-wheeler built of galvanized steel, length 46 feet, beam 11½, and draught when loaded only 8 inches. The boiler was placed in the bow, and the engine with a single non-condensing cylinder aft. The speed was very inferior,

specially when burning wood, and did not exceed $5\frac{1}{2}$ knots. I obtained the necessary permission from the Argentine Government to explore the Pilcomayo river, and the Governor of Formosa [the Argentine territory south of the Pilcomayo] was instructed to assist me to the best of his ability.

The *Explorer* proceeded up the Paraguay river to Asuncion, and here the final preparations for the expedition were completed. It was very difficult to get the natives to accompany me, but by offering double wages I finally succeeded in engaging sixteen Paraguayan "peons"; the Europeans numbered six, making a total force of twenty-two men. My first lieutenant was a Dane, Mr. F. Freund, C.E., a man of great experience in Paraguay, and who was a most valuable companion and assistant during the whole expedition. The late Dr. Thomas Morong of the Smithsonian Institute accompanied the expedition as a botanist. Before I give an account of our expedition, I will shortly explain the hydrographical conditions of the Pilcomayo.

The river has an average width of 30 yards, and its banks are 4 to 5 yards high, covered in some parts with dense forests, while in others the aspect changes into vast plains dotted with palms. There also exist extensive swamps. The depth is very variable, and entirely dependent on the rainfall. The course of the Pilcomayo is extremely tortuous, with very short and sudden bends, making it difficult even for a small steamer like the *Explorer* to wind her way through. The overhanging trees from both sides, and specially the numerous *raigones*,* offer great obstacles and even dangers for the navigation of the Pilcomayo. In some parts the raigones are so abundant that the river-bed at low water looks like a forest of dead trees. We had to stop at every moment to cut our way through, and at times the men scarcely were out of water the whole day. It is all hard-wood, and even the best axes will break. Another serious impediment is the rapids, with very shallow water and strong current. In order to pass these, we had to lighten the vessel and pull her over with warps or even tackles, and some of the men in the water pushing on each side. In some instances we first had to dig a channel in the hard *tosca* before executing this manœuvre. Our principal food was sun-dried beef (*charque*), which in itself is not very palatable, but has the great advantage of weighing little and keeping well. Boiled with beans and some extract of meat, the *charque* makes a very nutritious dish. We carried very little tinned provisions, to be used only in cases of illness or when unable to light a fire. The rations were distributed every morning by one of the officers, and watch was always kept on the provisions to prevent the men from stealing. We carried a small medicine-chest with written instructions. We were very fortunate with our medical treatment, and though once half the crew were laid up, they eventually recovered, and we all returned in good health.

We only navigated at day-time, and even so we had the greatest difficulties in not running on the raigones hidden under the surface of the water. Military discipline ruled in the expedition; every man had a rifle and twenty rounds of cartridges, and we all slept with our arms beside us. Besides the *Explorer*, we possessed one big canoe, *La India*, and one small, *La Negrita*, which were taken in tow; also a portable canvas boat that was very useful for sporting purposes. In narrow and difficult waters six men were put on board *La India*, punting her against the current at a very good speed.

On January 6, 1890, we left the port of Asuncion, where a crowd of friends and spectators had assembled to see us off, perhaps for ever, as many believed we should never return alive from our hazardous undertaking. At the mouth of the

* *Raigones* is the Spanish word for "snags."

Pilcomayo we shipped the last provisions, and on the morning of the 9th we steamed slowly up the river, which was high and the current scarcely perceptible on account of the flood from the Paraguay river. A couple of days' journey, however, brought us beyond the influence of the Paraguay river, and I was soon convinced that the Pilcomayo itself was very low, though it was just the season for the yearly rise. It took us twelve days of toilsome navigation to reach Las Juntas ("the junction"), a place 120 miles from the mouth, and where the two arms into which the Pilcomayo is supposed to divide itself at about 22° S. lat. again join. There is no doubt as to which of the two arms is the bigger, namely, the western or right one; but the Argentines, from political reasons, maintain that the left branch is the real Pilcomayo. At Las Juntas I encamped in order to overhaul and repair our vessels, which had suffered much during the voyage, and also to give ourselves a well-earned rest. In spite of the exceedingly low state of the river, I resolved to continue the exploration, because I knew from experience that the men would soon get demoralized if we remained idle waiting for a flood to set in.

The next day we recommenced our exploration, following the right branch, but made very little progress on account of the shallowness of the river. Working from sunrise to sunset, with but little rest in the middle of the day, we some days only made a mile and a quarter. The officers set the example, and we passed the greater part of the day in the water, under a scorching sun, removing raigones or hauling the steamer over the rapids. Soon half the crew was on the sick-list, some with fever, and some with dysentery from the bad water.

One evening as we encamped I half despaired of being able to continue the following morning, when a torrential rain set in and kept on during the whole night, causing the river to rise with extraordinary rapidity and force. As the waters covered every mark, I had to calculate the rise, which I estimated at about 10 feet. We loaded the steamer up with wood, and, full of joy and hope, we headed up stream at full speed. The river had changed almost past recognition; all the raigones and rapids had vanished as by magic. What a difference in the navigation from the day before! With the exception of the engineers and the helmsman, the rest of the crew could for once enjoy the *dolce far niente*. That day we made 20 miles, which was the best run against the current we made during the whole expedition. But our happiness was of short duration; a few days later the depth commenced to diminish, and the ghastly raigones once more made their appearance. However, on February 10, after great exertions we reached close to La Espera, 300 miles from the mouth, where we in 1884 had had our encampment, but here it was impossible to advance any more; even *La Negrita*, in which I made a reconnoitring up river, had to be hauled over the "tosca" banks. Very reluctantly I made up my mind to wait patiently for the annual rise, which, according to the hypothesis of the geographers and others conversant with the subject, already ought to have made itself felt; but, alas! this rise never appeared in the six months we stayed on the Pilcomayo. In fact, contrary to all theory, this river has no periodical fall and rise.

Already further down we had seen quite fresh tracks of Indians, and at La Espera we found unmistakable indications of their presence, which, of course, increased our vigilance; we made several attempts to find their wigwams, but without success. We now made preparations for a prolonged stay, pitched our tents and disembarked all our provisions and implements. We also constructed a ranch for the officers on a long sandbank in the middle of the river-bed, where we were less exposed to the troublesome insects and the heat than on board the *Explorer*.

I had all the stores weighed, and found that our provisions would last for sixty

days. The distance to the nearest Bolivian village I presumed to be 500 miles, which we with high river ought to cover in thirty days; besides, I trusted to be able to buy provision from the Indians further up. Taking everything into consideration, I calculated that we could afford to wait a month for the river to rise. Day after day, however, passed without the slightest change, except that the river always fell, the provisions diminished, and the mosquitoes augmented. We beguiled the time as best we could, specially by shooting, but gradually the game became scarcer, and we had to look for it at considerable distances from the encampment, which was not without danger on account of the vicinity of the Indians. Fortunately, we had a good stock of books, and our botanist's piles of old *New York Herald's*, which he used for drying his plants, were devoured with avidity. We also played at chess and at other games, had target-shooting with prizes, etc.

The heat, specially at night, was very oppressive, but not to be compared with the annoyance we suffered from the swarms of insects which harassed us day and night. Wind and sun were the only things which would moderate their attacks, and we therefore used to promenade in the broiling hot sun, fanning ourselves with kerchiefs in order to keep our enemies away. I shall not try to make a scientific description of our tormentors; it suffices to say that we discovered six different classes of mosquitoes of various sizes and colour, some even walked with their feet in the air. There were also many reptiles, of which the rattlesnake was the most objectionable, besides the tarantula and the big bird-spider.

After a stay of three weeks in Las Penas ("the sufferings"), as we significantly named our encampment, there was still no sign of an approaching flood, and I realized that we should have to send for some provisions in order not to abandon the exploration and the steamer. After consulting with Mr. Freund, we agreed that he should take *La India* and six men with provisions for fourteen days, and go down to Asuncion to fetch a new crew and fresh stores. We picked out the most useless among the peons to go in the relief expedition.

On March 3, we bade Mr. Freund and his comrades good-bye with a heavy heart, as it was doubtful whether we should ever meet again. They had before them a journey of 300 miles and back by a dried-up river, and we on our side, twelve men all told, of whom seven were rebellious half-castes, were left with scanty provisions, and practically cut off from retreat should we be attacked by the Indians, the river having fallen so much that the *Explorer* could not float. I calculated that Mr. Freund should be able to get back in five weeks' time—that is to say, about April 10—while our provisions, by exercising great economy, should last a week over this term. In case the river should rise, I had agreed with Mr. Freund to go down in the *Explorer* and meet him at Las Juntas.

The days now commenced to drag on with a maddening slowness. We never went about alone for fear of Indians, nor did we absent ourselves for great distances from the encampment. Almost every day the sky looked threatening, but invariably it cleared up without the rainfall for which we so anxiously longed. We used to get our drinking-water from a neighbouring pool, but it gradually dried up, and we were then obliged to fetch the water every morning from a small brook 6 miles up the river. The provisions also diminished with an alarming rapidity, and at the end of the month our stores of flour, peas, and beans were finished, only the tough "charque" remaining, which we prepared together with palm-cabbage. We also shot an alligator, the only one that had remained after the drought set in; by cutting off the tail, and boiling it before roasting, we got a very eatable dish of fresh meat, in spite of the repugnance which these reptiles impress on the mind. Under these circumstances the time for the return of Mr. Freund expired. The river was still exceedingly low, and this might count for his

tardiness, though I in my calculations had made good allowances for it, and I therefore feared he had been attacked by the Indians on his voyage down or up.

On April 14 we had provisions left for only one day more, and I was now forced to leave the steamer and go down the river in search of our companions and of food. All the superfluous arms and implements were buried in the bank, and the ammunition together with \$200 in silver enclosed in the boiler. The chronometers and astronomical instruments I carried along with me in a box on board the *La Negrita*, manned by four men; one man embarked in the canvas boat, and two in a canoe which we ourselves had scooped out of the trunk of a tree; the rest, four men, had to walk on foot along the bank. The Pilcomayo was so low that we, at every instant, had to jump out of the canoes and drag them along the dry river-bed. Each man was only allowed to take one set of clothes, his rifle, and a "poncho." The weather was hot in the day-time and cool at night, and one evening we were surprised by a heavy hailstorm. As soon as we got some miles below Las Penas we found abundance of game, mostly birds; but as we by this time were short of cartridges, we had to be very careful when shooting. I had arranged with Mr. Freund that he, at certain places, should leave news of his voyage, and, in fact, at La Mora Negra I found in a bottle a slip of paper announcing his safe arrival at that place on his way down. This message was a great relief to me and all of us. After a couple of days, the men on foot suffered from sore feet and swollen limbs, and were unable to proceed any further. We tried to build some rafts of dried palms, in which they made but slow progress, running into raigones at every instant.

In the afternoon of the fifth day, just as we turned a bend of the river, we suddenly came on Mr. Freund and his party, drawn up in a line, and ready to receive us with a shower of bullets; they had heard some shots, and believed that the Indians had killed us and had seized our arms. For all that, our appearance was far from reassuring, and we looked more like savages than white men in our scanty and torn clothes. The joy at meeting each other is not to be described; only the old peons, who had been with me, were very crestfallen, as they had hoped to reach Asuncion and be paid off. Half imploring and half threatening, they asked permission to continue the voyage down stream by themselves. I immediately had all the peons drawn up, and told them briefly that I had not the slightest idea of giving up the expedition, nor allowing anybody to abandon it, and whoever should try to do so would do it at the risk of his life. This had an excellent effect, not only on the old peons, but also on the new ones that Mr. Freund brought, and who had behaved rather independently. Mr. Freund was accompanied by a friend, Mr. Noble, and eight peons. Besides the old canoe, *La India*, he also brought a new one, both loaded with provisions.

The cause of the delay was simply the exceedingly low state of the river. The same day that we met, a rise had set in owing to some rain, and in high spirits we again started up river to return to the *Explorer*, which we reached on April 24, after an absence of ten days. The previous days we had seen big prairie fires, which indicated the presence of Indians; but, fortunately, we found the steamer and everything on board her just as we left them.

The total rise of the river at Las Penas was 14 inches. The arms and implements were again unearthed, and on the following day the whole expedition, headed by the *Explorer*, proceeded up stream. We passed the river Dorado, a tributary of the Pilcomayo, and reached the rapids which had stopped our expedition in 1884, and, though the waters were now much lower, we succeeded in passing them after having cut a channel. As we advanced the presence of the Indians got more marked. In the night we saw their watch-fires and heard their war-whoops; we also

came on several abandoned wigwams. Twelve miles above these rapids we found a waterfall 5 feet high. After having examined the ground, I resolved to excavate a slip in the left bank; placed four palm-trees longitudinally, 3 feet apart, the whole length of the sloping terrace, and short rollers, also of palm-trees, on the top of these. On the fourth day after we commenced the work, we gave the first pull with the tackles fastened to the bow of the *Explorer*, and, to our great satisfaction, she gradually ascended the slip, and the next day we were able to launch her above the fall, which we baptized "Salto Palmares," from the immense forest of palms which exist there. Thus we had overcome this obstacle, but a still more serious one was in store for us. A couple of miles farther up, the Pilcomayo converted itself into a big swamp all covered with rush, and extending as far as the eye could reach. In the small canoe I penetrated about a mile into the swamp, and ascertained that, unless there was open water farther up, it would be impossible to penetrate with the *Explorer*. Naturally enough the men were rather disheartened, and the night before we were to enter the swamp two of the peons disappeared. This time they had not been able to steal any of the canoes, but had left on foot. Accompanied by a couple of men, I set off in pursuit of them, but was unable to track them in the dense forest. I knew, however, that they had but a poor chance of finding their way back to civilization alive. About their fate I shall relate later on.

As soon as we entered the swamp the engine was of no use any more, and we could only advance by warps and punting. After great efforts we penetrated into a sort of small lake with comparatively open water, and here I determined to leave the steamer and explore the whole swamp in canoes. On May 16 I started, accompanied by Mr. Freund and eight men in *La India* and *La Negrita*, provided with food for thirty days, and 150 rounds of ammunition per head. The steamer I left in charge of Mr. Noble, to whom I gave written instructions how to proceed in the different cases that might present themselves. In case of a rise, he was to follow us up; while if the river should fall, he should return to Salto Palmares, and there wait our return till he had only provisions left for fifteen days, and then save himself and leave us to our fate.

The Pilcomayo seemed at first to disappear in the swamp; this, however, was not quite the case. The river wound its way through the morass, and was conspicuous by the height of the grass and abundance of aquatic plants with which it was filled. In some places this "green" river had spots of open water with a depth of about 6 feet, and an almost imperceptible current. The average width of the swamp was 5 miles. We first tried to follow the river, but soon found that it was easier going through the swamp itself, where the grass was not quite so dense, and was covered with about 10 inches of water. Partly pushing and partly punting, we advanced close upon 2 miles before darkness came on. Of course there was no *terra firma* where to encamp, and we had to turn in all standing in our canoes. The nights at this time of the year were quite fresh, and the thermometer would be as low as 42° Fahr. We forced our way through the swamp for three days, and still the condition of the river did not improve; but in the morning of the fourth day it gradually changed into an open stream, where we made good progress with the poles, expecting soon to get out of the dreary morass. However, a mile and a half further up the river again closed in, and divided itself into three branches, which each gradually disappeared in the swamp. This was now so overgrown and shallow that even our small canoe could make no headway. We successively tried the different arms, all with the same result—impassable! It was evidently of no use to continue any more in the canoes, but at the same time I did not like to come back with the intelligence that the Pilcomayo disappeared, without knowing how or where. I determined to leave the boats in charge of a few men, and undertake an exploration by land. After

wading through water and mud for an hour and a half, we once more trod firm ground, and directed our steps northward, following an Indian footpath which led us to an encampment, where we found plantations of pumpkins and Indian corn.

We saw quite fresh prints of horse-hoofs, and it was plain enough that the Indians were about. A little later we also discovered two of their scouts in a tree; we made some friendly demonstrations, but the savages soon disappeared. Even if our number should have permitted us to engage in a fight with the Indians, I should have tried to avoid it as long as possible, and my policy was always to establish a friendly intercourse with the Indians, in order to get some information from them regarding the Pilcomayo; but during the whole expedition we never were able to get near them. They evidently believed us to be the van of a military expedition, similar to the one which in 1884 had punished them so severely.

About 12 miles from our starting-point we again found the Pilcomayo, which here presented a similar aspect as below the morass. We followed its course in the direction of the current, in order to make sure that it was the real Pilcomayo, and soon sighted the swamp, which made a big bend to the south-west.

We had now achieved the object of our land-exploration, and returned to our canoes, in which we once more made an attempt to penetrate in the direction where we had refound the Pilcomayo, but in vain. The swamp was almost dry, and quite impenetrable, and we might just as well, or easier, have hauled our canoes over land; but this would be an operation that required more time than our stock of provisions would allow us, if we were to continue the exploration above the swamp. Moreover, the waters had been falling ever since we left the *Explorer*, and for this reason alone I should have to beat a hasty retreat. So on May 29 we started on our return voyage to the steamer, which we reached three days later at Salto Palmares. Mr. Noble and his party were all safe, and had commenced preparations for repassing the fall. These we completed, and soon got the *Explorer* over.

The river by this time had fallen 24 inches since we first arrived at Salto Palmares, and was still falling at the rate of 3 inches every 24 hours, and I feel assured that, had we been a few days later, I should have had to leave the steamer behind. As it was, the bottom of the *Explorer* grated the tosca-banks as we shot the rapids, driven by both engine and current. However, the raigones, as always, proved to be the most dangerous obstacles; and, after having run into one, we got the bow knocked in, and had to run the steamer ashore in order not to sink. A slip was soon constructed, the forepart was beached, and the damage repaired.

Passing the Dorado river, we, strange to say, found it swollen, and consequently, from this point downwards, the Pilcomayo was comparatively high and the navigation easy. A few days later we approached the place where we had met Mr. Freund and his relief-expedition, when suddenly a human being of a wild and ghastly appearance rushed out of the woods, and, falling on his knees, implored to be taken on board. It was Julian, one of the deserters at Salto Palmares. At first I thought of leaving him to his fate, as he had left us; but when he, all in tears, told me that his comrade Antonio was dying in the bushes, I took pity on them, and had them brought on board. Antonio, who formerly was an active and powerfully built man, was so exhausted that he had to be carried on board, and could hardly speak. Julian, though not actually ill, looked like a skeleton. On being interrogated, he explained in "guarani" (Indian) *patois* that their original plan was to pick up the canvas boat which I had had sunk below the fall as useless, but our keen pursuit had frustrated this design. They continued for a while on foot, following the banks of the river; tired of this, they constructed a raft, which, however, capsized, and Antonio, already then ill, was nearly drowned, and their rifles and few

provisions lost. They again started walking, but Antonio, getting worse and worse, finally could not move any more, and had been lying down for four days at the place where we overtook them, waiting for death to relieve him from his sufferings. They had been able to sustain life by some stray birds.

Without further incidents, we reached Las Juntas, where we found the other branch to be very low. Mr. Freund, on his relief expedition, had met with another exploration party, under the command of Captain Page, of the *Argentine*, who had penetrated into the left arm of the Pilcomayo, and from the low state of this river, I presumed that Captain Page might have been caught in the same way as we had been ourselves at Las Penas, especially as his steamer was considerably larger than the *Explorer*.* I therefore resolved to go in search of Captain Page, and to offer my assistance, if necessary. However, after penetrating a few miles, I found the river so low that I had to abandon all hopes of advancing any further. Consequently, we returned to Las Juntas, and continued our downward journey.

Four days later we reached the first settlement close to the mouth of the Pilcomayo, where I was told that three days previously a canoe, with five men belonging to the Page expedition, had passed on their way down in search of provisions. On June 17 we once more dropped anchor in the port of Asuncion, after an absence of 162 days.

We had not been able to reach Bolivia, but I had practically proved my theory, that the Pilcomayo was not navigable. We had penetrated further than any other expedition; had surveyed the course of the river towards 24° S. lat. and had made a series of astronomical and meteorological observations. Among the collections, the botanical was specially rich, containing a number of formerly unknown plants.

On my return to Buenos Aires, I presented to the Minister of War an account of the expedition, accompanied by a map of the river and a report on its hydrological conditions. I will not here enter into the details of my report, but only mention the conclusions I arrived at after a careful investigation into previous explorations of the Pilcomayo, and comparing these with the experience and observations gathered in my own.

1. The Pilcomayo is not navigable for commercial purposes.
2. The western or right branch is the principal river of the two that join at Las Juntas.
3. The Pilcomayo has no regular and periodical rise or fall.
4. It is probable that the Pilcomayo debouches into the Paraguay river by one or more outlets beside the one in front of Lambaré below Asuncion.

THE MONTHLY RECORD.

THE SOCIETY.

Honour to the President.—M. Arthur Claparède, President of the Geographical Society of Geneva, writing to Mr. Markham, informs him that he has been elected an Honorary Member of that Society in place of the late Sir Henry Rawlinson. The number of such members is limited to

* The Page expedition actually was detained some 30 miles above Las Juntas, and did not get back till May, 1891, after an absence of fourteen months, and with the loss of its commander, the doctor, and several men. During the whole of this time the left branch of the Pilcomayo never had a rise of any importance or duration.