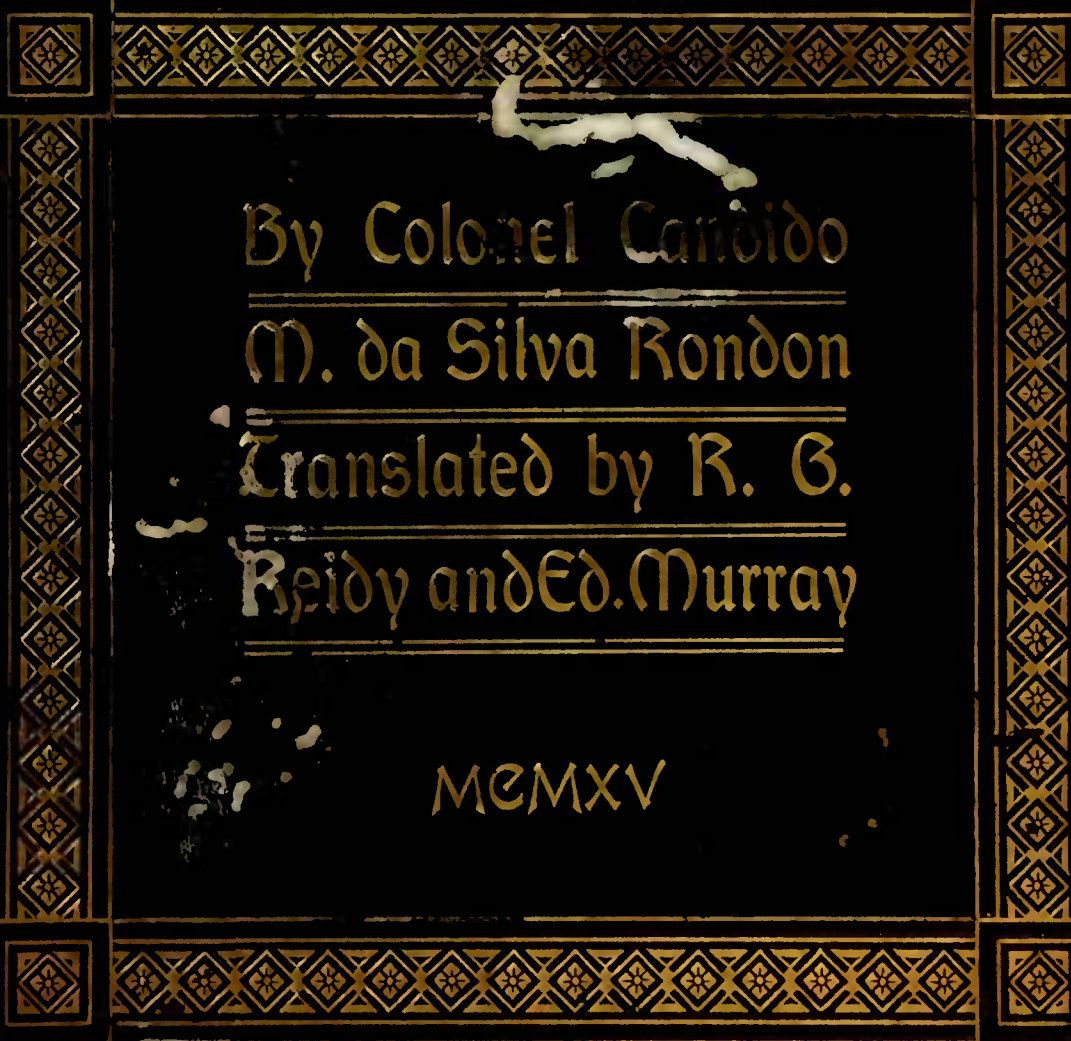


The Roosevelt - Rondon
Scientific - Expedition
AND
THE TELEGRAPH
LINE COMMISSION



By Colonel Cândido
M. da Silva Rondon
Translated by R. G.
Reidy and Ed. Murray

MEMXV

Je ne fay rien
sans
Gayeté

(Montaigne, Des livres)

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Missão Rondon



Brasil

1918

Commissão de Linhas Telegraphicas Estrategicas
* * * de Matto-Grosso ao Amazonas * * *
————— (Publicação n. 43) —————

Conferencias de 1915

VERSÃO PARA INGLÊS
DA PUBLICAÇÃO N. 42

————— POR —————

R. G Reidy

————— E —————

Ed Murray

Cândido M. V. Rondon

(Autografo do
General Rondon
Rio - 10 de Fevereiro de 1944.)
Glaubert Serpa

RIO DE JANEIRO ** TYP. LEUZINGER

————— 1916 —————

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PREFACE

I

The *Jornal do Commercio*, of Rio de Janeiro, published the following notice on October 6th 1915 :

« A manifestation of remarkable brilliancy, promoted in honour of Colonel Rondon by the Geographical Society of Rio de Janeiro, took place in the Phenix Theatre yesterday evening at 8.30. Besides the ceremony of the unveiling of his portrait, which is to be hung in the gallery of meritorious members of the Geographical Society, it was known that Colonel Rondon would avail himself of this opportunity, to give, at the request of this Institution, his first lecture on the Roosevelt-Rondon Scientific Expedition, and the exploration of the river Duvida. The place first chosen for these lectures was the S. Pedro Theatre, but through unforeseen circumstances, the Committee was obliged to alter this arrangement in 24 hours, and in this short space of time the Phenix Theatre was prepared for this purpose. Long before the appointed hour the guests commenced to arrive, and

at 8.30 p.m. the elegant theatre was quite full ; boxes, stalls, galleries and all seats were taken. In the corridor which encircles the stalls one could see many people standing. The invitations had been distributed in accordance with the larger seating room of the S. Pedro Theatre, and for this reason there was some difficulty in seating all the guests in the Phenix Theatre. The first tier of boxes were all reserved for the President of the Republic, Vice-President of the Republic, Ministers, Members of Congress, the Diplomatic Corps and the Government of the City of Rio de Janeiro. Amongst those present we took note of the following : The Minister of Marine, the Minister of Agriculture, the Vice-president of the Senate, the Chief of Police, the American Ambassador, in whose box the American ensign was displayed ; a Commission of the Municipal Council, the Chief of the General Staff of the Army and Representatives of the President of the Republic and of the Ministers of Foreign Affairs, Justice and War. Shortly before 9 p.m., the session was opened with General Gregorio Thaumaturgo de Azevedo in the Chair ; at the table placed on the stage were also seated Colonel Rondon, Dr. José Boiteux, Alvaro Belford and Sebastião Sampaio, members of the Board of the Geographical Society, and Lieutenant Alfredo Severo dos Santos Pereira who was committed to greet Colonel Rondon on behalf of the Officers of the Army. The unveiling of Coronel Rondon's portrait was followed by prolonged cheers, after which, General Thaumaturgo de Azevedo delivered the following speech :

« The Geographical Society of Rio de Janeiro, which I have the honour of presiding, has decided to hold this great meeting in order to unveil the portrait of an illustrious Brazilian and honoured Member of this Society, in acknowledgement of the relevant services rendered by him to the Nation. In retribution of this proof of kindness, and at the request of the Board of the Society, the intrepid explorer will deliver three lectures on the subject of the geographical and other work carried out, under his direction, as Chief of the Commission of The Telegraph and Strategic Lines of Matto-Grosso, and also during the Roosevelt Expedition. From these words it can be easily gathered that I refer to the meritorious Colonel of Engineers, Candido Mariano Rondon, who is here present. His contemporaries of the Military School say that whilst a student of this academy, Rondon had the constant ideal of connecting up all the important places of his native State, by a system of telegraph lines. This preoccupation, which was always before his mind, he carried out beyond his wishes, for he not only made this connection, but extended same to another State as great, and as rich as his own, viz the Amazon ; and from there to the whole of Brazil by means of the already existing communications. It is close on 25 years since he undertook this work in the wilds of Matto-Grosso, firstly as assistant and afterwards as a Chief, and he not only planned and studied these aerial lines, but traversed century-old forests, followed up the courses of unknown rivers, exploring some and rectifying others, determining geographical positions and collecting abundant natural

history material heretofore unknown. This arduous task can only be understood by those who have carried out such work in other regions, such as the boundaries' commissions, equally dangerous and full of sacrifice. Hence the value we give it by our own experience. In this way Rondon has rendered this patriotic service at the cost of his health, the risk of his life and as a duty to his country. Of all these qualities, however, the one which most ennobles his name is the kindness with which he initiated the service of the Protection of the Indians — liberating them from the massacres of other tribes, and even of civilized people in search of rubber — bringing them into the midst of civilization. This is his most meritorious work. For such deeds the Geographical Society of Rio de Janeiro, in unveiling his portrait here, will be proud of having same among those hung in the Members' Gallery of the Society ». General Thaumaturgo's last words were received with prolonged cheers. At this point Mr. Sebastião Sampaio, the official speaker of the Society, recited the verses from Olavo Bilac's poem entitled *O Caçador de Esmeraldas* (The hunter of emeralds).

« Behold Sir! it was a *wild wander*, says the poet, and it was a *lost march*, it was but a selfish *dream*, that of this hunter of emeralds; nevertheless he has these verses to immortalize him!

You never could have imagined that the praise of this unique poet, the cherished symbol of our Country could ever be yours... Bring, meanwhile, to the present era of civilization that company of pioneers; substitute the *wild wander* and the *lost*

march, by the sure route which breaks through the wilderness, just as your pencil designed a map; change that *selfishness*, the delirium of the green stones, into your unselfishness, into your earnest hope of causing the generous blood of life to circulate in all the arteries of our Nation; forget for a moment that we are referring to you, and I can affirm that you will be possessed with the vision of this moment in which I am greeting you with Bilac's poem, dedicated to Fernão Dias Paes Leme, who appears returning from the wilderness, like the ancient heroes, bringing the wilds on their shoulders!

You will therefore see that it is perfectly useless for me to attempt to honour you with my own phrases. They fall to your feet like the forest flowers which dropped slowly across your way through the silent woods on dark nights, trying in vain to fathom the incomparable brilliancy of your glory. Our Society was desirous of having your picture: it has therefore procured one in retribution of its enormous debt, not towards you who do not require words of praise, but to our Mother Country, proud of your work and of your merit. I would that the words of our illustrious Chairman, who is also full of services to the Nation, should have sufficed for the ceremony; but I must comply with the rules of my office and delay, somewhat, the anxiously awaited narrative of your deeds.

Far from me to attempt to eulogize this Homeric enterprise of 25 years; to repeat in simple words the magnificent work which you have accomplished would be to diminish it; we are all aware of the height to which same attained; and

History's altar has no steps for human aspirations; it is Immortality that takes under her wings and carries the chosen souls... I prefer to admire you from below with the earnestness of all your admirers. —

Behold! all of us are the believers in the utility of your work: your generation which you highly honour, my own generation which learns from your example. Your example as a youth! Dreamer of a great dream, you were able to accomplish it at manhood; and by this you have taught us not only to esteem work, but to yearn for the ideal, which is so wanting in our days, materializing the present and threatening the future...

Your tenacity! The incomparable virtue of your tenacity! The constant fever which burnt in your mind through cold nights and that did not hamper your heroism exposing your life like the genial poet in the stormy waters of the Amazon, for the sake of your work,—this other poem, the poem of your journey, the new *Lusiadas* of the new glories of our race.

Your love! It was through this love that you substituted the soldiers of the old pioneers by brotherly affection. You have brought us with the unknown land an unknown brother, thus redeeming a race which science had condemned in its cruel mistake, that it was sufficient to think without feeling.

Why mention your services rendered? Who is there that ignores that you have given us this huge tract of unknown Brazil, which five heroes had previously attempted in vain to reach, and which

you have finally incorporated in the Nation by this giant's march from Matto-Grosso to the Amazon?

Why more words? You know the modest home of our studies and investigations, the Geographical Society where the bust of Rio Branco presides; the venerable statesman who gave us a new independence by erecting the defensive walls of the borders of the Nation. You have completed the work of Rio Branco; you have discovered this unknown Brazil which he delimited. It was but natural that your picture should complete the external veneration in our humble Temple. We have accomplished our duty. We are content. And our Country who hails you, gladly blesses you at this moment when we celebrate your glorious work. »

On terminating his speech Mr. Sebastião Sampaio was received, by the auditorium, with loud and prolonged applause.

First Lieutenant Severo dos Santos then delivered the following speech :

« Colonel Rondon. Your comrades joyously associate in the just homage which you receive from the Geographical Society of Rio de Janeiro, the legitimate interpreter of the gratitude which the Country owes to the fearless discoverer of the wilds of Brazil and to the humanitarian pacificator of our aborigines. And their pleasure, in so doing, is so much the greater, inasmuch as these words of praise fall on a group of devoted comrades of the glorious 5th Batallion of Engineers of the «Strategic Telegraph Lines Commission from

Matto-Grosso to the Amazon» and of the «Service of the Protection of Indians and Localization of National Labourers» which under your direction work so patriotically.

You have once again shown what services military engineering is apt to render in time of peace, for since the time of the Romans it develops industry, that is to say, the real and useful effort of mankind over its surroundings, in view of the fact that your mission is rather of protecting human life than of destroying it, as was the wish of a Lazaro Carnot or of a Vauban.

And during this long campaign, how many simple and obscure soldiers have silently fallen, unknown to the outside world ; how many comrades of ours have courageously sacrificed themselves to their work, since that kind hearted and noble First Lieutenant Francisco Bueno Horta Barbosa to the more recent one, fallen yesterday wounded with many arrows that good and brave Francisco Marques de Souza in whose diary, brought up to the last days of his life, we can read the narrative of the privations, hardships, and sufferings of his epic exploration of the river Ananaz !

Only the active courage, the combative faith, and the potential energy of a Chief like you, could bring about the amalgamation of such manly souls in the crucible of a similar devotion, implanting in the hearts of the younger generation who followed you, this intense passion for the unselfish and dangerous life of a forest traveller, that attraction for the unknown, that same faith in a high ideal, which after facing all sorts of drawbacks, has

conquered and brought to a meritorious end, the enterprise which we now honour and thank.

Condemned to the primitive life of hunting and fishing, descending the rivers in canoes, made from the trunks of trees, marching knee-deep in the marshes and swamps or entangled in the vegetation ; what enormous courage and energy is it necessary for a man to show, in order to avoid succumbing in the struggle against hostile elements? ! There the marches are conducted amidst the dangers of the flora and of the fauna, now crossing arid plateaux, now forcing a way across the hispid woods, now again investigating the secrets of the treacherous waters, closed to view by the labyrinth of the branches between banks permeated with malaria.

Pascal said that rivers are « roads that travel ». But here, in our complicated potamographic system — a net-work of *igapós* and *paraná*s, of falls and rapids, *tombos* and *sumidouros* — the river is more like a dangerous serpent, now winding insidiously between banks of mud and suddenly throwing itself into the treacherous revolution of the agitated waters! And there is wrecked the capsized *uba* (*) and the result of many months' work, instruments, and provisions parcimoniously calculated for the rest of the voyage are lost.

Then it is hunger that arrives, with its long despair and the sadness of

« Gulleting in, corrupt and putrid meat »

« The spice and sauce with which the valiant eat »

(LUSIADAS, VI, 97).

(*) Vide Glossary.

Thanks to your wise foresight, along the track opened for the main telegraph line, notes were mapped with the new geographical and ethnographical corrections with regard to the habits and customs of our native tribes, enriching our folk-lore and our knowledge with new information with regard to the flora, the land and the aquatic fauna and also with regard to the geological structure of our soil.

The immortal journey across our *hinterland*, from the Pareci Plateaux to the marsh lands of the Madeira, will remain as if grooved in the surface of the earth which we inhabit wedged in between meridians and parallels which likewise mark out an immense region of suffering and heroism. For this reason, your name will be

« worthy in fame's memorials to remain »

(LUSIADAS, III, 118).

as : —

« Illustrious names, with deathless laurels crowned »

« While time rolls on in every clime renowned »

(LUSIADAS, I, 2).

X — Nevertheless, you did not enter into the midst of our forests with sword unsheathed, holding in the other hand the lighted torch of Bellona. On the contrary, you had before your eyes that gospel as it were, of the woods, described by the great José Bonifacio, wherein it is said that we owe the Indians much « *kindness, constancy and endurance*, which we must show them as christian *usurpers*, which



Photo. Com. Rondon

Renato Rodrigues Barboza
Then 2nd. Lieutenant

Lieutenant Nicoláo
Bueno Horta Barboza (then 2nd. Lieut.)

Colonel Rondon

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Colonel Rondon, in the company of two of his assistants during an exploration in the heart of the unknown wilderness, appears apprehensive with regard to the state of health of one of them, and weighs his responsibilities as chief of the expedition

we actually are » and that consequently, we must not treat them with fire and sword, but rather, « first know them and what they are, and what by nature, they must needs be — wild indians — and then, find out the means of converting them into what it is our duty to see they should be ».

At that time, this great statesman who was the father of our national independence, had foreseen that to attempt *ex-abrupto* to transform an indian into a civilized being, was the same as to attempt by force, to turn from one day to another a child into an adult, thus violating all the laws of biology and sociology which govern the normal development of the human species. Already Father Nobrega had declared that « with music and harmonious voices he would venture to bring to him all the tribes of America ».

Nevertheless even in our days, these indians found themselves outside the law, which like an inhuman stepmother, existed only for the purpose of delivering them up, defenceless to the iniquity of their persecutors, thus living like so many wild animals held at bay by the relentless hatred of the indian hunters. There was even a scientist who proclaimed that the only natural solution of the problem was the extermination of our poor forest bretheren.

In the midst of such crude injustice which dishonoured our History, it fell upon your great heart, and your civic courage to have the glory of taking up the tradition of José Bonifacio, saving from complete annihilation what remained of the unfortunate aborigines population, bravely facing not only their unconscious arrows but also the still

more poisoned arrows of the unemployed demobilisers who trail their life at the corners of the Avenida blowing off their ridiculous and wanton criticism. It is because in the midst of the stagnation caused by scepticism and discouragement occasioned by negative criticism, by the exercise of pure talk of the most sterile vaniloquence, you speak the unknown language of action with the courage to undertake, the prudence to continue, and the firmness to carry out to the end.

Your mission was not, however, that of theological catechism, which endeavours to impose its faith on the gentiles, nor that of pseudo-scientific materialism, which preaches the monstrous theory of modern anthropophagy, according to which the strong and cultured may devour the weak and uncultured. No! your mission was inspired by scientific faith based on the unchangeable laws of positive sociology which show us the various people of the earth from the most primitive settlements or *taba* up to the most enlightened society, as being fundamentally constituted of the same organic elements, differing only in the respective degree of development.

This being the case, what we have to do is not to exterminate the Indian, in the same way as one does not exterminate a child: one educates it; that is to say we must lift him up to the level in which we live ourselves, peacefully and humanely placing within his reach the improvements of which we may dispose.

Let us therefore admire your daring efforts, and serene courage, the noble disinterestedness, thanks

to which whilst other nations supposed to be more enlightened were criminally hunting them down, we could prove to the Indian that we, the civilized people, are superior to them not in the superiority of our fire-arms but in the greatness of our generosity and in the excellence of our altruism.

Only those who see but the material and crude aspect of progress can deceive themselves, endeavouring to underate the position which is due to a Nation in whose midst hatred against other races is unknown, and that brought about the abolition of slavery amidst rejoicing and flowers.

Still more, therefore, than the perfile of the unraveller of the wilds, what stands out most in our eyes, above all, are your service as the practical executor of the civilizing aspirations of José Bonifacio, and your great heart as a friend and protector of the persecuted Indian whose lamentations ring out in the poem of Gonçalves Dias (*Tymbiras*).

Your work stretches out into the future to an enormous extent, just as those sightings from our terrestrial telescope which is daringly thrown up to the stars.

Your name has already crossed our frontiers proclaimed by such an eminent person as a Theodore Roosevelt, in the centres of world-wide prestige.

Gentlemen : he who most loves his Country is he who served it more. Let us therefore learn in the noble life of this Bayard *sans peur et sans reproche*, in this courage of this clearer of virgin forests, in the intrepid action of this pioneer traveller of our interior ; let us learn from this character like

a diamond without defects ; in the naked and clean blade of this energy of steel ; in the precious vein of this heart of gold, how to serve unfailingly and desinterestedly the land of our birth, our dear Brazil ».

After this speech, which was highly applauded by the assembly, Colonel Rondon rose to say a few words.

Colonel Rondon rose from his seat on the right of the Chairman of the Society and ascended the tribune. The auditorium received the lecturer with loud cheers which lasted for a few minutes. Then, the illustrious Brazilian commenced his first lecture.

Colonel Rondon was interrupted at various intervals during the lecture by the applause of the audience. Amidst the loudest applause we may remember the projection on the screen of the pictures of the speaker with the Pareci children educated in the school instituted by Colonel Rondon among the tribe of those Indians, and who are now in this city completing their education ; later on they will return to the woods as telegraph operators. Colonel Rondon's last words were received with great enthusiasm.

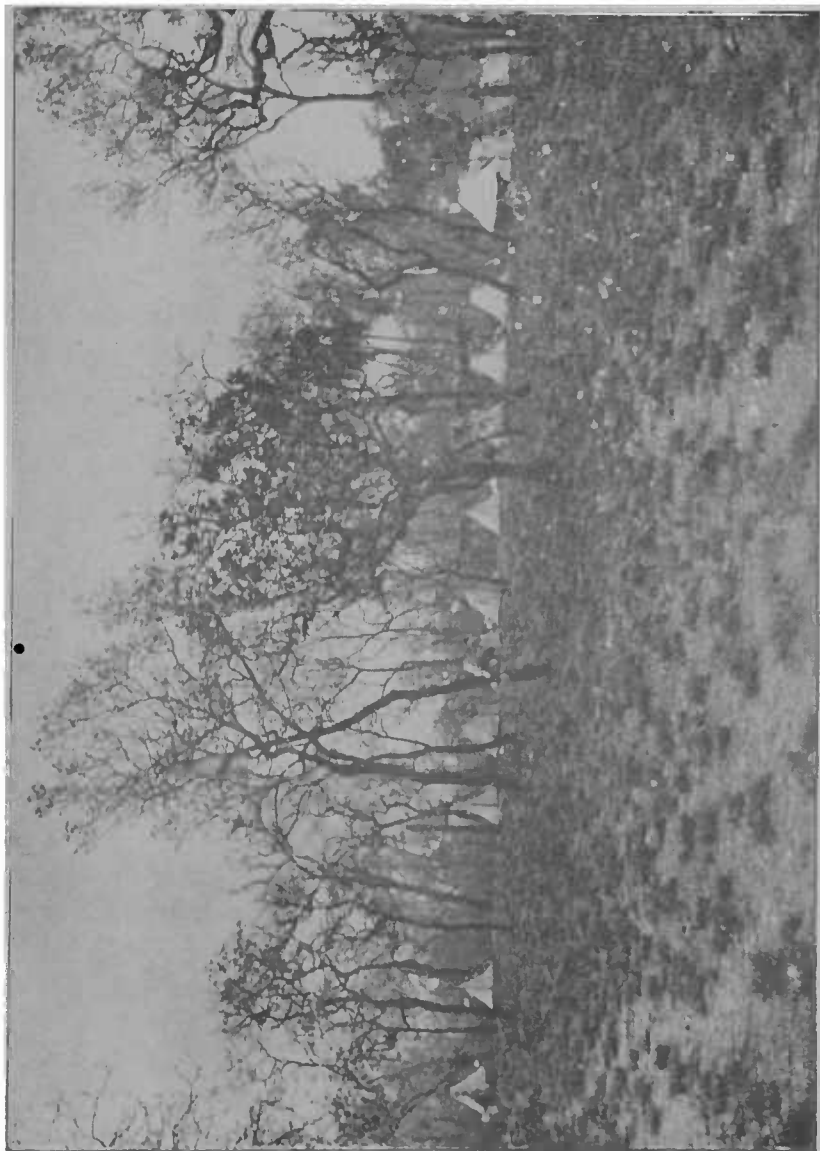
In proportion as Colonel Rondon proceeded with his lecture, projections were thrown on to the screen under the following headings : The President of the Republic ; Dr. Lauro Muller ; Colonel Roosevelt ; *Commemoração de Floriano*, Confluence of the Pimenta Bueno and the Gy-Paraná ; Lieutenant Jaguaribe ; Captain Amilcar

Botelho de Magalhães ; A Stretch of the mouth of the River Apa ; Chamacoco Indians ; Deck of the «Riquielme» ; The Bolivian Frontier Mark ; First Sight of Corumbá ; Chart of the route adopted ; On the way to the Fazenda das Palmeiras ; Marshland at the Fazenda das Palmeiras ; Cattle-enclosures at the Fazenda das Palmeiras ; The Cattle of the Fazenda ; On the way to a Hunt ; The first jaguar ; Skin of the First Jaguar ; The Second Jaguar of which Rondon shows the head ; Banks of the Paraguay ; Swampy Pipiresal ; Carandazal ; Steamship «Matto-Grosso» ; View of the Fazenda de São João ; Photograph of the setting out to a hunting expedition ; Roosevelt laying down reading ; Stretch of the river Nanarassú ; Gahiva Bay ; Camping at Porto do Campo ; Setting out for a hunt at Porto do Campo ; The result of the hunt ; Porto do Campo ; Departure for Tapirapuan ; Arrival at Tapirapuan ; Departure for Salto ; Arrival at Salto ; Breakfasting on a hide ; Aldeia Queimada ; Entrance into the track of the Telegraph Line ; Rio Sacre ; Camping at the Sacre ; Salto Bello ; A Pareci Village ; The interior of a Pareci hut ; A Pareci Mother ; Pareci basket ; Game of Head-ball ; Breakfast at Salto Bello ; Utiarity Village and Station ; Utiarity Waterfall ; Group close to the Utiarity Falls ; Juruena Station ; Group of Nhambiquaras ; A Nhambiquara Mother ; Presents for the Nhambiquaras ; A tree in the field ; Serra do Norte.

After a small interval the cinematographic films of the Expedition, divided into four parts, completed the programme of the entertainment.

The following is a list of the principal pictures taken in the wilds by 2nd Lieutenant Thomas Reis :

The Docks at Buenos Ayres ; Rio Paraná, Rosario, Asunción ; Brazilian Frontier with Paraguay ; The Carandá Palms ; Porto Murtinho ; Corumbá ; Views taken of the Expedition leaving for the first hunt on the river Taquary ; The river Taquary with its birds, water-fowl and cayman ; Colonel Roosevelt firing on a cayman ; Porto de Retiro ; The Expedition leaving for a hunt on the Fazenda das Palmeiras ; At the Fazenda das Palmeiras ; Colonel Roosevelt presents the skin of the first jaguar ; journey on the river S. Lourenço and hunting on the same river ; Marsh Lands on the River Paraguay and the Gayva Lake ; In Caceres, afterwards at Porto do Campo ; Camp at Porto do Campo ; Crossing the rivers on horse back ; Ascent of the River Sepotuba in launches ; Falls of the Sepotuba ; Arrival at the Port of Tapirapuan ; Presentation of the Members of the Expedition ; Colonel Roosevelt, Colonel Rondon and the other members of the Committee ; Animals for use of the members of the Expedition on their voyage ; the determination of the coordenates of the Port of Tapirapuan by Colonel Rondon and Lieutenant Lyra ; Preparing the Expedition to climb the Pareci mountain range ; The journey across the prairies of Tapirapuan ; The Port of Salto and the journey to Aldeia Queimada.



Photo, Com. Koudon

A camp belonging to the construction party

Conférencias

SYNTHESIS OF THE LECTURES

LECTURE N.º I

Origin of the Roosevelt-Rondon Scientific Expedition.

Organization of the Brazilian Commission.

Choice of routes submitted to Mr. Roosevelt ; selection of the one relative to the Rio da Duvida.

Overland journey of the Chief of the Brazilian Commission from Rio de Janeiro to the mouth of the river Apa.

• The Heads of the Brazilian and American Commissions meet on board the Paraguayan gunboat «RIQUIELME» ; formation of the Roosevelt-Rondon Commission.

Ascent of the river Paraguay to Corumbá ; ratification of the hunting programme and the reconnoissance of the river Duvida.

Arrival at Corumbá.

Hunting on the river Taquary Velho and on the Fazenda de S. José, belonging to the President of the State of Matto-Grosso.

Jaguar hunting on the river S. Lourenço.

Visit to the cattle ranch Descalvado.

Arrival at S. Luiz de Cáceres.

Pitching camp and hunting at Porto do Campo.

Ascent of the river Sepotuba and arrival at Tapirapoan ; organization of the pack-train to cross the wilds of the Pareci and Nhambiquara indians.

Subdivision of the Expedition into two parties, one of which was under the immediate direction of Mr. Roosevelt, assisted by the Chief of the Brazilian Commission.

Voyage of this party as far as Utiarity; Pareci indians; Salto Bello Fall and the Utiarity Falls.

Formation of a new sub-party for the exploration of the river Papagaio; Chief occurrences during the voyage of same

Arrival of the Roosevelt-Rondon Expedition at the River Juruena; Nhambiquara Indians.

Continuation of the march from the Juruena to José Bonifacio and arrival at Passo da Linha (the point where the telegraph line crosses the Duvida).

LECTURE N.º 2

I

Reconnaissance and exploration of the river Duvida; Geographical features:

a) the work of Ricardo Franco de Almeida Serra, and maps made by Pimenta Bueno, Horacio Williams and Rio Branco;

b) the 1909 Expedition for the preliminary survey of the telegraph line from Cuyabá to the river Madeira, discovers, besides others, a river to which the name of Duvida was given; reasons for this denomination. •

Survey of the river *Commemoração de Floriano* in 1913:

a) the Duvida is not an affluent of the Gy-Paraná;

b) it will be one of the feeders of the Aripuanã;

c) description of this river.

Lieutenant Antonio Pyrineus de Souza's party on the Aripuanã river assisting the reconnoitring expedition of the river Duvida.

Mr. Roosevelt commences the work of the Expedition, still in doubt as to the direction and importance of the course of this river; steps taken in case it flowed into the Gy: building canoes on the river Ananaz.

II

Exploration and survey of the river Duvida from Passo da Linha, in Lat $12^{\circ} 3' 56'',8$ S. and Long. $60^{\circ} 21' 55'',8$ W. of Greenwich, up to the place of meeting with Lieutenant Pyrineus's auxiliary party on the Aripuanã.

Affluents, waterfalls, rapids, mountain ranges, geological formations and forests of the river Duvida.

Adoption of the new name river Roosevelt.

Identification of the Alto Castanha.

Indian tribes.

III

Meeting of the Roosevelt-Rondon Expedition with Lieutenant Pyrineus' party.

The old Lower Aripuanã constitutes only the lower portion of the course of the river Roosevelt.

Reference to the problem of determining the principal source of a river.

The river Aripuanã.

The river Roosevelt is composed of the united courses of the old Duvida, Castanha, and the lower Aripuanã.

Examination of the criticism of a Portuguese geographer, and the map called «Carta da Nova Luzitania».

The river Roosevelt was for the first time mapped by the Roosevelt-Rondon Scientific Expedition.

Arrival of the Expedition at Manáos.

News of Captain Amílcar de Magalhães' party.

Descent of the river Amazon; arrival at Belem (Pará); reception by the governor of Pará.

Mr. Roosevelt's departure for New York.

Return of the Chief of the Brazilian Commission to the Telegraph Line Construction Camp at Barão de Melgaço.

LECTURE N.º 3

Technical work and geographical explorations effected by the «Telegraph and Strategic Lines Commission from Matto-Grosso to the Amazon», from 1907 to 1915.

I

Review of work done from 1907 to 1911:

a) exploration and reconnoitring of the general track of the telegraph line from Cuyabá to Santo Antonio da Madeira;

b) work of construction from Cuyabá to Vilhena, and from Santo Antonio to Jamary;

c) the transport problem in the wilderness, and its solution.

II

Résumé of the construction work from 1911 to December 1914:

a) from Vilhena to José Bonifacio. Study of an alternative route of the 1909 track; Indian camps, river Carumicharú, or Festa da Bandeira, visit to the villages of the Nhambiquaras at «Campos Quatorze de Abril»;

b) from José Bonifacio to Barão de Melgaço; purveying by river: exploration of the river Pimenta Bueno: discovery and pacification of the Kepikiri-uat Indians;

c) from Barão de Melgaço to Pimenta Bueno and thence to Arikemes. Alternative routes of the 1909 track: Indian tribes of the Gy-Paraná, Jarú and Jamarý.

III

Notes on the construction of the branch lines of Santo Antonio to Guajará-mirim, and from Parécis to Barra dos Bugres; Indian tribes of these respective regions; pacification of the Barbados tribe; habits and identification of these Indians.

IV

Geographical exploration (accompanied by notes relative to the Indian population existing in the valleys of the rivers explored).

The sources of the river Paraguay.

Affluents of the Guaporé which flow from Campos de Comemoração de Floriano.

Basin of the river Madeira.

Jacy-Paraná, Jamarý and Gy-Paraná.

Region comprised between the Gy-Paraná and the river Roosevelt; work of the pacification of the Parintintis Indians.

Lieutenant Marques de Souza's Expedition to reconnoitre the old river Anamaz.

Basin of the Juruena-Tapajoz:

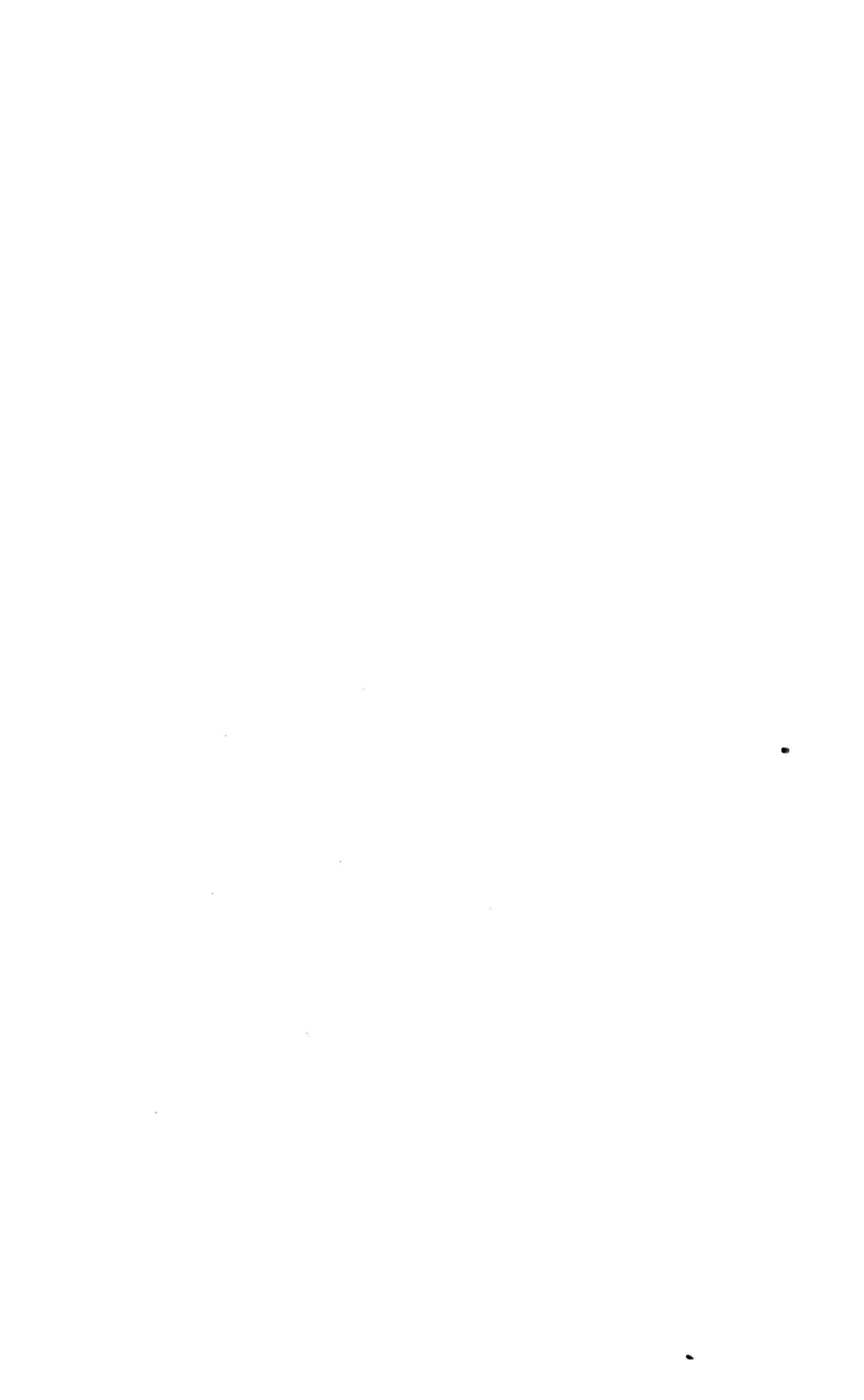
Exploration of the large central catchment of this basin; reestablishment of the historical point of view regarding the extension of the course of the river Juruena as far as the mouth of the river Telles Pires, (formerly São Manoel or Tres Barras).



Photo. Com. Rondon

Conferencias

**Colonel of Engineers
Candido M. da Silva Rondon**



Exploration of the Ikê and fixing the course of the river Doze de Outubro.

Exploration of the rivers Sangue and Papagaio.

Exploration of the river Arinos.

Exploration of the river formerly called São Manoel ; its new name ; river Capitão Telles Pires. Rosa Borôro among the Apiacás. Modifying action which she exercised on the system employed by Lieutenant Duarte in regard to the Borôro Indians of the river São Lourenço. Her death in January 1915. ■

LECTURES

LECTURE N. 1

INTRODUCTION

Some time ago, friends of mine informed me that the Rio de Janeiro Geographical Society, — desiring to manifest the high degree in which they held the modest contribution brought by my work in the wilds towards the development of the descriptive study of the lands and people of Brazil, — had resolved to bestow on me the distinguished honour of having my picture hung amidst the select company of those of our compatriots who have most distinguished themselves by their services rendered to Brazil in this branch of human accomplishments.

This resolution was so out of proportion, between the small value of the results directly attributable to the capacity of my own individual efforts, and the magnitude of the distinction with which it was proposed to reward them, that I at once felt it my duty to request the distinguished society to reconsider their decision, and after weighing all the facts which I myself would submit to them,

come to a decision which more in accordance with the true nature of the facts would spare me the constraint of finding myself in the position of having to regret not accomplishing all that was expected of me, rather than flatter myself with the praise of that which I had effected.

This reasoning which I intended to submit to the Geographical Society was, in my opinion, of itself, so evidently convincing as to remove from this assembly all aspect of a festive or congratulatory solemnity. Were it not for the scarcity of time now at my disposal, and the still greater failing in the poor means of expressing myself, I would give you another reason which at the present moment holds my soul in mourning and my heart closed to all sentiment which has not the bitterness of the deepest pain. An enormous succession of unpardonable errors, — because they were committed in our days when the doctrine of Auguste Comte is sufficiently propagated to render the sentiment of universal fraternity familiar to the most accomplished peoples of the West — has resulted in hurling the leading nations of Humanity against one another, and has kept them for more than one year plunged in the floods of bloodshed, which snatch off, pick to pieces and submerge the most delicate and beautiful qualities of our civilization, namely, gentility to women, kindness to little children, the aged and the sick; and that sentiment of individual dignity which restrains one from committing violence against persons and things, lest one should diminish in one's own eyes, the esteem and respect which is due to one's self respect.

Immersed in the sea of anguish which flows from the heart of Humanity, the loving mother, who sees her children tearing themselves to pieces with the assistance of the very resources which she had created and given to them, prompted by the noble ambition of placing them above the sorry sollicitings of primitive animality; I feel pained at the frailty of my strength which does not permit me to contribute towards the work of those, who are using their efforts in the direction of mitigating the devastations of this horrible catastrophe, otherwise than in accompanying them with the expressions of my gratitude and in supplicating destiny, to afford them the greatest facilities capable of enabling them to attain the object to which they have devoted themselves.

Such weighty considerations, however, could only prevail, were it a question of doing or of suppressing acts which affected my person directly and exclusively; but they could not be invoked in order to justify my non compliance with any duties inherent to the exercise of the functions entrusted to me. Friends of mine, to whom I explained the scruples which oppressed me, and the constraint which I felt in assisting at the special honour of the inauguration of my own portrait which they intended to hang in the gallery of the Geographical Society, confirmed the objection which I had already made to myself, i.e. that all the attention evidently only seemed directed towards me individually, but that in reality it aimed further and embraced also the Telegraph Lines Commission, which the Republican Governments, since the time of worthy President

Penna, have used as an instrument to render the Nation the services which are known to all.

Considered from this and sole point of view, my presence at this meeting is more than justified ; it is necessary ; for I am doing nothing more at this moment than carrying out the duty of personally representing the Commission of the Telegraph Lines, to come and tell you, Mr. President of the Geographical Society and your illustrious associates, how gratifying it is for the members of the Commission, taken individually and conjointly, to receive the support from the applause with which you reward the efforts which they — far off in the wilds of the country have used their best endeavours to develop — with the only hope of contributing to the continuation of the work which we inherited from the Past and are preparing for the Future, to lift up our dear Country to such a level as will enable it to give full expansion to its aspirations and to render to Humanity the gifts which she has so lavishly spread around us. As for me, I must acknowledge that I rejoice at the circumstances with which destiny has entwined my life.

Without referring to other sources of lasting happiness from which the most complete blessings flow, which may have fallen on me in my mother's breast, and without delaying in an effusion of renewed and daily increasing gratitude, and my indebtedness to the religion of Humanity, which taking me by the hand, conducts me with a firm step along the road of altruism, which is day by day smoother, easier and more beautiful, the only certain and true aim of the unsurpassable pleasures of the

devotion to high ideals inspiring the enobling works of human nature, it is sufficient to record the fact that during the whole of my public career I have had the good fortune to see associated with my work, as chiefs or assistants, citizens who honour the name of our nationality, colleagues who dignify the class to which they belong, and friends who raise friendship itself to its highest degree, making us discover therein new charms hitherto undiscerned.

Under such conditions, the greatest blessing which could be vouchsafed me evidently would be, that the ties existing between these Chiefs, assistants and myself, should still become closer and closer and everlasting, so that as long as the memory of any of us lasts, once invoked would immediately appear accompanied by the others.

The hanging of the portrait of the chief of the telegraph lines commission in the picture gallery of the Geographical Society of Rio de Janeiro satisfies at least, in part, the wish which I have just expressed, because at any future time he who looks at this portrait will at once recollect that its object is to call to mind the remembrance of those of my distinguished assistants and friends whose vigorous cooperation resulted in the success of the enterprise initiated in 1907, which was to open up and hand over to civilization, a huge territory in our country, until that date in a wild and abandoned state. You can therefore realize, Mr. President of the Geographical Society the nature, the extension and deepness of my gratitude for the kindness which you and your worthy co-associates have shown me, and for which I confess myself eternally and deeply

indebted to all of you, not only collectively, but each one separately and individually.

To all of you I beg to tender the undying thanks of the members of the «Commission of the Strategic Telegraph Lines from Matto-Grosso to the Amazon», who promise to reciprocate the distinction which you deigned to honour their modest but sincere past efforts, with renewed and greater efforts in devoting themselves entirely to the love and to the work of augmenting the moral and material aggrandizement of our mother Country.

And you, my noble colleagues of the Army, what do you expect me to say to you to express, even in the pallid and awkward fashion that I have just done to the worthy Geographical Society, a part at least of the emotion which I feel at seeing you here assembled to bring me, not simple words of encouragement, approval, and applause, but the most affectionate effusion of good and sound comradeship, which burst forth, grew and became more consolidated with the warmth of the communion of sentiments, the resolutions and the thoughts which constantly unite us around the ideal of the republican aspirations of our country, represented by the colours, in the design, and in the words of our beautiful and adored national flag?

You wished to take an active part in this assembly to signify to us that the campaign we have been for so long sustaining against the hardships and snares of the wilds, has not broken the solidarity between you and your colleagues of the Commission of the Telegraph Lines; on the contrary, it has strengthened it.

This unity of purpose never had any other origin, or motive, beyond the desire, or, I should say, ambition of thoroughly understanding the sentiment and the sense of our duties to the Nation which only aspires to become great by peaceful labour and international fraternity.

Your manifestation is joyously accepted by your comrades of the Telegraph Lines, who feel happy at seeing how completely you reciprocate the truly fraternal affection which they had also devoted to you.

In their name, and in my own, I beg of you to accept a cordial shake hands and our best thanks, for the comfort which you have brought us, in accepting as yours, and therefore as that of our class, the work and efforts which we have accomplished in the wilds, and on the boundaries of the country, as obedient servants of our Government and Country.

THE ROOSEVELT-RONDON SCIENTIFIC EXPEDITION

I

On the 4th of October 1913, I arrived at the Barão de Melgaço Station, having come from Barra dos Bugres, the extreme southern point of the telegraph lines from Matto-Grosso to the Amazon which I had just inspected, when I received from Dr. Lauro Müller, Minister of Foreign Affairs, a telegram inviting me to accompany the ex-President of the United States of America, Colonel Theodore Roosevelt, on a journey which he purposed to undertake through the interior of Brazil as far as Venezuela. I replied accepting this honourable commission; and on the same day, left bound for the river Commemoração de Floriano, which I descended making use of the means of transport created by the Telegraph Lines Commission; I entered the river Pimenta Bueno, and afterwards the Gy-Paraná, at the mouth of which I found the scout « Cidade de Manáos », which took me to the capital of the State of Amazonas.

Considering the urgency which existed to provide for the organization of the indispensable elements for the journey of the Expedition, I immediately took steps which would be useful, whichever might eventually be the final route chosen by the eminent American statesman, to get out of the central Brazilian cordillere into the Amazon basin.

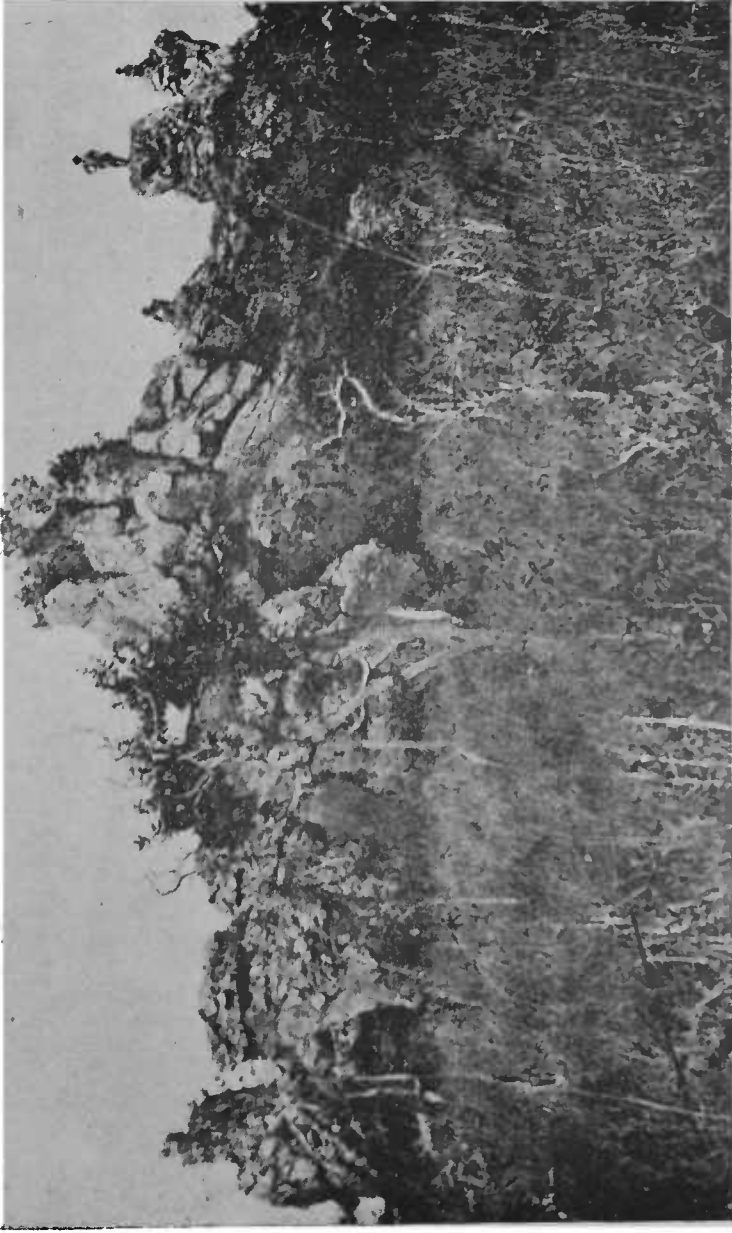


Photo Com. Kondon

Conferencias

A curious aspect of the wilds of Matto-Grosso

Of all the routes which might be followed, that which appeared to me preferable, was one afforded by the courses of the rivers Arinos, Juruena, Papagaio, and Duvida; for this reason I ordered canoes to be prepared on the banks of each of these four rivers, at points of easy access, for travellers who might penetrate into the highlands of the Parecis, coming from the headwaters of the river Paraguay.

During my voyage to Manáos, I received word that Colonel Roosevelt's project was to enter the river Amazon by the Tapajóz, and into this river by the Arinos.

But, evidently this course could not offer anything new to an Expedition whose object was to unravel the unknown aspects of our wilds. I decided, therefore, to submit to the appreciation of our illustrious guest other routes, which could with more advantage be taken by his party, and I therefore telegraphed from Manáos to Rio de Janeiro, to the Chief of the Drawing Section of the Telegraph Commission, 1st Lieutenant Jaguaribe de Mattos, to show him at the Ministry of Foreign Affairs, the geographical charts drawn in our technical office, with the data supplied by our explorations; suggesting the following routes:

a) from S. Luiz de Cáceres, or from Cuyabá, along the Telegraph Lines Commission road as far as the Barão de Melgaço Station, and there to embark in barges to descend the rivers Commemoração de Floriano, Gy-Paraná and the Madeira;

b) follow the same route as far as José Bonifacio Station, — one station before Barão de Melgaço, — and thence gaining the Passo da Linha

on the Duvida, to descend and explore this river, which would probably take the party to the Madeira ;

c) reach the Tapajoz by descending the Juruena, and not the Arinos, which latter route has been known for a century ; so much so that it has served as a trading route for some time between Pará and Matto-Grosso ;

d) from S. Luiz de Cáceres, pass to the valley of the Guaporé, and from the city of Matto-Grosso to descend this river and the Mamoré in a launch as far as the falls, of the Guajará-mirim ; here to take the Madeira-Mamoré railway, to get to the city of Santo Antonio do Madeira ;

e) finally, by the Telegraph Line road to reach the river Papagaio at the Utiarity Station, and by this river enter the Tapajoz.

Of these five alternatives, the one which offered the greatest unforeseen difficulties was that relative to the river Duvida. This was the one chosen by Mr. Roosevelt.

During my voyage from Manaus to Rio de Janeiro, where I arrived on the 11th of November, I organized the staff of the Brazilian Commission and picked out the professional men who might be entrusted—for the greatest benefit to the Nation—with the services of astronomy, determination of the geographical coordinates, topography, botany, zoology and geology, besides those relative to general administration.

Of these devoted assistants, those who were in Rio de Janeiro left in parties successively from the 22nd of November to the 5th of December for Montevideo in order to ascend the river Paraguay,

and from there, make for Corumbá and other points, where they were to await the arrival of the Expedition, and organize the services entrusted to them. As for myself, obliged to remain in Rio de Janeiro to attend to the requirements of the indispensable equipment necessary to the success of the Commission which was confided to me, I would follow on by land, as late as possible, but still in time to descend the Paraguay and await the entry of Mr. Roosevelt into Brazilian territory. To accompany me on this journey, I retained Captain Amilcar de Magalhães and Dr. Euzebio de Oliveira, the former my assistant, and the latter, the geologist of the Expedition. All baggage was sent on by water via Montevideo.

On the 28th of November, the Ministry of Foreign Affairs communicated to me that Mr. Roosevelt would leave Buenos Ayres for Asunción on the 4th or 5th of December, and three days afterwards would continue to ascend the river Paraguay making for Corumbá. On receipt of this advice I left Rio de Janeiro for S. Paulo by the night train on the 2nd of December, having previously taken the necessary precautions to enable us to travel, without interruption, by the following railways: Central of Brazil, Sorocabana, Noroeste and Itapura to Corumbá.

On the evening of the 5th we arrived at the end of line of the Itapura-Corumbá railway, the construction of which went a little beyond rio Verde, and even so, a few kilometres of this line were not yet consolidated and could only be used for ballast train. Here we organized our march on horseback

to reach the end of the line which was being constructed from Porto Esperança to Itapura. We thus travelled 168 kilometres as far as Campo Grande, where we arrived at 6 a.m. on the 9th. Three hours later we left Campo Grande in a special train, which took us to Porto Esperança, situated 2.248 kilometres from Rio de Janeiro, and where we alighted at 11 p.m. We immediately embarked on the steamer NIOAC belonging to the Lloyd Brasileiro, which by order of the Ministry of Foreign Affairs awaited us under steam. Before dawn on the morning of the 10th we were under way. A little before one o'clock on the afternoon of the 11th we anchored in front of the mouth of the river Apa, where we were to await the arrival of Mr. Roosevelt and his party.

From the point where we lay at anchor, the river Paraguay extends its course, down stream, in one long straight line, forming one of those stretches which, in the picturesque language of the dwellers on river banks, is called ESTIRÃO.

We knew that the American Expedition had left Asunción on the 8th, on board the Paraguayan gunboat ADOLFO RIQUELME: therefore, barring accidents on the two shallows which hamper navigation on this river, a little before and above the city of Concepcion, it could now not be long before the anxiously awaited moment of sighting our future guests would arrive. In this expectation, we gazed in the direction whence they should come, full of anxiety to catch sight of some smoke or other sign, which would predict the nearing of the Paraguayan boat to us. At the end of two hours we discerned

the outline of a steamer, coming up at full speed : we hastened to make the last arrangements for the reception which we thought would presently take place. On the deck of the NIOAC, already in white uniform, which had been chosen for this occasion, we did not lose sight of the small vessel, which like a new Protheus, constantly appeared to us to be changing its shape, sometimes confirming our hopes, sometimes dissuading us. At last we ascertained that it was not the long-desired RIQUELME, but a tug carrying Chamacoco Indians, who were going to some industrial establishment on the banks of the river Paraguay, and were there to continue their sad and laborious life, semi-enslaved to some company of strangers, who had converted their free forests into an unhomely, hard and unfeeling country.

In this way we passed the day and the night of the 11th of December. On the following morning, we were at our posts scanning the horizon towards Asunción. The hours slipped away slowly until 10 o'clock, and were running on their fatal march, when we were suddenly delighted to see, at the end of the ESTIRÃO, a ship. We soon distinguished its flag, at the stern mast head, and by same, we saw that it was the Paraguayan gunboat.

At 11.30 a.m. the RIQUELME was alongside the NIOAC, and from its quarter-deck Mr. Roosevelt corresponded to our waving in anticipation of the greetings which we were about to bring to him on board, together with the offers of cordial hospitality which the Government of my country had entrusted me to make. The Paraguayan anchor had hardly grappled the bottom of the river, when my assistants

and I, made for the ship, on whose deck was to take place the ceremony of the introductions, between a statesman accustomed to the usages of European diplomacy, and the man, who for almost twenty five years had lived in the wilderness, frequenting the *Ministries* of the Borôro, Pareci and Nhambiquara Indians, perfecting himself in the etiquette of their respective *Courts*. Withal, I was not tormented with nervousness at the outset, because the mass of exterior circumstances, which forms the circles in which we have to act, support and help us to find the necessary gestures adequate to the moment which we traverse: and if, when we greet in the Borôro fashion, we are immediately prepared for the sharp odour of naked bodies painted with *urucum*, in compensation, when we exchange amiabilities in the language of Corneille and Molière, we are insensibly drawn to gentleness and refinement, and without any effort, the charming manners, which are peculiar to the life of our drawing rooms, come back to us.

I now found myself on the deck of the Paraguayan warship, greeting Mr. Roosevelt in the name of the Brazilian Government, repeating to him the offer of our hospitality, and introducing to him the members of the Brazilian Commission, who from that moment remained at his orders. Mr. Roosevelt replied to our words, not only with the distinction characteristic of his great intellect and high culture, but also, with the affability of a true friend of our country and its people.

It was the intention of the Brazilian Government, that we should take the American Commission on

board the NIOAC there at the mouth of the river Apa: but when we alluded to this part of our programme, I saw that the Paraguayan officers would be very disappointed if they were deprived of the honour of taking the ex-President of the United States of America to Corumbá. As we all of us had the same object in view, which was to render homage to our guest, I gave way to the Paraguayans, and was glad that destiny had been so benevolent, as to allow me the privilege, on the first occasion that I found myself in an official capacity in that country, of expressing my sentiments of fraternity to the most genuinely American nation of all those who had formed themselves in these lands of Columbus.

Having settled this point, a little after midday the RIQUELME continued to ascend the river in the direction of Brazil, and the NIOAC followed her closely, as an escort. We journeyed in this way until 2 o'clock in the afternoon, when both ships stopped in order that Mr. Roosevelt might come on board the NIOAC, to return the visit we had made to him. Besides the courtesies which were exchanged between Brazilians and Americans, it was also agreed that Mr. Roosevelt, on the day following his arrival at Corumbá, would leave for the Fazenda das Palmeiras on the river Taquary, where he would have his first jaguar shooting.

From this ranch he would go on to the one called Firme, for the same purpose, namely killing jaguars. From Firme, he would return to Corumbá to enter the river Cuyabá at the point where the Fazenda de S. João is situated, and in which the Pre-

sident of the State of Matto-Grosso, Dr. Costa Marques, was awaiting him, and would also offer our guest a jaguar, peccary and tapir hunt, besides a round-up (rodeio) of 6000 head of cattle on the open plains. He would afterwards return to the river Paraguay to take the S. Luiz de Cáceres route, visiting on the way, the Fazenda do Descalvado. From S. Luiz de Cáceres he would continue the journey, on the next day, to Tapirapuan, in case he decided not to hunt on the river Jaurú. On the road to Tapirapuan he might do some shooting on the Fazenda Barranco, at Porto do Campo, and at the farm called Palmital. Finally, from Tapirapuan he would journey on horseback across the Pareci Plateau as far as the river Duvida, which he and I and a part of the two commissions would descend in a canoe, whilst the other party would go as far as the Gy-Paraná in which they would embark, directing themselves towards the Madeira and Manáos, at which place all should finally meet.

We arrived at Porto Murtinho, where we dropped anchor, and went on board the Paraguayan gunboat to take part in a dinner offered by Mr. Roosevelt to the Brazilian Commission. On the following day we gave a breakfast on board the NIOAC in honour of the officers of the RIQUELME.

On the fourteenth we were opposite the legendary fort of Coimbra; Mr. Roosevelt did not visit this fort, neither did he see the famous Gruta do Inferno (Grotto of Hell), because he considered that the time, which he had at his disposal to absent himself from his country, was almost insufficient to carry out the programme previously laid out.

At two o'clock in the afternoon, we had passed the Bolivian frontier mark on the right bank of the river Paraguay, and only 24 hours afterwards did we sight the city of Corumbá, in which port the RUIQUELME entered, escorted by a large number of small craft, full of ladies and gentlemen, who had come to greet our honoured guest.

While still on board the RUIQUELME, Mr. Roosevelt received the compliments of the Commander of the Brazilian fleet of war-ships on the river Paraguay, represented by a 1st Lieutenant of our Navy, and on shore he was received by the Commander and officers of the 13th Military District, the Municipal Council, the Federal and State authorities, and by the whole population of the city, who were most enthusiastic in manifesting their delight, at having the eminent American statesman amongst them.

On the morning of the 16th, the Brazilian Commission gave a farewell breakfast to the officers of the Paraguayan gunboat, in which Mr. Roosevelt, and the members of the American Commission participated; the toast of honour was raised to the Paraguayan Republic, which, once again in common brotherhood, took such a brilliant part in the honours bestowed on the statesman, who of all others, in the present day, represents the policy of American fraternity.

That day we remained in Corumbá, verifying the baggage of the American Commission and examining the convenience and propriety of certain articles which they had intended to be used in the

wilds. But on the following morning, having presented myself to Mr. Roosevelt, ready to embark whenever he wished, we took the NIOAC and left for the Taquary, a river which enters the river Paraguay by various branches, one of which is called Riosinho. It is on this branch, that the landing stage of the Fazenda das Palmeiras is and we directed our course to it. But before arriving there, at 5.30 p.m. we sighted a giant ant-eater (Tamanduá bandeira) which, with its clumsy gait and small jumps, was wandering in the camp. This was one of the specimens of our fauna which Mr. Roosevelt desired to obtain for the zoological collections of the Natural History Museum of New York. I ordered the ship to stop, and we jumped on shore, the dogs running ahead to embarrass the flight of this curious quadruped; Kermit, Dr. Soledade and I completed the circle, and Mr. Roosevelt fired his Springfield, a gun of the type used in the North American Army, of great precision and admirable penetration. The beast dropped, and we, delighted by this fortunate commencement of our guest's hunting expedition, congratulated him. He thanked us with great satisfaction, which was fully justified, moreover, by the beauty of the specimen which he had just acquired; really worthy of providing a skin which will recommend, to the admiring New Yorkers, the entire race of South American ant-eaters.

At eventide, the NIOAC hauled up alongside the port of Riosinho, and the next day Mr. Roosevelt left for the Fazenda das Palmeiras, whilst Captain Amilcar and I remained behind, as we were engaged in surveying the road across the marsh. On the

same day I prepared everything necessary to start the jaguar hunts on the following morning, and in order to eliminate the possibility of any personal accident, I adopted all the steps indicated by the experience of experts in this dangerous sport.

To those who are not acquainted with the American feline — except by name, or having seen him in a sleepy mood, cowed at the back of a cage, or still more inoffensive, in some Museum with large staring glass eyes, wide open jaws showing his great teeth, which many people would willingly pull out and have mounted in gold, as unequivocal trophies of some wonderful adventure — I would say that the jaguars are classified in three large groups; the Suçuaranas, the spotted jaguar, and the black jaguar. The species of the first class are sometimes called pumas or lions (probably in order not to deny the rule that suggestive names are generally in contradiction to the character of individuals to whom they are applied); these are the most common, and in accordance with the latitude of the region in which they are found, present a variety of colouration; from dark red they fade to yellow, when inhabiting the prairies of the South, and towards the Northern side in the Amàzon district, they carry a black line the whole length of the back and a few stripes of the same colour. The spotted group is sometimes divided into three varieties; one with wide patches on a whitish base, another with large black patches on a reddish base, and the third with small black spots on a red base, lighter in colour than the preceding one and smaller. The last two are called Canguçús and these are distinguished, one from the

other, by adding to the common name, the indian adjective « *assú* » which means *the bigger*.

In the marshes of the river Paraguay, as far as the Poaya Forest, the spotted jaguars of the first and second varieties are to be found; those of the third variety live in the Amazon, in the high wilds of the central mountains and in the Plan Alto of the Maracajú range, where they are scarce.

This group of black jaguars exists attached to that of the spotted division: their bodies show patches of a chocolate or coffee colour on a black base. Although the name of tiger is commonly given to this group, it is not however the most ferocious or the most audacious; these qualities pertain, by right, to the Canguçu-assú, an animal with an enormous head, large paws, powerful claws, thick forelegs, thighs of an athlete, and of a size and weight equal to an African lion, in the opinion of Mr. Roosevelt.

The hunt of this feline beast presents, in certain cases, serious danger. If at the moment in which the dogs find him and chase him, he has a full stomach,—having satiated his natural voracity on the flesh of some victim previously slain—it is common to see him climb up the first tree he meets and remain there on the branches, quietly observing the surroundings from his refuge, quite indifferent to the onslaught of the pack of hounds, and even the approximation of the hunter; on these occasions to bring him down is a simple and safe operation and without any risk.

But, if the hunter comes upon the Canguçu when he is prowling about, things take a different turn. It is hunger that keeps him on the move, and the hungry feline is an irritated beast, crafty and

audacious. He faces the hounds with aggressive resolution, and if any one of them, more daring or of less experience, does not know how to keep at a convenient distance, with one sole blow from his mighty paw, the dog is thrown into the air and falls far off with his bones broken, bleeding, almost dead.

It is not necessary to be a Nimrod, to know that the hunter, as soon as he ascertains from the barking of his pack of hounds, that the beast is at bay—runs to the place where it is, endeavouring to arrive in time to avoid the loss of one of the dogs. When the jaguar comes face to face with the hunter he no longer bothers about the dogs : he fixes his attention on the principal enemy, studying the best means of mastering him. Now one must be calm, and steady and have firm sighting and determination ; one's legs must not be called upon, at these moments, to do more than to supply the strength necessary to sustain a still body without trembling, so as not to compromise the precision of the shot ; and even if we did merit the epithet of velocipedes, like Homer's great hero, running would be of no avail, for we must either kill or be killed.

Meanwhile the hunter must not hurry to fire ; it would be extremely dangerous to miss the mark ; he must endeavour to find the best position, and the opportune moment, to mortally wound the animal at the first shot. It is however necessary to be wide awake : if the beast commences to wag its tail, there is no time to be lost : either a sure shot brings him down, or, he springs at the hunter as quick as a dart, and with a wonderful bound, throws itself on to its prey. At the last bound, standing erect on its hind

legs, the jaguar is close up to its victim, subjugates him by the shoulders with its powerful claws, and with its formidable teeth crushes his skull.

Jaguar hunting is not devoid of danger for a man alone and armed with a rifle. For this reason, in Matto-Grosso, experienced hunters are accompanied by a man whom they call «*azagaieiro*», a name derived from «*azagaia*» (a short spear), having at its base a cross-piece, so that the steel blade which is reasonably long, can only penetrate up to same, in the body of the beast. The «*azagaieiro*» remains beside the hunter; but if for some motive or other the jaguar should attack, his duty is to pass quickly and resolutely right in front of the hunter, attracting on to himself the attention of the animal; with his *azagaia* in the rest, firm, and without attempting to make thrusts which would most certainly be parried by a stroke of the beast's paw, he waits until the jaguar, rising on its hind legs and throwing its body forward for the fatal grasp, springs on to the steel which is presented to him. Thus the feline aggressor, blind with fury besides being wounded, remains at a distance, which renders it unable to make use of its claws, because the cross piece of the spear impedes the shaft from running through its flesh at the point of the wound, giving the man the certainty of having his weapon free and disengaged for a new attack. The beast falls, but still full of vigour, returns to the attack with renewed impetus; again it is wounded and again it insists in the struggle, until the hunter finds a favourable occasion to bring him down with a shot.

It will thus be seen, from the above description,



Photo. Com. Rondon

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**Liana taking the form of steps in the woods
of the river Camararé**

that the function of the « azagaieiro » is not to kill, but simply to protect the hunter during the time in which he is obliged to keep his gun in his hand as an inert weapon which he is momentarily unable to use.

Nevertheless, either as a pastime or out of bravado, there are men who go jaguar hunting armed only with an « azagaia » (spear), obliging these beasts to show fight ; and they even succeed in killing them. Such a feat has a great deal of daring about it, and in this fact resides the charm found by those who use these methods. It is true, that even when the two hunters cooperate with one another, serious accidents still happen.

I will relate one which took place, some time ago, in the very region where Mr. Roosevelt was about to hunt.

One day, a cattle breeder named Cyriaco Rondon, noticed that cattle in his fields were being worried, chased, and decimated by a jaguar. He therefore sent his hunters in search of its trail, with instructions to follow it up, discover, and kill the beast. In order to do this, two men left accompanied by the necessary pack of hounds ; one of these was a « caboclo » (native) armed with a shot gun, and the other a Guaycurú Indian, an expert « azagaieiro ». The dogs easily discovered the trail of this carnivorous animal which was soon afterwards brought to bay, in the midst of a clump of trees. It was a Canguçú, who was there protecting its offspring, a couple of cubs which had taken refuge in a thick cluster of undergrowth. The men made for this spot and whilst they were endeavouring to sight him,

behold, suddenly, they saw him rising in the midst of the jungle, with such fury and swiftness, that the Guaycurú Indian had no time to make use of his weapon. But, at the moment in which the jaguar, rising on its hind legs, was about to lay hold of the poor Indian by the shoulder, he seized its powerful paws and with a herculean effort, held the beast in an uplifted position. The brute infuriated, struggled desperately, and with the claws of its feet, tore to pieces, the flesh from the thighs, and from the legs of his stoic antagonist. The « caboclo », his companion, terrified at such a sight, had not the courage to assist him ; far off he heard the « azagai-eiro » shout to him, that there was nothing to fear, as he had the jaguar held. Finally, as the struggle was lasting a long time, the « caboclo » got up courage ; getting closer up he fired his gun ; the grains of shot struck the face, and perhaps even the eyes of the beast, and under the pain, it made one supreme effort and succeeded in releasing itself from the hold of the Indian, and fled into the woods, in the thickness of which it disappeared.

The hero of this wild struggle was carried to the ranch where he arrived in an almost dying condition ; but after a long treatment he succeeded in recovering.

It is now easy to understand what steps had to be adopted to avoid the unpleasantness of having to lament an accident, in the course of Mr. Roosevelt's jaguar hunts.

Having got everything together, we left for the jungle on the early morning of the 19th of December. The party was composed of Mr. Roosevelt, his son

Kermit, two « azagaieiros » and myself ; it was not convenient that the party should be larger, for too many people only serve to scare the game. We of course took with us a good pack of hounds, the best I knew of in Matto-Grosso and which I had expressly brought together, for this purpose, getting them from places afar off. However, on this day, we found nothing else than a female Tamanduá (ant-eater) which was brought down by Mr. Kermit Roosevelt. In order to avoid useless tramps, I sent one of the « azagaieiros », on the next day, to beat the jungle called Miguel Henrique, and see whether he could find recent signs of the presence of jaguars. The man returned with the news that he had discovered a trail of the previous night, which revealed the passage of a couple of these felines into clumps of woods, where they had taken refuge. We left at daybreak of the 21st for this spot, and a little after 6 a.m. we discovered the first jaguar, a splendid specimen of the ferocious Canguçu class, which was brought down by a sure shot from Mr. Roosevelt's Springfield. On the next day we took the route of the Taquary Velho and discovered the second jaguar, which was killed by Mr. Kermit, with a shot from his Winchester.

The lands of the Fazenda das Palmeiras comprise three kinds of camp : the first are plain and completely open, on the banks of the rivers Paraguay and Taquary, whose waters overflow and cover them from the beginning of the floods ; the second are less low, but swampy, with clumps and belts of woods, here and there, in which the bushes called Pipiri, of the Cyperaceas family are abundant ; and

finally the firm land on the heights, never reached by the floods, and which serve as a last refuge for the cattle during the flooding of the marshes. These are the so-called «*Carandazaes*», named after the Carandá, one of the most beautiful palm trees of our forests.

Such a variety of lands makes it possible for the differing representatives of the rich Brazilian fauna to live there almost in common. For this reason, the few days we remained on his ranch, all the hunting parties into which the two Commissions had been subdivided, were able to get specimens of birds, quadrupeds, and quadrumanes, which in other regions live quite apart from one another, according to the habits of their respective species, whether they be water, prairie or forest animals.

The skins of all the animals killed were carefully prepared by the American and Brazilian experts, to be afterwards handed over to the Museums of New York and Rio de Janeiro. This was in fact the real object of the journey undertaken by Mr. Roosevelt; being passionately fond of the study of natural history, he had come to Brazil moved only by the desire of adding to the zoological collections of the principal Museum of his country, the specimens which were missing, and of these what he was most interested in supplying were those relative to our jaguar, ant-eater, capybara, tapir and peccary.

Having now obtained a couple of Canguçu and specimens of ant-eaters and capybaras, Mr. Roosevelt declared that he was perfectly satisfied on this score; there was no necessity to go to the

Firme Fazenda where jaguars never fail: these hunts only interested him as a means of furnishing the necessary elements for the divulcation of useful knowledge, and not for the purpose of revealing his abilities as a marksman, or of running extraordinary adventures, capable of obliging an admiring world to proclaim him the champion shot, or the *primus inter pares*, of rask killers of wild beasts.

Besides, the political situation created in the United States, owing to the developments in connection with the intervention in Mexico, filled his mind with constant preoccupation; the duties and the responsibilities which pertained to him as a statesman and the head of a political party, were ever before him, not only because he felt them keenly and knew them well, but also because he was incessantly receiving, from his country, appeals from his party, complaining of his absence at a moment so full of danger to the life of the Nation. Therefore, his best efforts were directed towards hastening the completion of the enterprise commenced in Brazil, so as to be able to return within the shortest possible delay to New York; and in order to attain this result, he did not hesitate, from the moment he arrived in Brazil up to his departure, to sacrifice all that appeared to him not strictly indispensable to the nature and the general outlines of the Expedition.

Consequently, on the evening of the 23rd, the NIOAC steamed out from the landing-place of the Fazenda das Palmeiras, taking on board our guest and all his party, proceeding to the Fazenda de São João, where we were to be met by the President

of the State of Matto-Grosso. On the morning of the 27th, we began ascending the river Cuyabá; it was important, however, that we should not arrive before there was good light for taking photographs; the ship therefore anchored at 8 p.m. in front of Aterradinho, a name which recalls the work done by the original inhabitants of that region, in their task of enlarging, at the cost of the swamps and marshes, the area of the « firmes » (firm land) or « cumes » (high lands) which, inasmuch as they remained dry when the rivers overflowed and spread the waters along the vast extension of camp, afford the only points where it is possible for the inhabitants of the submerged territory to escape alive. At dawn on the 28th, we continued to ascend the river Cuyabá; we sighted on our left an indian village of the Guatós tribe, the (eternal canoemen) cited by Couto de Magalhães, and before nine o'clock we saw the boat « MATTO-GROSSO » followed by a launch, having on board the President of the State and his followers, who were desirous of anticipating their greeting and courteous attentions with which they had planned to welcome Brazil's honoured guest.

Still on that same day, Messrs. Roosevelt and Costa Marques, accompanied me on a small hunting excursion; on the next day, the 29th or December, the rain was so copious, that it was impossible to get any results from hunting or to attend the « rodeio » (round-up) of the cattle in which were to take part 6000 head, rounded up and assembled by mounted cow-boys.

Mr. Roosevelt notified his desire to descend

the river Cuyabá without further delay ; but this was only made possible on the morning of the 30th. Even so, we still stopped at several points on the banks of the S. Lourenço, which appeared to us to be suitable for obtaining the zoological specimens common to marsh lands.

On the 1st of January, while ascending this river, we decided to make another beat for jaguars. We let the dogs loose on the left bank, while the hunters continued downstream in « chalanas » (a kind of barge). Shortly before 7 o'clock, the « onceiros » (jaguar dogs) showed signs that they had encountered a trail ; we leaped on shore and entered the jungle, through the swamps, towards the point whence the barking came. As we advanced, fresh difficulties arose, hindering our march ; now we had to free ourselves from the insidious firmness of immense quagmires, formidable enemies, that conquer by giving way ; then we were obliged to wade in the extensive marshes and inextricable jungle, through which we could only force our way, by the weight of our bodies ; although our feet were entangled at every step in the network of cane stalks already bent down and trodden over. Then again there were the « corixas » (depressions of the ground) along which, in the beginning of summer, the last waters of the floods run out and return to the beds of the rivers ; the floods, however, announce themselves by invading them, and we found them like so many large rivers which we were forced to swim across, holding up our guns at arm's length to avoid them getting wet. The sun was already high up in the sky ; the heat worried us ;

not one of our party however thought of giving up the hope of meeting the two jaguars, which we could see by their trail, were ahead of us, closely followed by the dogs, interning themselves more and more in the vastness of the swamps. They were evidently some very sly beasts which, on more than one occasion, had been chased by the hunters of the neighbouring ranches, and had become more and more wily. They fled without showing fight.

We were without breakfast, and two of our companions, both Brazilians, felt their strength giving way; Mr. Roosevelt, however, and his son maintained their vigour admirably and resisted the fatigue of the hard march. At midday we arrived at the margin of a big «corixa»; I proposed to Mr. Roosevelt to stop there whilst his son with the two «azagaieiros» followed up the hunt. Having accepted this alternative, we remained waiting for Kermit nearly two hours: and then we decided to return to the river, coming out farther above the point where we had disembarked in the morning. I had previously sent one of my men to the captain of the NIOAC, to ask him to send the launch up to the spot where we hoped to get out, by a much shorter road than the one we had gone over during the chase. Mr. Roosevelt and I succeeded in getting on board our steamer at five o'clock, but our two companions remained behind, extenuated, waiting for assistance and food, which we sent them from the ship.

Finally, in the evening, the whole party returned to the NIOAC, including Mr. Kermit, who informed us that it had been impossible to sight the jaguars,

because the dogs being worn out, had lost all courage, and would not continue the chase.

We emphasize this incident, in order to take this opportunity to refer to the physical resistance and endurance, with which Mr. Roosevelt is gifted, and which he, during the course of the Expedition gave proof ; so much vigour, in a man of more than 50 years of age, accustomed to city life and sedentary work, surprised us. And it is the more extraordinary because, in the midst of the fatigues and the great inconveniences of these long journeys on foot, on horseback or in canoes, sometimes under heavy rainstorms, and other times under unbearable heat, he never once interrupted his intellectual practices ; he showed himself to be extremely fond of reading. For this purpose, an essential part of his baggage was made up of many cases, containing a large number of books recently published, some on politics, others on social questions and the remainder on natural history. A volume of one of these works he always had with him : he scarcely arrived at a resting place or a momentary halt, when he would cover the ground with a hide, throw himself on to it, and recommence his studies, as if no other thing in the world preoccupied him, except to find an opportunity of continuing his interrupted hobby.

After the hard and fruitless journey of the 1st of January, we descended the São Lourenço and got into the river Paraguay, again directing our course, upstream, towards S. Luiz de Cáceres. At this period of the year the marsh, invaded by the waters which extend inland out of sight, winding between the hills covered with verdure, looks like an immense

lake with a smooth quiet surface, into which are reflected the beautiful palm trees known as the Carandás and the Uacuris, with their graceful trunks towering towards heaven. The life of that delated region concentrates itself in these enchanting refuges, emerging from the midst of the great flood; in the denseness of its woods the famished jaguar prowls, roaring and goaded on by its sexual instinct, which makes him more than ever fearless; whilst the grotesque *bugio* (monkey) jumps about on the branches of the trees, and the black flock of « *biguás* », in contrast with the egrets with their pure white feathers, keep him company.

Daybreak, tinging the skies, the land and this extensive sheet of water, with myriads of changing hues, casting in some places deep shadows and in others resplandescent brilliancy, binding the milky whiteness of a cloud with a border of burning cinder red, inlaying with gold the emerald coloured waves of the foliage, all this charms our imagination and throws us beyond the circle in which we are enclosed by the ordinary flow of our thoughts and reflections.

Mr. Roosevelt went into raptures at this marvellous sight, and declared that never in his life, had he experienced similar emotion to that which he then felt, whilst gazing at our Country's pictures of nature.

On the afternoon of the 4th of January we anchored at the landing place of the Fazenda do Descalvado, now the property of Mr. Farquhar, who had acquired it from the Belgian Syndicate called « *Produits Cibilis* », more or less two years ago. Its first owner formed this property with the

assistance of the Borôro indians of Campanha, and in its prairies, of more than two hundred square leagues (a league = 6^k.666.) there existed at that time about 600.000 head of cattle, some of which, it is reported, were driven to this property from the National Cattle Farm of Caissara. Besides, stealing Government's cattle has become a lucrative and above all an easy profession of Brazilians and even of Bolivians; to steal a few head of cattle from private farms was difficult, because in this case the fact was qualified as robbery, and whoever committed same, was called a thief and treated as such! At the death of its rich owner, his heirs sold the Descalvado property for a mere song, to the firm of Cibilis & Co., in the Argentine Republic, and the latter firm resold it to the aforesaid Syndicate, of which King Leopold was a member. The Belgians explored the cattle of this enormous property for a period of thirty years, slaughtering same as they came in the «rodeio», without either method or selection; even so, they did not succeed in extinguishing the herds; they reduced them however to less than 100.000 head. The new owners intend continuing the extract of meat industry, which was carried on by the Belgians; but for the present they are simply attending to the renewal and the increase of their stock. There, Mr. Roosevelt was heartily welcomed by his countrymen; the manager of the establishment, a cow-boy from Texas, being in charge of superintending the peons, who are almost entirely Paraguayans. The best cow-boys were introduced to him personally, and he chatted with them regarding the duties of their profession.

Taking up our journey again, we arrived on the afternoon of the 5th, at the town of S. Luiz de Cáceres, where the population, together with the officers of the 5th Batallion of Engineers, welcomed our guest with the usual honours. From there we proceeded on the following morning, and continued our ascent of the river Paraguay, making for Porto do Campo, on the river Sepotuba, where we arrived after three o'clock p. m. on the 7th of January. The NIOAC could proceed no further; we, therefore, landed, and for the first time pitched our tents, forming a camp for almost all the members of the Expedition. We remained in this camp until the 13th, not only in order to give the launch called ANJO DA VENTURA, which belonged to Casa Dulce, of Cáceres, time to effect the transportation of all the baggage and of part of the soldiers from Porto do Campo to Tapirapoan, but also for the purpose of completing the collection of large mammals which Mr. Roosevelt was making.

In the various hunting expeditions which we undertook in the course of those days, we killed several deer, peccaries, tapirs and monkeys.

Finally, we broke camp on the 13th and proceeded on to Tapirapoan, near the Sepotuba, which was opened in 1908 by the Telegraph Line Commission for the purpose of providing the necessary facilities for the supplies required for their work in the Chapadão dos Parecis (Pareci Highlands) to a point far beyond the river Juruena and the Serra do Norte.

We arrived at that place shortly before noon on the 16th of January and the attendants laid their

hands immediately to the preparation of the baggage and pack-mules which were to follow, with the Expedition, into the forest wilds.

It became necessary to subdivide the baggage of several of the cases belonging to the American Commission, in order to pack it in volumes of a weight more in proportion with the strength which can be expected of animals, about to travel more than 600 kilometres across very poor pasture land.

I had managed to bring together at Tapirapoan, for the purposes of transportation, 110 pack-mules and 70 pack-oxen. The organization and expedition of the various lots of this baggage train, with a cargo of 360 large packages, besides many other smaller ones, took five days of incessant toil.

Meanwhile, the naturalists were increasing their zoological collections by the acquisition of fresh specimens, some of which were obtained by Mr. Roosevelt and Mr. Kermit themselves.

Certain measures, counselled by the opportunity arising from the actual circumstances, were also adopted in view of accelerating the march of the Expedition according to the expressed wish of Mr. Roosevelt. We formed parties which were to advance separately across the wilderness until they met again at the Station called José Bonifacio. The first of these, which was under the lead of the ex-President of the United States, assisted by myself, was to proceed along the road constructed for assuring the supplies of the Telegraph Lines Commission, and to pass by Utiarity; the other, directed by my assistant Captain Amilcar de Maga-

lhães, would take a more direct course, by the headwaters of the rivers Verde, Sacre, Papagaio, Burity and Sauêuiná, in order to arrive at the Juruena in time to proceed, thenceforward, at least 24 hours in advance of the first party ; in this way, Mr. Roosevelt would not undergo the disappointment of having his march hampered by some drawback on the road, inasmuch as it would already have been removed by Captain Amilcar, who had undertaken to repair and render the bridges and crossings passable.

Finally, at one o'clock in the afternoon on the 21st of January, the order was given, and we, of the first party of the Expedition, mounted and left for Tapirapoan, directing our course towards a place called Salto, still on the river Sepotuba.

We arrived there at 4 p.m. after travelling 27 kilometres, set our camp and enjoyed the first sensations of the wandering and uncertain life of forest travellers, so toilsome and full of unforeseen impediments, so exacting of prompt and energetic initiative, so incompatible with lack of determination and courage, and so much opposed to comfort, calmness and the regularity of our civilized life, which must pass and run placidly and comfortably protected against all frailties, in order to be able to spring out in the exuberant and beautiful florescence of poetry, science and industry. Nevertheless, we used our best endeavours to secure for our guest special comfort never, however, before seen here or on similar occasions.

I had included two camp chairs among the packages of our urgency baggage, for the personal use of our guest and Father Zahm. When he

discovered this, Mr. Roosevelt positively declared to me, that as long as he was in the wilderness he would accept nothing, and do nothing, that might have an appearance of special attention to his person, and consequently just as he saw me sit so would he sit himself. I had to give in, inasmuch as I was loath to deprive myself of the pleasure of seeing my ingenuity carried out, and consequently I increased the number of chairs to three. For this reason, when we were at our meals, hurriedly arranged by our cook, who was full of good intentions, but insensible to the glories and to the remorse of a Vatel, we had our dishes displayed on two raw hides which covered the ground on a level with our feet. Around the hides the remaining guests squatted in the Yedo and Tokyo fashion, some with a certain amount of elegance and others in a very clumsy posture; but they honoured our table with that joviality which can only be prepared by the exercise of long marches in the open, breathing the fresh and oxygenated air of the virgin forests, and drinking from the running waters of the rivers, that flow under the foliage of secular trees.

From our camp at Salto we proceeded, the following morning, on our march into the forest; on the 23rd we passed through Aldeia Queimada, where I received a petition for the discharge of Dr. Fernando Soledade, Lieutenant Luiz Thomaz Reis and the botanist Hoehne, members of the Brazilian Commission, who came with the party under my devoted and most diligent assistant Captain Amilcar de Magalhães. I granted these discharges.

Two days later, we camped at the head of

the river Mandioca, a name which was given to it by the first rubber tappers from the river Sacre, to recall to people's minds that there they had found the mandioca plantations of a village of Pareci indians, whose assistance had been indispensable to enable them to maintain themselves in the forests. In this camp we were overtaken by the motor wagons in the service of the Telegraph Lines Commission, which came from Tapirapaon and were leaving for Utiarity, loaded with baggage belonging to the Expedition. Father Zahm then got the idea of making use of this means of transport, which to him appeared less tiresome than the trot of the animal on which he was mounted. Having agreed on this point, he left next morning on the motor wagon for Utiarity, accompanied by his attendant Jacob Sigg, the naturalists George Cherrie and Leo Miller, whose work of collecting birds and mammals, was, in fact, hampered by the marches which were commenced at dawn and continued until sunset.

Whilst in camp, Mr. Roosevelt always set aside a certain portion of his time to organize the book, which he published later, relative to his voyage across the Brazilian wilderness. At first, and in order to designate these works as a whole, he decided upon the title «Colonel Roosevelt's South American Expedition for the Museum of Natural History of North America»; later on, however, he decided to change this title and use that of «The Roosevelt-Rondon Scientific Expedition», adopted by the Brazilian Government.

While still in camp, on the 27th, he wrote out the pages in which he explains the reasons which

prompted him to adopt this change of title, and followed this up with other considerations in regard to the nature and the purposes of the Expedition, with the intention of guarding himself against future comment, and more or less malevolent interpretations.

On the morning of the 29th, — after having followed, from Aldeia Queimada, the automobile road opened northwards between the river Verde and the river Sangue — we took the route cut out for the telegraph line, which we were not to abandon again until the moment when we should take to the dug-outs on the river Duvida. We commenced to meet groups of Pareci Indians, who are being employed since the last five years, in the services of the maintenance of the lines; and on that afternoon, we reached the river Sacre, otherwise called Timalatiá, at the spot where, with a width of 130 metres, it falls from a height of 40 metres and forms the marvellous Salto Bello, the power capacity of which is rated at 30,000 H.P. Under the direction of a telegraph clerk, the Indians had already prepared the camp, which we were to occupy, and had pitched our tents on one side of the road and erected two flag-staffs with the Brazilian and American ensigns. Facing the camp were the huts of the Pareci village, and behind these the Falls could be seen.

We went up closer to admire them; Mr. Roosevelt talked enthusiastically of the natural beauty which was accumulated there, and with the penetrating insight of an accomplished and true statesman in referring to the future, he took pleasure in figuring the wonderful picture into which, the

industry of man would shape this piece of our country, as soon as we shall be disposed to benefit of the facilities afforded by its healthy and mild climate, by its fertile lands, suitable for any sort of cultivation, by its means of river communication, which render it accessible from Paraguay, from the Amazon and from the Madeira, and by utilising the almost unlimited hydraulic power capable of moving innumerable factories and operating electric railways which can be laid out with almost no trouble whatever over level ground, towards Cuyabá and other centres of commerce or interchange with the rest of the world.

We returned to the village. Mr. Roosevelt was detained in observing, with much interest, the domestic implements of the Indians: the gourds which served them for water-pots; the pans placed on the fire inside the huts, now built after our methods with their ridges and two falls, some completely open, others having walls made out of palm leaves; their hammocks serving for the slumber of adults and infants; the cloths made by the women; and baskets, balls of cotton yarn all mixed up with axes, machetes, hoes, clothes and other articles of our manufacture which are now being used by these poor people.

He also took good notice of their habits: the women always on the move and occupied, now with their children whom they tend with the utmost patience, carrying them about in large sash-slings which they pass around their bodies, from one shoulder to the opposite hip; now weaving their hammocks and loin cloths (*tangas*); then attending

to the cooking, or carrying large baskets full of maize, manioc, or other products from their plantations; but they are never without their spindles which are incessantly rotating as soon as they find a moment, however short, between two occupations, leaving their hands free, one of which to hold aloft the yarn, and the other to cause the small, restless device to rotate.

But, of all that Mr. Roosevelt saw, nothing caused him so much pleasure, as the games which the Parecis play on a large beaten plot of ground, where they divide themselves into two teams to thrust, receive and return, by means of their heads only, a large inflated India rubber ball.

Already in 1911, in the public lectures which I delivered at the Monroe Palace, under the auspices of the Geographical Society, I referred to this game, which the Parecis call Matianá-Ariti, and I showed the process which they use in the manufacture of the ball from the latex of the Mangabeira tree.

Whilst referring to this game, under the name of head-ball, and describing it in his book « Through the Brazilian Wilderness », Mr. Roosevelt confirms the opinion, which I gave in 1911, that the Matianá-Ariti is an autochtone institution of this tribe, and he adds that he had never heard of, or read anything, that might give reason to believe, that a similar practice existed among any other people of the world. With regard to this last part of his opinion, I can say that the Nhambiquaras and the Kepikiri-uats also know this game and play it; however as they play same less proficiently than the Parecis, I maintain my supposition that the latter are its real

inventors ; the others may have adopted it, out of a spirit of imitation, which moreover, is quite easy to explain, in view of the fact that the territory of these Indian nations is adjoining.

The morning of the 30th was still employed in visiting the Indian village and the surroundings of Salto Bello Falls, where we breakfasted. We then proceeded on our journey to Utiarity ; here Mr. Roosevelt was met with a festive reception by the Parecis, under the lead of the *amure* Major Libanio Coluizoroce.

Utiarity, on the river Papagaio or Sauêuiná, an affluent of the right bank of the Juruena, is a name which since 1907 designates one of the most wonderful waterfalls of the world. I referred to it in my public lectures of 1911, delivered in this Capital and in S. Paulo, when I alluded to the marvel with which I was struck on seeing this enormous mass of water plunge itself into space in one gigantic fall of eighty metres. I shall not dwell, therefore, on the recollection of the impressions which remained stamped in my mind, from the moment in which, still far off, I commenced to hear the deafening roar of this furious mass of water, up to the moment in which I set foot on the trembling soil on the border of the abyss, whence huge clouds of eternal mist are thrown up. I shall only say, that in seeing it, Mr. Roosevelt was filled with admiration and declared, that it was one of the most beautifully complete creations of nature, only surpassed perhaps, by the Niagara Falls. Close by those Falls a telegraph station exists since 1910, and also a village of one of the three groups of Pareci

indians, which I managed to dislodge from their old dwelling place at the headwaters of the river Verde and others, and settle in the neighbourhood of this and other telegraph stations, established on the road from there to Diamantina.

In their new settlements, the Indians hold the legal possession of the lands which they use for their plantations, and live under the direct protection of the Government, represented by the Telegraph Lines Commission. Besides these advantages of a general nature, the dwellers of the Utiarity village, as also those of Ponte de Pedra, have also the benefit of schools, where their children learn reading, writing and arithmetic. These schools comprise two divisions; one for boys and the other for girls, respectively conducted by the local telegraph clerk and his wife.

Among the festivities arranged for the reception of Mr. Roosevelt at Utiarity, there was one prepared by the little girls of the school to which I have just referred. Unfortunately, however, sad news awaited us here; the niece of our honoured guest who, together with Mrs. Roosevelt, had accompanied him on his excursion to South America and had returned to New York from Valparaiso, died shortly after reaching the United States. I therefore ordered all the festivities, which the people of Utiarity were preparing, to cease. Here we met Father Zahm and his companions who had travelled in the motor car. His Reverence was very much astonished at the great difference which he found between our Indians and those of Perú. The latter, he had occasion to study during the course of

a journey he had undertaken, some years back, when passing from the Pacific coast to the Amazon basin across the Andes. It even seems, that this journey brought him certain renown as a fearless and resourceful traveller, because at the Fazenda de São João and at São Luiz de Cáceres, some Franciscan Friars referred to it, in a conversation with Mr. Roosevelt, and foretold the most complete success for the Expedition which was about to be undertaken, inasmuch as it could rely on the advice dictated by Father Zahm's wide experience.

Before our arrival at Utiarity, the American priest had been told by the Inspector in charge of the maintenance of one of the sections of the telegraph line, that it would be quite impossible to get the Pareci Indians to submit to carrying anyone across the wilderness on a chair fastened to two long rods which would serve to keep it upright and at the same time rest on the shoulders of four men. I confirmed this, and added, that except in cases of sickness or disablement, where it might be necessary to assist anyone by this method of transport, no one in Brazil could obtain such a mode of conveyance, inasmuch as it was entirely against our habits and character. Father Zahm called our attention to the noteworthy fact that such a great difference should exist in the natures of men of an almost identical degree of civilization, as in the case of Brazilian and Peruvian indians; for among the latter he had occasion to see that for a man to submit to such a task was an honour worth disputing, when it was a question of conveying any representative of the Roman Catholic Clergy. We, however,

did not share in our friend's astonishment, inasmuch as we consider this and other differences as natural consequences of the methods adopted for the education of the Indians, which vary according to the object one has in view. If we propose to educate men, so that they may incorporate themselves into our midst and become our co-citizens, we have nothing more to do than to persevere in applying the methods up to the present adopted in Brazil: if, however, our intention is to create servants of a restricted and special society, the best road to follow would be the one opened by the Jesuitic teachings. Whatever may be the nature of the people submitted to the system peculiar to this method, the result obtained will always be the same, as is proved by the fact which some time ago was related to me by Father Malan, viz that the Indians of Tierra del Fuego were as much attached to the Salesian Mission in our days, as were those of Paraguay to the Jesuits in olden times; they have not, as the Guaranys had not, any other thought beyond attributing everything to God, to whom they consider they are indebted for everything which they possess and all the work they are able to do. Mr. Roosevelt entirely in accordance with this reasoning, said that he considered that the Indians are wards of the Nation whilst they do not attain the grade of civilization which would permit them to intermingle with the rest of the population and be absorbed by it; it cannot be an ideal of modern politics to promote or simply to consent that associations, religious or civil, should propose shutting them up in the ambit of their interests and

of their special point of view. With these opinions it was natural the American statesman should agree and approve the action which, in the last few years, the Governments of the Republic have wished to systematize amongst us; so as to solve the great problem clearly formulated by José Bonifacio, namely, the establishment of the ethnic unity of the Brazilian people.

Seeing what we were doing in this direction, Mr. Roosevelt found similarity between our action and that which exists in the United States under the name of « Indian Service », dependent on the Department of the Interior, and with visible satisfaction he mentioned facts which prove the spirit of justice with which that Government acts in relation to their Indian tribes. There, since 1837, the Indians' right of property over the lands which they occupy is recognized, and if, for whatever motive, the Government considers the disoccupation of any of these lands of public interest, negotiations are opened up with the Indians, and plots of land in some other part of the country are offered them in exchange, and an indemnity in money is paid. For this reason there are tribes who possess deposits of considerable sums of money in the North American public treasury and on which the nation pays, in interest alone, close on two million dollars; the Osages tribe for instance, figures as a creditor of the National Treasury for the sum of eight million dollars. Unfortunately, in regard to this question of ownership of lands, we are, in Brazil, not only very backward, but also in a more than lamentable position I may even say shameful.

The backwoods of Brazil where no civilized man ever trod, already appear on the books of the public Registries as belonging to such and such citizens; sooner or later, according to the convenience of their personal interests, these proprietors — *cara deum soboles* — will expel the Indians who by a monstrous inversion of facts, reason and morality, will be from then considered and treated as intruders, bandits and robbers.

These and other matters relative to the Indian problem in Brazil and in the whole of America, came back often and often to our minds; and however interesting they might be, we could not allow ourselves to be absorbed by them; there were other matters more urgent and necessary to be solved immediately.

In the first place we had to arrange the means for carrying out Mr. Roosevelt's resolution to send Father Zahm, with his attendant Sigg, back from Utiarity; both were detached from the American Commission; and in the second place we had to organize, with the resources of the Roosevelt-Rondon Expedition, a new party to reconnoitre and explore the course of the river Papagaio, leaving the point where we were, up to its mouth in the Juruena.

With regard to the American priest, I arranged for all necessary means of transport to be afforded him on the rivers Sepotuba and Paraguay until he should reach Corumbá, where he would take passage on a Lloyd Brasileiro boat for Montevideo and Rio de Janeiro. From Utiarity, he left on the 4th of February embarking in a motor car belonging to

the Telegraph Lines Commission, which took him to Tapirapoan.

For the river Papagaio expedition, we had at our disposal the canoes which I had ordered to be built in October. The exploring party was organized with two chiefs: one a member of the American Commission as honorary chief, and the other as an effective chief. In order to fill the first named post, Mr. Roosevelt appointed Captain Antonio Fiala, and the duties of the second fell upon Lieutenant Alcides Lauriodó de Sant'Anna, a member of the Brazilian Commission.

For the convenience of the present exposition, I will here anticipate the details which I would have to give later on in regard to the principal events during the voyage of the Fiala-Lauriodó party. The descent of the river Papagaio was commenced on the 7th of February. On the same day the members of the Expedition arrived at the Rapids which became known as the Fiala Rapids, where they capsized. Captain Fiala could scarcely swim, and struggled desperately in the stormy waters; now he would submerge under the eyes of his companions, then he would reappear on the surface further on, to disappear again in the midst of the current. For a moment it appeared to the party, that the Expedition would there have a sad and lamentable ending. At this moment someone was seen resolutely swimming in the direction of the drowning man. On reaching him, he extends his vigorous arm; but he had hardly terminated this generous movement, when the other one laid hold of him in a convulsive and deathly embrace. They

seemed to form one body disappearing in the depths of the waters, and whilst they were drowning they struggled : — one to free his robust limbs and recover their liberty of action, the other to continue fixed to the hope of living, a hope which is the outcome not of the deadened mind, but only of the muscular sensation of being attached to something solid. The swimmer reappears from the bottom of the river free from the fatal embrace ; he takes breath and again throws himself into the waters to defy death, for the sake of saving a life whose worth to him consisted in the mere fact of its being that of a man. For the second time he is subjugated and obliged to recommence the desperate struggle : he overpowers him and persists in his first intent. Behold them at last on land, both alive, Captain Fiala and his saviour, the canoe man Agostinho Ferraz de Lima, a man from the State of Goyaz, an inhabitant of the wilderness, an obscure hero, as fearless and devoted a « *camarada* » as generally are the representatives of our strong race of *caboclos*, so incessantly abused by national and foreign writers, who exceed one another, in criticizing all that is Brazilian, and in destroying in the minds of all, the confidence in the future of our nationality, underrating the value of its men, their honour and their character.

After this wreck, the Fiala-Lauriodó Expedition returned to Utiarity in order to take in fresh provisions and other material, in lieu of those that had been lost, and also to substitute the canoe, which had been carried away by the rapids, by a Canadian canoe which we had taken there ; we recommenced

the voyage on the 11th. Next day, the members of the Expedition passed the mouth of a river on the right bank, which they recognized to be the Sacre, below and on the left bank they discovered another on the 13th, which they identified as being the Burity, and following this, that of the Sauêuiná, also on the left bank. Proceeding they penetrated into the Juruena and from this river into the Tapajoz, whose grand fall called Santo Augusto, they passed on the 24th of February. Continuing down the Tapajoz they arrived at São Luiz, embarking in a steamer of the regular line between this port and the city of Santarem, in the State of Pará; from there they went up the Amazon to Manáos, where they arrived on the 26th of March, without further trouble beyond that of bringing down Lieutenant Lauriodó and a soldier, both in a sick condition.

After the organization of the column whose journey we have alluded to above, the Roosevelt-Rondon Expedition was divided into three parties with independent routes, but all working on the same plan and equal resources, so that at the end, the respective work of each could be considered as constituting the elements of one sole undertaking of the geographical exploration of the entire region studied by them. Of these three parties, one was headed by Captain Fiala and Lieutenant Lauriodó; the other had been organized at Tapirapoan under Captain Amilcar A. Botelho de Magalhães, assisted by Lieutenant Joaquim Vieira de Mello Filho, and having as his technical staff the naturalist Leo Miller of the American Commission; the geologist Dr. Euzebio Paulo de Oliveira; the taxidermist Hen-

rique Reinisch ; and also a botanist, a physician and another taxidermist, who tendered their resignations and returned to Rio de Janeiro on the first day they entered the wilderness. This second party was destined to explore the rivers Commemoração de Floriano, Pimenta Bueno and Gy-Paraná : in order to arrive in the Amazon by the Madeira, but before reaching the first of these rivers, on leaving the Juruena, they became the vanguard of the party under Mr. Roosevelt personally assisted by me ; the other members were Mr. Kermit, George Cherrie, the physician Dr. Antonio Cajazeira, and Lieutenant Salustiano Lyra.

The first party being thus reconstituted, proceeded on the way to the river Duvida, leaving Utiarity on the 3rd of February. Five days later we arrived at the telegraph station of the Juruena where there is a military detachment ; there we met a group of 25 Nhambiquara Indians who manifested great rejoicing and surrounded us before we could get off our horses. On another occasion I hope to be able to dwell, a little longer, in exposing some of the characteristic traces of this nation of Indians, of which before the work of the Telegraph Lines Commission, nothing precise, or of any worth, was known.

For the present I will limit myself to say, that the general impression of Mr. Roosevelt was, that the Nhambiquaras are a people of a much milder and gentler nature, and more sociable, than the great number of others belonging to a degree of civilization approximating theirs. The essential difference, existing between this tribe and the Australians, in

reference to their methods of treating their women, did not escape the penetrating eye of the American statesman. As a matter of fact, the Nhambiquaras, as almost all the Indians of Brazil, are not brutal to their women or to their children ; on the contrary, they are kind and show a great deal of attention to them. They supply the wants for their subsistence and give them the same food which they eat themselves, obtained from their hunting, fishing and their plantations. Another fact at once observed by our guest was the modest behaviour and the simplicity of their habits and attitudes ; not only of the men but also of the women : in spite of the fact, that they wear no garments, and present themselves to the eyes of all, just as they were born, no one discovers in them an attitude, a look or a simple movement, which reveal malice, and one might say with great appearance of truth that their habit of nudity, clothes them more than the garments of many civilized people.

We left the Juruena on the 10th. The region which we traversed under the telegraph line from this river as far as the *Commemoração de Floriano*, is all occupied by the great Nhambiquara nation. For this reason we encountered, everywhere, fresh groups of these Indians, who being advised of our passage, came to meet us on the road. To all of them we gave presents as a remembrance of this meeting ; with some we exchanged strings of beads and other odds and ends which we had brought, for caps of jaguar skin, potteries, feather ornaments and other articles of their primitive and curious industry. To describe, in this march all the hardship we

went through, would be to repeat and enumerate the same fatigues and annoyances of all big journeys on horseback across the forests and wild uncultured open country. Withal, if you remember that the Expedition started in December, and that we were now coming into the month of February, it will then be understood that besides all the unavoidable discomforts of such journeys, we had still to overcome the effects of our summer, and the heavy rains which fell incessantly night and day. But it must not be supposed, as it would appear from print and hearsay that all these things were full of tedium. In seeing them we cannot even think them monotonous, owing to the different aspects in which the same episodes present themselves to us and the interest which we attach to them at the moment.

Moreover, with the march, the landscape goes on changing ; and as we do not go very fast we have time to dwell upon the sights which arise and occupy our minds, with one or other conjecture on some topographical problem, the aspect of the flowers, and even the colour or the song of a bird. Here and there, a tree, which throws to the sides and above it its long frondent branches, casting a wide dark shadow on to the middle of the isolated camp, to the extent of which one's eyes can extend their vision as far as the long and undecided curve of the horizon : beyond, an eminence from which a beautiful perspective is displayed, in a succession of plains which appear to go to the infinite, some covered with the light green of the grasses, others with the dark tone of the woods winding according to the course of the rivers which they hide and shade, and

far off, the dark blue of the massive mountains which gradually fades towards the North, until it is mingled into the bluish white of the bright sky.

We took eighteen days on these marches. At last on the 25th of February we arrived at the point where a cutting, belonging to the telegraph line, crosses the river Duvida. The canoes were now ready; it was only necessary to make the last arrangements, embark the baggage brought, some by the pack-mules of the first party and the rest by Captain Amilcar's party; and finally we who formed part of the Expedition for the survey and scientific exploration of the river Duvida, all embarked.

LECTURE N. 2

“RIO DA DUVIDA” (The River of Doubt)

I

As an indispensable preliminary, for the entire comprehension of the importance and originality of the work done by the Roosevelt-Rondon Expedition, in the part relative to the reconnoissance and exploration of the river Duvida, it is necessary for us to stop a few moments in the examination of the scientific problem which it proposed to solve; and in order to obtain this result, we require to refer to the state of our geographical knowledge of this region wherein it was about to operate.

We will not be able to arrive at, however, a more perfect understanding of the importance or the *raison d'être* of the problems which were then being ventilated, unless we go back to a former epoch, that is to say, to the expeditions of 1907 and 1909, for the laying of the telegraph line from

Cuyabá to the Madeira river, which gave rise to the formulation of this problem; not only in reference to the river Duvida, but also to eleven other rivers discovered conjointly with it on that occasion, between the meridian of 16° and 17° W. of Rio de Janeiro: some of them being cut by the parallel of 13° and the others by parallel 12° S. of the Equator. The region which we have just mentioned is wedged in the interior of the great wilderness which generally one can describe as enclosed on the North side by a stretch of the course of the Amazon river; on the N. W. and S. W. by the entire courses of the rivers Madeira and Guaporé; on the S. by the Jaurú, Cabaçal, Upper Paraguay and the source of the Cuyabá; and on the E. by the Arinos, the Lower Juruena and the Tapajoz. The enormous fluvial periphery of these wilds was known since the colonial days.

In 1746 the « *sertanista* » João de Souza Azevedo passed from the river Sepotuba to the river Sumidouro, by which he went to the river Arinos, which took him to the river Juruena and from this river to the Amazon river, by means of the river Tapajóz, discovered 20 years previously by Capt. Pedro Teixeira. The navigation between the city of Belem (Pará) and Villa Bella (now Matto-Grosso) going up or descending the rivers Amazon, Madeira, and Guaporé, was equally known, already, in the 18th century. The geographical exploration of these rivers was carried out at the end of the same century, and in the beginning of the next, by Colonel Ricardo Franco de Almeida Serra, of the Royal Engineers. The result of these surveys, made

to verify the practicability, from a commercial point of view, of the route indicated by Souza Azevedo, appeared in a pamphlet written in 1798 entitled « Navegação do Tapajóz para o Pará » (Navigation of the Tapajoz to Pará) which is to be found in one of the volumes of the « Revista do Instituto Historico ».

On another expedition, of much greater proportion than the above, Ricardo Franco, with the assistance of two astronomers, Silva Pontes and Lacerda e Almeida, made a survey of the whole route which in those days one could follow, through the interior of the country, to come from Belem (Pará) to S. Paulo. In order to arrive at this result the Portuguese geographer left the capital of Pará, went up the Amazon river, entered the river Madeira, then into the rivers Mamoré and the Guaporé, which he ascended as far as Villa Bella. From this town he went by land to the waters of the river Paraguay, which he reached in the valley of the Jaurú. He descended this river as far as Cáceres; entered the river Paraguay, which took him, down stream, to the mouth of the river Taquary. He went up this river and then the Coxim, as far as the waters would allow navigation, by canoe. He traversed a stretch of land, extending for about three kilometres, immediately meeting the river Pardo, which is navigable by this kind of craft. Carried down this river he penetrated into the river Paraná, which he ascended. Afterwards he entered the river Tieté, navigating up stream as far as the port of Araritaguba, whence he went to the city of Itú and thence to S. Paulo.

In the course of this journey, Ricardo Franco and his two assistants were engaged in marking out such geographical features as merited annotation.

Thus the mouths of all the rivers which descend to the explored stretch of the Amazon, to the river Madeira, Mamoré and the Guaporé, were determined by geographical coordinates. After the chart of these rivers was made, and having drawn therein the features of which they had taken the necessary data, an outline of the general configuration as presented by nature, over the whole area traversed, was obtained. Later on, this chart, in combination with the reconnoissance of the river Tapajoz to which I have referred above, formed the outline (contour) of the region which we have now before our minds. The work subsequently effected by all the geographers of the 19th, century consisted in figuring in this chart the courses of the rivers of which the mouths had been fixed. An example of this mode of procedure had already been laid by Ricardo Franco: it consisted in utilizing with more or less ability, information obtained by the new cartographer with regard to any part of the river corresponding to this or that estuary; the stretch resulting from this information was drawn in, and by means of hap-hazard deductions, the entire course of the river was traced almost always based on the hypothesis that it would be a watershed of another, corresponding to such and such mouths.

We do not wish to say that such method was absolutely discretionary and capricious; experts on these subjects know that I am not here examining all the elements and material which the cartographers

could make use of to guide themselves by a well thought out comparison of the different hypotheses resulting from each of these data, to accept that which appeared to them the more exact. I will simply indicate on general lines the method, which has served, up to quite lately, in drawing up maps of great extensions of our territory—not with the idea of censuring and much less condemning such system,—but simply to place within reach of all, the possibility of understanding, why there were in the charts of Brazil so many great errors and numberless omissions as were brought to light by the surveys of 1907 and 1909. Withal, however benevolent one may wish to be in the appreciation of these systems, one cannot fail to acknowledge that they were more apt to lead to error than to the truth. Who, for instance, simply from his knowledge of the mouth of the river Parahyba, and the direction of its course up to Barra do Pirahy, or even up to a much higher point, such as Rezende or Queluz, could foresee that this river in the height of the Serra do Guararema (mountain) takes a turn, so familiar to us all, after which it continues ascending, parallel to itself, as far as Serra da Bocaina (mountain)? However, it was on the basis of such guess-work, but on a much larger scale, that they had to make the charts of the N.W. of Matto-Grosso, starting from the periphery to the interior.

It is not surprising, therefore, that the charts which were held to be the best and most modern, contained mistakes and omissions so great that, comparing them now with the real aspect of the area purporting to be represented by those charts,

it is impossible to admit any similarity between one and the other. To give you a more concrete example of what I am stating, I will take, for instance, two rivers: the river Gy-Paraná and the river Jamary, and I will compare the real elements of these rivers with those which were attributed to them in the charts made by Pimenta Bueno; the most renowned of our geographers with regard to matters relative to Matto-Grosso, and in those more recently published by Baron do Rio Branco and H. Williams, the latter of which bears the pompous inscription «Borders of Brazil with Bolivia according to the Treaty of Petropolis». As far as the river Gy is concerned, its headwaters are shown to lay in Lat. S. below parallel $12^{\circ} 43' 21''$; whilst of the three cartographers above named, the first places same above this parallel; the second figures it as one of the branches of the fork which he imagined to represent the formation of the river; and the last one, although he closely follows the work of the first, places same further north than he does, besides confusing the name of the river, which we are considering, with the Pirajara.

As far as the Jamary is concerned, its sources are to be found between the parallels 10° and 11° , one almost on the meridian of 20° W of Rio de Janeiro, and the others more or less symmetrically distributed on one side and the other of this meridian of which not one is more than $1/2$ degree distant; however Pimenta Bueno, who of the three cartographers already cited least exaggerates, places one of them $20'$ below the parallel 12° and does not advance with the eastern one beyond $30'$ to E. of the meridian 17° .

Not less important than the incorrections were the gaps presented in these charts for the whole region contained in the interior of the fluvial circuit explored by the Portuguese geographer. After having crossed the river Juruena, to the W of the meridian 16° as far as 17° , the expeditions of 1908 and 1909, successively encountered the rivers Nhambiquaras, 12 de Outubro, Toloiry, Ikê, Duvida and Piraculuina, besides others which I will not mention. The problem which then arose for each of these rivers was to discover the hydrographic basin to which it belonged; and if, for some of them we did not meet with difficulties in formulating an hypothesis which might entirely satisfy us (as in the case of the Nhambiquaras, which we attributed to the basin Juruena-Tapajoz), for others on the contrary, opinions were divided. Hypotheses which subsequently were found to be false, had also at one time been admitted as being correct; this was the case, for example, with the 12 de Outubro and Toloiry, which we supposed constituted the headwaters of the river Canumã, when in reality both belong to the basin of the Tapajóz. But, of all these rivers no one occasioned more numerous and continued doubts than the one corresponding to a source which we discovered on the 16th of July 1909 in the parallel of $12^{\circ} 39' S.$ and to which we gave the name of headwaters of the Urú. The exploring column was composed of Lieutenants Lyra and Amarante, Dr. Miranda Ribeiro, zoologist of the National Museum and myself. To some of us it appeared that these headwaters flowed into the Guaporé river; others were of opinion that they were from the Madeira. The

problem which thus arose was worth studying and being solved, not only on account of the interest which it awakened from the potamographic point of view, but also its importance in furthering the work relative to the laying of the telegraph line. We therefore decided to make a close examination of same, and for this purpose we constituted three parties : one under the direction of Lieut. Amarante, who was in charge of prolonging the reconnoissance in a northerly direction ; the second, with Lieut. Lyra, went westward ; and mine, which left first for the South and then for the North-west. With less than two days march I discovered a new river, which appeared to me to be the first water flowing from the plateau (chapadão) to the valley of the Guaporé, into which river it enters probably by the mouth called the Corumbiára. On the other hand, the reconnoissance made by Lieut. Lyra articulated itself so well with mine, that the result of the two combined was to completely exclude the hypothesis of the headwaters of the Uru running into the river Guaporé.

The first doubt occasioned by the course of the river which might correspond to the headwaters of the Uru was thus solved. But on the 26th, when my party, having joined Lieut. Lyra's, returned to the East, there appeared before us a stream about 12 metres wide running in a NNW direction. New controversies arose : whence came this stream ? from the source to which we gave the name of Uru, or from the Toloiryinaza ? As it was impossible, on that occasion, to conciliate the two opinions, I resolved to take note of those waters under the name

of Duvida, because it was my opinion that they were the same as those which gave us so much trouble in the discrimination of the basins of the river Madeira and of the river Guaporé. Following up the march of the exploring column in a northwesterly direction, we had a few days afterwards to cross the course of these waters a second time: again fresh motives appeared justifying the name which I had given them, and which was finally forced upon me, inasmuch as in my opinion we were still in the river Duvida, but my distinguished assistant Lieut. Lyra, was of opinion, that it was another river.

When the 1909 expedition terminated, and it was thought necessary to put together, in one and the same map, all the geographical data collected by the expedition in the wilderness explored, it appeared to us only natural, that the river Duvida should figure as the affluent of the *Commemoração de Floriano* which, with the *Pimenta Bueno* whose headwaters we designated under the name of *Piroculuina*, form the *Gy-Paraná*. This map subsisted until 1913. In this year Lieut. *Amarante* having been entrusted to proceed with a complete survey of the *Commemoração de Floriano*, he concluded that the hypothesis of the *Duvida* figuring as part of this river was incorrect. On receiving notice of this result, on the 25th of June, my mind was made up that in this case the river *Duvida* could only be the upper part of some river whose mouth on the river *Madeira* was already known under the name of *Aripuanã*. In spite of this supposition necessitating, in order to be accepted, that a much longer course should be attributed to

the river suggested than that marked out on the charts, and also that the position given by Coudreau to the river Canumã should be dislocated in an easterly direction closing it between the meridians of 15° and 16° W of Rio de Janeiro, I did not hesitate in accepting it as the only one probable, and also as the only one possible, taking into consideration the mass of data already established on the western region of the Tapajoz basin and the whole valley of the river Gy.

Under the name of Aripuanã the charts designated an affluent on the right bank of the river Madeira closed up in a trapezium which sides were : on the E. the course attributed by Coudreau to the Canumã ; to the S. the Gy-Paraná ; to the W. the river *dos Marmelos* ; to the NW. the portion of the Madeira from the mouth of this river to that of the Canumã above named. Thus involved, the Aripuanã could not extend itself below the parallel of 9° to which it did not reach, neither could it get out of the section corresponding to the meridian 17° - 18° W. of Rio de Janeiro. It was known that in passing from the Madeira to this river, and ascending same, one always navigated in the general direction of a meridian up to a point in which it divided into branches, one of which inclined towards the East and continued with the same denomination of the main stream, that is to say Aripuanã, and the other deviated to the West and received the name of Castanha. Consequently it will immediately be seen, that the hypothesis of the river Duvida being one of the feeders of this river, brought about considerable modifications in the cartography of this vast

region : we would have to admit that the Aripuanã not only went over the parallel 9° but also that it also reached Lat. $12^{\circ} 29'$ S. But if this were the case, it would be necessary to open a passage for it between the Canumã and the Marmelos, of which the one figured as extending itself too much westward and the other so much eastward, that no space would be left for the branches of the Aripuanã to expand between the two. The exploration and survey of the river Duvida could alone furnish the indispensable data for the solution of these controversies. Besides, as we have seen, it was already known that the Aripuanã, at a certain height, divides itself into two branches, one could not beforehand assert which of these would correspond to the river discovered in 1909, and this was one of the questions that would have to be decided by the Roosevelt-Rondon expedition. Moreover, the region which we were about to traverse, would give room to collect a great number of other interesting facts for the geography of the Northwest of Matto-Grosso. Everything, there, was new and unknown ; from the rivers which flow into that which we were about to discover, to the geological constitution of its soil, the richness of its forests, its-population, in short, everything which existed there. The motives which I had in June 1913 to formulate the hypothesis that the river Duvida was one of the feeders of the Aripuanã, were in my opinion so valid and decisive that they authorized me to propose to the Minister of Foreign Affairs the organization of a subsidiary party entrusted to await the arrival of Mr. Roosevelt at the heighest point on the Duvida, where it would

be possible to get to by steamer from Manáos and entering that river from the Madeira.

The object which this party had to bear in mind was to receive the members of this expedition on their arrival at the point already known, and where therefore they would consider their work terminated ; there they would find the necessaries to make up for whatever losses they might have sustained during the navigation of an unknown river, and they would also, besides this, find rapid and comfortable means of transportation for the termination of their voyage, from this point to Manáos. My proposal having met with the approval of the Minister of Foreign Affairs, I picked out Lieut. Antonio Pyrineus to organize and direct the work of that party, giving him instructions to go up the river with the steamer as far as possible and afterwards in canoes, so as to await us at the confluence of the branches of Aripuanã, inasmuch as this was the only point where we were certain to meet him ; whether the Duvida might correspond to the one or to the other of the two branches above mentioned. But just as if Destiny persisted in justifying up to the last moment the denomination which I had given on the 16th of August 1909 to the headwaters of the Uru, the reasons which appeared to me so categoric as to exclude any other hypothesis with regard to the course of the Duvida, than this one which I was now admitting, they did not arrive at entirely convincing Mr. Roosevelt. Lieut. Lyra presented strong and numercus arguments in favour of the former opinion that that river was only a contributor of the Gy : if this were the case its course would be

run in a few days and to effect same would be a work of insignificant value, which would not be worth appearing as the principal object of an enterprise to be carried out by the American statesman. For this possibility Mr. Roosevelt would prefer making the sacrifice of remaining absent from the United States for a longer period, provided he might terminate the exploration of some river whose importance would justify the idea of giving it his name. It was his wish, however, that necessary steps should be taken at once to initiate the new exploration as soon as the hypothesis established by Lieut. Lyra should be found correct, because, in either case, it was his earnest desire, to terminate in as short a period as possible, the undertaking which had brought him to these wilds, so that he might return to the United States in time to assist at the closing of the Mexican dispute. It was not difficult for me to satisfy the wish of the American statesman, because there, near the Duvida, was the river Ananaz, also discovered by the Telegraph Commission, but with regard to which we did not know whether it belonged to the basin of the Tapajoz or to that of the Madeira: in either of these cases, however, the Amazon would only be reached travelling along this river after a journey worthy of being mentioned as a strenuous and energetic feat. I therefore ordered that dug-outs should be built on the river Ananaz; they would probably not be used by Mr. Roosevelt but they would serve for the solution of the problems which were connected with the name of this river. After this occurrence we commenced to descend the river Duvida reconnoi-

tring and making the necessary surveys to place us on firm ground, and once having arrived at this, that name disappeared, extinguishing itself at the same moment when the last motives which still existed for its existence ceased.

II

The expedition for the reconnoissance of the river Duvida was supplied with seven canoes, recently built, the larger of which with a cargo capacity of 80 «arrobas» (about 1 1/4 tons). One of these canoes was set aside for the personal use of Mr. Roosevelt; two others for the services of the topographical survey, which I took under my charge together with Lieutenant Lyra and Mr. Kermit as sign bearer; the remaining four were lashed together in pairs forming a kind of raft.

Besides the persons whose names I have just mentioned, the Expedition was increased by the American naturalist Cherrie, the physician Captain Dr. Cajazeira, two soldiers eight regional volunteers, and six civilian labourers; the members of the Expedition were, therefore, twenty two in all.

Having completed the last arrangements for the embarkation, we commenced to descend the river Duvida shortly after midday on the 27th of February.

The river, swollen with the waters from the rain — for we were in the rainy season — had where we were, a width of 20 metres. The flood was so great that the current as it rushed by, touched the lower surface of the platform of the bridge which

the Telegraph Lines Commission had built there ; this flood, however, was of great advantage to the Expedition, inasmuch as we were thus enabled to float over the many obstacles which would, for this reason, be submerged ; numbers of fallen trees lying across the river from one bank to another, many dry patches of land, some of which perhaps rocky, would certainly hamper our navigation if we were to undertake it during the dry months ; now, they would not even be seen, and would therefore give us no trouble whatsoever.

On that day we travelled 9.314 metres, at times through thick woods, where the *hevea brasiliensis* already appeared in different parts, and again, through low and swampy lands. The soil was constituted of Parecis arenite.

The course of the river took the mean route Northwards and the survey was made with 114 stations.

We spent the night at our first resting place, on the right bank, and proceeded from there, on the following morning at 8 o'clock. After travelling 14.778 metres we found on the right bank the mouth of a river measuring 21 metres wide by a depth of 4 metres, which we recognized as being the Festa da Bandeira, a name under which since 1912 we have known, the waters of a source called Carumicharú by the Nhambiquaras. We concluded that day's work at a place, 1.750 metres below this bar, or say at 25.842 metres from the bridge called Ponte da Linha.

On the following day, the 1st of March, we covered and surveyed a length of 20.377 metres,

notwithstanding that we were seriously annoyed with very heavy rain, which poured in torrents from 11 o'clock up to one o'clock in the afternoon.

In this section we found, first the mouth of another river with a width of 15 metres; and soon after numerous signs of the Nhambiquara indians; probably of the group called Navaité. Among these signs I would like to mention: a dam for fish built across that river, which, for this reason became known as « Ribeirão da Tapagem »; thickets of former clearances for plantations; a landing place with a few small huts, and a « *pinguela* », (foot bridge) of considerable length along which was stretched a « *cipó* » or liana, in such a way as to serve as a hand-rail.

On the following day, the 2nd of March, we were only able to navigate from 8 a.m. up to 3.30 p.m. making a run of 20.013 metres. There we were obliged to stop the march and encamp, because right ahead of us the river formed rapids which made it impossible for the canoes to cross. A little before, this incident had already announced itself, because the waters began to run impetuously, and when we found ourselves in the midst of them, it became difficult to prevent the swamping of the craft belonging to the surveying party; for this reason we called this place « Corredeira do Apuro ». As soon as we set foot on land we went ahead, by the river's bank, to a point where it was possible to examine the obstruction which had made us stop. We saw the river, in a distance of 200 metres, flowing with enormous velocity between rocks of feruginous arenite, which appeared

there and everywhere deeply cut out, smashed to pieces and thrown one on the top of the other by the rushing force of the waters which precipitate themselves in violent gulfs. Then appears an island the last stronghold of resistance which that ruined ground offered against the indomitable pertinacity of the current. But the two portions into which this current appears to be divided, reunite themselves again and penetrate in a funnel-like corridor, dug out by them in the rock, and throw themselves into the lower part of the bed of the river, and continue to rush in revolted bubblings through a channel cut into the massive arenite. In this way, that portion of the river in which our navigation was stopped, continued for a length of more than 1000 metres below where we had encamped. We had therefore to portage our canoes. For this purpose we had to cut a road across the woods, joining up the point where we were to the nearest point below the rapids, where navigation could be recommenced. Then, the men of the Expedition would, with the aid of ropes, draw the canoes along this road, until they could replace them in the river, and would carry on their shoulders all the cargo in order to pass it also, from the upper to the lower part of the rapids. This work is evidently extremely tiresome not only in view of the exertion it requires to drag along the canoes, but also and chiefly owing to the necessity of felling numerous trees in the woods which border the river.

Fortunately the place where we were was a site which the Nhambiquara-Navaitê Indians were in

the habit of frequenting. This we found out by a trail, very much trodden, running across the place where we had set our encampment, and which went on along the bank of the river until it crossed same by a *pinguela* (foot bridge) near the place where the river was reduced to a width of one metre sixty centimetres. But for the position in which we were placed, the best signs of these visits were the camps opened up by the Indians, and some even recently burnt: our work for portaging was thus greatly simplified, inasmuch as it was not necessary to cut down a great number of trees.

The 3rd was entirely spent in the preparation of the new encampment, which was already the fifth during this Expedition, and in the transportation to it of our baggage from our previous camp.

The portaging of the canoes was commenced at dawn on the following morning, and by the evening was almost concluded. While Lieutenant Lyra superintended this work, I took with me two dogs which we had with us in our expedition and crossed over from the right bank to the left by utilizing the bridge built by the Navaitês; I followed the trail of these Indians and entered their lands and the forest for the purpose of making a small reconnoissance. I saw three headwaters of a river and several thickets of former plantations; I did not, however, find any signs of a settlement. I returned from this short excursion still in time to effect the survey of the portion occupied by the rapids, and which I found to measure 1.310 metres.

I gave the name of «Salto Navaitê» to the fall which exists at this spot.

The outcrop of the rock which occasioned this fall, corresponds entirely to that which determined the cascade called Paraiso, except in regard to the direction it takes, for here it goes from Southwest to Northeast, while in the former case it runs Northwards and terminates at the Barão de Melgaço station.

The rock is of a ferruginous sandstone with hard incrustation which has in many places resisted the shock of the enormous current produced by the sudden change of level of the bed of the river. All the naked surface is being decomposed by erosion which is slow but increasing. In many places there is a certain quantity of thick gravel, quartzite pebbles and pure quartzite, which indicate the former beds of the river.

The fall itself is formed in the shape of an elliptic curve which causes the waters to converge as if they were about to enter a funnel.

The fall to which we have just referred is the largest; but there are two others, one above and the other below it.

After we had concluded portaging the canoes on the morning of the 5th, we proceeded on our journey downstream.

The river, on both sides continues to appear to us, rich in rubber trees, its forests grow rapidly denser and denser and therefore more picturesque; the «canella ribeirinha» appears everywhere, and also some specimens of the «*mauritia vinifera*» are to be seen.

On the evening of that day we pitched our 6th camp, called «Da Canja», on the left bank on ground

covered with tall woods. We had travelled 11.890 metres and were therefore at 74.120 metres from the point of departure of the Expedition. At the place where we had our present camp, the Duvida was 45 metres wide or say five metres more than at the position of our 5th camp.

From this place we descended on the 6th a distance of 19.420 metres further down. We halted shortly below the bar of a river, to which we gave the name of «Figueira» and pitched our 7th camp, called «Do Assahy», because we could already hear, from there, the roaring of a second waterfall which required exploring.

During this travel we noted on one side and the other of the river 18 sources or headwaters and 5 rivers. We also found another *pinguela* (foot bridge) with *cipó* (liana) handrail made by the Indians.

From the stations 745 and 746 of the topographical survey, we could see, in the direction of the South, a high range of mountains which apparently lay at a distance of some four kilometres from the left bank of the Duvida. From that moment we went on meeting, from time to time, some of its slopes which almost reached the river.

The removal from the 7th camp to the 8th had to be conducted overland along a road of 490 metres cut out in the woods, which wound around the waterfall. This removal and the preliminary arrangements for the portaging of the canoes were effected on the 7th

The waterfall comprised two main falls one hundred metres apart, preceded and followed up

by dangerous rapids. The terraces of these falls were formed by a rock of red porphyrite which lay across the river in the normal direction of its course.

On the following day I found out, that below the point selected for coming out of that portage road it was necessary to cut through another one, 180 metres in length. Notwithstanding all the good will of Lieutenant Lyra and Mr. Kermit in executing this service, it was not possible to conclude same before the 10th. These developments caused a great deal of annoyance to Mr. Roosevelt who feared lest all this should result in delaying still more, the termination of the journey and consequently, in upsetting, to a certain extent his plans of an early return to the United States. He repeatedly inspected the plan which we went on making of each day's march and endeavoured to foretell the end of these and other contrarities. But, in spite of all this, he did not change, even in the slightest measure, his habit of writing down every day, the notes on his impressions of each moment, and a few more pages of the book whereby he intended to divulge the things which he saw and the facts that were occurring during his travel across the Brazilian wilderness. Besides this he still set aside a certain amount of leisure time, every day, to go into the forest, taking his gun with him. He was always alone on these excursions; and most frequently he returned without any game whatever, as being short sighted he did not always succeed in seeing the game from afar, and the latter, in its turn, was scared and fled when it heard his footsteps as he approached it.

Finally on the 10th we were able to proceed on our reconnoissance of the Duvida below those falls, the larger of which took the name of « *Seis de Março.* »

We did not succeed in travelling 732 metres completely unhindered ; we soon after came up to another cataract. Fortunately in this one there was a channel which permitted us to pass the canoes over unloaded ; the baggage and the men had to descend overland and cover a distance of 403 metres, before they were able to reembark. Even thus our march was delayed during three hours, which was the time required to effect the passage. To this cataract we gave the name of Jacaré, because it was at this place where we saw, for the first time in the Duvida, one of these amphibians. Some 607 metres below this waterfall we came across another one, which we crossed without any trouble beyond unloading the canoes and descending them through the channels with a pilot and a prowman. As it was already very late, Mr. Roosevelt suggested that we should halt and camp there. Our survey registered for that day the insignificant march of 1.847 metres ; we were thus more than 120 kilometres away from the starting point of the expedition. The river here showed a width of 100 metres and flowed through a soil with an outcrop of *diabase* (diorites greenstone).

At first I had given the name of « Jacutinga Atirada » to our 9th camp set out in this place, on the following day, however, I had to alter it and call it « Quebra Canôas ». The reason of this change of names was, that during the night one of the pontoons

had broken its tackle and having remained at the mercy of the current of the rapids, went to pieces against the rocks. We lost two canoes in this way and in order to replace them we ordered the men to fell and dig out a large tree belonging to Euphorbiaceas species, the timber of which is called Tatajuba and is of a yellowish colour.

The new boat was ready and launched on the 14th. We recommenced our navigation at one o'clock in the afternoon and continued until five p.m., covering a distance of 14.671 metres. We established our 10th camp at a point on the left bank, where there was a giant *tucum* (*Astrocaryum tucuman*) cut by stone axes, naturally by the indians settled in the vicinity. Besides this Lieutenant Lyra killed, and offered to Mr. Cherrie the naturalist, for his collection, a « gralhão », a bird of the Falconidiæ species, which gave its name to our camp.

Ever since we left Quebra Canôas, we had found the river with an appearance of a continuous series of rapids, rushing over a bed of *diabase*.

For this reason we were obliged to abandon the method previously used in the survey of fixed stations, and to adopt instead that of sighting with the front canoe in motion.

The forests likewise change; we now see on both sides of the river, numerous rubber trees and also Brazil nut trees (which are here called Pará nuts), and as the ground is mountainous the « caucho » is to be found in abundance. Among the hardwoods characteristic of the Amazon region,

we still find many others which are peculiar to the sub-basin of the Paraguay. In regard to the palm-trees, the Burity, the Assahy and the Patauá appear frequently, and in large numbers; the Inajá, the Bacabá, the Tucuman and others are scarcer.

We left the Gralhão camp at 7 o'clock on the morning of the 15th, and as the course of the river below this place appeared to us to be calm, we again adopted our method of surveying by fixed stations. This calm was however of a short duration: after travelling a distance of 4.184 metres the waters commenced once again to flow impetuously, and rushed through a dangerous channel of a new waterfall into which they emerged in furious bubblings.

Having ascertained the true importance of the obstacle and the impossibility of crossing it, I directed my canoe towards the left bank and ordered the leading canoe, which was carrying the sighting staff to do the same. As soon as we set foot on shore, I went with Lieutenant Lyra and the prowman Joaquim to survey the route of a road which should take us to the end of the falls where we desired to camp. On concluding this work we returned to the place where my canoe was secured in order to make arrangements for the transportation of the baggage. On arriving there we did not find Mr. Kermit, nor did I see his canoe; I inquired of the pilot Antonio Correia, what had happened, and he replied that Mr. Kermit, having paid no attention to my order to come alongside, had descended the rapids.

We thereupon retraced our steps towards the falls. A little further on running towards us, I saw

our dog Trigueiro, who had been travelling in the leading canoe. Our anxiety became greater and greater, for the dog showed signs of having been drenched in the current. We hastened our pace, and as we were about to reach a slope, at the end of the road, we saw Mr. Kermit coming up some dripping wet. The relief which we then felt gave rise, in spite of ourselves, to our chaffing remark; «Well, you have had a splendid bath, eh?» Our friend replied that he had escaped from drowning and that the other men who had capsized with him, the *canoeiros* João and Simplicio, were on the opposite bank, where they swum for safety. The canoe together with its load had disappeared in the whirlpool.

Now relieved of our apprehensions as to the fate of the shipwrecked crew, we could listen to Mr. Kermit's narrative. He told us that attempting to reconnoitre the channel, he found his canoe suddenly caught by the current and carried over the fall which was there, and over a second one which followed; thus rushing along from fall to fall, impossible to be steered, the canoe had finally become filled with water and submerged.

Thus there was a second fall: we directed our steps towards it and decided to examine same carefully. On arriving there, all our searching in the hope of finding something to save, was fruitless: on the waters and along the banks of the river we did not see the slightest trace of the wreck which had occurred but a few moments previously.

Lieutenant Lyra and I commenced to study the portage road which was to connect the second fall

to the first ; Mr. Kermit continued his search along the bank, downstream.

After some time, and on the road which we were following, we met the canoe man João, who had finally managed to cross the river. He told us that Mr. Kermit after examining the fall, had ordered the descent by the channel, and taking no notice of the information given to him that the passage was impracticable, he insisted on his purpose and repeated the order. In view of this the canoe man had thought himself obliged to obey, although he well knew that this was most rash. The canoe, impelled by the current, and unable to stand up against it, made water and was flooded. João, who was in charge of the steering, in his attempt to save it, jumped into the river and tried to hold it by the hawser which was fixed to the bow. All his efforts were, however, in vain ; the canoe, carried away by the racing torrent capsized. After this he had seen it drifting down the river, bottom upwards, and sitting on same were Mr. Kermit and Simplicio.

This narrative left us disconsolate : poor Simplicio had not saved himself either with João or with Mr. Kermit ; there was only one hope left and that was the result of the search which was being made below the last fall. But this was very uncertain ; still we sent João to help Mr. Kermit. Unfortunately the moment arrived when it was impossible to deceive ourselves : Simplicio was drowned. This sad certainty broke upon the members of the expedition as a painful mishap in which everyone shared. Certainly, no one commences an enterprise of the kind in which we

were engaged, without having previously become acquainted with the idea of the danger which same may offer, and of the innumerable occasions in which one has to face death. It was not, therefore, its unforeseen arrival which shocked us, but it was the pain of having lost a companion to whom we were attached, in brotherly affection, by the communion of past work and of the privations and hopes tried in the realization of an object, which now belonged to all our wishes and our hearts.

Wishing to give expression to these sentiments, we perpetuated the name of the unfortunate Simplicio at this fall, and on the kilometre mark raised in the camp, we placed the following inscription : « In these rapids poor Simplicio met his death ». The sorrow and preoccupation which such an accident had left in us did not succeed, however, in weakening our efforts. The work of portaging the canoes around the fall by a road of 520 metres in extension, terminated in time to enable us to commence the voyage at 7 o'clock on the following morning, the 16th of March, and to proceed with the topographical survey by the process known as moveable sightings as we had not a canoe sufficiently light to work with a sighting rod. In this way we were enabled to make 1.612 metres, a new waterfall now made us stop and obliged us to explore and open up another portage road about 910 metres in length. Once this service was arranged and whilst the canoe men were transporting the cargo from the upper part of the fall to the lower level, where we established our 12th encampment, I took my gun and interned myself in the wood to

find some game and some Tocary nuts (Castanhas Tocary). As usual I was accompanied by one of my dogs. First I went in a westerly direction climbing a hill behind the camp; I then turned to the North, arriving again at the bank of the river which course I accompanied downstream. Having walked about 1500 metres, I arrived at the point where the waters divided themselves between the principal bed and a small canal, forming in this way a fair sized island.

I was on the side of the canal, which I was accompanying, when suddenly I heard in front of me, the characteristic sounds of the voice of the Coatá, the biggest of the monkeys of the Matto-Grosso and Amazon forests. It was good game and convenient to bring it down. With a thousand precautions to avoid frightening it, crouching between the tufts of the vegetation I advanced in the direction of the sounds, closely examining the branches of the trees. All of a sudden my dog Lobo, who had gone ahead of me, broke the solitude with yelpings of pain. It was evident that he had just been attacked and was wounded; most certainly by a jaguar, or a peccary I thought. But almost immediately I heard other voices; these were well known to me; they were short exclamations, energetic, and repeated in a kind of chorus with a certain cadence peculiar to Indians who when they are ready for the fight commence the attack on the enemy. My dog Lobo had already come to my side; the Indians had chased him, and for the second time, had wounded him with an arrow. My first move was to assist the dog. I

fired one of the barrels of my gun. I waited a few moments and, as it appeared to me that the pursuit was continuing, for I only heard voices and could not see the Indians, I therefore fired the other barrel. Afterwards I reflected that it would be imprudent to persist in helping the animal ; I could not do this without exposing myself to be seen by the Indians and this might give occasion for a struggle between them and myself. I decided therefore to return to the camp, but before arriving there I already repented having abandoned my poor Lobo, and also not having attempted to get close up to the Indians. On arriving at the camp bad news awaited me : whilst the party were occupied in passing the canoe *Aripuanã*, a name we had given to same when we launched it on the river two days previously, the hawser which served to sustain same and direct it in the current, had broken and the canoe had disappeared in the surf. But what most worried me were the Indians and my poor wounded and abandoned dog. I related what had happened to Mr. Roosevelt and our other companions, and invited Lieutenant Lyra and Mr. Kermit to return to that place with me taking axes and beads ; if we should not meet the Indians we would leave these presents at a place where they could be easily discovered ; this would reveal to them the intentions of those who had left them there. We set out therefore, taking with us the Pareci Indian Antonio who formed part of the expeditionary column. We arrived without any difficulty at the place where the Indians had been : it was at the brink of the channel to which I referred above. There we came across

a long rod at the end of which was tied a « baquité » or small basket full of the entrails of game. This was evidently some fishing implement, and the mode of using it was to merge same into the water to attract and collect the fish; these would follow the bait as the operator lifted it up slowly until they could be seen by another fisherman armed with bow and arrows; they would then be shot and easily caught. We procured other traces but could only detect the trail of the fugitives, which followed in the direction of the « igapó » existing a little further on; we, however, did not cross same, and returned to the fishing place where we left our presents by the side of the rod. Guided by the blood stains of Lobo, we found him dead, fallen on the road leading to the camp, 300 metres away from the point where he had been attacked. Two arrows had struck him; one traversing his stomach below his heart; the other had torn away the muscle of his right leg. We found the point of the first arrow, a piece of bamboo in the form of a barbed lance, and from which we verified that these Indians did not belong to the Nhambiquara nation. We thus confirmed the supposition which had been suggested to us by the tree which had been cut with a stone axe, that the river Duvida from a certain point was inhabited by a new tribe of Indians with regard to which we possessed no information. We returned to the camp. The wreck of the canoe Aripuanã left us seriously embarrassed. At this place there was no wood which could be used for building a new canoe, and the four which still remained, were insufficient for the transportation of

the members of the Expedition and the baggage. The alternative of making a raft was remembered and rejected. At last we adopted the decision of loading the canoes with the baggage and in which besides the men strictly necessary for the service of the navigation, Mr. Roosevelt and Dr. Cajazeira would embark. We, in all thirteen persons, would go by land following the course of the river and during the journey would take the necessary precautions to avoid that the two parts of the Expedition should deviate too much one from the other. So we advanced until we found some wood which might serve to build the canoes which we required. While Mr. Roosevelt did not entirely agree to this plan, — it appeared to him to be very risky whilst we were traversing the zone inhabited by unknown Indians, — it was in this way that we proceeded on the 17th, having previously joined the two canoes together, which up to then had been navigating separately (the surveying canoe and that belonging to Mr. Roosevelt), so as to form a kind of ferry analogous to that formed by the other two.

During this journey we met a first waterfall, with a length of 312 metres, to which we gave the name of *Bôa Passagem*, and then a second fall « *Sete Ilhas* », which necessitated a portage road of 408 metres. Immediately below same, we came across on the left bank, a river with a width of 21 metres running with an average velocity of 60 centimetres per second and discharging its waters from a mouth the transverse section of which gave an area of 339.760 square centimetres; the volume of

water furnished per second corresponded to 20.385 litres. I gave the name of Kermit to this river in honour of Mr. Roosevelt. The survey gave 6.460 metres in relation to our previous camp, and therefore 123.230 counting from the zero stake at the bridge belonging to the telegraph line.

Up to this point it was still possible to give way to the existing doubts in the mind of Mr. Roosevelt and of some of the other members of the Expedition, relative to the importance of the river which we had been exploring since the 27th of February. But now there was no motive whatever for hesitation, which for so long had held our judgement in suspense and divided our opinions, inasmuch as all of them arose from the hypothesis which we saw could not be verified, namely that the river Duvida was a simple affluent of the Gy-Paraná. And that which peremptorily excluded this hypothesis was the fact that the river did not possess such a big tributary as that which we had just discovered; the Gy was well known and all of us of the Telegraph Lines Commission knew that this river had not, on its right bank, any feeder comparable in size and volume of water to that which we were navigating. It was therefore recognized that the Duvida was the principal collector of a great hydrographical basin; it was certainly my opinion for some time back that this river flowed direct into the Madeira; but even if it flowed into the Tapajoz or into the Amazon, this could in no way affect its importance, to bring it down to the level of some tributary or other of secondary order. The condition on which depended the compliance of the reso-

lution taken by our Government and communicated to me by the Minister of Foreign Affairs, namely to perpetuate in the map of Brazil the memory of the journey of Mr. Roosevelt's geographical discoveries by adopting his name to designate the river explored, was therefore carried out and complied with. Consequently, on the morning of the 18th, before we left our 13th camp, I issued an Order of the Day making known to the Brazilian and American Commissions that from that day onward the river which we had since 1909 called « Duvida » would henceforth be known as the « Roosevelt. » This ceremony with which we gave execution to the wish of the Government of our country viz to render once again homage to the United States of America, in the person of its ex-President, took place with all the solemnity in keeping with the place and the conditions under which we were. On the same occasion we inaugurated at the mouth of the recently discovered tributary, a wooden mark with the inscription «Rio Kermit», besides the number of kilometres, the number of the camp, the initials of the Expedition, the value of the geographical coordinates which we found to be Lat. S. $11^{\circ} 27' 20''$ Long. of Rio, $17^{\circ} 17' 2''$ After this ceremony we commenced our march, once again, divided into two parties, one going by the river on the two ferries and the other by land. The ground which since we left the fall of Bôa Passagem shewed that its formation was of a diabase rock, now commenced from the mouth of the river Kermit to be granite. At first this was the subject which most occupied our minds ; as

usual we would pick up samples of stones here and there destined to be afterwards examined and classified by Dr. Euzebio Paulo de Oliveira, the geologist of the Brazilian Commission. But soon afterwards we commenced to find recent signs of Indians: first a *tapiri*, made according to the style used by the Urumis and Pauatês tribes of the Gy-Paraná; then, three huts close together, small and low, and arch shaped entirely covered and closed by palm leaves. Each one possessed but one opening or door, very small in size, which was disguised underneath the leaves of the roof, purposely left hanging over it. As was to be expected, from such a mode of construction, the interior of these huts was completely dark. The most interesting feature however, was the arrangement of the lot: of the three huts, two were placed parallel to one another and slanting; the third one was perpendicular to these resting itself laterally at the extremity of one and leaning on the other, almost at the commencement of its inner wall. In this way if they were to be attacked from one side or another, one at least would be covered by the other two, and in this way, being invisible to the assailants, could serve as a refuge for the women and children. From the examination of all these things however, what most interested me was the indication that the Indians of the river Roosevelt were in touch with the tribes of the Gy-Paraná, because this would facilitate in the future, my work of reaching, pacifying and protecting them. We continued our march, and after having travelled 5.280 metres, counted from the mouth of the Kermit,

found a second river which flows into the Roosevelt from the right side by a waterfall 2 metres in height and 30 in width. We could only make a small reconnaissance of this new tributary, along its bank, as it was necessary to attend to the wish of the chief of the American commission relative to accelerating our voyage. However seeing it descend from S.E. in Northwesterly direction, we presumed it corresponded to the headwaters designated by us, on the highland, by the name of Marciano Avila. We still descended along the river Roosevelt another 3,060 metres, at the end of which, a new waterfall forced us to transport our baggage by a portage road of 640 metres in length. We decided to install our 14th camp here, to which we gave the name of Duas Canôas, in view of having discovered two *araputangas* of good size from which we were to obtain the craft which we required. Having commenced the building of same on the 19th, the two canoes called Esbelta and Chanfrada were launched on the afternoon of the 21st, and these permitted us to recommence our work of reconnaissance on the following morning. The topographical survey by fixed staves was also reestablished using as before the Fleuriais telemeter. We thus traversed 9,970 metres crossing first with little trouble, a waterfall formed by the outcrop of porphyritic quartz, and arriving afterwards at another one much larger, composed of two walls of diabase, which had to be got round by a portage road of 850 metres. The latter we named Cachoeira da Felicidade; and there we established our 15th camp. Having pitched our tents, Mr. Roosevelt asked me

for a chat as he wished to give me his opinion as to how we should conduct the work of the Expedition. His view was that the chiefs of undertakings of certain importance, should not occupy themselves with the details of the work to be carried out, but only with the determining of the principal points, and even this only to an extent necessary to characterize it in its general lines; opening up and clearing the way for the specialists who would not be long in coming up and filling in the details of same. In this way, he was inclined to think that it would be convenient to again adopt the rapid survey. I replied, that we were there to accompany him and take him across the wilderness, and that therefore, we would execute the services in accordance with his wishes; we would employ our greatest efforts to give him the satisfaction of seeing reduced to a possible minimum, the time which he had still to spend on this expedition. For this reason, the topographical survey proceeded without our being able to obtain all the benefit of the technical resources which we had at our disposal and with which we had carried out a sufficiently exact and correct work. We left the Felicidade waterfall at 7 o'clock in the morning of the 23rd. But right ahead of us we had to suspend our march because, the river forming rapids, was enclosed in a canyon opened through a rock of quartzite which runs from the right bank to the left, from S.E. to N.E. On all sides could be seen huge boulders hurled one over the other by the tearing force of the current; and although the aspect was very picturesque, it increased however, the difficulty of discovering the canal by which

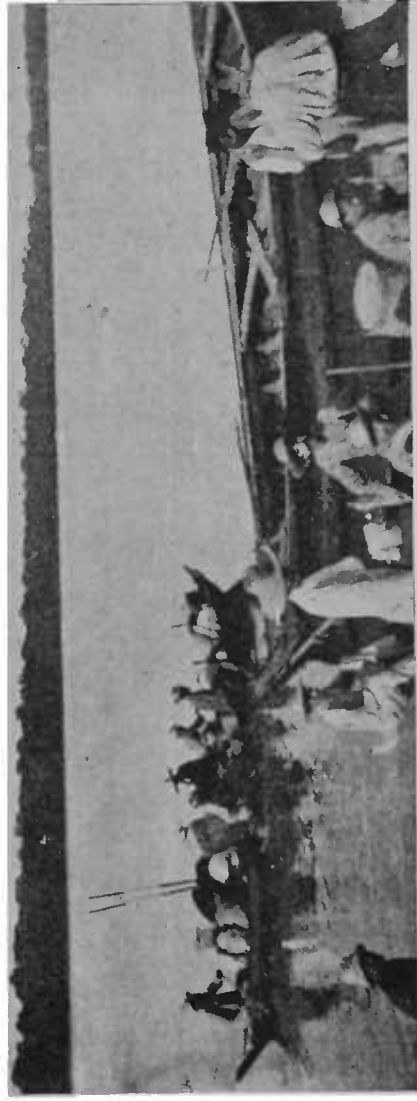


Photo. Com. Kondon

Confrencia

Departure of the topographical surveying party of the river Paraguay

the unloaded canoes could be passed. The first reconnoissance made along the left bank, gave us no other result, beyond the finding of fresh signs of Indians. We therefore passed over to the right bank and there we found the convenient canal. The baggage was transported by land over a distance of 1.096 metres, and the work only terminated in the afternoon at almost four o'clock. In spite of this, we proceeded on our journey; we passed by a sharp pointed rock of diabase two metres above the level of the river, and we established our 16th camp at a place where the dim murmur of the waters rushing between the rocks could be heard. On this day when we worked from 7 o'clock in the morning until after 5.0 in the afternoon, we did not succeed in advancing more than 12.600 metres; were it not for the obstacles we had encountered, we would have covered more than 38 kilometres in eight hours alone; for the survey was going at the rate of 81 metres per second. On the dawn of the 24th, after having chased, with no result, a tapir which had made its appearance in the river (for this reason we named our 16th camp « Anta Perdida »—Lost tapir) we got into our canoes and went to reconnoitre the rapids which announced themselves by the roar of the fall. Thirty three minutes afterwards we arrived close by and commenced to explore it from the right side, by land. We walked the length of its course, more than one kilometre, at the end of which there exists an enormous basin 400 metres in length; however we convinced ourselves that it would be impossible to descend the canoes over it, as the waters rush

impetuously over the bed of diabase which is here and there cut in terraces, forming a series of falls. Lieutenant Lyra, Mr. Kermit, the canoe-man Antonio Corrêa and myself, passed over to the other bank to see whether we would be more fortunate there. We had not advanced very far with the new reconnoissance, when we were surprised at seeing, another river, which flowed into the Roosevelt with a width of 40 metres, and a much larger volume of water than any of the other tributaries previously noted. Although we could not go further ahead with our exploration, we were quite satisfied with the work done, because we discovered a canal through which we could pass the smaller canoes ; the others would be dragged overland.

However, I did not wish to deviate from the recently discovered river before choosing the name most appropriate to designate it, taking into consideration the greatness of its waters, the poetical and charming aspect of its banks and bar, as also the richness of its lands, most adequate to the cultivation of sugar cane, coffee and all kinds of cereals. By the side of many Brazil nut trees and numbers of specimens of *hevea brasiliensis* (rubber) we saw the Uacury palms, the *water cipós* (lianas) and many other varieties of vegetation which attest to the excellence of the soil where they grow and flourish.

This was unquestionably the most remarkable and the most important of all the geographical discoveries which we had made since the 27th of February ; and as it belonged to the territory of Matto-Grosso, only the name of some person to whom the gratitude of Matto-Grosso was due, owing

to the love and dedication with which he had served his people and his country, could merit being remembered to receive the homage of remaining to commemorate same in it.

Under these conditions who would not immediately remember the eminently pleasing figure, dear to all Brazilians, and to the hearts of the sons of Matto-Grosso; of the soldier who gave them the strength of his arm on the sad occasion of the Paraguayan invasion; the engineer who lent the concourse of his technical knowledge in the study of the marsh land region of the rivers Negro, Tacouco and Aquidauana; and of the writer who best knew how to evoke the ephemeral greatness of the near past of Villa Bella, and depict same, enhancing the beauty and grandeur of those lands and of those skies in which he saw, collected and cultivated lovingly the sweet flower of the soul of the forest which opened out and expanded in the charms of INNOCENCIA. I could not therefore hesitate: I cut out the bark of a tree full of sap and life and in its lasting wood we cut the following inscription:

RIO TAUNAY, IN FRONT OF THE WATER-
FALL OF THE SAME NAME, HOMAGE OF
THE ROOSEVELT-RONDON EXPEDITION AT
156.280 METRES FROM PASSO DA LINHA
TELEGRAPHICA, MARCH 24TH, 1914.

In order to attend to the already mentioned solicitations to accelerate our march, we did not continue to proceed with the necessary measuring

in order to ascertain the different technical data relative to the entire definition of the Taunay. The transport of the baggage to the 17th camp below the fall, terminated on the same day; but the portaging of the canoes demanded efforts which lasted until 2 o'clock in the afternoon of the 25th. We recommenced immediately afterwards to descend the river; but we did not succeed in traversing more than 1.110 metres. Now we came across an outcrop of granite which hindered our passage in a length of over 1000 metres. These repeated stoppages, although they did not succeed in overcoming the resistance and the vigour of our admirable canoe-men, were however, now trying the patience of the members of the American Commission. We had completed 27 days navigation but we had nevertheless not advanced more than 157.410 metres, corresponding to a daily run of below 6 kilometres. This speed would really be ludicrous, were it not rather an eloquent testimony of the enormity of the work which the constantly embarrassing falls were causing us. Withal, were it not for the annoyance resulting from the delay, everything else was going on favourably. The sanitary condition of the expedition was good, and the quantity of provisions still existing was sufficient to assure us the termination of the voyage without scarcity of food. If it were not for the most special conditions of this expedition, these hindrances would constitute, for us, a good occasion to extend, with greater leisure, our explorations into the interior of these lands, which in reality greatly interested us in virtue of the exhube-

rance of its formidable vegetation. The rubber tree became more and more profuse, and of a better quality. The hardwoods were numerous and of great variety. Proceeding along the banks of the new waterfall, we observed the following trees:— « Aroeira », « Piuva », « Angico », « Peroba », « Cedro », « Lorangeira Silvestre », « Cajueiro » and many other equally precious specimens, which form a forest so high and dense that the river below has a dark and shaded aspect. We also found vestiges of Indians, but not of recent date.

On the following day I formed our men into two parties: one under the direction of Lieutenant Lyra, who took charge of portaging the canoes by the channels, and the other took our baggage to the 19th camp pitched at the bar of a small stream which flows into the river from the right bank of the Roosevelt. This work took us the whole day. At first, we gave the name of Tocary to the waterfall, on account of one of these trees which furnished us with a great quantity of nuts. Later on, however, we changed this name to « Das Inscricões », in remembrance of the fact that Mr. Cherrie had discovered a slab with geometrical figures, naturally carved on same by the Indians of that region. Unfortunately, the American naturalist was not able to photograph these interesting ethnographic documents, neither did he copy the designs. Nevertheless he informed us that they consisted of a series of three sets or combinations of concentric circles, each one constituted by four lines, the position of the common centre being marked in each one. Below the first set of

figures, three others existed, each one formed of five Ms. overlapping each other so that the strokes of the M remained parallel to one another. The design was headed by a line which ran from right to left of the slab, at first rectilinear, then curved upwards, and finally descending again and continuing on the other side in the initial direction. In the highest point of this line, three small circles were carved, each one with its centre clearly visible. Other designs, which existed on the face of the slab turned towards the current of the river, Mr. Cherrie could not distinctly see. We left this camp on the morning of the 27th and descended 5.425 metres more, still surrounded by mountains which were accompanying us from the quartzite waterfall. Twice we were obliged to unload our craft in order to traverse the current, and on one of these occasions, we almost lost the canoes forming the ferry, which capsized.

We installed our 20th camp under an enormous rainstorm and from there we left on the following morning, having made the insignificant run of 1.550 metres. Whilst dispensing myself of further reference to three rapids which gave us the usual trouble, I will say that a little before, we had discovered on the left bank, a small river, to which I gave the name of Cherrie, after the American naturalist, and that our halt was made on the side of a big waterfall. Taken on the whole it caused a change of level in the bed of the river to a total extent of 33 metres ; but in detail, it was recognized as being constituted of six successive steps, the intervals between them rapidly increasing from the

4th to the 6th where the waters make a drop of 10 metres. From both sides of the three last steps, large rocks jut out assigning the spot where the mountain allowed itself to be torn asunder by the impetus of the current, when this was endeavouring to secure a passage through its compact and solid mass. After the last fall the river continues in a deep and narrow bed enclosed between the mountains, flowing swiftly and only at the end of two stretches does it regain its customary aspect. With regard to the predominating nature of the rock, it appeared to me at the moment, that it was of a calcareous formation ; and for this reason I named this place Cachoeira da Pedra de Cal. Later on, however, the geologist Dr. Euzebio de Oliveira, verified from the samples that I gave him, that there was a mistake in that classification for the mineral there existing is called Hornfels, in which there are only slight traces of calcium. I leave this rectification consigned, in the hope that it may serve to avoid possible mistakes, which might arise from the erroneous designation. The embarrassment which this waterfall caused to the progress of our march was most serious ; we would not have overcome same except at the cost of enormous efforts employed during some days. It was necessary to open up a road on the top of the hill on the left bank in the direction of the first navigable point on the lower part of the river, and we should have to transport all the baggage of the expedition by it. As for the canoes, we would endeavour to pass them by the less dangerous channel, guiding them and sustaining them by means of hawsers ; at

the places where this manoeuvre was absolutely impracticable, we would drag them overland, until we could launch them ahead of us in analogous conditions to the preceding. We admitted the possibility of the five smaller craft not resisting the shocks to which they would be exposed ; and in case we lost them, we would be obliged to build others to replace same. On the morning of the 29th we separated into three parties : the first with Mr. Roosevelt, Cherrie and Dr. Cajazeira remained in the camp (the 21st) ; the second, under Lieutenant Lyra and Mr. Kermit, took charge of the work of descending the canoes, and the other accompanied me in reconnoitring the road overland. I left in a NNW direction, across small ridges which slope towards the river ; I crossed the valley of some headwaters, of little importance, and then commenced to climb the side of the hill. On reaching the summit, at 10,30 a.m. I ascertained that the barometer showed a pressure of 742.5 m/m, corresponding to a height of 104 metres, in relation to the level of the 21st camp. By this evaluation, the top of the hill where we stood, and the Salto Navaitê which was more than 100 kilometres distant, were so situated that if an imaginary straight line were drawn from one to the other, it would be horizontal ; therefore, following all the route traversed from that fall to the mouth of the river Cherrie, we had descended, from waterfall to waterfall, as much as we would descend in a few minutes from the top of this hill to our 21st camp. Desirous of seeing the panorama which was displayed from this height, I ordered a few trees to be cut down on the northern

side, at the place where the slope drops abruptly, forming a precipice. After having terminated the cutting down, we could then gaze on the distant horizon, taking in beautiful scenery in which the dark ridge of the mountains stood out, and below, winding between the mountains until it disappeared behind them in a northerly direction, the river, which we had been exploring with so much fatigue, and now seemed to us to be reduced to the insignificant proportions of a rivulet. Proceeding with the work of opening up the road, we arrived at the bank of the river below the last falls at 2.30 where we were to establish our 22nd camp, which was 2.250 metres away from the previous one. By this road, our valiant caboclos transported the whole of the baggage of the expedition, working for this purpose during the 30th and the 31st. On the last day we were installed at our new camp. The descent of the canoes required time and more earnest efforts. On the first day in spite of the fact that Lieutenant Lyra and Mr. Kermit had prolonged the work up to 6 o'clock in the afternoon, they only succeeded to pass the first three falls with one canoe, the other canoe only got over two falls. On the following day employing great efforts they got down the falls not only these canoes but two others, bringing them to the upper level of the last fall, and were obliged to proceed by land. It was still necessary to employ the whole day of the 31st in descending the five first terraces with the larger canoe; but one was lost and we now remained with five only. Finally, from 2 to 5 o'clock in the afternoon on the 1st, of April they

successively arrived at the port of the 22nd camp having been dragged overland by the members of the Expedition. This hard work during four days, caused considerable suffering to our men. Only one of them, the canoe man, Luiz Correia, kept up his vigour and good spirits of always; another one called Macario also distinguished himself by his capacity of resistance against fatigue; the others, however, without excepting our excellent pilot Antonio Correia, broke down, not in spirit, but their physical forces were exhausted.

Whilst awaiting the end of this difficult journey, the members of the Expedition gave themselves over to their habitual occupations. Mr. Roosevelt divided his time between reading, writing and correcting his book, and Cherrie the naturalist, augmented his ornithological collections by the daily acquisition of fresh specimens. One of these called the attention of the American scientist because it appeared to him that it was a variety hitherto unknown and therefore not classified. On one of these days I myself had my own little surprise. Naturally, it was not one of those things that would increase the wealth of the compiled knowledge of works on natural history, but it was a modest observation of mine, relative to the first representative of the large family of turkey buzzards which allowed itself to be seen in the forests of this river. The animal which gave me the occasion to register this note, did not belong to the species of those who feed themselves on decomposed carnage; it was a more noble animal, one of those who knows how to hunt his prey and prides himself so much, that he has

a surname, for he is called «Urubú-Mathias». Besides the whole district of the waterfalls which we were traversing right away from Navaitê, was completely devoid of game. It is possible that this was due to the fact, that at this time of the year, the birds and quadrupeds had taken refuge into the interior on the highlands. It is true that I could rarely determine the existence of certain birds. Once or twice, I heard the red headed macuco chirp but I never succeeded in getting to hear the real macuco. I heard also, but rarely, the song of the Uru and of the Miatiré; there were no signs, however, of the Maui-ie-kieré. As for the mammals, we saw a deer twice; once at the Simplicio waterfall and then at the bar of the Marciano Avilá; the tapir was once or twice surprised by us when crossing the river, but the Caetetú and the Peccary we never met. Of the quadrumanes, the one which we most frequently met was the Barrigudo; and then the Coxiú, and, more rarely than these, the Macaco Prego. The Coatá made its appearance very seldom, and only on one occasion did we see the white faced monkey with a light coloured body. At the end of the last day of the work which I have above referred to, a tempestuous night followed, during which it rained so much that our canvas awnings gave way under the weight of the water, and the canoes threatened to be sunk. In spite of the fact that the members of the Expedition had not had the sleep which they so much required, on the following day we recommenced our journey, on a ferry, and three separate canoes.

The river continued to flow with impetuous velocity, forced between rocky hills, obliging us to transport the baggage by difficult roads—regular goat tracks—in order to be able to descend the canoes through the rapids. In this way we covered 2.850 metres, at the end of which we encamped close to a high rock, through which the waters had opened a deep channel forming almost vertical walls, as if the rock had been worked by stone masons. The exploration of the road, to get round, by the left, the enormous obstacle created by this incident, was realized on the same day and had to be prolonged until reaching to more than 2200 metres, the base of a rock where the falls ended. This was the place picked out to establish our 24th camp, and which we hoped would be known as the Queixada de Anta, in view of the fact that we had there found a jaw bone of the well known *Pachydermata Brasiliensis*. Unfortunately, a great disaster obliged us a few hours afterwards to change this name for another. On the morning of the 3rd we commenced our work: Lieutenant Lyra and Mr. Kermit were going to descend the canoes by the waterfalls and I went to open the portage road. This work was almost terminated, and now a third party, under the direction of Sargent Paixão, had commenced the transportation of the baggage when the canoe man Luiz Correia came to advise me, on behalf of Lieutenant Lyra, that the soldier Julio, of the 38th Battalion of Infantry, had just then assassinated that sargent. I left the men of my party continuing the work which they were doing, and set off to the place of this sad mishap. I found the body of

my unfortunate camarada lying down close to a big tree, a little distance off the spot where the baggage of the Expedition was accumulated. He had been hit in the right axilla, by a bullet of a Winchester 44, which caused immediate death. I directed myself to the camp, where I found Mr. Roosevelt and Dr. Cajazeira, who had taken the first steps unfortunately of no avail, to succour the wounded man, and arrest the assassin. He, after having committed the crime, had run into the interior of the wood, where he had disappeared with his murderous gun. The criminal was a healthy man of strong constitution; we had included him in the Expedition because of these qualities verified by Dr. Cajazeira on the medical inspection made at Tapirapuan for the picking out of our men, and added to this was the fact that he had manifested the desire to accompany us. Unfortunately such favourable appearances only served to disguise a nature of the most unfortunate morality which soon revealed itself at the first waterfall. But when we were able to discover his bad qualities, his cowardice and complete incapacity to follow up the continuous efforts of his fellow companions, we were so far advanced in the river that it was impossible for us to rid ourselves of his presence, and we therefore had to resign ourselves to keeping him with us until the end of the journey. Nevertheless, not one of our party suspected that we would have to lament the consequences of such a wicked act as that which he had just committed, because the most accentuated trace of that sad soul was his pusillanimity, not only in facing danger but also in sustaining any continuous

and energetic action. In the Expedition no one relied upon the assistance of his strength, and least of all, of his will. Nevertheless, it would not have been right for us to have left him unoccupied. He was therefore, employed in the transportation of the baggage and more than usually excelled in showing the despondency and carelessness with which he did his work. Sargent Paixão reprehended him for this. He, without saying a word, went to the camp, got hold of one of the expedition's four carbines, came back to the spot where the sargent was, and treacherously murdered him. We said above that the criminal had taken refuge in the wood, carrying that gun with him. There was therefore sufficient reason for us to fear, lest he should commit other crimes and in order to avoid this, it is was imperative to follow on his track, disarm, and if possible, arrest him.

With this end in view, I gave the necessary instructions to the canoe-man Antonio Correia, and to the Pareci Indian Antonio, who, following up the trail of the fugitive, were not long in discovering the fire-arm, abandoned at the first obstacle which he met in the rapidity of his flight into the dense vegetation of the forest. With our minds at ease on this score, we desisted from the almost impracticable purpose of pursuing the assassin, in order to arrest him, and we turned all our attention to the arrangements for the funeral of our poor fellow worker. Sargent Paixão, of the 5th Batallion of Engineers, was a veteran of the campaign waged by the « Telegraph Line Commission » against the hardships of the wilderness in the highlands of the

Parecis. He was in command of a military post installed by me at Juhina, to serve as a base for our animals which became interned beyond the Juruena, in the direction of the Northern range of mountains. There he had the fortunate opportunity of receiving, in 1911, the friendly visit of the representatives of a group of Nhambiquaras from the valley of that river, and he acquitted himself so well on this occasion, that in a very short space of time, he succeeded in conquering the confidence of these Indians and acquiring great prestige amongst them. From the Juhina post, Paixão had passed to serve at the general construction camp, where he rendered relevant services, which obtained for him his promotion as sargent; for his effective post was that of a corporal. A few years ago, having finished his time of first engagement in the ranks of the Army, he was immediately reengaged; it was in this position that he continued to render to the 5th Batallion of Engineers, to the Commission of the Telegraph Lines and now to the Roosevelt-Rondon expedition, his assistance and excessive good will; serving as an example to his comrades by his spirit of discipline which he impressed to all his acts, and above all by the morality of his life as a soldier and as a man. The grave was opened on the same spot where he fell, close to the road with his head towards the mountain and his feet towards the river. Then Mr. Roosevelt, Lieut. Lyra and myself carried the body of our unfortunate companion and layed it at the bottom of this modest grave, marked by the symbolic cross of his religious creed. We completed these

pious duties with a military funeral salvo, in which Mr. Roosevelt seconded by Mr. Cherrie, two soldiers and myself took part. It was this sad occurrence which made us adopt a new denomination to mark out the mountain range and the falls which had the bad destiny of being its indirect cause and theatre. They both received the name of Paixão, as a last homage due by us to the companion whose devotion to the common cause, and to his chiefs, his kindness to his comrades and subalterns conquered, not only the esteem but the gratitude of the discoverers of the «Roosevelt». In spite of actively proceeding with the moving of the camp we could not finish same on that day. For this reason, at the end of the portage road below the falls, we could only make a hasty bivouac with part of our baggage. At 5.30 p.m. Mr. Roosevelt arrived breathless with the great effort which he had made to climb up the slopes of the rocky mountain; that violent exercise was too excessive for his state of health and made him suffer very much. On the following morning the 4th of April, we commenced the exhaustive work of the previous day so as to terminate the transportation of the baggage and canoes. At about 4 p.m. this work was so far advanced as to make it possible to finally install our 24th camp. At the moment that we left the bivouac Mr. Roosevelt felt himself suddenly attacked with high fever. His temperature rising quickly to more than 39 degrees centigrade. On the road we had been caught by a heavy hailstorm, which drenched us and greatly increased the sufferings of our sick friend. Dr. Cajazeira gave him an injection of half a gram

of quinine, and during the night, Mr. Kermit and Dr. Cajazeira kept watch over him, in turn, until two o'clock in the morning, and from that hour onwards I took their place. Although on the morning of the 5th Mr. Roosevelt was feeling better, I decided to transfer the camp to another place which was not so damp as where we had passed the night. In order to do this I crossed over to the right bank which I explored in a distance of 1.600 metres, where we came across a large creek to which we gave the name of « Bôa Esperança »; for we saw that the river from that place flowed down apparently with no obstacles to oppose our march. I did not change the camp to this spot in view of Mr. Roosevelt's bad state of health; I limited myself to install it at 950 metres from the place where we wished to get out.

On this day we finished the work of passing the canoes across the waterfalls, in which our canoe men, under the direction of Lieut. Lyra and Mr. Kermit, animated by the example of tenacity which these two gave them, developed efforts which appeared to exceed the resisting capacity of the human organism.

Mr. Roosevelt was amazed at the exceptional physical and moral energy of our officers and men, and whilst talking to me said the following: « They say that the Brazilians are indolent! Well, my dear Colonel, a country that has men like these has assured a great future for itself, and will certainly carry out the biggest undertakings in the world ». We passed a relatively quiet night; the fever did not continue its attacks

on Mr. Roosevelt, but attacked Mr. Kermit. On the morning of the 6th we left the 25th camp, taking the canoes still lightened of their burden to the « Bôa Esperança » creek, where we recommenced the navigation which continued unhindered through long stretches of the river, until we had completed 28.325 metres. On descending the Paixão waterfall, we lost a canoe. With our craft reduced to four canoes, we could not continue on the topographical survey, with the methods previously used, and it became necessary, therefore, to content ourselves with the elements furnished by the measures of time and of the average velocity, deducted from the values obtained in regard to the rectilinear tracts of the river with the assistance of the telemeter. The place at which we arrived and where we installed our 26th camp, 201.950 metres from Passo da Linha Telegraphica, was the mouth of a new tributary which flows into the Roosevelt by the right bank, with the azimuth of 263° ESE coming almost from E. Its width was 95 metres and its waters flowed with great rapidity over a rock of porphyritic quartzite. At the bar there were two islands; and the river Roosevelt after receiving that affluent takes a width of 120 metres and continues with the previous azimuth of 13° NW.

The forest formation which had commenced to change a little before this spot, with the appearance of the Uauássú palms, becomes very abundant here with this *ataléa* as well as the *hevea brasiliensis* (rubber tree). Since leaving the Pedra de Cal Fall however, we no longer saw the *Bertholetia Excelsa*; it perhaps exists in the interior of these lands.

To the new river, thus discovered in Lat. S. $10^{\circ} 59' 0''{,}3$ and in Long W of Rio. $17^{\circ} 5' 54''$, I gave the name Capitão Cardoso, a modest homage of the gratitude and of the *saudade* which I owe to an old and constant companion in my work in the wilderness; from the time of the construction of the telegraph line from Matto-Grosso to Cuyabá, up to the day in the month of January 1914, on which he died at the Barão de Melgaço station, where he had come to organize and proceed with the work which Lieutenant Nicolau Bueno Horta Barbosa and Paulo Vasconcellos had been, months previously, forced to suspend, so as to save their lives threatened by malaria. Unfortunately, my old and dedicated companion of strife, had no time to protect himself against a violent attack of these deadly fevers; and at the end of two days sickness, for the first time his body rested from the work of serving the public cause; and his great heart stopped loving, the country which gave him birth and the friends he had conquered by the beauty of his manly and kind character.

The possibility, which expeditions of discovering unknown lands give us to perpetuate in the new geographical features the memory of the devoted servants of the Nation, real heroes, not of some brilliant feat executed in a moment of excitement, in the presence of thousands of spectators, but rather of an uninterrupted series of sacrifices and unheard-of hardships, is no consolation for those who meet and realize same; it is simply a mitigation of the pain which remains, of knowing that one of its sons is lost to the nation; who knew

how to honour it and serve it, and for our friendship the object of an affection which sees itself frustrated in the hope of adding to the qualities already received other fresh qualities, and has to resign itself to the fate of only nourishing the recollection of the past and the emotions of the *saudade*.

How often would we wish that destiny should spare us the painful duty of seeking a spot in the grand soil of our Country, to receive and preserve the memory of our companions of strife, so as to transmit it to the future generations in which we deposit serene faith, that they will know how to retribute, with much love, the devotion of those who had previously loved, and served it so well?!

In front of the river Capitão Cardoso, on that afternoon of the 6th of April 1914, far from our minds was it to imagine, that little more or less than a year having passed, one of its affluents, whose existence was not even then suspected, would give us the occasion to renew these melancholic recollections. We had left in the highlands, the headwaters of the Ananaz, to which we have already referred, saying that Mr. Roosevelt, participating in the doubt relative to the course of the river which finally received his name, had chosen to explore it in case the hypothesis that this was a simple tributary of the Gy-Paraná were verified. The reconnoissance which we were making, dismissed all the opinions contrary to that of the former river Duvida being the upper part of the biggest of all the feeders of the right bank of the Madeira and, the result of this fact was that the Ananaz continues wrapped up in its mystery, giving rise to new suppositions with regard to the potamographic

system to which its waters should belong. It appeared to us very probable that they flowed to the Eastern branch of the Aripuanã ; but we could not definitely reject the supposition that they flowed towards the Tapajoz or directly enter into the Amazon by the mouth already known under the name of Canumã. In order to solve these difficulties once and for all a new expedition was organized in the present year which whilst descending the Ananaz concluded that it was one of the two formers of another river, whose identity the members of the Expedition were only able to discover when they reached the mouth ; because there they met the mark of 1914 with the indication which we had left, namely Rio Capitão Cardoso. Unfortunately, however, the intrepid chief of this Expedition, Lieut. Marques de Souza and one of his canoe-men, a few days previously, had lost their lives, from an attack which they had suffered from the Indians, who inhabit that wild country.

Let us return, however, to our 26th camp installed at a *pontal* of the confluence of the river Capitão Cardoso and the Roosevelt. Two unforeseen events obliged us to pass the 7th of April there : one was the appearance of the assassin of Sargent Paixão, and the other the discovery of a new fall which appeared in such low land (the aneroid registered a corresponding pressure of 754.9 m/m) and caused admiration in finding it there.

The canoe in which Lieut. Lyra and I were travelling was ahead of the party running at a good speed. We were still two leagues distant from the spot in which we afterwards discovered the mouth of the

Capitão Cardoso, when suddenly we heard the voice of someone who from land exclaimed Tenente! (Lieutenant). Very much surprised, we could not at once realize who was calling; neither were we thinking of the criminal, because we all accepted the hypothesis that he had taken the resolution to return up river walking by the bank until he discovered the tracks of the Navaités, by which he could easily arrive at the telegraph station of José Bonifacio. Nevertheless, it was he who was there, having climbed on to the branches of a tree hanging over the river, imploring for mercy and asking us to receive him on board. We did not attend to him immediately, we had first to communicate to Mr. Roosevelt that it was our duty to take that man into our canoe in order to deliver him over to the law courts of the country, and this is what we told him once we found ourselves all together at the spot where we had fixed our new camp. Mr. Roosevelt said that he and his companions in the canoe were as much amazed as we were. With regard to taking the criminal into our canoe, he replied that there was nothing else for him to do than to conform to same seeing that I wished to comply with what I said was the duty of a Brazilian officer and of a man; but that were it not for this fact, no other consideration would make him decide, if it depended on him to reincorporate into the Expedition, an individual who had excluded himself from same by his wicked instinct; besides the clamorous injustice which would be imposed on the other members of the Expedition by increasing their work and the risks of suffering hunger for the

purpose of saving the existence of a man who had revealed himself so unworthy of living in our society.

We waited for the rest of the afternoon and the night of the 6th, so that the unfortunate wretch should reach us in the camp. As this did not take place, on the following day I sent the canoe man Luiz Correia and Antonio Pareci overland up stream to look for him. On this mission the two men spent the whole day, and came back at night with the news that they had not found him. Although the shouts of the men calling him, the firing of arms, and the smoke from the camp, were sufficient signs to assist anyone who might have been lost in the woods, to direct themselves within a circle with a radius of many kilometres. To take the greatest advantage possible of the stoppage which had been imposed upon us, Lieut. Lyra and I occupied ourselves with the measurement of the rivers and the necessary astronomical observations for the calculation of the geographical coordinates of our position, whilst Antonio Correia and another canoe man went to explore the waterfall, with the intention of discovering the channels by which they could descend the canoes on the next day. The latter was done first on the right bank with a negative result, because the river after dividing itself into several channels through the rock, ended by taking a huge leap, bigger than any of those which we had met up to the present. The two canoe men therefore crossed over to the left bank where they were more fortunate; a channel permitted the passage of the canoes unloaded but the rapids prolonged themselves to a great extension

spotted with small islands here and there, which forced the river to widen its bed, and at the same time, to take a Westerly, SW course, deviating it from a hill existing on the North side.

On the following day courageously struggling against the difficulties caused by the waterfall which received the name of Sete de Abril, and others further on, we did not succeed in advancing more than 6.655 metres, in spite of having worked from 8 a.m. until close upon four o'clock in the afternoon. We stopped at the edge of another waterfall, and to the camp established there we gave the name of Piranhas, in remembrance of a few of these fish caught by Lieut. Lyra.

From this camp we descended on the following day, the 9th of April, 4.575 metres crossing two waterfalls which obliged our valiant workmen to carry the baggage over two extremely bad roads, the first 700 metres and the second 400 metres in length. These men already presented the appearance of having their constitutions worn out by the excess of work which they had had during 42 days incessantly in a terrible struggle against the formidable resistance of the wild nature of the backwoods and the rivers full of obstacles capable of rendering navigation difficult in the extreme ; nevertheless, no sign of moral depression was manifested in them and nothing could make us foresee the possibility of their losing determination to face and conquer new obstacles and resist the shocks of the greatest misadventures and sufferings. Of the three following days, we spent one, the second in the 29th camp, awaiting the return of the party sent to our previous

camp in search of the dog named Trigueiro, belonging to Mr. Kermit and which we had forgotten to embark in the canoes; and on the last day we installed our new camp n. 30, which we called «Do Peixe». During the two days in which we navigated we had made a run of 8.250 metres, by itself sufficiently eloquent to give an idea of the enormous obstacles which we had to overcome. On the following morning the 13th of April, after having crossed a dangerous rapid where we lost two oars of the ferry, we came into a stretch which was favourable to navigation as the river had commenced to show a tendency to enclose its water in a regular bed, which from the Sete de Abril Fall came dispersed through innumerable channels, some smooth and others full of boulders. Thus we managed to advance 13.400 metres when we saw that the marginal vegetation was recovering its aspect of an Amazon forest, severed by the low rocky ground of the Cachoeira das Piranhas.

We departed from our 31st camp on the morning of the 13th of April, a date which served us to designate a new tributary on the left bank of the Roosevelt, at a distance of 252.475 metres from Passo da Linha, and we proceeded on our march until we had completed on that day a run of 31.350 metres, at the end of which we encamped.

On the 15th, as Mr. Roosevelt's ailments had become more serious, for his right leg showed signs of erysipelas, we were only able to recommence our work at 8 a.m. We passed by a range of hills existing on the left bank to which we gave the name of Serra da Cigana, sighting afterwards

on the same bank a wooden mark with the initials J A burnt in same. On examining this place we discovered another mark similar to the above on the opposite bank. This was the first sign of civilization which was found on this river by the members of the Expedition who had left from the Telegraph Line Commission's Bridge on the 27th of February and had since that date travelled 270.200 metres across entirely unknown and deserted regions. Nevertheless, those marks did not express the importance of the knowledge which they revealed to exist among civilized people regarding their stay there, because there still remained to be ascertained whether the lands thus marked belonged to some proprietor who had made a regular survey of same, or whether they were simply occupied by energetic rubber tappers who had pushed into the wilderness and there established themselves on their own initiative without any dependence or connection with the public authorities and practically isolated from the rest of the world.

Proceeding on our voyage we discovered at 2.600 metres from these marks a large well built ranch having at the side of it another smaller one, destined for the work of smoking the latex of the rubber tree. The proprietor, Joaquim Antonio, whose name corresponds to the initials of the marks was absent, probably for a short space of time in view of the fact that there existed in the interior of the ranch many domestic utensils and a great quantity of food stuffs. We there left our names and the indication of the place whence we had come, and continued to descend the river. Having gone

another 3.600 metres, we found a small canoe manned by an old nigger, who as soon as he saw the flotilla, manoeuvred his craft in such a way as to gain refuge on land. Seeing this I got up in my canoe and waving my cap, shouted to him. It was only then that he realized that there was no reason for flight and without fear he came up to us. He explained to us that he had become frightened because it was quite impossible for him to expect the arrival of civilized people descending the river from its source. The same surprise would be felt by other dwellers that we were to meet below his house; in order to avoid them the fright of supposing that we were indians, we were to advise them of our proximity by three shots from our guns combined with the sound produced from a bambu *busina* which he gave us. On inviting us to visit his house, the old man said that his name was Raymundo José Marques, a native of the State of Maranhão. I introduced him to Mr. Roosevelt, who had not got out of the canoe on account of his ailments. On this occasion, having made allusion to our guest as « ex-president », old Raymundo asked me in the most astonished manner: « But is he really a President? » I explained to him that he was not a President now, but that he had been; « Ah, said the old man, he who has once been a king, has always the right of majesty ». Mr. Roosevelt hearing this comment, manifested great admiration at seeing so much wit and courtesy in a man who lived interned in the wilderness, away from the culture of the great populous centres and assured us that the *matuto* of the United States under equal

conditions, would be quite incapable of manifesting himself with the grace and intelligence of this *sertanejo*. We took leave of the old Maranhense and continued navigation downstream. We passed by another rubber tapper's hut, whose proprietor was absent, and came up to another one belonging to a man called Honorato, situated at 11.450 metres away from Raymundo's. In all we had made on that day a run of 24.800 metres. Following the advice of old Raymundo, we fired off the shots of our rifle and blew our *taquara businas* immediately we saw that we were in the neighbourhood of the new hut. Unfortunately this precaution did not have the desired effect. Honorato's wife no sooner saw the canoes, than she immediately began to run, terribly frightened, along the bank of the river, carrying a child in her arms.

The road by which she fled was cut at some distance by an igarapé (stream); in the anxiety of saving herself from the imaginary danger, the poor woman threw herself down into it; she succeeded in getting up with her clothes drenched and continued her wild race until she arrived at the house of a neighbour where she fainted. The other family was also taken with panic. Fortunately, Honorato was there and with him three more men. They all armed themselves, took a canoe and came up stream fully prepared for a fight. We were in the terrace of the abandoned house where we had lit a fire for our cooking. At a certain distance, Honorato and his companions could see us and they recognized then that we were not the indians. They came to meet us and were much surprised that we had arrived

covering a completely unknown route to the dwellers of the river. We then had a friendly chat. We learnt that this river was the western branch of the Aripuanã. Its dwellers gave it the name of Castanha and they had established themselves there in common accord, each working for his own account and profit. In case any one of them required assistance they all got together to render same. In the distribution of the lands, they followed the rule of the new occupant going up river in a canoe for a space of time corresponding to two hours' navigation from the last hut. At the point attained they sank marks identical to those we had met and described above, and from that moment onwards, the lands thus marked were considered and respected as the legitimate property of the person whose name corresponded to the initials therein carved. They all recognized that the lands belong to the Government; but do not consider that this may in any way upset the right of possession resulting from the fact of occupation. With regard to the indigenous dwellers, of which we had not found any signs after passing the Paixão Waterfall, the rubber tappers informed us that at long intervals they had news of the appearance of some, now at one place and then at another. Some time ago they appeared and were welcomed with some shot from the guns from a hut a little above Honorato's property. The reprisal was not long in coming and the consequence was that the owner of that hut, a *caboclo*, named Manoel Vieira, fell wounded by their arrows. After this fact no other of such gravity had occurred; but the rubber tappers

did not deceive themselves with regard to the tranquillity which they were enjoying, for they knew that they would forcibly have to enter into a conflict with the original owners of those lands, of which they could not become possessors without a struggle. The panic caused by our arrival clearly shows the degree of nervous tension in which those people live, constantly tormented by the expectation of seeing the warlike indians springing forth from the wilderness. Honorato's wife told us, afterwards, that she not only distinctly saw the canoes, in which we came, full of indians, but also whilst running heard their terrible yells and felt herself pursued by them. And this hallucination made her suffer so much that at night time she had an attack of fever, which was abated by Dr. Cajazeira. From Honorato's ranch downstream we met, successively, other rubber tappers' establishments, and even a store where we bought a few goods, the prices we paid were fifteen mil reis for 5 kilos of rice, twelve mil five hundred reis for 5 kilos of sugar and seventeen mil five hundred reis for two kilos of tobacco; and a fowl cost us ten milreis (*).

Navigation continued comparatively easy, at least for those who had experienced the difficulties of the previous *stretch*. So it was that in five days, between the 16th and 20th of April we were able to run 185.400 metres, in spite of the fact that we had crossed a few rapids, the most important of which was the one known by the name of «Panellas».

On this course we noted a great number of igarapés, from one and the other bank of the

(*) One Milreis equals at present 12 pence.

Roosevelt and an important tributary, the Rio Branco, the mouth of which is to be found on the left bank at 368,275 metres from Passo da Linha Telegraphica. With regard to the nature of the soil, characterized by the rocks therein contained, we found at the first mark, that is to say Joaquim Antonio's property, porphyrite and orthose, to which followed quartzo-biotite which reached as far as the Rio Branco, and thence downwards outcrops of orthogneiss. The width of the river attained 310 metres. On the 21st we left Mr. Benevenuto's store and passed by the old Barraca do Bagaço, a place close to the parallel $8^{\circ} 48'$ through which ran the boundary line of the states of Matto-Grosso and Amazonas, ideally traced from Santo Antonio do Madeira to the source of the Uruguatás, an affluent of the Tapajóz. Following on our voyage, at 4 p.m. we sighted on the left bank, the mouth of the Madeirinha, another affluent of the river Roosevelt, situated at 519.875 metres from the Telegraph Line. At the point where we saw it this tributary has a width of 80 metres and its waters, in the rainy season, can be navigated by canoes as far as the waterfalls further up. On this river there are various rubber tappers' establishments and the indians who inhabit same, the Urumis, are good natured and accept the society of the civilized people. A little below the bar of the Madeirinha there exists a waterfall called Infernã, formed by an outcrop of granite. There the canoes must be unloaded and the baggage transported by land. To facilitate this operation there is at the upper part of the waterfall a store (barracão), whose administrator had been a soldier.

Further, we found at this place a note from the engineer Ignacio Moerbeck placing the latitude at $8^{\circ} 19' 29''$ and the Longitude W. of Rio $18^{\circ} 24' 58''$ and $2^{\circ} 35' 19''$ from Manáos. Sextant and chronometer n. 5.607 Casella. Our observations, however, registered the latitude as $8^{\circ} 29' 27''.4$ and for the Longitude W. of Rio $17^{\circ} 29' 39''$.

We passed the night at the store called Infernão, 523.325 metres from Passo da Linha Telegraphica, as it was not possible to pass the canoes over on this same afternoon. At 11.30 on the morning of the 22nd as the work of portaging the canoes was completed, we proceeded on our voyage. From this point downward we had to struggle against important obstacles such as the Gloria Waterfall, which demands a portage road to the extent of 528 metres, and also the Inferninho Waterfall. But in spite of the fact that these obstacles were aggravated by the bad state of health of Mr. Roosevelt who was scarcely able to stand up on his sick leg, we were able to cover in four successive days, marching till the afternoon of the 25th, a distance of 129.300 metres.

During this journey, beyond the numerous feeders of lesser importance, the river Roosevelt receives by its left bank the waters of the igarapé Machadinho, and in its bed appears the porphyritic granite which forms the Gloria Waterfall; a little below however, orthogneiss is again found, in the waterfalls respectively called Carapanã and Galinha. These denominations date as far back as the first establishment of the rubber tappers on this river. Judging from the information collected

by me at the barracão Carapanã, the ascent beyond the point of the confluence of the former Castanha with the Aripuanã commenced in 1879. In this year, Raymundo Gato, the nigger, whom I saw and heard in the above alluded to Barracão, went with some companions as far as the waterfall of Infernã, and during the whole of this journey he did not meet any other inhabitants except those belonging to the villages of the indians, and even the name of Castanha was given to this river by the Campineiro indians, who are none other than the Mundurucús.

After this period the movement of invasion continued, new establishments of rubber tappers being formed more and more up river, having come from Ceará, Piauí, Maranhão and other places. Whilst the invaders progressed the indians were pushed back into the interior. From some places they were expelled more violently than from others. Thus at the place where one today sees the village called Terra Preta, there was a settlement belonging to the Matanaués which was destroyed some thirty years ago by a few people from the state of Ceará. The mention here of the name of the Matanaués tribe requires special explanation to elucidate the intermingling which exists between the inhabitants of the valley of the river Roosevelt, and those of the Gy-Paraná and of the *igarapé* « Dos Marmellos ». For this reason we must state that between the two first rivers the Roosevelt-Rondon Commission noted the existence of a range of mountains until then unknown the direction of which is SE to NW. It was this range of mountains which, cut by the course of the explored river gave

rise to the troublesome waterfalls called Paixão; a name which we adopted to designate same. Amongst these ridges, the most important is known by the name of Serra da Providencia in the slopes of which rise, on the northern side, the river Marmellos, a direct tributary of the Madeira, and on the east the Madeirinha an affluent, already mentioned, of the Roosevelt. In the western part of the basin of the river Marmellos the Parintintins indians live, their villages extending towards the Gy-Paraná and are not far from the Madeira; a little further up we meet the Urupás, the Ararunas, the Muras, the Turas and the Matanaués indians. Still from the same ridges of the river Tarumã, the waters of a feeder of the Gy descend, at the headwaters of which the Urumi indians built their villages. This geographical distribution and the contiguity of the territories determine the above mentioned intermingling of the tribes inhabiting the valleys in question. So the Matanaués extend from the Roosevelt very far up the river; and the Urumis possess villages at the headwaters of the Madeirinha.

The indians which with their arrows, on the 16th of March killed the dog Lobo, probably belonged to the first of these two tribes. Besides those which we have mentioned above, the existence of a group in the river Branco is further to be noted, of which I did not succeed in obtaining any other notice beyond the fact that their arrows were badly made and therefore did not appear to be like those of the Urumi indians, who make them well finished and very artistically. Besides this, they are brave warriors and hostile to the rubber tappers who endeavour to

invade their domains. Finally in order to terminate the enumeration of the indians of the river Roosevelt, we must remember that from Salto Navaitê upwards until its highest headwaters, the Nhambiquaras live.

III

On the morning of the 26th of April we left our camp of Samaúna Lat. S. $7^{\circ} 40' 55''$,6 and Long. W of Rio $17^{\circ} 24' 22''$ continuing to descend the river formerly known under the name of Castanha. We crossed the waterfall called Gallinha with the canoes unloaded and after that the Araras which was completely submerged on this occasion as is always the case during the rainy season. Shortly afterwards we passed by the mouth of the igarapé do Ouro, so called as it is believed to be a place where there is a layer of gold sands, years ago secretly explored by an African nigger who used to appear with this mineral and sell it to a Portuguese merchant on the Aripuanã. Proceeding on our voyage, at 1 o'clock in the afternoon, we arrived at the point of the confluence of the river which we were navigating, with the Aripuanã, which descended SE. There we found encamped, awaiting us since the 21st of March, Lieut. Pyrineus, with his auxiliary party composed of 6 persons. To this place the party had arrived embarked in canoes as it was impossible for them to cross with the scout «Cidade de Manáos, over the Matá-Matá waterfall, 7.900 metres away from there. It was now 59 days since we had left the bridge of the telegraph line, with our flotilla of seven canoes cutting through the waters of the river whose

name resumed all the indecisions resulting from the mystery of its course, and from the unknown region traversed by same. During this period we covered 686.360 metres, the first 276.000 of which were so full of hardships that to overcome them we had to struggle during 48 days continuously without allowing ourselves to be either depressed by any sort of fatigue, or through the sad circumstances which embittered our hearts and, for some moments, astonished our souls in the contemplation of the unfathomable fate of the things of this life. We arrived at the end of this hard crossing, almost all of us ill and exhausted. The eminent chief of the American Commission after his attack of malaria, which he had caught at the Paixão Waterfall, never was himself again. His son Kermit was also very much shaken in health by the lengthy attack of fever which tormented him for many days, and after the irksome work of portaging the canoes at that same waterfall Lieutenant Lyra and Mr. Cherrie had had long gastric complaints, and the men of the crew attacked with fever and tired to death were themselves in a very weak state of health and would have been literally defeated if it were not for the endurance of these admirable caboclos and sertanejos. But the pleasure of seeing the fortunate results which our efforts and work had effected, always with the hope of attaining this prize, this alone made us forget all the attribulations of the past and after calming the excitement of our meeting, there was only one point on which we concentrated our attention: we wished to examine at a glance the importance of the results which we had just

obtained. From our camp we could see the confluent of the former Castanha, bringing its waters from a southeasterly direction with an average velocity of 776 m/m, flowing between two banks separated one from the other by 470 metres. By contemplating these data with the result of our soundings which gave a depth, on an average, of 639 c/m, it can be concluded that in every second its mouth allows to pass through the area of 3.003^{m^2} , a flow equivalent to a volume of 2331^{m^3}

This was the river whose course the rubber tappers imagined prolonged itself below the point of the confluence with the Castanha until it flowed into the Madeira under the name of Aripuanã. According to this mode of thinking, it would therefore be the principal river, and the other, the Castanha, would simply be its tributary, very important in reality, but not so important as to make it lose its individuality and with it its name also.

I will rapidly examine whether this opinion corresponds to the real facts observed and noted by the Roosevelt-Rondon Expedition, or if, on the contrary, it would be more legitimate to attribute the precedence in question to the recently explored river. But before doing so, I will give some other information, endeavouring to show how far our present knowledge reaches in regard to the former Castanha. And for the facility of this lecture, it must be understood that henceforth I shall call this confluent, and it alone, by the name of Aripuanã; from this name I systematically exclude the part of the course of the two rivers united from their point or union to its mouth in the Madeira.

All the rubber tappers whom, since the 15th of April we had met along the banks of the river Roosevelt, agreed in informing me that no other explorer had gone up the Aripuanã beyond a certain waterfall known by the name of Infernão, the same as we saw in the former Castanha. The first man who there attempted to establish himself, did not succeed in resisting the indians, whose hostilities he had awakened by persecuting them without pity, and without any trace of reason or justice. After they had expelled this man, the indians of the Aripuanã continued to wage war against all civilized men who attempted to venture through their lands, and they still do so with such ardour that the river may practically be considered closed to the rubber tappers, who therefore seldom frequent it.

There is however, below the said waterfall, an affluent, the Guariba, fairly populated by our people in spite of the fact that therein exist many indians. According to the information of Mr. Caripé, who is the largest proprietor on the Roosevelt, the indians on this affluent belong to a different tribe than that which hostilizes the rubber tappers on the principal river; those are called the Araras, and the others would probably belong to another tribe of the great nation of the Muras, a part of which are on friendly terms with the civilized people on the other rivers.

Besides this fact, we may register another with regard to gold deposits in the Aripuanã, the first of which is to be found in the igarapé «Taboca» and must have been known and explored by the same African nigger to whom we have already referred; and the second, more recent, as it dated from 1913,

should be in another igarapé, tributary to the Guariba. The discovery of this last deposit is attributed to a rubber tapper of Peruvian origin, and it is affirmed that gold of 22 carat was there found.

From all that we have said above, it is clear the result is that the Aripuanã is little short of being an unknown river. The general direction of its course, the greatness of its basin, the localization of its headwaters, without alluding to other elements to be able to consider any river as conveniently identified, these are matters still pertaining to the dominion of hypotheses. It is true that of these, many are excluded from the limits of possibility, thanks to the conquests realized by science in the regions which confine with that in which the valley of the river exists. But even so, the number of those which remain as being plausibly formulated is more than sufficient not to permit to localize in maps, in Lat. S. $7^{\circ} 34' 34''$,07 and Long. W of Rio $17^{\circ} 9' 36''$ anything beyond the mouth of a confluent of the Roosevelt, and marking it with the name of Aripuanã. Nevertheless, as it is interesting for the geographical conclusions of the Roosevelt-Rondon Expedition I shall make slight references to the hypotheses which had to be ultimately set aside from the midst of those capable of being admitted.

The most important of these arose from the ignorance in which we were in regard to the direction followed by the course of the Ananaz, below the small stretch close to the source, which we were able to determine as an accessory work to that of the track of the telegraph line between the stations of Vilhena and José Bonifacio. One could, however, admit that

this source belonged to the Aripuanã, and as it is situated to the N. of the former Duvida, scarcely 15 kilometres, the consequence would be that the course of that river could compete in Latitudinal extension with the Roosevelt to which it was inferior only in a few minutes. As however it has been verified — and my heart bleeds since the day when I heard that this certainty had cost the sacrifice of the life of our much beloved and courageous friend, Lieutenant Marques de Souza — that those sources are the headwaters of one of the feeders of river Capitão Cardoso, the conclusion is that there is no more reason to admit the supposition that the Aripuanã reaches almost as far up to the highlands of the Parecis as the Roosevelt.

Thus reduced in extension in regard to latitude, the said river had forcibly to gain in longitude, extending its course eastward.

Of what we know of the hydrographical system formed by the tributaries of the Juruena and upper Roosevelt, and further North of what we could infer from the information relative to the Canumã, the result is the only acceptable hypothesis with regard to the headwaters of the Aripuanã having as its watersheds those of the Acary and Secundury, feeders of the above mentioned Canhumã from which they are separated by the ridges thrown out by the Serra do Norte to the interior which rests itself on the Southeast side on the curve of the Ikê, and on the Southwest side on the concave branch of the river Marques de Souza.

If we should now wish to compare the two branches which form the stretch which flows into the

Madeira by the mouth known, until 1914, under the name of Aripuanã, with the intention to decide as to which of these shall be considered as an extension of that main river and therefore as the upper part of the principal collector of the respective fluvial system, we require before all else to allude to the principles which serve us as a basis for the solution of questions of this nature.

Fortunately we can be brief in the reference to the aspects under which this important geographical problem has been considered by experts in the matter, in view of the facility which we have of carrying ourselves back to the work of Captain Antonio Alves Ferreira da Silva, written with reference to the fixing of the frontier with Perú and published under the title of « Rios e seus Afluentes. Contribuição para o Estudo da Nascente Principal ». In this work Captain Ferreira da Silva basing himself on the opinions of various noted authors, such as Geike, Hamilton, Peschel and Carlo Porro, concludes that the conditions which should prevail in the selection of the principal branch of a river are: in the first place the conservation of the general direction of the trunk; the confluent which takes up its course or that which least diverges from same, must be considered as the principal branch; in the second place the greater extension, or, in case the two branches are similar in extension then the greater volume; and lastly if there should be a sensible equality in the deflexion of the two confluent, as well as in their respective extensions and volumes, the anthropogeographical data shall prevail; that is to say, the principal headwaters of a river

shall be accepted as being that one which is indicated as such by the primitive inhabitants of the region. The argument adduced from the difference of altitude of the source only merits attention when the rivers considered exist in a mountainous country where that difference can attain a really appreciable value. This last argument must not bear weight in the judgment which is to be rendered on the relative importance of the two branches of the former lower Aripuanã; all the others, however, concur to affirm the preeminence of the most western of them. This if we commence by the last, that of the anthropogeographical order proposed by Geike and Peschel, we must acknowledge that the Nhambiquaras, that is to say the inhabitants of the region of the headwaters of the river named by us Duvida in 1909 and called Castanha by the rubber tappers of the lower part of its course, gave it the name of Caiuaniaru right away from the source to the mouth of the Madeira. Therefore, to the minds of the Nhambiquaras, the western branch which we called the Aripuanã, is nothing more or less than the affluent of the Caiuaniaru into which, on entering, it loses its name and individuality, the same as occurs to all tributaries after they are absorbed by their respective recipients. With regard to the extension, it is to-day definitely accepted, that that of the alluded western branch exceeds that of the other, not only by the 15 kilometres in Lat. S. which were admitted before the reconnoissance of Lieutenant Marques de Souza, but of much more than this, perhaps to the extent of one or more degrees of the terrestrial meridian. With regard to the volume of

water we saw, citing the conclusions of Captain Ferreira da Silva, this does not decide against the conclusions arrived at from the extension and much less against those deduced from the coincidence of the general direction of the main branch with that of the trunk. However in order not to leave without mention this element of value in the characterizing of the river studied by the Roosevelt-Rondon Expedition, I will say that the surveys made in the confluence by Lieutenants Lyra and Pyrineus registered a width of 302 metres, an average velocity per second of 885 m/m and a depth of 828 c/m; therefore, the discharge of the former Castanha in each second of time was on that day 2212^{m^3} .

Comparing this volume to that above mentioned of the Aripuanã we find for the first an inferiority of a little more than $100/m^3$. It is therefore evident that such inferiority, beyond being small, is nothing more or less than a simple expression of occasional circumstances: naturally, the Aripuanã was swollen with the waters of the more copious and lengthy rains than those which had fallen on those days in the valley of the former Castanha. Finally let us consider the first of the conditions enumerated by Captain Ferreira da Silva.

According to the exact text of the author, the title of main branch belongs to the confluent «which preserves the general direction of the river, or that which approximates itself most to it, presenting the least deflexion in relation to its trunk ».

Now, if we take a map in which is figured the route followed by the Roosevelt-Rondon

Expedition from the moment in which it embarked in the canoes on the river Duvida up to the moment when it came out in the Madeira, the first thing which must strike our attention, will certainly be the regularity with which the line representing this journey extends itself from South to North, at first a little to the right and then a little to the left of the meridian which, passing by the mouth of the former Aripuanã, characterizes the general direction of the main river. And in fact, it is sufficiently noteworthy that in a fluvial journey of 899.174 metres, the Expedition should have found itself incessantly enclosed in a stretch of land limited by two meridians, those of 17 and 18 degrees W. of Rio de Janeiro, without however touching either of them. If to this journey we join the existing track from the telegraph line bridge to the South, as far as the highest sources, in the parallel approximately $12^{\circ}, 39'$, we will find another 110.000 metres, of which only the last 44.000 penetrate in the geographical meridian previous to that already mentioned.

It is therefore certain that the courses formerly called Duvid, Castanha and lower Aripuanã, form one and the same river, with an extension of 1009.174 metres flowing uniformly from South to North close upon 7 degrees, without presenting at any point a deflexion which might be considered as the rupture of the continuity of the general direction.

With less extension than this great central artery, and arriving at same, coming from the East, as we explained above, the branch, for the designation of which we reserved the use of the name of Aripuanã,

presents itself with all the characteristics of the affluents; and so as when it penetrates into this artery it loses the general direction of Northwest, which it had up to the mouth, thus also, from there onwards the denomination which is proper to it disappears absorbed by that of its recipient.

On the 27th of April, in Lieutenant Pyrineus's camp, close to the bar of the Aripuanã, I as chief of the Brazilian Commission, inaugurated the new commemorative plate of the change of the former names of Duvida and Castanha to that of River Roosevelt, just as I had done in all the places of note during our journey, starting from the mouth of the Kermit. Mr. Roosevelt wished to assist at this inauguration, and in spite of the fact of the great pain, provoked by the effort demanded of his sick leg, he came and placed himself by the side of the inaugural mark, thus once more joining in the thoughts of international fraternity and in the sentiments of friendship and the personal consideration which we, who had the satisfaction and the honour of being his companions of the work during the difficult journey, wished by that act to set forth.

But, taking into consideration the rapid justification above referred to of the motives which carry us to recognize in the rivers corresponding to their former names the quality of being an extension of the principal collector of the hydrographic basin of the biggest contributor on the right bank of the Madeira, it is clear that the new designation covers the whole of the river's course up to the place where it loses itself in the waters of its majestic recipient. And so it must be, not only because we lent a just and well

earned homage to the eminent statesman, who did not disdain to bring the cooperation of his intelligence, courage and his initiative to the efforts with which we continue the great work of the past, of discovering and conquering wild regions of the territory of our country, as also to avoid the geographical disorder which would result from the fact of giving different names to the consecutive stretches of one and the same river.

With regard to the second reason it is evident that there are not and cannot be any doubts or allegations capable of affecting it: because either the entire course had to be called Duvida, a name of an occasional significance which arose from an incident too local; or it would be Castanha, as was remembered by the Mundurucu indians on account of the abundance of Brazil nuts, a common fact in this and many other rivers of the Amazon district; or yet one would have to extend the denomination of the trunk by the western branch taking it from the other to which it was already applied; or finally we would have to adopt the alternative, which we put into execution, of rejecting two names, relatively recent and not yet much used, substituting them by another one highly expressive, easy to be made of common and current use by the person and the feat recorded without forgetting however what came to us from the past, but only restraining the application of it to a part of its former dominions. Thus we remained with the river Roosevelt, without however, losing the traditional Aripuanã.

With regard, however, to the justification of the new name with the fact which we alleged, that the

DVA LVSITANIA

Roosevelt-Rondon Expedition was the first to discover the course of the river which we had called Duvida—reconnoitring and surveying at the same time the courses of the formerly called Castanha and Lower Aripuanã, which only after the work of this Expedition were able to be placed on the maps, — certain contentions arose. Of all these, I shall restrict myself to making a few observations in regard to that which was communicated to the Geographical Society of Lisbon, at their sitting of the 8th of March of the current year, by Mr. Ernesto de Vasconcellos, Perpetual Secretary of that Society; and in so doing I wish to prove the consideration which we should dispense to that Society where the chronicles of the former Capitánias of Brazil are carefully kept.

Mr. Vasconcellos's communication entitled « With regard to the River of Doubt » (A proposito do rio da Duvida), is published in a pamphlet printed in Lisbon under the title « Investigações geográficas » (Geographical investigations). On page 22 of this pamphlet, the author resuming according to the geographical journal, the lecture effected by Mr. Roosevelt in London on the 16th of June 1914 said the following: « Before commencing to descend this river, we passed the headwaters of the river Abacaxis (pine-apple), making preparations to descend same after having gone down the Duvida, because he thought that in three or four days it would flow into the Gy-Paraná. As this did not take place, as we saw, he said « And the Abacaxis was not descended and no one knows its course. It is not mapped and will not be until some

one descends or ascends it. It is possible that it flows into the Tapajóz or into the Canumã. It is more probable that it enters the Castanha in Lat. $10^{\circ} 58'$ as the river Cardoso, or, which is more natural, that it constitutes the headwaters of the Aripuanã proper ». This is the summary made by Mr. Vasconcellos, of what he says he read in the English paper as being Mr. Roosevelt's conference. As it will be seen, in this resumé, the name of the river Abacaxis appears, to which the translator called attention in parenthesis to the word (Pine-apple). It is clear however that there is some inexplicable confusion on the part of Mr. Vasconcellos: because as the newspaper published simultaneously the conference alluded to and the map of the region to which it referred, it is not easy to imagine how the Portuguese geographer, on reading the reference to the headwaters crossed at the South of the parallel of 12° could understand that he was treating of an existing river all to the North of parallel 7° . In his care to place at the side of the word Abacaxis, the word Pine-apple, so as to indicate that one was the translation of the other, the communicator probably had the intention to save himself the responsibility of not having translated the English word for Ananaz; however, he forgot the most important thing and this is that Mr. Roosevelt, in describing the march of the Expedition said, according to the resumé of Mr. Vasconcellos himself — « Before commencing to descend this river (that is to say the Duvida) he passed the headwaters of the Abacaxis (Pine-Apple) ». It is evident therefore that the explorer found himself at parallel 12° S.

when he passed by the headwaters named Pine-Apple. How could one imagine therefore that those headwaters could correspond to a river whose course exists entirely to the North of parallel 7° ?

Nevertheless, it is under this confusion that Mr. Vasconcellos places himself to affirm that the river pointed out by Mr. Roosevelt is to be found «in the map of Silva Pontes, 1798, known by the Portuguese who surveyed same, under the name of Carta da Nova Luzitania». And Mr. Vasconcellos categorically advances the following «The Abacaxis (Pine-Apple) directing itself towards the North and throwing its waters into the *furo* of the Tupinambaranas, to which Silva Pontes gives also the name of Abacaxis, and which is nothing more or less than a narrow, natural channel, which joins the lower course of the Madeira to the Amazon, starting from a point above the Madeira with the Solimões.» Yes, the Abacaxis could have a course just as is mentioned above; but the Pine Apple referred to by Mr. Roosevelt, rises south of the parallel 12° in the highlands of the Parecis and flows in a northerly direction until it joins the Capitão Cardoso, an affluent of the right bank of the Roosevelt in the Southern latitude approximating $10^{\circ} 59'$. Exactly as the ex-President of North America said, this river was unknown; it did not appear on any map, and if we now know its course, and can trace it on the geographical charts, it is because there was somebody who, after the Roosevelt-Rondon Expedition descended same. We know too well the sacrifice which this cost us, because the badly translated Pine Apple is the river Lieutenant

Marques de Souza, the present name of the former Ananaz. No less unfortunate was Mr. Vasconcellos in contesting Mr. Roosevelt's affirmation that the rivers Duvida and Castanha were not represented on the geographical charts, i. e. the higher portion and the mean portion of the course of the former Aripuanã. In order to support his contention, the Perpetual Secretary of the Geographical Society of Lisbon has recourse «to an original photograph» of the already mentioned Carta da Nova Luzitania, and referring to it he asserts that there one can see the Aripuanã running from South to North and bending in the middle of its course to Northwest and running towards the right bank (sic) of the Madeira, between its tributaries Maraurá (he should have said «Mataurá») and «Canumã». Now, if we look at the chart in question we will see without very much trouble that at parallel S. 5° and to the left of the meridian of 320° referred to as that of the Island of Ferro, a river island limited: to NW. by the small portion of the Madeira, to E. by the Canumã and to SW. by the Mataurá, and to S. by a channel or *furo* joining these two latter rivers. In the interior of this island whose latitudinal extension is not greater than 3° , of which little more than 2° are below parallel 5° , one can see two lines carrying, one of them, the inscription Rio Aripuanã, and the other R. Aripuanã. The line carrying the epigraph Rio Aripuanã does not run from «South to North», neither does it present any inflexion which may cause it to abandon that direction and take up a Northwesterly one: because it is a continuous curve, the concavity of which is turned to SW. having in its interior the

R. Aripuanã. The line in question, and with the epigraph Rio Aripuanã, terminates in two short fine lines, diverging very little from one another: the general appearance of the figure reminds one of some two-tailed worms of a very long body in relation to the two appendages. This is the river Aripuanã of the Carta Geographica da Nova Lusitania or America Portugueza, and Estados do Brazil, drawn up in 1798 by a Commission of Portuguese engineers in which took part Antonio Pires da Silva Pontes Leme, Captain of the Navy, an astronomer, and geographer, of H. M. the King of Portugal.

This river does not exist, in the same way the island in the interior of which it is made to appear does not exist. However the most astonishing fact is the force of imagination which it must have cost the Perpetual Secretary of the Geographical Society of Lisbon to convince, first himself and afterwards his co-associates, that this Aripuanã was nothing more or less than the river mentioned by Mr. Roosevelt: a river which we see rising in Lat. approximate to $12^{\circ} 30' S.$, running frankly and constantly in a Northerly direction with small deflexions to both sides of the meridian $17^{\circ} 17' 46'' W.$ of Rio de Janeiro, and finally enters into the Madeira with a length of more than 1,000 kilometres of which the greater part, or let us say, 796.350 metres, corresponds to the upper portion designated respectively by the names of Duvida and Castanha. But besides all this, the courage of the Perpetual Secretary was not up to the colossal task, the difficulties of which he had proposed to overcome. It is true that to support

the argument that the course of the river Roosevelt was « first mapped » in 1798 by Silva Pontes, it would be necessary to have constructed a gigantic aqueduct above or below the canal which joins the Canumã to the Maturá, so that at parallel 7° it might afford a passage for the waters from the firm land of the island figured on the Carta da Nova Luzitania. Mr. Vasconcellos gave way before the tremendous effort which would be necessary to carry out such a task. He resolved therefore to concentrate the whole of his courage and ingenuity in obtaining another objective much more simple : that is, to shorten the course of the rivers. In order to obtain this result it was only necessary to write the following words : « The great length which Mr. Roosevelt attributes to them... is not likely to be true ». And the fact is that Mr. Vasconcellos could even have been more categorical than this. Any one of us would have preferred to say : in the Carta da Nova Luzitania the course of the river traversed and described by Mr. Roosevelt does not exist and cannot exist ; in the same way this river does not exist in the Carta Politica e Economica do Brazil, published by the Missão Brasileira de Expansão Economica in Paris, 28 Boulevard des Italiens, and cannot exist unless one makes the bed of the new river cut the beds of the other rivers appearing on this Chart and cutting the region in various directions to SE. and to NW.

Saying this, however, would at the same time be the truth and to confirm in all the points Mr. Roosevelt's communication to the Geographical Society of London. Therefore, Mr. Vasconcellos

in order not to depart in the slightest degree from his plan to demonstrate « that the Portuguese undeniably... in South America, as in Africa and in Asia, maintain the priority of the important terrestrial and maritime discoveries, to which others assumed the rights » he thought it better to suppress the course of the former Aripuanã, without attending to the loss which would result from the fact^o to us Brazilians of our remaining deprived of a fluvial system of more than 700 kilometres or else to oblige us to consider it unlikely. It is very painful, really, that the world must resign to the fatality of only accepting as likely the regions, the mountains, the valleys and the rivers directly discovered and surveyed by the Portuguese ; but there is no other choice, for the Perpetual Secretary of the Geographical Society of Lisbon insists on this, in his determination to oppose in a phantastic struggle the no less phantastic adversaries of the glories of Ricardo Franco, Silva Pontes, Lacerda e Almeida, Pedro Teixeira and many other daring explorers of the wilderness of our country in the colonial days.

If the gallant champion of these strifes for the revindication of memories hitherto unattacked or unforgotten, but on the contrary, respectfully cultivated and venerated, wished to attend a little to the real object of things and of the men of his days, he would certainly spare himself the uncomfortable position in which he has placed himself in making such blind assertions as that contained in the following extract of his communication : «Of course the courses of the two rivers (Mr. Vasconcellos refers to the Aripuanã and to the Abacaxis of the

Carta da Nova Luzitania) are not marked on the map with the rigour which can be obtained with the modern methods and instruments or with the details which a special map demands and the scale permits, a few tributaries may even have been omitted...»

Without insisting on the concession of *lack of rigour* resulting from the differences in the methods and instruments, a concession which in this fencing to which Mr. Vasconcellos has devoted himself, corresponds to a feint, let us examine carefully the text of the last phrase: «a few tributaries may even have been omitted», by which he certainly means that in the Carta da Nova Luzitania are figured perhaps all the affluents of the river Aripuanã and Abacaxis, and if they are not all there, there are very few missing. Nevertheless in the Chart under examination, the Aripuanã and the Abacaxi do not possess one single affluent. There are only marked the hypothetic trunks of these rivers ending in the two small branches to which I have referred above. Therefore, at the last thrust contained in the words «a few tributaries may even have been omitted» Mr. Vasconcellos receives the reply given by the Carta da Nova Luzitania itself: «all the tributaries have been omitted»; and we register this reply without giving any further importance to it because even if the Aripuanã were on that map full of affluents, it would not for this reason alone be the river mapped by the Roosevelt-Rondon Expedition and constituted by the unified courses of the Duvida, discovered in 1909, by the Telegraph Lines Commission in the zone of the Plateau of the Parecis, where no Portuguese explorer ever pene-

trated ; of the Castanha known and frequented by the rubber tappers and indians, but not described by the geographers ; and of the Lower Aripuanã.

I am afraid I have dwelt too long on this matter, more than convenient, in the appreciation of the motives alleged by the Geographical Society of Lisbon to deprive the 1914 Scientific Expedition of the priority of the reconnoissance and description of the River Roosevelt. Let us therefore return to Lieutenant Pyrineus's camp in order to continue to follow the march of our illustrious guest up to the moment when he left Brazilian territory.

Having terminated the ceremony of the inauguration of the indicative plate of the new denomination of the river, Mr. Roosevelt together with the other members of the American Commission and Dr. Cajazeira, took to their canoes and directed themselves to a place where the scout Cidade de Manáos was at anchor. Lieutenants Lyra, Pyrineus and myself remained in the camp to effect the measurement of the rivers and at night time to make our astronomical observations necessary to calculate the latitude and time.

On the following morning the 28th of April we proceeded on our voyage downstream, making the topographical survey up to the Matatá waterfall ; from there to the Madeira, this work had already been effected and terminated by Lieut. Pyrineus. Continuing to descend we arrived before midday at the place where the Cidade de Manáos was, and there we met Mr. Roosevelt who seemed to be in a better state of health. Three hours later our ship commenced to go ahead and navigating without

stopping we reached next morning the mouth of the Roosevelt from which we immediately entered the Madeira.

Descending this great fluvial artery we saw on the morning of the 29th the city of Borba; in the afternoon we arrived at the Amazon Telegraph Company's station of Amaraty. Finally on the following morning we arrived at the port of Manáos where we went alongside the quay.

On the quay were the representatives of the State Government who were sent to receive Mr. Roosevelt and offer him their hospitality on shore, which he accepted. In spite of his sufferings from standing, our illustrious guest received the visits of the Governor of the State, the Municipal Council and other important people. On the first of May after having undergone a surgical operation performed by Dr. Cajazeira, in the presence of the director of Public Health Department of Manáos, and having presented through my intermediary his farewell to the Governor and to the General in Command of the Military Region, Mr. Roosevelt left on a merchant ship for the city of Pará. I however, and the other members of the Brazilian Commission still remained in Manáos where we received news of Capt. Amilcar de Magalhães's party, of which Miller, the naturalist of the American Commission and Dr. Euzebio Paulo de Oliveira and Dr. Henrique Reinisch, respectively the geologist, the taxidermist of the Brazilian Commission formed part.

After having seen the departure of the other party that descended the former river Duvida, this party left for the telegraph station of Barão de

Melgaço on the river *Commemoração de Floriano*. Embarked in canoes it descended this river and the *Gy-Paraná*, at the mouth of which it transferred itself on board the ships employed in the regular navigation of the *Madeira* and thence left for *Manáos*, where it arrived on the 6th of April.

Besides the work of the naturalists, other work was done by the chief of this party, for the topographical survey of the first of the rivers navigated and of the portion of the second one lying between the *Igarapé Boa Vista* and the *Riachuelo*.

The principal occurrence recorded during this journey was the accident suffered by Captain *Amilcar* whose canoe was sunk; fortunately there was no occasion to regret any loss of life, but only of the field books containing the notes of the survey already effected, and some material.

After the completion of all the work which had detained us in the Capital of the State of Amazonas, we returned on board the scout *Cidade de Manáos* at 5.30 in the afternoon, still on that same day, the 1st of May, and followed in the way of the *Dunstan*, on which Mr. Roosevelt was embarked, in the hope of finding it at anchor in the port of *Itacoatiara*, where we knew it must call.

But on the morning of the 2nd, on arriving at that port we saw that the *Dunstan* had got ahead of us. We therefore proceeded down the Amazon and only in the evening, already at the city of *Obidos* in the State of *Pará*, did we manage to catch her up.

We left *Obidos* at noon on the 3rd of May and

at dawn of the 5th we laid anchor in the port of Belém, and I went immediately on board the ship where Mr. Roosevelt was.

At this place the official visits and receptions of the State and Federal authorities were repeated, and on this occasion Mr. Roosevelt was invited to attend at a banquet which the Governor of Pará was offering him on the following day.

Finally, after this and other acts of the official welcome at Belém, the members of the Brazilian Commission went on board the Dunstan on the morning of the 7th of May to bid farewell, and to tender our best wishes for a pleasant voyage to Mr. Roosevelt, in whom each one of us recognised not only a statesman of world-wide note, a superior mind endowed with rare scientific and literary culture, a man of firm, resolute and imperative character, an honest and most noble soul, but also, and above all a thoroughly enthusiastic believer in the greatness and the beauty of the future of our Country and of our people and a sincere and true friend of all those who had had the good fortune of sharing with him, at all times, the fatigue and the hardships suffered during the long and irksome march across the wilderness of the Plateau of the Parecis, of the Juruena and of the former Duvida.

At 11 o'clock the Dunstan weighed anchor, and made for the Ocean, bound for New York. We still followed her for a short space of time on board the scout Cidade de Manáos; and finally through a mist of *saudades* which was already enveloping our hearts, we threw into space our last farewell and our cheers for the Chief of the

American Commission and for the great Republic whose glory it is to possess such a son.

At 11 o'clock at night on that same day, the Cidade de Manáos returned to the Capital of Amazonas taking me on board.

From that city I proceeded up the Madeira and then along the Jamary, whence I should leave for the station of Barão de Melgaço in order to continue with my work of the construction of the Telegraph Line from Cuyabá to the Madeira.

LECTURE N. 3

The work dealt with in our preceding lectures, and which was carried out by the Roosevelt-Rondon Scientific Expedition in the river Papagaio and in the rivers formerly known under the names of Duvida and Castanha, must be considered as an integral part of the series of geographical explorations which resulted in the construction of the Telegraph Line, projected and caused to be constructed by the government under President Penna, to connect Cuyabá and Santo Antonio do Madeira. It is therefore but natural that the exposition of the results of this work be followed up with another, specially devoted to presenting the resumé formed by the combination of all these explorations. In this way alone shall we possess all the elements required in order to be able to form an idea of the importance of the most extensive region and of the numerous population of the interior of our Country, which lay unknown and deserted without supporting us with the cooperation of their resources and of their forces, and without receiving the benefits of our industry and our civilization. Besides this,

we shall be in a position to see certain of our countrymen, almost devoid of other resources beyond their own courage, perform the same feats which we admire and praise when performed by men of other ages and of other countries. Were it given to me to expect to impress upon the minds of my audience any strong and lasting impression with my words, that which I would most desire to produce at the present moment would be to make it quite clear that the campaign of discredit maintained in this country and abroad against the character and the nature of the Brazilian people is nothing short of a monstrous heap of falsehood and of injustice that must be opposed and destroyed before it manages to complete the nefarious task of precipitating the soul of the nation into a «dim and vile sorrow» similar to that which galled the latter days of the great Portuguese.

In this lecture I shall, consequently, make a summary exposition of the work carried out by the Commission of the Telegraph and Strategic Lines from Matto-Grosso to Amazonas during the years that followed that of 1909; as far as the others are concerned, inasmuch as their results were already published in 1911 in this City and in São Paulo, I shall simply recall them very rapidly.

It is a known fact that according to the route traced out for the audacious enterprise of establishing telegraphic communications between the seat of the Government of the Republic and the most

distant regions of the far northwest of the territory of our Country, the Commission which was created to carry it into execution was obliged to operate, to an enormous extent in unknown territory, where no other resources were to be obtained beyond those proper to the uncultured nature of our forests, and where no other dwellers were to be found except the inhabitants of the indian villages who had settled there since times immemorial.

The Commission was formed in 1907 and in that same year it began its field work by commencing simultaneously, the works of the construction of the branch line from S. Luiz de Cáceres to the town of Matto-Grosso, these of the main line starting from Cuyabá towards Guia, Brotas, Rosario and Diamantino, and those of the reconnoissance of the forests of the Parecis which were made necessary in order to discover the direction to be followed so as to reach the banks of the Juruena, where the forests continued to be victoriously defended by the inflexible warriors of the Nhambiquara nation.

In the following year, having completed the construction of the branch line to the town of Matto-Grosso and proceeding with the work of the main line from Diamantino to the highlands of the Parecis, the work of reconnoitring the forests was continued with the idea of pushing it on as far as the Madeira; however, as certain difficulties arose which could not be foreseen by the party entrusted with the construction, the pioneers who had pushed on beyond the Juruena in carrying on their reconnoissance, were only able to reach the place where a formidable excavation produced by the action of

the current of numerous rivers interrupts the continuity of the plateau and causes to appear the geographical feature which we identified with that which the Portuguese cartographers perhaps meant to indicate under the name of Serra do Norte.

After reorganizing the services of transportation and of supplies for which the construction had been paralysed, in 1909 we again took up the road opened in the preceding years across the dominions of the Parecis and of the Nhambiquaras, and crossing the Serra do Norte we proceeded on a route almost invariably from Northwest until we came out at the Madeira, after a continuous march of 237 days having travelled 1.297 kilometres in the sense of the main route, without taking into account 240 kilometres of several bye-routes and 866 of fluvial navigation.

The general outline of the main line being thus ascertained, the work of construction proceeded until towards the end of 1914, and the inauguration of the traffic along the portion last completed took place on the first day of the current year (1915). Thus the carrying out of the great scheme proposed and started by President Penna, became dependent upon the continued efforts of the administrations of Dr. Nilo Peçanha, of Marshal Hermes da Fonseca and of Dr. Wenceslau Braz, all of whom showed their determination to maintain them in due correspondence with the important interests of the Nation,—economical as well as political and social—connected with the destinies of that enterprise.

In its more general outlines, this was the routine followed by the work of the Commission of

the Telegraph Lines from Matto-Grosso to Amazonas, as far as the construction is concerned; however, it could not be carried to an end without the expenditure of trebled efforts demanded by the necessity under which we were placed to overcome, in the course of an endless struggle, the ever recurring difficulties proper to the uncouth and wild nature of the region in which we had to operate. Of all that we required for our work, the region could only supply us with lumber; the remaining necessaries, from tools to the most simple and urgent provisions, had to be brought from elsewhere. If we add to these the telegraph material proper, such as zinc wire, insulators, metal brackets and accessory hardware, which we could only obtain from abroad, we shall have an idea of the enormous amount of extremely heavy packages for which we had to provide the necessary means of transportation into the interior of the forests, with the most careful and diligent attention.

But, in this regard, the ever increasing distances to be covered, the complexity of the equipment of a variety of systems to be utilized, some for river navigation, others for overland transportation, and, above all, the absence of pasture lands and the bad quality of the grass on the Parecis Plateau, the fatigue, the loss of energy and the sicknesses which played havoc with the pack animals, destroying whole troops of mules and of bullocks, everything, in short, seemed to combine in a conspiracy to bring about the failure of the measures which we had adopted as the result of the surest forethought, based upon long experience.

In order to partly obviate these great difficulties, we divided the duties of the construction between two parties: one was already then operating, since 1907, from Corumbá towards the interior of the forest; the other, created in 1910, was destined to start from Santo Antonio do Madeira and to follow towards the first until they should effect their meeting. Thus the operations could proceed and develop more freely, not only because greater advantage could be taken of the efforts of a more numerous personnel, but also on account of the fact that the roads and the means of supplies of each party were independent of those of the other.

Our party, constituted with the title of «North Section» and successively placed under the leadership of the then Major Gomes de Castro, of Captain Nestor Sezefredo, of Lieutenant Sebastião Pinto, of Captain Costa Pinheiro, and of Lieutenant Mario Cardoso Barata, obtained supplies from Manáos, through the Madeira and the Jamary.

The other party, called «South Section» utilized the navigation facilities on the Paraguay as far as São Luiz de Cáceres. Thence the transportation proceeded and even now does proceed up the Sepotuba, as far as this river can be navigated by launches and small craft and where we opened up in 1908 the so-called port of Tapirapoan situated 91 kilometres above another port called «dos Bugres». From the latter the journey overland is commenced along a road which winds up the slopes of the Serra dos Parecis, enters the plateau and continues in the direction of Aldeia Queimada,

whence it throws off different branches to Juruena, Utiarity and other points of the Telegraph Line. From Juruena onwards, the same way (picadão) cut out for the passage of the line, serves as a road for the packanimals employed in the service of the supplies and for travellers.

The «South Section» suffered the greatest difficulties from the fact that it had to depend for its supplies upon the journey across this road. The first was the enormous distance which had to be covered : from Tapirapoan to Aldeia Queimada 80 kilometres ; from the said Aldeia to Utiarity some 200, and to Juruena 272. Besides, for each convoy, these distances must be reckoned twofold owing to the return march. Then, we have the lack of pasture, to which I have already referred ; before completing one march, already the greater part of the beasts were knocked up, and of the small number that managed to withstand the fatigue and the bad quality of the fodder, we could at the most expect them to do a second march ; if they did not die they had to remain inactive for months and months in the pastures to restore their forces at the cost of much care and heavy expense.

Two measures were adopted by us in order to remove such important difficulties : one of immediate effect and the other longer in producing its results but certainly of a greater bearing on the development of those wilds by new elements of our civilization which even now are already seeking them out and will not fail to fill them shortly with agricultural establishments and cattle farms, besides other centres destined to the extraction of the

resources of forest and mineral wealth which they contain in abundance. The measure to which we have lastly alluded consists in modifying the conditions of the prairies so as to adapt them to the development of the different species of forage plants of which we found, even there, some good varieties, and to develop some only required to be freed from the wild vegetation which smothered it; we took with us some seeds of other kinds which quickly sprung up and are growing very well.

As a necessary complement to this measure, we started plantations of cereals, fruit trees, and vegetables, combining with the same, rearing of poultry and cattle, at all the telegraph stations and other places specially selected for the purpose.

The measure of an immediate effect to which we referred above, consisted in the employment of motor wagons for transportation from Porto dos Bugres to Utiarity. This was the route which presented the greatest disadvantages for pack-animals; still, it was also not adaptable to the transit of those vehicles because, every now and again, the ground presented, at intervals, large areas of sand in which the wheels of the machines interned themselves and went on skidding so that they could not go ahead.

A young and studious officier of our army, Lieut. Emmanuel Silvestre do Amarante, set to work to solve this difficulty and was fortunate enough to quickly discover a completely new device to obviate this. It was due to his invention that the three motor cars of the Telegraph Lines Commission were able to transit on the roads of the Planalto dos

**A Game invented
by the
Pareci Indians**

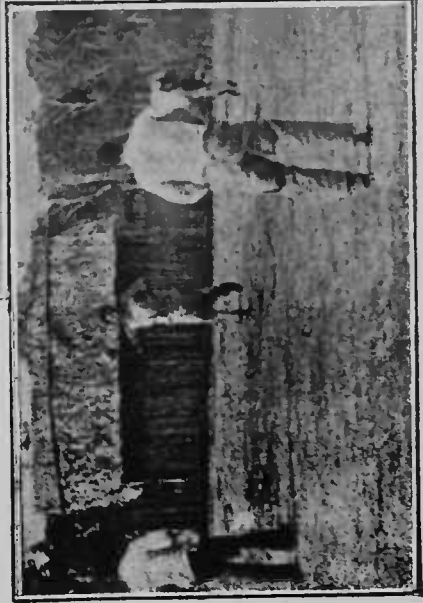


Photo. Com. Nondon

Coiferencias

**called « head-ball »
by Colonel Roosevelt**

(the ball is struck with the
head only).

Parecis, carrying cargo equal to the maximum weight for which they had been constructed.

But all these efforts only succeeded in overcoming some of the difficulties which cropped up at every step, to hinder the work of the «South Section». Amongst others, one presented itself to us which could have had its effects annulled by using wireless telegraphy. This difficulty arose from the fact that our camps were getting further and further away from the city of S Luiz de Cáceres, the principal base for our purveying, which services would have greatly improved if we could have got into direct communication, from the « sertão » with our purveyors.

We therefore had recourse to radio-telegraphy, installing a station in Cáceres and taking along with us another field equipment mounted on a waggon. For some time this installation worked very satisfactorily ; but, an important part of the instruments had been broken, and as the spare piece would have to be obtained from the manufacturer in Germany, we had no further opportunity to use this installation, in as much as the progress of our work had already taken us away from the dependency of S. Luiz de Cáceres. In order to understand how it was possible for us to get out of this dependency, we are obliged to detail a little further, the different phases through which the construction of the line passed, up to the date of my return to the « sertão », because as you know I was attacked with serious illness at the end of the great reconnoissance of 1909, and which detained me in Rio de Janeiro for more than one year.

From 1907 to the beginning of 1910, under the direction of Major Marciano de Oliveira Avila, seconded by Captain Custodio de Senna Braga, the work had advanced from Cuyabá to a little beyond Utiarity in a total distance of 505 kilometres, in which, besides the stations the names of which I have already mentioned, — Parecis, Ponte de Pedra and Barão de Capanema were also established. During the year of 1910, under Lieut. Franco Ferreira, the construction reached the Juruena, with a distance of 101 kilometres counted from the previous station. At this point the construction stopped for a period of one year, due to the violent epidemic of beri-beri which attacked that officer, Lieut. Candido Cardoso, many soldiers and civilians, and caused some deaths. In July of the following year, Lieut. Nicolau Bueno Horta Barbosa, assisted by cadet Tito de Barros, recommenced the work up to a point beyond the Juruena; but soon afterwards they were surprised, in the woods, by a number of Nhambiquara warriors who shot at and seriously wounded them with their arrows; both however recovered from their wounds, thanks to the care and nursing of Doctor Murillo de Campos, the physician to the Commission. In order to substitute the wounded officers, Lieut. Julio Caetano Hort^a Barbosa and Boanerges Lopes de Souza left immediately to take charge of the work, and they took the line to Nhambiquaras and to Vilhena with a total development of 139 kilometres, counting from Juruena, or 730 from Cuyabá. We had thus arrived at the Campos de Commemoração de Floriano beyond the Serra do Norte, always

following the route surveyed by the 1907—1909 Expeditions. Now we had to proceed towards Campos dos Palmares and Maria Molina, which, according to that route, the line should reach by scarcely two tangents, but the first of these presented, in view of the situation in which we found ourselves — depending on transport by mules and bullocks — the grave inconvenience of carrying the line through the woods of the valley of the Rio Tenente Marques de Souza, or Ananaz as we still called it. Such a great inconvenience might perhaps be removed by the discovery of new camps analogous to those of Maria de Molina, where there is excellent pasture of «capim gordura», «mimoso agreste», «milhã prahyba» and «sapé». The reasons for hoping for such a discovery were due to the fact that these camps are the outcome of the destruction of large stretches of primitive forests, set on fire by the Nhambiquaras, in preparing the ground for their plantations. Now, the region into which we had penetrated from the Juruena, is all infested with indians who are distributed in groups of distinct denominations, such as the Nenês, Iáiás, Navaitês, Tagananis, Tavitês and others, each one occupying its distinct territory, in the valleys of the different rivers and streams. Therefore, it was very natural that, in the interior of all those forests many other groups of the same nature and origin would exist, and to which we gave the generic name of « Campos Indigenas ». I therefore decided to proceed on new explorations in the hope of modifying the 1909 route in the sense which I now mention.

I commenced this work on the 6th of November 1911 leaving Vilhena towards the North East and travelling along an indian track, which directs itself from Comemoração de Floriano to the valley of the river Marques de Souza, passing between the headwaters of the former Duvida and Ikê. In that valley I reached a small natural prairie of «*cerrado*» which I named Mangabal, already discovered in 1909 by Lieut. Lyra, and where there existed, in that year, a large village and many plantations belonging to the Nhambiquaras, of the group which we afterwards learnt to be the Mamã-Indê; I however found nothing else: the indians had abandoned the place and set fire to the village.

On exploring the region, I discovered, on the northeastern side through which a tributary of the left bank of the former Ananaz runs, and which I denominated Ribeirão Lyra, just as I had previously named two others respectively Amarante and Tanajura, a beautiful prairie, just what I was looking for. From Mangabal I directed my course to Campo Maria de Molina according to the magnetic course of 50° NW. taken from the plan of the road, which I had just traversed, combined with that of the survey of 1909. I crossed, successively, a region of entangled overgrowth, a river, the Miranda Ribeiro, two small «*campos indigenas*» of «*capim gordura*», two headwaters, of which the last was the one called Lyra. I then entered the region in which the waters run into the present River Roosevelt, encountering first a stream, the Pyreneus, and afterwards on the date of the Decree which instituted our Republican ensign, the river

called Festa da Bandeira (Flag day), also called Corumicharú by the Nhambiquaras.

After crossing the river Pyreneus I found a beautiful « campo indigena » called the Perdiz, whence we could see, to the North and to the North East, many others which succeeded one another, without end, out of sight. It was evident that this was the direction through which it was convenient for us to take our line, even at the cost of a big detour, which would extend some seven kilometres beyond what we had reckoned upon ; this sacrifice however, would be more than compensated by the incomparable advantage of having secured the maintenance of our mule and ox packs as also our cattle.

I proceeded on the march to Campo de Maria de Molina always on the initial course of 50° NW, proceeding with the survey with the help of a metric chain, and a Salmoiraghi pocket compass. I arrived at those Camps after having gone over 36.280 metres, counted from the stake at Mangabal, or scarcely 18 from Festa da Bandeira. In this last stretch the country presented itself to us covered now with entangled overgrowth, now with certain special vegetation intermediary between the former and virgin forests ; the indians called it « Alôri » and we knew it under the name of « Lorê », because, in the midst of same, a certain tree is very abundant, the wood of which is very strong and lasting and is so called by the indians.

The tangent to which I have just referred, did not coincide with that of the 1909 survey ; there was

an angular deviation of $1^{\circ} 15'$ or of 1 kilometre between the point of arrival in 1911 and the mark of that survey.

The study of the modification of the old route was immediately followed by the work of location, the line leaving Vilhena on the general course of 5° NE and prolonged itself to beyond the Ribeirão Lyra until it reached the great tangent at Mangabal. Having gone over a small segment of this tangent which runs, as we saw, to the Northwest, the location abandoned same before arriving at the Ribeirão Pyreneus, inclining itself anew to the North, so as to pass through the Campos indigenas on the right bank of the Festa da Bandeira. In this new direction the line crosses, besides several headwaters of two important streams named by us Nicolau Bueno and Julio Caetano; and after this last one it retakes the Northwesterly course and crosses the river a little below the mouth of the Ribeirão Alencarliense, at a point which was indicated to us by the Nhambiquaras—Taitês, as it satisfied the conditions which we, for close upon a month, had procured in vain, viz that it was not swampy as other places.

After crossing the Festa da Bandeira the route advances parallel to the bed of the Alencarliense, in the SW quadrant, across the marginal woods; but it soon abandons this route in order to take a Westerly direction, with which it penetrates into the basin of the old Duvida, cutting through the bush of the divisor of the valleys of the two rivers, and thus arrives at the Campô de Maria de Molina, where the Telegraph Line Commission had

equipped a station called José Bonifacio, more than 83 kilometres from Vilhena.

Before, however, terminating this work, whilst I was still studying the region in which we were locating the alternative route on the right bank of the Carumicharú, or Festa da Bandeira in order to ascertain how far the Campos Indigenas extended, an accident occurred which will serve to give an idea of the habits of the Nhambiquaras.

Various partial explorations had convinced me that in the Northwest quadrant those camps terminated in the river and in a stream, an affluent of same on the right bank which I discovered and called Joaquim Gomes. I therefore decided to make further surveys in a northerly and north-easterly direction.

For this purpose, on the 13th of April 1912, my uncle Miguel Lucas Evangelista, an old man of 76 years of age, whose robustness and endurance would surprise a man of 40 years, and his nephew Bellarmino accompanied me, and we took the indian trail which after crossing a « Jungle » penetrated into one of those forests of Loré, to which I have above referred. In the interior of the woods, after four hours of slow marching ; for we were on horseback and the trail was a footpath, we saw many signs of the recent passage of indians, and suddenly heard the sharp and angry sounds of their jabber.

I therefore took the lead in the place of my cousin and soon after was able to discern, at a distance of 50 metres, five Nhambiquaras all young and strong fellows, completely disarmed : they were

directing themselves slowly towards us talking aloud and gesticulating frantically.

I had not at the moment a single weapon with me, and recommended my companions to hide theirs, directing my animal towards the indians. These however commenced to retire in spite of the fact that one of them, probably the chief, continued to speak to me in a long and enthusiastic discourse.

The thought then struck me that our mounts were unknown and strange animals to them and this caused them some suspicion : this was therefore the reason for their retirement. I dismounted and walked resolutely and full of confidence towards the group, for I had made myself sure that they were acting in good faith and were not laying a trap for us.

In a few moments we all formed one friendly group in which all talked and no one understood one another.

Finally as the good will was general and sincere, I succeeded in making them understand that my desire was to accompany them to their village. This caused them visible satisfaction and calmed the loquacity of the orator who only then finished the discourse which he had been declaiming in a very high pitched and most energetic tone. I inferred from this fact that the meaning of the harangue was nothing more or less than to convince me that I should make this visit, and it only then occurred to me that, in international diplomacy the tone of the communications is never in accordance with the sentiments and the intentions of the communicators ;

among some people it is gentle and soft, exactly when the intention is malicious and aggressive; in others, as we have just seen, it is boisterous and unrestrained when it hides the thought of much good and sincere friendship.

We mounted and got ourselves into marching order, the Nhambiquaras going on foot.

Here a great difficulty turned up, perhaps, due to the customs of the indians or to the old prejudice, reigning amongst us, that all indians must necessarily be on every occasion and circumstance of life, false, disloyal and treacherous.

The case was, that the five Nhambiquaras wished to divide themselves into two groups, one to go ahead of the small column, the other behind us.

My uncle, who had only decided to go to the village moved by the conviction that he would have to defend my life, deduced from this distribution that his suspicions were being confirmed and peremptorily declared that he would not give up the advantage of occupying the rearguard, whence he could watch the movements of our supposed enemies, and in case of necessity, assist us with his rifle.

In their turn the indians insisted in arranging the column as they had desired; we in the centre, three of them in front and two immediately in the rear. Contending with the difficulties of this gesture-language I was forced to employ the greatest efforts and the most trying patience, to convince them, without offence, that the two last ones should march in front of my uncle and behind my cousin and me. In this way we went ahead finally. The indians in the vanguard, leading us by their trails,

walked very quickly and soon got ahead of us, not only on account of the many *cipós* (lianas), branches and trunks of trees laying across our path above the height of a man, causing us delay, for we were mounted, but also because the animals were now tired out by the march which had lasted from dawn up to past two o'clock in the afternoon.

At the spot where these scenes took place there is a small stream of water which was called « Encontro Feliz ». A little ahead of this place, we saw leaning against the trees on the left side of the road, the bows and arrows of our friends; they however, passed by them without taking them up and continued, as they had come, entirely disarmed; truly and unmistakably characteristic of their gentility, courage and tact; still more noteworthy is the fact that they had not asked us to give them identical proof of confidence and friendliness by deposing the arms which we were carrying. We were marching now for fifteen minutes when one of them in the vanguard, hastened his pace and in a very short time was out of sight. To my uncle this movement could not pass imperceived, and with his mode of seeing things cried out « Now we are in it »! « This indian has gone ahead in order to advise those who are in ambush waiting for us, that we are close by. We will surely all die but not like a lot of stupid sheep; I am going to fight ». However, the developments were not long in allaying our suspicions, because a little ahead, we found our host awaiting our arrival with a large quantity of *Naru-caguinindê*, a refreshing drink much used by the *Nhambiquaras*, who prepare same with water

and the juice of the wild pine-apple, which is very abundant in their country and is cultivated, to a great extent, in the numerous clearings in the interior of the woods opened up by fire.

It was now four o'clock in the afternoon ; and we had got out of the forest of Loré into a new jungle. At dawn when we left our camp, we had no intention of prolonging our reconnoissance so much ; for this reason we were without breakfast and were very hungry. The resolution taken by our guides to get us to dismount was very opportune and we accepted the large calabashes of that refreshment, cakes made out of manioc, which is cultivated in their plantations, toasted larvae of various insects, provisions which all the Nhambiquaras take with them in large pots during their excursions.

We accepted this food and on finishing the repast, continued on our journey under a terrible fall of rain which had suddenly overtaken us.

From the jungle we passed into another wood not very extensive, covering a small headwater. There we found a few small open huts, which the Nhambiquaras construct in their Ikidás or temporary villages used for hunting purposes. Our guides thought that it would be agreeable to us to take shelter there from the rain, and as our clothes dripping with water were stuck to our bodies, they understood that beyond shelter we required the heat of a good fire. Consequently, they took into the interior of one of the huts the small pieces of wood which they use to make fire and rubbing one piece against the other they commenced this patient operation.

However it was not convenient for us to stay

away from our camp too long ; I insisted, therefore, on the indians continuing the journey and to this they agreed.

Soon afterwards we got out of the woods into some country where the vegetation was low and scant, and from here into an open camp of *Alochiti* the name of the grass which grows in the *campos indigenas* in the yellow background of which the outline of the big conical huts of the Xicés or Nhambiquara villages could be discerned.

Again one of the indians from the vanguard fell out and with a hurried step went towards the village, and once again in the mind of my uncle, full of false traditional notions amongst white people with regard to the character and sentiments of the indians, the suspicion arose that we were going to be betrayed and killed. Withal our march continued. We were still far off from the village, when we saw a man coming out to meet us carrying a large basket on his shoulders, dropping from a sling of fibre which was tied round his forehead like a wide sash. On coming close up to us he stopped and commenced a long discourse, which we heard with the greatest interest and respectful attention ; it was certainly not the first time that such diplomatic discourses had been heard. However the reply to same was not given by us but by one of our guides, who spoke almost as much as the other. Having terminated the discourses, the indian relieved himself of his load placing the basket on the ground ; from inside same he took out a large pot full of Narú-caguinindé, pine-apple water, and a small calabash : we once more helped ourselves to the Nhambiquara beverage.

After this ceremony our hosts drew near to us and taking our hands in theirs led us into the village.

The indian who had come to meet us with all this ceremony was the « *cacique* » (Indian chief). In him one could see the influence of African blood which had been already noted in many individuals of the groups dwelling in the valleys of the Juruena and of the Juhina, and in Campos Novos da Serra do Norte ; the hair slightly curled, a moustache and a cavaignac. It is a fact that the North American indians of pure blood possess a large quantity of very smooth straight black hair and very little beard, which grows badly. It appears to me therefore that the hypothesis, formulated by me in 1908-1909, is demonstrated and brought to light in the public lectures which I delivered in 1911 in the Monroe Palace to explain the origin of the conical form of the great ranches pertaining to the Nhambiquaras, viz that these indians had been in contact with the negroes who escaped from the old gold diggings of the Guaporé and principally with those who founded a « quilombo » (nigger settlement) in the Guaritizé, an affluent of the right bank of that river.

In the village which was formed of one of those conical ranches entirely closed, and of many others with a simple flat roof without walls, we saw on our arrival, some thirty individuals which we afterwards learnt belonged to two distinct groups. They were all under shelter in their huts and sitting around their respective fires : for it continued to rain. There however were only men ; we did not see any women or children.

We dismounted and took our place in the midst of a group by the side of a fire ; new ceremonies of Nhambiquara hospitality then commenced. First they favoured us with food ; manioc, cakes, roasted corn, toasted larvae, fish, monkey meat, potatoes and cará. The plates were like small trays made out of stems of « tabóca » matted, and the cups were calabashes which were incessantly being filled with the everlasting ananaz water (pine-apple).

In spite of these delicacies being served up full of the ash and cinders in which they were roasted, things went very well and to the satisfaction of all. But suddenly cigarettes appeared : huge ones, and perhaps the most extraordinary of all the cigarettes in the world ; they were excessively long, rolled up in rough and coarse leaves and made of roasted tobacco dust, the product of Nhambiquara agriculture and industry.

Up to this point nothing could be said of them because it did not appear to me that they could be more or less repugnant than those of their civilized similaries, and to me the absurdity of smoking them, was not more or less, than that of smoking any other cigarettes.

However, a surprise was in store for me, in order to learn at my own expense, that the Nhambiquara cigarette has a peculiarity of its own which renders it more detestable than its similary : it must not be refused. The other cigarettes wait until people procure or accept them ; these are imposed upon you.

The first aggression I suffered from my friend Nuchelá, which was the name of the « cacique ».

Having prepared the formidable instrument of torture, he presented it to me in the most genteel and hospitable manner imaginable: I declined it politely; he insisted, and I commenced to realize that there is not in the whole world any sort of gesticulation capable of transmitting to a Nhambiquara brain this new notion which is to them absolutely unsuspected and inadmissible; viz that there are men who do not smoke! We did our best, in this way, during some time, he offering me the cigarette and I refusing it. In the end, my host believing perhaps that the only motive I had for refusing same, was my bashfulness, took upon himself the heroic resolution of pushing the cigarette into my mouth! I had to inhale the nauseous smoke.

The atmosphere around us now became compact and unbreathable, so many were the puffs which all these men took from so many cigarettes. The most horrible, however, was that they all wished to repeat to us the same operation made by the cacique!

In order to avoid such martyrdom I determined to take a walk through the village, visiting the other ranches. Many of them were empty, naturally because the dwellers were at their work or hunting. The large hut had its doors closed and for this reason we could not see into the interior, but we could perceive that therein were fires and people; and listening we could hear the voices of the women and children.

As it appeared to me that the best means of obtaining breathable air, would be to remain in camp

out on the terrace, in the open, I asked the cacique to send for some firewood and arrange me a good fire. I was promptly satisfied in my request and while the men were busy at this, I observed that one of them had a steel axe; I then surmised that this group was friendly with those of Campos Novos da Serra do Norte, to whom we had already given many of those implements.

We were preparing to hang our clothes to dry before the heat of the brisk fire, when we saw, towards the North, some ten indians arriving, armed with their bows and arrows; they were probably returning from some hunting expedition. As soon as we caught sight of them, the cacique addressed them with some sharp words, and in an energetic tone; they immediately disappearing from our sight. A few moments afterwards they reappeared at another point, now unarmed. So they entered the village and directing themselves towards the group in which we were, commenced to exchange conversation with Nuchelá and his people; it was evident that they were asking and obtaining information as to who we were, whence we had come, and how we had arrived there.

We afterwards learnt that these ten individuals came from a village of Taganís, established in the same camps and not very far off from the one where we were, and that besides this one there were several others thereabouts belonging to the Tautís, Minis and Tachiuvitês tribes.

The cacique Nuchelá had sent emissaries to the inhabitants of those villages for the purpose of advising them of the great event. For this reason

fresh groups of indians were incessantly coming in, full of curiosity to see us : the women and the children went immediately to the conical hut and shut themselves in there together with those who had preceded them ; the men, however, came close to our fire and sat in small groups around other fires which they lit. This movement, which commenced at the fall of day continued into the night ; the small fires went on multiplying themselves incessantly and the same time the number of men also, who did not tire of talking, and went on conversing eagerly. And in the middle of all this animation they did not forget for one moment to heap upon us new presents : the trays made out of tabóca, full of cakes, carás, maniocs, potatoes and roasted corn went on circulating in an endless procession. What most impressed us however was the quantity of cigarettes being smoked. Had the village been set on fire the column of smoke which would rise from the burning huts would perhaps not be greater than that which was formed out of the combination of puffs which incessantly were expelled from the mouths of those indefatigable smokers.

At last I was already getting tired of talking so much and of paying so much attention in order to guess the meaning of the discourses which I could not understand. My cousin Bellarmino was already sleeping for some time, placidly stretched out on a bed of coco-nut palm leaves with which we had lined the ground which we occupied. The desire came to me of imitating his example and I decided to do so notwithstanding the objections of my uncle, who found it a double imprudence to go

to sleep after having placed ourselves in the midst of such a multitude of unknown indians, whose habits and even their language we ignored

Close to me many indians sat : in order to give them a further proof of confidence I stretched myself out on my bed of leaves, resting my head on the knee of one of them. I did not err in doing this, for the fellow was so content at having been chosen for this sign of affection and of abandonment, that he took the greatest care to avoid the slightest movement that might be taken as a sign of uneasiness or of fatigue.

Notwithstanding the sharp odour from that indian's body painted with *urucum*, I succeeded in falling asleep.

But it was a short slumber : I awoke, and it seemed to me that the number of persons assembled on the terrace had received a great reinforcement ; certainly there were no less than two hundred in number.

Furthermore, I could hear the sounds of female voices ; I perceived that the women had left the large closed hut, and given to curiosity, had approached to see us.

This curiosity seemed to me to be fully justified ; so much so that I also arose and went towards the fire to light a torch made out of palm leaves in order to obtain sufficient light to be able to properly distinguish them. This occasioned a great flurry ; from all sides came exclamations of fright, and the indian women began to run off in the direction of their refuge. While they ran the men laughed heartily at seeing them so terrified.

I gave up my project and returned to my bed where I found the indian, on whose knees I had been reclining my head, occupying his post of honour. I again went off to sleep and did not awake until daybreak.

My uncle, a true representative of the old prejudice of our people with regard to the indians, kept awake during that whole night. The indians likewise passed the night awake ; they however had another reason for so doing and this could well be surmised at hearing as one could on all sides in the midst of their endless conversations, the word « côcô », which recalls the sound produced by the blunt stone axes striking the trunk of a great tree. The satisfaction which they felt in hoping to be able to possess, before long, the splendid steel axes, was so intense that it made them sleepless.

At daybreak we were already prepared to leave when the indians invited us to visit some other villages on those camps to which they had given the name of Hugulitendê, and which I called « 14 de Abril » in memory of the date cherished among the most dear to my heart of a thankful husband, forced to live more on « saudades » than on the perennial enjoyment of the affection with which my good Destiny has filled my most loving home.

Having gone over the camps and visited four other villages, whose population on the whole we reckoned at more than three hundred, we returned to our camp where we found our companions already alarmed at our unforseen absence. Thirty four indians accompanied us, amongst whom there were five from « Encontro Feliz » who had come to fetch

their arms which as we saw, had been left on the side of the trail, inside the woods. To all of them I gave axes, matchettes and trinkets.

From that date onward, the visits of the indians to our camps never ceased, and there were times when they arrived in groups of 200 and more. The news of such extraordinary success spread rapidly over the whole forest, the result being that to these first tribes others soon joined coming more than twenty leagues from the North. In this way we made the acquaintance of the « Sabanês », the « Iáiás », the « Xaodês », and the « Teiobês », who are the finest men of the whole region. Not even the old invalids wished to be deprived of the satisfaction of seeing with their own eyes, the men who suddenly appeared in this fashion in their territory, with the power to produce so deep and radical a modification in their secular habits, such as the one that results in substituting their stone implements by others made of steel.

These events so highly significative in the general work lately initiated for the protection and the civilization of the indians, had to be commemorated by naming the telegraph station which was to be erected in those forests as a result of all the efforts which were being employed. Thus the idea occurred to me that no other could better satisfy the moral and civic requirements of the emotions and the hopes which had sprung up and which it was desired to see developed and fructify, than that of the great statesman of our Independence.

In order to further enhance the significance of the homage which we were about to render to the

memory of the great author of the « Apontamentos para a civilização dos índios bravos do Brasil » (Notes for the civilizing of the Brazilian wild indians), I selected his glorious birthday, the 13th of June, for the date of the inauguration of the new establishment and, by quite a coincidence, I was able to carry out the solemnity corresponding to this act not only in the presence, but also with the cooperation of a group of Tautê Nhambiquaras, who designated one of their daughters to unfold to the winds of those wild regions, the sacred symbol of the Brazilian nationality.

After inaugurating this station, called « José Bonifácio », and whilst we continued with the location of the line along the general route of the 1909 reconnoissance until we crossed the former « Duvida » and departed therefrom some 10 kilometres to the NW., we went on investigating the means of solving the transportation problem which services became day by day more imperfect and uncertain.

Practically we had already ceased to rely upon the supplies from Tapirapoan; the packs on which they depended became disorganized and were almost exterminated before they could cover the enormous distances, which they had to travel, in order to arrive where we were.

In compensation we had almost approached the river Pimenta Bueno which we knew — since 1909 when we had discovered it and caused it to be reconnoitred by Lieutenant Alencarliense and Dr. Alipio de Miranda Ribeiro — to be the main feeder

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In compensation we had almost approached the river Pimenta Bueno which we knew — since 1909 when we had discovered it and caused it to be reconnoitred by Lieutenant Alencarliense and Dr. Alipio de Miranda Ribeiro — to be the main feeder

of the Gy-Paraná. Consequently, in order to solve the pressing problem of transportation, we should profit by the relative facilities afforded by the river navigation, causing our baggage to come down from Manaós, along the Madeira up to the mouth of the Gy; thenceforward it would be carried in barges, up this river, at the point of the confluence of the Pimenta Bueno with the *Commemoração de Floriano*; after being unloaded from the barges it would be handed over to the pack-trains by which it would be finally conveyed to the place where we might be encamping. We would still remain dependant, naturally, on the mules and bullocks whose maintenance would be rendered extremely difficult in those regions, where the 1909 Expedition had found only the tall and close-set trees of the virgin forests. But, on the other hand, there was the advantage, that the distances to be covered would become shorter and shorter as we progressed with the construction; thus the efforts demanded of the beasts would gradually decrease.

In order to carry out this scheme, it was necessary for us to adopt two series of measures; the first was the organization of the river craft for the navigation on the Gy-Paraná; the second had relation to the preparation of the road for the transit of the pack-trains from the terminus of the navigation up to the camp. The latter, however, was changeable and accompanied the advance of the construction; consequently in order to be properly and at all times useful, the road should be made in conjunction with the same route which the telegraph wire would follow.

I committed the opening up of this track to the charge of Lieutenant Nicoláu Bueno Horta Barbosa who, after leaving José Bonifacio with a small gang of men armed with machettes and axes proceeded along clearing the track opened by the 1909 Expedition, and at the same time, carrying out partial explorations intended to improve, in certain points, the route of that Expedition.

From the point of departure up to the river Pimenta Bueno, Lieutenant Nicolau had to successively cross the rivers Duvida, Commemoração de Floriano and Barão de Melgaço. In the first named he discovered a new crossing situated at a point 800 metres above that utilised by the 1909 Expedition, and having, over the latter, the advantage of not being in swampy ground; and in the second which was crossed by the track at a point near a waterfall, Salto do Paraiso, a beautiful camp was discovered below this point, covered with magnificent pasture, and which was named *Parabens*.

Thence up to Barão de Melgaço and from the latter to the port of Boa Passagem on the Pimenta Bueno, Lieut. Nicolau did not depart from the 1909 track. From that port up to the confluence, there were still some five leagues to be covered; the small expedition, however, which was travelling on foot, could not cover this distance in consequence of the state of health of that officer and one of his men, who were both suffering with high fever. Of the four persons who formed the whole party, only two were in a condition to walk; they were ordered to proceed along the river until they should come out, by the pier, at the confluence in

order to bring up, from there, some sort of craft in which the sick might be taken. Thus on the 7th of September, this small expedition terminated, and besides reopening the road from the station of José Bonifacio to the river Pimenta Bueno, it made the most important discovery of the Campo de Parabens, in the very heart of the virgin forest.

Another interesting result obtained on this march of Lieut. Nicolau, was the fact that he was able to ascertain that there existed villages of indians and their plantations, established along that road after crossing the Commemoração de Floriano. In 1909, when the expedition for the reconnoissance from Cuyabá to the Madeira passed along there, no signs revealed the fact that the region was inhabited. On the other hand the style in which the houses were built, the pottery, the musical instruments and other wares seen in the *malocas* where, at the time, there was not a single inhabitant or fires alight, differed in form, dimensions and materially from those used by the Nhambiquaras; it was evident therefore, that we had before us a new nation, of which we had, so far, no knowledge whatever.

Judging from the information collected among the Nhambiquaras adjoining them towards the West, there lives an antropophagic people whom they know under the name of *Malotundús*.

The villages and the plantations discovered by Lieut. Nicolau, could belong to a group of these people. Certainly after the passage of the 1909 Expedition, some of them whilst on their customary hunting excursions observed on the felled trees the cut of our implments which are really extraordinary

when compared to those made by their stone implements.

They were most desirous of possessing such admirable axes and had formed the project of lining up on the roadside awaiting the return of the men who had opened up the cutting : when this occurred they would employ the best means of entering into relationship with the proprietors of the much desired axes and so obtained them.

Afterwards we verified that we had not made a mistake in our suppositions, except in the part relative to the identification of the people in question with the *Malotundis* of the Nhambiquaras. Because Lieut. Amarante having been entrusted with the opening up of the road which cutting had been cleared again by Lieut. Nicolau, he found himself one day in front of three indians who half hidden amid the vegetation watched him with drawn bows ready to let go their arrows. In the face of that imminent risk, the distinguished officer did not lose his presence of mind ; by gesture-language he endeavoured to make the indians understand that he did not wish to molest them ; on the contrary his wish was to treat them kindly and in a friendly manner. Then one of the hiding indians got up, and in an energetic tone addressed himself to the others, who still persisted in carrying out the aggression, and opposed himself to their intent.

He having succeeded in this, the indians approached with the greatest stealth, making the customary introduction discourses and took Lieut. Amarante together with the only man who accompanied him on this occasion, the civilian João de

Deus, to the village, where, they were received with acclamations of great joy for they were looked upon as friends whose visit had for a long time been desired and expected.

The relations thus established developed very quickly and permitted us to get to know this indian tribe, of which no explorer of the wilderness had notice before. In their own language their name is Kepikiri-uat, their domains extend on the easterly border up to the river *Commemoração de Floriano* which they call the *Tumbóaroê*, where the *Nhambiquara* territory commences and includes all the valley of the *Pimenta Bueno* or *Djaru-uérébe*, which word in the indian language signifies the « Brilliant River ». Their population is distributed in numerous independent groups each one with its own name such as « Baep-uaps », « Uarapanan », « Barêpits », « Uaparanãs », « Guêp-uats », etc.

On many occasions I was in villages belonging to the Kepikiri-uats, whose customs I was able to observe: if I wished to relate same here I would have to extend this lecture more than would be convenient. I therefore limit myself to saying that they, just as the *Nhambiquaras* use no clothes, not even the women; in spite of this, however, they make cloths out of cotton cultivated in their splendid plantations, of which they make hammocks in which to sleep. In this, as in many other points, they are more advanced than the *Nhambiquaras* who make their beds on the ground, without any other care beyond that of picking out places covered with sand. They do not smoke, but they take snuff by means of a most ingenious implement, which

consists of a tube of thin bamboo, about two feet long having at one of its extremities a small recipient made out of a coco-nut shell. The bowl being filled with tobacco dust the person who is about to sniff brings same to his nostrils, and another person making use of the other extremity of the tube, blows through same making the snuff penetrate into the nostrils of the snuffer who helps the operation by taking a deep inhalation. This instrument, to which cannot be denied the merit of a novelty, and to which I attribute excellent qualities, amongst others that of being less aggressive than the Nhambiquara cigarette, is called in the Kepikiri-uat language Nharimã-cap.

Equally curious is the reception ceremony on important visits—we were almost saying embassies. The solemnity takes place in the yard. The men present themselves armed spick and span and remain standing whilst the women form a group, squatting at a small distance off.

The visitors are placed in the centre of the yard; the men commence to march arms in hand and thus defile in front of the recent arrivals, whose chief must be prepared to receive and retribute the friendly, and perhaps somewhat excessive shake hands of the Kepikiri-uats. Here is how this part of the ceremony takes place. Each indian, when facing that chief stops, rests the bow and arrows against his own body and extends his two arms with hands opened and fingers stretched out. The visitor must extend his hands in the same fashion and lock his fingers with those of the indian. This done, the two friends set to work shaking each other

in an extremely cordial manner, so much so that it would fill with envy those splendid gentlemen who are accustomed to take the opportunity of shaking hands with us, to show us the strength of their wrists. Having terminated the masculine compliments then follow those of the women each one of which comes and shakes hands in a friendly way with the visitors. After this they retire to the interior of the huts and the men sit down to initiate their conversation with their guests.

We have said above that these indians were not those indicated by the Nhambiquaras under the name of *Malotundús*. This verification was made possible by us, from the fact that the Kepikiri-uats themselves informed us that nearer its headwaters the Pimenta Bueno possessed a feeder the Djarú-Jupirará or Rio Vermelho (Red river) the valley of which is occupied by a tribe which they call Coaiás; and the description of these, given to us by them, coincides exactly with that given by the Nhambiquaras relative to the terrible Malotundús.

However, we saw in the possession of a Kepikiri-uat chief a human collar-bone which he used as a flute. On inquiring of him the origin of this bone the indian replied saying, that it belonged to a Coaiá whom he had slain in combat. Finally he confessed that his tribe were not entirely exempt from the guilt of cannibalism; they limit themselves however to practice same only in regard to the « Coaiás » killed in battle. This they do by the desire to vindicate their parents and friends who had been previously eaten by those savages. But contrary to the practice of the latter they do not

arrive at consuming all the flesh of the victim, because, each one contents himself with such a small portion, that most of the body remains intact and is rejected.

The flute made out of the collar-bone of the Coaiá indian to which I have referred above is now in the National Museum.

As we have seen, the commencement of our relations with the Kepikiri-uats is due to Lieut. Amarante who was entrusted with the opening up of the road from José Bonifacio to the confluence of the rivers Pimenta Bueno and Commemoração. This work took place in 1913 and after finishing same, the transport of the baggage destined to the construction camp and the other services of the line up to Vilhena, was done along the Gy-Paraná; on arriving at that confluence it was taken over by the pack animals and carried to its destination.

However, our greatest efforts were employed in the direction of reducing as far as possible on this journey the part which had to be done by land. Similar results could be arrived at once the Commemoração de Floriano proved navigable above its confluence with the Pimenta Bueno.

To decide this question I again designated Lieutenant Amarante indicating to him that he should leave from Campo de Parabens going along the Commemoração up to the end of its course.

Having concluded this Expedition the results collected from same surpassed all our expectations, not only because it was ascertained that the river was navigable up to the mouth of a feeder on the right bank to which we gave the name of « Francisco

Bueno », but also because we learnt of the existence of many other camps, from that mouth to the confluence with the Pimenta Bueno.

The immediate consequence of these discoveries was the modification introduced in the route for the telegraph line, to which instead of crossing the *Commemoração* at Campo de Parabens and continuing through the interior of the woods traversed in 1909, it descended the mouth of the small river Francisco Bueno, and from there, followed along that river on the left bank.

Thus we benefited, for the construction, of the facilities offered by the camp, and again we obtained permanent advantage in having guaranteed to us the subsistence of the pack animals, which travel between the mouth of that small river and the Vilhena station, inasmuch as in the whole of this journey of nearly 25 leagues only less than 10, are devoid of pasture.

At the bar of the new river we placed the first station after José Bonifacio and to which we gave the name of Barão de Melgaço; the distance between these two stations is 67 kilometres.

But apart from these results, Lieut. Amarante's expedition obtained others, of a geographical nature emanating from the precise determination of the course of the *Commemoração de Floriano*; the fixation of the bar of the River Barão de Melgaço is a demonstration that the hypothesis which gave place to the including of the Duvida as one of the tributaries of the basin of the Gy-Paraná was incorrect. After the bar of the river Francisco Bueno, the road studied by Lieut. Amarante continued along the

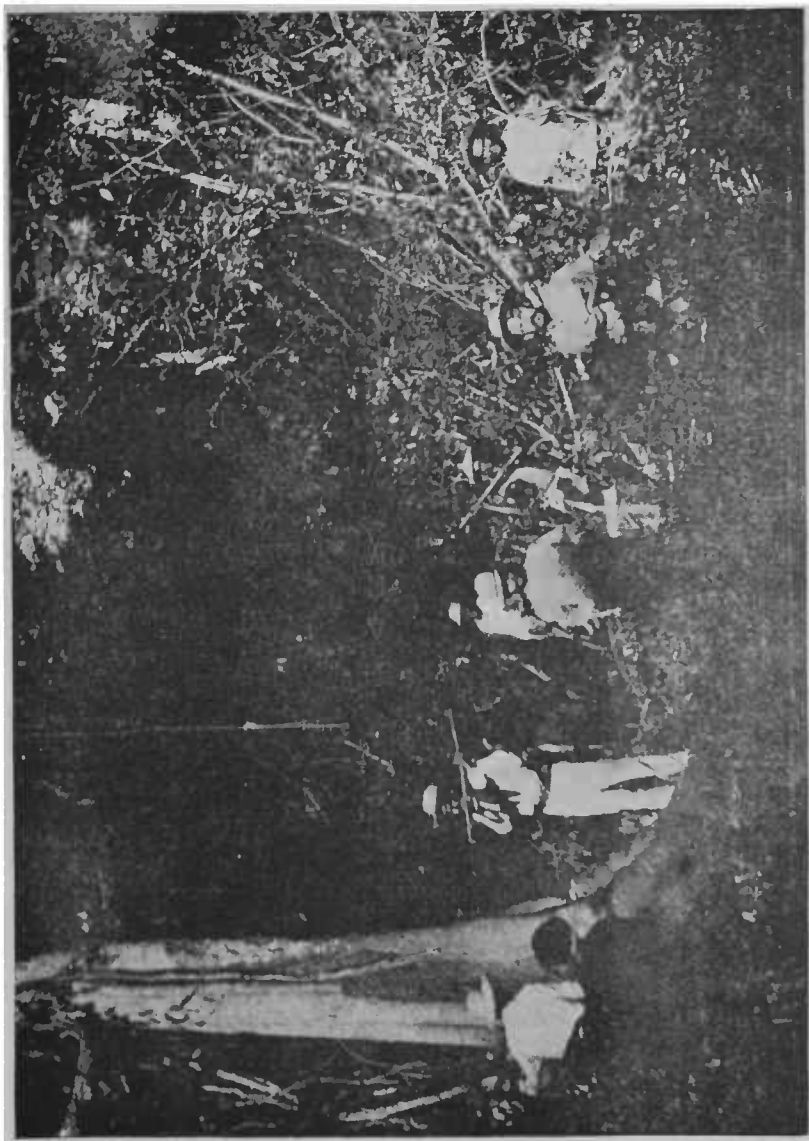


Photo. Com. Komaton

Conferencias

Opening up the wood for the telegraph line cutting

course of the *Commemoração* up to the point where, later on, the station of Pimenta Bueno in the confluence of the river of this name would be equipped. From there Lieut. Amarante prolonged his expedition by the right bank of the upper Gy-Paraná until arriving at the store called Urupá the property of a company of rubber tappers, established a little below the mouth of the river of the same name.

In this route, of more than 142 kilometres, the ground presented technical and economical conditions more favourable to the construction than that studied by the survey of 1909. We decided therefore, to abandon the old scheme which consisted in carrying the telegraph line from Pimenta Bueno to Arikemes, on the Jamarý, on the left bank of the Gy across a region of mountains, covered with high woods, cut by numerous *igarapés* and important rivers such as the Luiz de Albuquerque, Rolim de Moura, Ricardo Franco, Urupá and the Jarú, of which the three first had been discovered by the big 1909 Expedition. On the route surveyed by Lieut. Amarante we had not to cross more than one course of water of any importance, the Riosinho; we found large zones of jungles, and we remained still in condition to benefit of the navigation of the Gy for the transport of food-stuffs and baggage.

The location obeyed this line in which we opened two stations, one in front of the bar of the Ricardo Franco and the other where the Urupá store is situated. Both were concluded in 1914 and named respectively Presidente Hermes and Presidente Penna.

Beyond the results which we have mentioned

above, obtained by the surveying expedition conducted by Lieut. Amarante along the upper Gy-Paraná, we must register still further the meeting which he had with the indians of the place, belonging to, as I afterwards verified, a large ethnographic group of the Tupis. Far and away more advanced than the Nhambiquaras or the Kepikiri-uats, of whom they are enemies and with whom they are always at war, these indians besides using hammocks had the habit of clothing their women with loin cloths and the men with a kind of small drawers made of cotton. More important, however, is the fact observed by us that they are given to the art of navigation, which they carry out by means of canoes or « ubás », made out of the bark of trees, such as the Jatobá, the Jequitibá and others, which is peeled off entire by means of a process known to the indians and in which fire plays the principal part.

Very noteworthy also is the system of defence with which they surround their villages for the purpose of preventing the possibility of their being attacked by unknown warriors who might intend to take them by surprise.

With this object in view they construct among the branches of the trees, on both sides of the path whose access they wish to defend, platforms of rough wood where the defenders can take up their positions and from above detect and watch the movements of the enemy.

This resource although very efficient did not appear to them to be sufficient; they required a system of defence which would produce effect by itself, dispensing with their presence; an identical

thought to that of the civilised warriors when they invented the automatic explosion of mines destined to close the entrance to ports and canals. The indians of the upper Gy-Paraná, utilising with much industry and intelligence, the poor resources of their forests, employ rods pointed at the end forming a sort of spiked fence which remains in an oblique position in the paths or roads along which they wish to stop passage, covering them up afterwards with the leaves and branches of bushes near by. The point of these stakes is turned in the direction whence the enemy is expected to come and besides this, they are high enough to spike a man in the stomach.

These and other things relative to the life of the indians in question, were completely unknown previous to Lieutenant Amarante's expedition. Such ignorance almost proved fatal to one of the members of the expedition named João de Deus, a valorous veteran of the Telegraph Line Commission campaigns. The case was, that after crossing the Rio-sinho, the affluent which I have just referred to of the Gy-Paraná, Lieut. Amarante having perceived an indian path decided to reconnoitre same, in the expectation of arriving at the respective village. He commenced therefore to advance by that path, sending João de Deus in front of him, his duty being to cut a passage with the matchette at the points where same might be necessary. Having gone a small distance, João de Deus suddenly felt that he had been wounded in the upper part of the hip. Had it been a little higher up the wound would have been most serious, probably mortal.

We thus obtained the first inkling of the system of defence used by these indians in whose villages we could only enter under their own guidance, after they entered into friendly relations with the members of the Telegraph Lines Commission to whom they spontaneously presented themselves in February 1914 on one of the banks of the Gy.

In this same year, the chief Abaitará took me to his *maloca* and during the journey showed me a number of spikes which he had previously caused to be knocked down to facilitate my passage. I was thus enabled to learn the customs of this nation who were divided into various groups, namely the Parnauats, Tacuateps, Ipoteuats and others.

I will limit myself to cite here, one of their customs namely the staining of their faces, arms and legs with the juice of the *genipapo* which blackens their skin. I asked one of them why they painted themselves thus. He replied that it was a ruse to facilitate the hunting of the Coatá, because as this monkey is excessively curious, a man under this disguise placing himself in sight of the monkey and imitating the voice of some animal or other, will succeed in bringing him down from the branches of the trees most desirous of investigating at close quarters the novelty which he sees: on this occasion the hunter kills it with his unfailing bow and arrow.

But coming back to the construction, I will remind you of what was said in the lecture relative to the survey of the river Roosevelt, in regard to the paralysis which same suffered at Barão de Melgaço on account of the violent epidemic of fever which caused the death of Captain Cardoso.

When the work of that survey was finished, Lieut. Vasconcellos had succeeded in organizing the services of the above mentioned station and advanced with the location to Pimenta Bueno whence he would continue to « Presidente Hermes » and « Presidente Penna ». On the other side, the work of the « North Section » begun at Santo Antonio do Madeira, had progressed along the Juary and finally attained the highest point of this river at the Barracão Bom Futuro where, we equipped the station called Arikemes, a name of an indigenous tribe which I established in a village and whose pacification and customs I will speak of in another place.

In order to have the line stretched from Cuyabá to Santo Antonio it remained therefore to study the connection between Arikemes and Presidente Penna passing from the valley of the Juary to that of the Gy-Paraná which should be reached in the waters of the Jarú, its affluent of the left bank. I planned out to effect this study in two sections : one from Arikemes to Jarú and the other from this river to Presidente Penna.

For this reason having finished, as we have seen, the Roosevelt-Rondon Scientific Expedition by the departure of the illustrious American statesman from Belem do Pará to New York, I immediately returned to Manaus and from there left for the Madeira, making for the mouth of the Juary. I ascended this river up to the bar of its affluent Canaan, where the station of Arikemes is situated. From there I started the surveying expedition generally towards NE., first by the right bank of the

Canaan and afterwards by the left of one of its feeders, the river Quatro Cachoeiras, which was followed up to the point of the confluence of another river, the Igarapé Cachoeira.

From this confluence the survey took a NE. direction up a mountain, and on descending same on the opposite side, reached the waters of the basin of the Gy-Paraná. Advancing by the right of these waters I perceived that they formed the Igarapé de São José to which the S. Salvador is united, forming therefore the river Novo which discharges its waters in the Toque-Fone and the latter into the Jarú. The expedition, however, did not descend so far, because the bar of the S. Salvador turns to the SE, crosses the Serra de S. Rosa and enters the valley of the Jarú, the left bank of which was attained at a point where there exists a store called Santos Dumont belonging to some rubber tappers. This point was picked out to receive the new telegraph station which was intermediary between the two which were intended to be connected. Ascending the river, on leaving this spot, it will not be necessary to march more than a league and a half in order to find the place in which the 1909 Expedition had encamped, and whence it left, in a westerly direction, almost on the parallel of 10° in search of the waters of the Jacy, finding however those of the Pardo, an affluent of the Jamary.

From the place chosen for the new station the staff returned to Arikemes; but they did not cover the previous route except as far as to descend the Serra to which I have referred, where I passed from the valley of the Quatro Cachoeiras to that of the

Toque-Fone. This is the Serra known to-day as Expedição, on account of its having been for the first time noted in 1909 when it was crossed by the big survey of the main line, from Cuyabá to the Madeira. After having descended same, the expedition of 1914 followed the divisor of the feeders of the right bank of the Quatro Cachoeiras, and those of the left bank of the Toque-Fone, noting among the first, the headwaters of the Igarapés Andirá and Valha-me Deus and following these more to the East, those also of the Rio Branco, which discharges its waters into the Jamary by its mouth situated below that of the Canaan.

According to information gathered amongst the rubber tappers, the region where I recognized the headwaters of the Rio Branco is occupied by a tribe of warlike indians who are known to them under the name of « Bocca Preta ». These same indians are again observed in the headwaters of the River Preto, another affluent of the Jamary, below the previous one and as far as those of a feeder of the Gy, whose mouth the navigator who enters this river coming from the Madeira, finds right in the commencement on the right of one going up stream.

When we reentered the Arikemes on our return from these surveys, we had made a total run of 199.722 metres. We designed a topographic plan of the region studied and on same projected the route of the line between that and the future station of the Jarú, with a development of 93.027.

The location works of this portion was immediately commenced, and terminated in a very short

space of time. Then, leaving the new station I directed myself to the Gy-Paraná, navigating the Jarú down stream, making a topographical survey of the part of the course run.

On arriving at the Gy, I continued to navigate ascending it up to the site in which we were to open the station called Presidente Penna. There, I initiated the opening of the cutting for the laying of the line in the part included between this and the station situated immediately above same. Leaving this work in charge of Dr. Espiridião, I continued to ascend the Gy until I met a camp of the construction party under the direction of Lieut. Vasconcellos, which was already below the Pimenta Bueno and would soon reach Presidente Hermes. I proceeded up stream, inspecting all the work done after my departure from Barão de Melgaço on the 4th of October of the previous year when I left to commence the Roosevelt-Rondon Scientific Expedition; I visited various villages of Parna-uats and Kepikiri-uat indians and then returned down stream to the spot where Presidente Penna station exists.

As it can be seen from this rapid account of my inspection tour, at the time in which it was made, that is to say in August and September of last year, the work of construction had alone not been initiated in the portion comprised between the station of Presidente Penna and that of Jarú, and even the reconnoitring and survey of the ground necessary for the projection of the route between those points were yet to be undertaken.



Photo. Com. Rondon

Conferencias

The boy Parriba

An indian belonging to the Arikeme tribe, which inhabit
the upper Jamaré

Withal there was no time to lose; we were already in the second fortnight of September and it was imperative to have the telegraphic connection of Cuyabá and Santo Antonio concluded by the last day of December, in order to be able to inaugurate same on the first of January.

The ground which was yet to be studied is that comprised between the river Urupá, from its mouth, and the Jarú, and as far as it could be surmised from the indications deduced from the 1909 reconnoissance, the distance to be covered, if taken as a straight line, would not be more than 70 kilometres. Notwithstanding that the region was altogether covered with thick and high forests we expected to be able to cross same in four or five days, provided this did not require more than a hasty exploration.

I therefore decided to carry it out and in order to facilitate the march which I commenced on the 20th of September, I was determined not to take with me more than two men, with no implements, not even a matchette, as I was not disposed to lose time in cutting a way. Each of us carried his own hammock, his gun and ammunition; besides this only eight tins of condensed milk and salt; our food would have to be supplied by the forest: that is we would have to feed on the game and fruit which we might find.

We thus travelled inside the forest 88 kilometres, generally heading to 60° NW. until we came across the Jarú at a point intermediary between the mouth of the river Toque-Fone and of the Igarapé Paraiso, the latter of which we had crossed, after several other smaller rivers such as the Miolo and

the Boa Vista, direct tributaries of the Gy. In this first part of our march we took nine days.

The second part, which consisted in the ascent of the Jarú, from the point of arrival to the telegraph station, I undertook to effect it following along the bed of the river, which was rendered possible by the fact that it was at the time ebbing, and presented numerous and extensive dry strands. Soon after commencing this new itinerary, I became unable to walk having been attacked and wounded in the foot by a skate. At first I expected to recover in a short while from the sore which this wound had left me, but on realizing, after a four days' rest, that the case became worse, I sent one of my men up to the Barracão Santos Dumont in order to bring down a canoe. In this I travelled 24.501 metres up to the store. Thence, on recovering, I proceeded on with the reconnoissance on foot, and connected it to the last station of the Arikemes-Jarú location.

The total march attained a distance of 121 kilometres and allowed a route to be projected closing the circuit between Presidente Penna and Jarú, with an extension of 77.061 metres of wire.

Along the region traversed there are many mountain ranges located in between the small rivers to which I have already referred, as well as others relative to the Igarapés do Chibé and da Ponte, affluents of the left bank of the Urupá, besides numerous slopes, whence descend some headwaters of lesser importance.

This is the zone of the most famous rubber forests of the whole Gy-Paraná. No less remarkable for the quality of the latex they produce and for the

density of the forests they form, are the *caucho* trees which grow there. This is due to the fact that in that stretch of land are combined the two most favourable conditions for the development and the improvement of the *hevea brasiliensis* and the *caucho*, namely the great altitude and the existence of mountains of granitic rock. Each rubber tree of the Igarapé do Paraiso supplies 12 gallons* of latex; those of the Madeira do not furnish more than three. And *caucho* while frequently to be met with in the granitic soil is never to be found in ground of arenitic formation.

As regards the indian population of this region, this is at the present moment located in the valley of the Jarú and is composed of two tribes, both of them on good terms with the rubber tappers who utilise their services; the first one occupies the headwaters of the river and has settled there recently, coming from the Urupá, whence they take their name; the other which is a native of the Jarú itself and bears the name of this river, has its villages further down, between the said river and the Anary, also an affluent of the Gy.

The surveys to which I have alluded above were followed immediately by the work of location, and this was pushed on so intensively that by the end of December. we had stretched the 374.235 metres of wire between Barão de Melgaço and Arikemes, and finished the line from Cuyabá to Santo Antonio do Madeira forming a continuous circuit of 1.490 kilometres, served by 20 intermediate stations.

This is the main line, the official inauguration

of which was effected on the first day of January of the current year. We had, however, previously constructed and handed over for service three branch lines with a total extension of 769.946. To one of these, from S. Luiz de Cáceres to the town of Matto-Grosso, I have had occasion to refer in my lectures delivered to the public in this Capital in 1911; of the other two I shall now give a short notice.

The first runs along the road of the Madeira Mamoré railway, and connects Santo Antonio to Guajará-Mirim; its main object is to answer the requirements of the police of that region where the territory of our Country confines with that of Bolivia.

The extension of this branch is 356 kilometres and its intermediary stations are not more than four in number. In laying out the wire we at first utilised the post belonging to the railway, but later on we caused others to be erected for the exclusive use of our line.

On the banks of the Madeira, from Santo Antonio to Guajará-Mirim we did not meet other indians beyond the Caripunas, whose villages are located in the zone comprised between the Mutum-Paraná and Ribeirão. These are tame indians who have been on friendly terms with the civilized men since the colonial days. Amongst them can be noted a large number of *aborés* or a half breed between African and Indian blood. The personnel of the Madeira-Mamoré Railway treat them kindly and at times even go out of their way to assist them. I can, for instance state the case which occurred to one of them who necessitated undergoing costly

medical treatment, in the course of which it became indispensable to amputate both his legs. The indian besides having been operated and carefully bound up, received from his benefactor as a present, an apparatus sent from the United States to replace the amputated limbs.

The last branch to which we have to refer is that which was carried from the station of the Parecis to a small village existing at the bar of the Rio dos Bugres, an affluent of the left bank of the Sepotuba. The construction was under the direction of the Inspector of Telegraphs, Dr. Francisco Xavier assisted by a group of indians named Terenas, who came especially for this purpose, from the place where their tribe lived, near the town of Miranda.

The line measures 114.500 metres in extension and possesses the intermediary station Affonsos, situated in the plateau which one follows on descending the Serra dos Parecis and precedes that of Tapirapoa. After having crossed the two mountain sides it traverses some breeding camps, and penetrates into new forests which extend up to the Sepotuba and the Paraguay, joining on to those of the Jaurú and the Guaporé.

In the last part of the journey indicated there lives a tribe of indians, the Barbados, famous in the chronicles of Matto-Grosso for their tenacious and sanguineous resistance which, from the colonial days, they never ceased to oppose to the attempts, of entering into their territory, by persons of our civilization. The war which they sustained in the defence of their villages and domains was so merci-

less, that it was not even possible to find out to what ethnographic group they belonged.

When in 1913 it was decided that the Telegraph Line Commission would be entrusted with the construction of that branch, the first measure taken by me to commence the work was the installation of a special service destined to gain the confidence and friendship of that tribe. Of all the trials in the wilds of Matto-Grosso and other States to which the simple and easy method of entering into pacific and friendly relations with the nuclei of the primitive populations of our country, had been submitted, this was certainly the roughest and of the most doubtful result, because no other people of the indians had, as much as the Barbados, occasion and motives to confirm the belief that from the civilized people they could expect nothing but persecution, slaughter and cruelty. Notwithstanding this, I organized the service of pacification, and having handed over the direction to Mr. Severiano de Albuquerque an old employé of the Telegraph Line Commission, whose capacity for carrying out analogous duties had already been demonstrated in Campos Novos da Serra do Norte, where he had succeeded in making peace with a group of Nhambiquaras, I remained fully confident in the successful result which he would obtain.

It was not long before the facts came to confirm my prevision because that employé having fixed his abode on the left bank to the indians it would be easy for him to find numerous occasions of giving them proofs of his benevolence and kindness by not hostilizing them and leaving them in the interior of

the woods, presents of axes, machettes and trinkets, etc. He had the satisfaction, in the beginning of August 1913, of receiving in his camp the visit of the first party of Barbados who had procured civilized people with pacific and friendly intentions.

On Severiano communicating this auspicious achievement to me, he described the warriors of this tribe as being most robust and healthy men, who had the habit of staining their bodies with Genipapo and using, out of modesty a small band of coconut leaf rolled up. Round their necks they hung strings of threaded palm-nuts ; from their ears hung balls of bright coloured feathers ; their hair was long and fell down to their shoulders in small plats or was used in one small and partial chignon on the top of their heads. The chiefs were distinguishable by various adornments of feathers, one on the head, like a helmet, and others as bracelets and garters. The relations thus established have never since been interrupted ; the visits to our camp became more and more numerous and frequent and the men were accompanied by their women and children. This was evidently a great proof of the modification already operated in their minds by the confidence which we were inspiring in them. However, the prejudice engraved in their brains for more than a century of wars and merciless persecution is so great, that they have not yet decided to take us to their villages.

A similar state of mind appears to have been turned into a physical gesture which, by the prolonged habit through various generations has transformed itself into an irreflexible movement

common to all the individuals of the tribe. This gesture or tick consists in a quick and wide oscillating movement of the body as would be made by an individual attacked by an enemy who was endeavouring to sight him in order to strike him a death blow ; and in order to elude the aim bobs incessantly from one side to the other, without however, giving up the fight and procuring the favourable moment to attack his adversary. The Barbados act in this way on all occasions when they get into the presence of a civilized man ; their attitude is always that of men who are awaiting a sudden and treacherous blow.

On the other hand any one of us civilized people requires to dispose of a good dose of calmness and presence of mind, in order to overcome the uneasiness which one feels at the moment of receiving the first greeting of a group of Barbados.

Let us imagine, for a moment, that we find ourselves in the camp of the Rio dos Bugres and that we are informed of the approach of a number of warriors of that race. Out of curiosity we immediately leave for the yard desirous of seeing the ceremony used by them when they arrive at a strange village. Let us recollect those of the other tribes already seen : the Nhambiquaras, for example, yell from afar, *Anauê!* which cry is immediately answered by those of the village visited, *Anerê!* they following the entry of the first into the *maloca* whose yard they overrun in a large circle, each one carrying his bow and arrows in his uplifted hands ; having finished this circuit, they commence the conversation with the chief of the *maloca*. What will the Barbados cere-

monial be like? Behold they approach. They arrive frowning with a martial aspect, more aggressive than friendly; they all bring their bows and arrows. On arriving at a certain distance they suddenly stop, hold up their bows in a shooting position, arm their arrows pointed at us and draw the cords; they beat the ground angrily with their right foot, they send up a thrilling war-whoop; and all this so quickly that we had no time to recover from our astonishment and surprise! The bows giving way to the strong tension of the cords, curve themselves and collect the force destined to be transmitted to the arrows. Now, the cords loosened, the bows unbend; one hears the dry smack of the cords against the wood of the bows. If one of us, giving way to natural impulse should close his eyes, he would have lost the most unforeseen part and the only one really pleasing in the whole scene: the verification that the arrows had not left, but remained retained between the fingers which had directed and guided them. The cords had been let loose *in vain* and the whole thing was finally nothing more or less than mere show destined purely and simply to translate the sentiments of cordiality and good wishes of those who had mounted and executed same. I admit of the possibility of there existing persons who if they were placed in the conditions of having to receive the homages of this wild greeting would find them little amusing; but so that we may be just we must remember that they do not dispose of other elements in order to manifest their joy in their public feasts, except those which can be afforded to them by their poor arms; if they

possessed cannon, it is clear that they would thunder the air with formidable discharges.

When I returned to the camp of the Rio dos Bugres, already finding peace and friendly relations established with the Barbados, from the first words which I heard them speak I immediately recognized them to be a branch of the great nation of the Borôros. It is known that of this nation there exist two other groups respectively localized on the river S. Lourenço and on the Garças, the first in the basin of the Paraguay and the second in that of the Araguaya. The knowledge which we possess relative to the disposition and the capacity of mental assimilation of the two last groups makes things quite clear to us with regard to what we should expect from the first, and authorize us to predict, that if the action initiated with such good results is not interrupted, from the tribe of the Barbados will come out, in a very short time, campmen and agriculturists as good and as useful to the general economy of the nation, and especially to Matto-Grosso, as those who have come out of the other two.

II

Up to this point, I have restricted myself in the present exposition, to only consider the results obtained by the Telegraph Lines Commission in the execution of the principal part of a series of



1) The Zoologist ALIPIO DE MIRANDA RIBEIRO, who followed up the exploration and the survey of the same river when the state of health of Lieut. ALENCARLIENSE became worse. He embarked by order of the Chief of the Commission, as he was carrying besides his kit, the heavy zoological material which he collected during the journey.

2) Lieut. ALENCARLIENSE FERNANDES DA COSTA, in charge of the exploration and preliminary survey of the River Gy-Paraná or Machado.

3) First Lieut. Dr. JOAQUIM AUGUSTO TANAJURA, medical officer who accompanied the Big Exploration of 1909 from Matto Grosso to the Amazon and who descended the Gy-Paraná to lend his professional services to the sick who, unable to walk, embarked there.

work entrusted to it : not only to cross and explore the great wilderness of the northwest of Matto-Grosso, but also to occupy it and open it up definitely, to the joint activities, which characterize the civilization and the life of our Country.

To relate in a simple lecture all the measures adopted by the Commission to bring such a great undertaking to a successful end is a difficult task and I do not propose to attempt same. But on the whole in the work effected there are many aspects of restricted interest — for they are of a technical order — and there is a part which, on this occasion, I cannot fail to mention, lest the nature and motive of the efforts exerted to obtain that object, should remain unknown.

I refer to the geographical surveying expeditions with which the Commission not only studied the natural resources which there are to be turned to account in the explored regions, as well as the course to be pursued in order to facilitate the installation of a double movement of coming in and going out, on which the life of such a considerable an important segment of the National territory depends.

I will here, therefore, give a rapid glance over the capital conclusions at which these expeditions arrived, declaring, however, that I am sorry to see myself obliged, owing to the limited space into which I must confine my exposition, to pass over in silence, or without giving them all the enhancement they merit, numerous passages wherein are set out the strength and beauty of the character, the energy and the intelligence of the Brazilian citizens who undertook them and eventually carried them

out ; they were chiefly the officers of our army who conducted and accomplished them.

As we all know the region that served as the stage for the enactment of the rare aptitudes of its fearless explorers, can be defined, from a hydrographical point of view, by the basins of five large collectors : the Paraguay, the Guaporé, the Madeira, the Juruena and the Tapajoz, which nevertheless taken jointly form but three distinct arteries, whereas the third is an extension of the second and the last is the continuation of its precedent.

Consequently I shall put together the work of which I am now about to give a short notice around the central courses of these three basins, displaying them in the order in which they increase in importance in regard to the multiplicity of the material which they have respectively supplied for the present exposition.

In the basin of the Paraguay we shall have to detain ourselves but a short while. The river from which it takes its name is known since the colonial days, not only by reason of the constant navigation which has at all times been carried on along its course, but also from the topographical plan of the same which was organized by the Portuguese Border Commission, of which Ricardo Franco, Lacerda e Almeida and Silva Pontes were members.

Notwithstanding this, however, there is yet a correction to be made therein as regards the determination of its headwaters.

It had been admitted almost without divergency, that the Sete Lagôas was the principal feeder of the Paraguay. But, the first survey made by the Telegraph Lines Commission led us to ascertain the superiority, not only as regards volume of water but even as regards the extension, of the *ribeirão* Amolar, to which, on the ground of these two facts alone, its precedence in the formation of the Paraguay pertained.

In the chapter dealing with the Geographical Conclusions with which I closed the Report of the great surveys and reconnaissances of 1907—1909, I made mention of this correction as one of those which it is necessary to introduce in the map of Matto-Grosso from the parallel $14^{\circ} 25'$ and the meridian $13^{\circ} 16'$ W. of Rio de Janeiro up to parallel 10° and the meridian 21° .

We can now say that to the conditions previously enumerated may be added the consideration in favour of the Amolar that its course maintains the same direction generally, which is a condition proper to a main river.

Thus, once again the necessity of introducing the said correction in the map of Matto-Grosso. We have not lost sight of the fact that the antropogeographical argument weighs in favour of the Sete Lagôas; but we must also consider that the value of this argument is not of such a nature as to be able to destroy the indications resulting from the continuity of the general direction of the collector, its extension and volume.

Besides we all know the opinion of Bartolomé Rossi to which I referred in the said chapter of the

Geographical Conclusions, of the Report on the surveys and reconnoissances of 1907—1909; this opinion is contrary to the designation of the Sete Lagôas as the main branch of the Paraguay and awards the precedence to the Amollar.

The same impression was gathered by Dr. Hercules Florence, a member of the Expedition under Count Langsdorf, when he saw the two rivers. In describing the region traversed by the Amollar, he says: « ...we crossed thick woods of *guaguaçus*, through which winds a river called Pedras de Amollar. Not far from this place it receives another which is so narrow that I gave a jump to cross it but which has already the name of Paraguaysinho and comes from the Sete Lagôas, which are known as the Headwaters of the Paraguay, and lay *at a distance of half a league* at most. This denomination should more properly apply to the river Pedras de Amollar which runs down from a place some four leagues distant and possesses a larger volume of water, but, nevertheless, after the junction with the Paraguaysinho, the pompous and famous name of Paraguay already appears.

« The Sete Lagôas (Seven Lakes) were so close that we could not restrain the desire of seeing them. Going to the left, in less than an hour we came to swampy ground, where one can see marshes and here and there the *burity* palms.

« There is nothing remarkable to distinguish the site: a little stream flows therefrom and this is the Paraguaysinho ».

From this passage of Dr. Hercules Florence's book and from the opinion of Bartholomé Rossi it

can be seen that the correction indicated by me, although against the choice of the dwellers on the Paraguay, in compensation it bears out the mode of thought of the old explorers, who were sufficiently enlightened, and had the occasion of ascending as far as the headwaters of the river and personally comparing the two feeders.

If we should now wish to form an idea of the configuration of the beginning of the great basin of the famous feeder of the estuary of the River Plate, let us imagine that we are ascending same, and are journeying to the N. of parallel 15° . Continuing our voyage in this sense, in the NE quadrant, we will arrive at a point where we see it dividing itself in two branches; one, directing itself to the NW, becomes decidedly asymmetric in relation to the axis of the river which we are ascending; the other, however, slightly more voluminous, conserves the direction of its axis. The first is the Sant'Anna; the second the Paraguaysinho; therefore the name of Paraguay only exists from below the confluence of these two rivers.

As among these it is the Paraguaysinho which possesses the characteristics of being the prolongation of the trunk, we will continue to ascend same. We will have gone very little up stream when we will have met, on our right, the mouth of a small river, which is called the Brumado. Still continuing our journey, we will pass in front of the bar of another river, on our left, where is to be found the town of Diamantino, which it crosses. We still ascend; we now penetrate in the Planalto, and there we see the Paraguayzinho, dividing itself into two

branches, the larger and more voluminous, and besides this, the one which we must continue to ascend in order not to change the general direction in which we are travelling ; this is known under the name of Pedras de Amollar. The other preserves the name of Paraguayzinho, and a little further on it will have terminated in the marsh lands and swamps or little pools to which Hercules Florence referred. These little pools are those which received the name of Sete Lagôas (seven lakes) and were those indicated as being the sources of the famous Paraguay.

We will now leave for another occasion the allusion which we intended to make to a few notions collected with regard to the headwaters of the Cuyabá, and will now pass to the valley of the Guaporé.

With regard to the Guaporé, like the Paraguay, known and navigated ever since the colonial days I will limit myself to refer to the principal results of an expedition which I ordered to leave from Vilhena, in September 1912, under the direction of the North American mining engineer Moritz, to study the course of a river which ran into it and whose headwaters had been noted in the Campos de Commemoração de Floriano by the 1909 Expedition.

Following in the remains of a cutting which I had opened in 1909 and afterwards prolonging same, the engineer Moritz recognized that the above mentioned river, named by us Veado Preto, is the tributary of a river which rises in the SE and which at the time, received the expressive designation of «Não Sei» (I do not know). Having made a canoe

the engineer continued the exploration down stream during a few more days; but encountering unsurpassable difficulties and with the few men at his disposal, of whom many had become laid up, he returned to Vilhena bringing me information which permitted me to identify the river «Nã Sei» with the Corumbiára, whose mouth, in the Guaporé, is a short distance off the village of Guajarú, belonging to Bolivia. But the most interesting result of engineer Moritz's expedition, was the confirmation of the existence of a magnificent gold mine, which was found on the surface of the ground under the same conditions in which the Portuguese had formally found gold in Cuyabá. I believe these mines were the celebrated Urucumacuan, the wealth of which such marvels were told in the colonial days.

On the other hand, as the Corumbiára, through the above mentioned Veado Preto, is the watershed of the Pimenta Bueno, and as in 1909 we verified the existence of gold between this river and the Barão de Melgaço, one can conclude that those gold fields extend through a considerable region, from parallel 13° as far as a point very much to the N. of 12° . Besides this mining wealth, one must also mention in the slopes of the Guaporé, the wealth which exists in all their forests, where abundant specimens of *hevea bresilienses* and *bertoletia excelsa* grow.

Engineer Moritz's expedition not only encountered numerous signs of indians, but also saw a few groups of same. He did not arrive, however, at entering into relations with them, because they fled immediately they perceived the approach of the

members of his expedition. Withal, the engineer thinks that they belong to a different nation from that of the Nhambiquaras.

If we accompany the course of the Guaporé and continue along the Madeira, the first river which we will meet, after the Corumbiára, studied by the Telegraph Lines Commission, is the Jacy-Paraná.

In my lectures of 1911, I explained how the error of the geographical charts, with regard to the course and the position attributed to this river led me to include it in the plan of the great 1909 Expedition. Therefore, it is now known that I detached a party under the direction of Captain Manoel Theophilo da Costa Pinheiro, to that river, whose principal objective was to await the arrival of the Expedition which had left from Tapirapoan, directing itself, across the Sertão dos Parecis, and of the Nhambiquaras to a point in which the parallel of 10° is cut by the meridian of 20° W of Rio de Janeiro; at this point the charts marked the headwaters of the Jacy-Paraná.

The fact, however, was quite another, because what exists there is the Jamary, and the parallel of 10° only intercepts the course of the Jacy after passing the meridian of 21°

The consequence of this error in the charts was that the members of the expedition coming from Tapirapoan had to get out into the Madeira through the Jamary, without having the benefit of

the assistance which was awaiting them on another river.

However, the efforts made by Captain Costa Pinheiro and by his assistant Lieut. Amilcar Armando Botelho de Magalhães were not lost; on the contrary they were most useful for the progress of the geographical knowledge of important regions in our country.

As it is impossible to here give a summary of all the notable achievements of the expedition under Captain Costa Pinheiro, I will limit myself to cite the enumeration which he himself made in his report, already published, of the work effected on the Jacy: he proceeded with a topographic survey of the river, from the mouth in Lat. S. $9^{\circ} 10' 56''$,93 and in L. W. of Rio de Janeiro $21^{\circ} 18' 22''$,20, up to the Cachoeira Grande, in Lat. S. $10^{\circ} 23' 56''$,40 and in L. W. of Rio de Janeiro $20^{\circ} 51' 38''$,10, with a linear development of 323.926 metres; soundings were made in the canal; thermometrical and barometrical observations of the whole of the extension surveyed were taken; determination of the transverse section and discharge of all the affluents and the waterfalls and valuation of the theoretic and effective potential of the falls and rapids encountered; determination of the geographical position of the most important points on the river; the calculation of the altitudes of a series of noted heights.

The Rio Jacy-Paraná, says Captain Costa Pinheiro should have its sources on the Serra dos Parecis, which from Cachoeira Campo Grande is perfectly visible to the observer in a slightly oblique

direction to the general direction of the river. From the observations which I made, I should say that its course, at the outside, could attain an average of 400 kilometres.

«Its general direction is SE, and its tendency is more to the E. than to the S. The river, in all its extension is very winding and the long stretches are rare. Its bed is very variable, and one can even affirm that up to this day the river has not yet fixed it. During the dry season one can navigate almost always, over its primitive bed ; in winter however, every now and again one penetrates into a fresh bed, generally narrow and undefined and which the river has prepared during the flooding season. »

As regards the affluents, some deserve special mention, inasmuch as they already possess the appearance of rivers, such as those called Conto, Formoso, Capivary and Igarapé, all on the left bank ; and on the right bank the Branco and the Igarapé da Divisa.

As regards the population, the Jacy is occupied by rubber tappers nearly as far as Cachoeira Grande. But its primitive inhabitants are the Caratiana indians, who oppressed by the rubber tappers are pushed back to the forests in the highest points of the valley of the river.

On ascending the Jacy Capt. Costa Pinheiro had one of his canoes attacked by these indians who thought they recognized, in the Physican of the Expedition Dr. Paulo dos Santos, a rubber tapper who persecuted them most cruelly. We will now see the terms in which Capt. Pinheiro himself describes the attack :



Photo. Com. Rondon

Conferencias

Captain of Engineers
Amilcar Armando Botelho de Magalhães

(Then Lieutenant)

Assistant on the geographical survey and the exploration
of the river Jacy-Paraná

« The fact, which so much grieved us, occurred on the 2nd of September, at 4 pm. a little above the Barracão da Esperança, 137 kilometres distant from the mouth. We had not yet made three stages, after the passage of the above mentioned Barracão, when we heard cries for help which came from the canoe in front of us. Losing no time, we rushed to the point whence came the cries, perceiving as we got nearer, the exclamations, — *The Indians! The Indians!* — coming from two men who were struggling in the water. We promptly fired a series of shots into the air whilst the canoe arrived at the spot where the two men who, bad swimmers, were endeavouring in a supreme effort to reach the other side of the river. Having taken them into our boat, we directed ourselves to the canoe which was alongside the bank of the river, in which was Dr. Paulo dos Santos, who with three arrows in his body was bleeding and unconscious. Having taken him into our canoe, which was the bigger and more commodious, we endeavoured to discover a missing man. This man, who was sick, his companions declared had thrown himself into the water after having been wounded by an arrow. All our efforts to find him were in vain.

« As it was now getting dark, we returned to the camp, a little beyond the point where the attack commenced, in order to attend to the wounded. Dr. Paulo presented two large wounds on the left arm near the elbow and another in the abdomen. This last wound was very slight. The other man, Eugenio Martins Affonso, showed a small wound on the left thigh. Early on the following day, I

sent a well manned canoe, to search for the other man who had disappeared, for there was a supposition that he had gained and remained on the opposite bank of the river. At 3 o'clock in the afternoon the canoe returned with the body of the unfortunate José da Silva which showed a large wound produced by an arrow in the ribs. On the bank of the river I dug a grave and buried him. He was a good man, disciplined, very quiet and a worker. His death upset us very much and produced great terror amongst our personnel. »

After this sad accident, the expedition continued and terminated its work without any further annoyance beyond the natural privations in common with these lonely and wild places, accompanied by sickness and tropical fevers, which seriously attacked Capt. Pinheiro and his devoted assistant Lieut. Amilcar de Magalhães.

If we continue from the mouth of the Jacy to descend the Madeira, we will pass in front of the town of Santo Antonio, and following on we will find the entry of another river entirely explored and studied by the Telegraph Line Commission.

This is the Jamary which, for the first time, we had run over in 1909, having reached through the course of one of its sub-tributaries, the river Pardo. The conditions under which this took place and the observations collected in this first journey have already been expounded in the public lectures of 1911.

The telegraph line in the part constructed by the «North Section» leaves Santo Antonio in a direction almost due east; it crosses the river Can-

deias, reaches the Jamarý, crosses it and follows along its course, from N. to S., up to the bar of the Canaan, where in 1909 we encountered the Barracão de Bom Futuro and where the telegraph station Arikemes exists to-day.

In maps previous to the work of the Telegraph Lines Commission, as for exemple, in those of Horace E. Williams, under the title of « O Acre e a Fronteira entre o Brazil e a Bolivia » (Acre and the Brazilian-Bolivian Frontier) emphasized with the declaration « Conforme o Tratado de Petropolis » (According to the Treaty of Petropolis) the highest headwaters of the Jamarý figure extended to the south of parallel 12° in the middle of the section determined by the meridians of 17° and 18° . By this localization, the Jamarý would have to cut the valley of the Gy-Paraná, passing over the rivers Barão de Melgaço, Pimenta Bueno, Rolim de Moura, and Ricardo Franco, in short over all the affluents of the left of the Gy, without counting the mountain ranges which would have to be crossed, such as the « Expedição » and « das Onças ».

Such terrible anarchy in the domains of geography does not in fact exist, because the Jamarý limits itself to extend its bed of scarcely 400 kilometres, up to a little below parallel 10° , but without barely passing to the E. of meridian 20° .

Of the two principal branches of which we can consider it to be formed, one already brings from its sources the name which it maintains until entering the Madeira, and the other is called the Canaan. On leaving this place, where the confluence occurs, in Lat. $10^{\circ} 2'$, it successively receives the waters of

the rivers Branco, Preto and Verde, the two first of which I have previously mentioned ; and on the left those of the Massangana and the already mentioned Candeias, whose volume is almost equal to it and its mouth is not more than 25 kilometres from the point in which the two united lose themselves in the Madeira.

With regard to the population, we already know that the Jamarý — besides being largely inhabited by white people who are employed in the extraction of india rubber and caucho — possesses two indian tribes, one called Boccas Pretas and the other Arikemes.

The first, who are settled between the rivers Branco and Preto, are even to this day persecuted by the invaders of their forests.

With regard to the second lot, whose real name is « Ahôpovô », the name of Arikemes being taken from the Urupá vocabulary, I will relate their short, and very sad history, from the moment that they came into contact with the white people, up to the time in which the Telegraph Lines Commission took them under their protection.

In the beginning of 1911, the « sertanejos » who collected caucho and established themselves along the Massagana, began to get as far as the headwaters of this river, where the Arikeme villages were to be found. The persecution of the indians commenced on this occasion. In the month of June, these caucho tappers resolved to make a general onslaught against their malocas. Guided by the tracks opened in the forests by the indians themselves, they succeeded in discovering one of the



Photo. Com. Rondon

Conferencias

Dr. Paulo Fernandes dos Santos

(Captain of the Navy Medical Service)

Physician to the exploration and surveying party of the Jacy-Paraná

malocas ; they surrounded same, in the early morning whilst they were at work and suddenly opened fire and the bullets from their Winchesters rained upon their huts. The unfortunate indian men, women and children, only thought of flight, frightened out of their lives : one, however, named Ogunho, fell assassinated by the gunfire.

The assailants, now in possession of the village, sacked it and as the time was not sufficient for them to terminate the nefarious work which they had planned, they returned on the following day with more companions : they separated what was still left as being good and useful, and what they rejected they smashed and burnt, leaving everything reduced to ashes.

The rubber plantations of Massangana belong to Mr. Francisco de Castro. But still further up above the mouth of this river, on the Jamary, there existed already at that time other rubber tappers' establishments, namely those belonging to the brothers Arruda. With one of these I conversed regarding the brutal occurrences and persuaded him to use, and cause to be adopted by his men employed on the rubber forests, more humane treatment worthy of our civilization, or at least such as would not cause us to blush when one remembers that it was used by Brazilians against their brothers inside the mother country.

Future events took upon themselves to prove that my appeal had not been made in vain ; on the contrary, they were fully corresponded to in the sentiments and thoughts of the person to whom my appeal had been directed viz Mr. Godofredo

Arruda. In fact, in the following year, 1912, the employees of this proprietor, following at all hasards the instructions which they had received, succeeded in establishing pacific and friendly relations with the Arikemes, who frequently visited his rubber estate.

The notice of this success was not long in getting known to the caucho men of the Massangana, who, changing their tactics, but not their purpose, established friendly relations with the indians. Thus they succeeded in being admitted into the villages of that river and once in them they immediately commenced to commit the greatest abuse, provoking the disorganization of the indian families and demoralized the customs and institutions of the Arikemes.

Under the action of this deleterious influence, the tribe commenced to rapidly dissolve itself. Their inhabitants, taken away from the villages were disseminated through all the *barracões* of the rubber estates on the Masagana, and as far as the Candeias, where most of them died of avaria and defluxo, diseases which amongst the indians of the Amazon assume the proportions of a terrible epidemy and cause enormous mortality.

In February 1913, at Manáos where I had arrived from Rio de Janeiro, I learnt that a couple of young Arikeme boys had been taken to Belém do Pará by the owner of a rubber estate on the Massagana. It was necessary to hand them back to their tribe and family; and for this reason I demanded and obtained through the « Inspectorate of the Service for the Protection of the Indians », in that city,

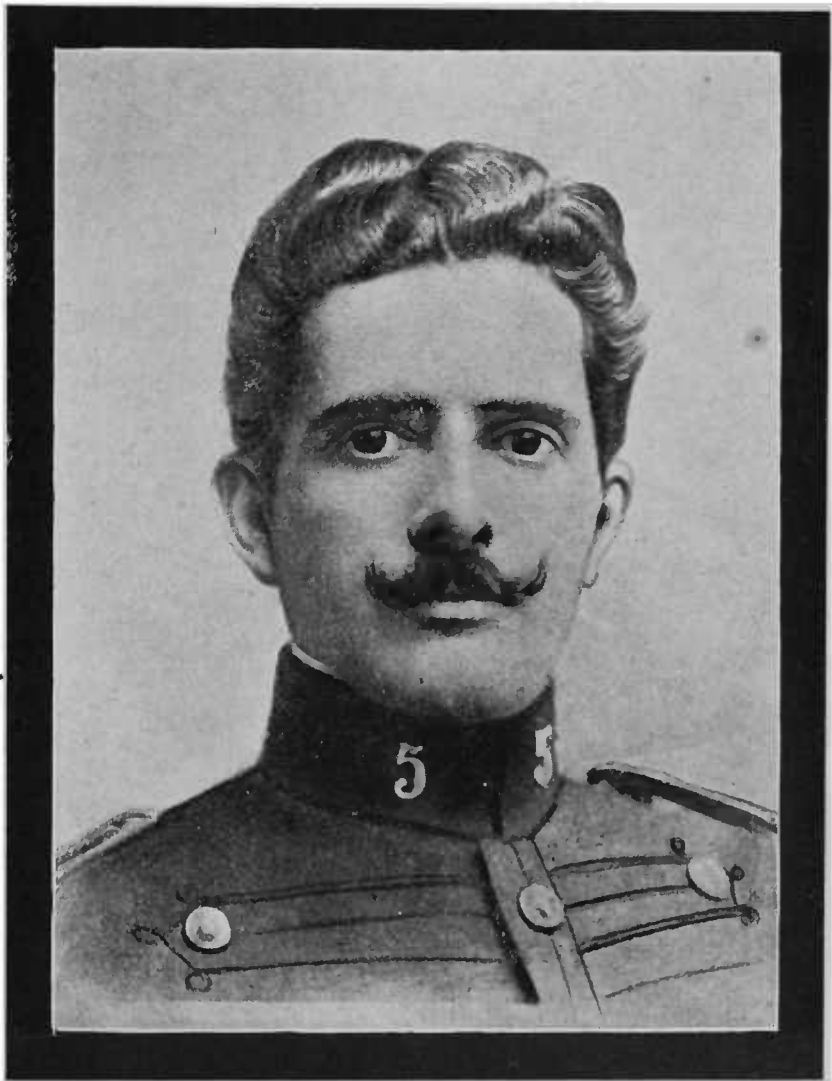


Photo. Com. Rondon

Conferencias

**Lieutenant of Engineers
João Salustiano Lyra**

Assistant to the Chief of the Commission
on the first preliminary survey of the River Jamarý and on
the geographical survey of the River Roosevelt (*)

(*) Killed in an accident which occurred in the Upper Sepotuba river
on the 3rd of April 1917, whilst carrying out the geographical survey of
this river.

police intervention, which caused the boys to be taken out of the hands of their detainer.

Abuses of the nature of those to which I have just referred, unfortunately occur in our country more frequently than one would reasonably expect, inasmuch as we being a duly organized nation the authorities should know that the first and the most noble of all their duties is to afford protection to those of their compatriots, who by reason of their weakness or ignorance may be exposed to violent treatment dispensed openly or otherwise by individuals or groups of individuals who are powerful and prepotent.

As evidence of what I have just stated, I will mention that on the same occasion, and whilst in Manáos, I was obliged to demand the assistance of the police of the State of Amazonas to stop the Frenchman Labadie, ex-chief of the Mollard mission, from leaving for Europe, taking with him as he had intended, an indian of the Uapichana tribe, whom he had brought from the upper Rio Branco.

Having succeeded in this, I left Manáos, taking the direction of the Jamary. Whilst I was ascending the Madeira, from all sides I received complaints that various families withheld in their power many Arikeme children. Then, I went to fetch them and took them with me, and continued the voyage taking them back to their villages which I was determined to reconstitute and protect. Amongst these children, those named Parriba, Poroia and Antina, were handed over to me seriously ill, so much so that on arriving at my camp

in the Torno Largo, on the Jamary, I had to leave them in charge of the commission's physician.

From the camp I continued the journey up stream, taking with me the indian boys Opuna and Patama. On the 8th of March I took out from a launch belonging to some rubber tappers who were coming down stream, a group of 16 indians, amongst whom was the mother of these boys. The poor woman appeared to have gone mad with joy at seeing her sons who had been snatched away from her and whom she had thought lost for ever.

The last part of the voyage by land was most arduous : it rained incessantly and the indians sick and worn out, could scarcely walk. Finally we arrived at their villages. The state of misery which I there encountered was enough to make the hearts, even of the most hardhearted, bleed.* Many of them had been destroyed by fire ; the plantations, and barns had been sacked and robbed ; the women kidnapped and outraged ; the children had been stolen and carried away ; sickness hitherto unknown had appeared and was causing a mortality never before seen. In fact, the tribe which, at the moment of entry into relations with the rubber tappers was at least six hundred in number, could now scarcely muster more than 60.

I do not wish, however, to delay in contemplating this picture more than sad, depressive and — why not say it?—a shameful example of the perverse and destructive ferocity which assails civilized men when they have not the brake of a human ideal, civic and planetary capable of directing them and moralizing the employment of the enormous forces which

science and industry placed in their hands, leaving them, however, the liberty to judge according to their sentiments and to their intentions the choice to apply them to good or evil.

I prefer to tell you a little which will permit you to know more or less the misery and wildness of the Arikeme nation.

In their territory, reduced to ruins, between the Massangana and the Candeias, there still existed at the time of my visit, four villages. I went to those which were directed by the chiefs, or *upós*, Titunha, Pioia, and Curaki, the other, which I did not see, was governed by *upó* Pindura. Each one consists of three large dwellings and of one *Pujico*, or ranch destined to keep the articles of the religious cult of this nation.

The houses are formed like the shell of the *tatú*; one of its extremities, however, terminates in a kind of dome which presents the only aperture of the whole construction: it is the entrance to the Arikeme hut, one metre seventy centimetres high and 0^m,60 wide. In this detail this hut appears like that of the Urumis, but differs from that of the Nhambiquaras and of the Kepikiri-uats, who use two openings.

The framework of the houses is made with six posts, standing at the extremities in two groups of equal number. Those of the same group are joined together by a crosspiece, which rests on two raising pieces placed at a height of 2^m,50 and each pair of symmetrical posts of the two groups sustains the top of the building. On these tops are passed

from one side to the other flexible rods which are curved and give the dome-form to the construction.

From the extremity of the roof to the ground there is a big arch, reinforced in the upper part which serves to sustain the rods of the dome structure. The coco-nut palm leaves with which they make the covering of the roof are placed diagonally on the rods and fastened to them with great art, forming a completely united and closed surface.

In the interior of the houses may be seen not only the sleeping hammocks, earthenware vases, baskets, calabashes and numerous other articles manufactured by the Arikemes, but also the graves of their dead, who are buried exactly under the hammock which they occupied during their lifetime.

The earthenware pots have all of them the shape of the body of a cone ; some are large called *Búro*, 1m. high and 50 cm. wide at the mouth, and others much smaller called *Icío*. In each house there were always to be found one of the first kind and three of the second, full of *Tótó*, a fermented beverage made from corn or manioc.

There is also a long trough of 4^m,40 in length, with a width of 28cm., cut out of a special sort of wood. It serves to break up the corn and to mash up the manioc root, which is carried out with the assistance of a stone or granite grinder of an elliptical shape, whose axis measures at the longest portion, 0^m,40 and 0^m,22 at the shortest.

I have already referred to the *Pujico* or hut, especially consacrated to the religious cult of the Arikemes. I will now describe same.

On entering one of these houses one finds, a hammock (erembê) made out of cotton cloth, whose exceptional whiteness is immediately noticed and which is carefully and intentionally maintained. The hammock is stretched in the direction of the roof of the *Pujico*, heaped with ornaments of feathers from the red *arara*, and trinkets of polished shells displayed in triangles of small circles. From the roof hangs down over it the skin of a spotted jaguar, stretched out with rods and full of feather ornaments. Still in the roof are to be seen calabashes for drinking Tótó; pieces of wood, used for producing fire, wrapped round with cord; a dark polished stone in the shape of a trihedral sphere, a small axe (Pute-Ejau) made of stone; and numerous polished shells. On the walls, bundles of old bows and arrows which belonged to some veteran dweller of the village; and still more arrows with bamboo points, very much like those used by the Caripunas and the Parintintins from whom, probably, they had been taken in warfare.

The principal object in this place is the hammock. Nevertheless, on first examination, nothing more can be seen than two bundles, one a long one, and the other shaped like a cap terminating in a point, and so large, that if placed on the head of any man it would descend over his face down to his chin. Both these are carefully rolled up in the wide inner bark of a certain tree which is known to the indians under the name of *Evotuera*. The long volume is simply placed at the back of the hammock; the other however is sewn to the latter so as to keep the upper part of same on top.

Of the two volumes so zealously guarded, one, the long one, encloses the bones of the body of an Arikeme hero ; and the round one contains his skull. On examining the Pujico carefully we will observe that there are preserved all the spoils of the hero : his hair, divided into two plats, hang down on the outside of each end of the hammock ; and the teeth, in the interior of a small basket, or *chiropamoita*, is suspended from the roof over the same death-bed.

The use of a special house dedicated to religious practices, is not peculiar only to the Arikemes ; even in the wilds of Northwest Matto-Grosso there are two other tribes, the Parecis and the Kepikiri-uats, who possess same. But the special form of this cult so manifestly dedicated to the memory of a hero, this yes, I believe to be exclusively practiced by this nation, and I even think, that in the whole of America there has not been registered any other case which, such as this, makes us remember the celebrated theory of Evermerus.

Individually considered the Arikemes present varied and different grades of colour which run from the well defined bronze, as for example, of the chief Titunha, up to the Japanese yellow, which we saw in the indian woman Aranhô. Some of them are very dark or Avá-únas, like the boy Opuna ; and others are light in colour or Avá-djús, like the chief Curaki. Their stomachs are very much developed. Aquiline noses with a depression in the upper part. Their eyes are small, and very black, sharp and oblique, as in the same indian woman Aranhô, which are characteristically Japanese ; a sclerotic yellow ; eye-brows and eye-lashes not abundant, the hair is

very fine and silky, such as might denounce a remote European cross ; their hands are of an avergae size, badly shaped ; long fingers ; nails like those of the Nhambiquaras ; large feet with the big toe wide open and the other toes very thick with flat nails ; the teeth are generally in good condition although imperfectly disposed in their maxillaries, almost invariably one on top of the other ; the lower maxillary long and exceeding the upper.

Only the men pierce their ears in the ear-lobe and place therein small twigs or feathers ; they do not pierce their lips, or their noses ; they paint their bodies with urucum and genipapo ; they do not pull out their hair or cut their moustaches or the beard on their chins ; before they get into relations with civilized people, they wear their hair long and tied at the end with fibre ; all the members, both male and female, of this tribe use garters made out of platted cotton yarn (pio-picuturó) above their ankles.

They eat soft corn, manioc, monkey-nuts, bananas, papayas, wild fruit, game and fish.

They are very intelligent, of a kindly disposition and not warlike ; they learn our language very easily and rapidly.

This in a few words is the Arikeme tribe, the remains of which the Telegraph Commission succeeded in saving from general destruction to which it was condemned, owing to the influence of the bad elements to which I have already alluded.

In order to attain our object, the Commission gave them, near the last station on the Jamary, the lands which they required in order to establish their villages and plantations. There they are now

settled, and live peacefully occupied in recovering from their past misfortunes, and preparing themselves to enjoy the advantages of our civilization which they endeavour to understand and assimilate.

One of the chiefs, wishing to hasten the advent of the era of the redemption of the Arikeme people, asked me to educate one of his sons according to our system. Acceding to this request I brought his boy Parriba Parakina Piuaca with me; he will be included in the list of scholars at the Professional Institution of São José. Many people in this Capital, in Cambuquira, and in other places know the boy Parriba, and when they hear him talking so easily and correctly in Portuguese, as if he had learnt same from his mother; when they see his gentle and polite manners; when they appreciate the vivacity of his intelligence and paused conversation, the sweetness of his frank and liberal nature, it will be difficult for them to believe that scarcely two years ago he lived in the backwoods of a virgin forest forming an integral part of a tribe of miserable indians, unknown, persecuted and massacred.

Cases like this boy's are numerous and common, not only among the Arikemes, but also amongst other indians of Brazil. Those who are acquainted with them, know by experience that the dispositions both moral and mental of which they are doted present the most admirable facilities for the modifying action which, well intentioned people, may intend to exercise over them, in the sense of inducing them to abandon their old habits and accept those common to us.

The essential thing is to merit and inspire



Photo. Com. Rondon

Conferencias

Lieutenant Emmanuel Silvestre do Amarante

Chief of the exploration and preliminary survey of the river
Commemoração de Floriano

confidence; once this is obtained, the road is prepared for their veneration which in them is intense and strong and which once awakened begins immediately to produce its known fruits; for they are prone to imitate all they see and admire in the object of their veneration.

We however, cannot be more lengthy in the appreciation of these facts; the road is still long over which we have to pass in order to review all the corners of the wilderness opened up by the Telegraph Line Commission.

Let us therefore, descend from the Jamary to the Madeira, and having arrived at the latter, let us continue to descend it. The first mouth of importance which we strike is that of the Gy-Paraná, also called Machado do Mar. We can say that we already know it, so often and so repeatedly have we been referring to it in the course of these lectures. We need not recall how it is represented in the geographical charts of Pimenta Bueno, Rio Branco and Horace Williams. We have already seen that in all these maps, while profoundly divergent from one another, the only thing that is to be found is the position of the mouth and its name: even this is subject to a restriction because the last of the writers cited, inscribes at the spot which should contain the double denomination — Gy — or — Machado — the word Pirajanara.

I shall thus limit myself to giving a rapid description of its course, such as it is and as it has

become known, after being studied in its whole length by the Telegraph Lines Commission.

At Campos de Commemoração de Floriano, the admirable springs of three great hydrographical basins — of the Guaporé, the Madeira and the Tapajoz — laying at an altitude of an average of 630 metres above sea level, two rivers rise and as they were yet unknown at the time, received from the members of the 1909 Expedition, one the same name of the Campos, and the other, that of Pimenta Bueno. Both run down almost together from the station of Vilhena and in the direction of Northwest, from a spot a little before the meridian 17° to that of 18° , where, at a point above the parallel 12° , they unite and thus form the upper Gy-Paraná. The first one, of a lesser volume of water and having its source lower down, is the more eastern; the other, more important than the former, starts under the name of Piroculuina, which was given to it also in 1909, and in its turn is the result of the junction of two branches respectively noted under the Kepikiri-uat names of Djáru-Jupirará (Red River) and Djáru-uérébe (Brilliant river or Shiny river).

After its formation, the Gy penetrates into the section of the meridians 18° and 19° W. of Rio de Janeiro. At first it continues to run in a north-westerly direction; soon after however, it directs its course due North and thus maintains it up to parallel 10° . Thence it descends one more degree bending towards the East, reaching the Lat. 9° , but when about to pass this latitude, it abandons abruptly the direction in which it had been flowing and again throws its course to the northwest; it

rapidly crosses the meridian 19° and reaches the Madeira before attaining that of 20° , at a point close on to parallel 8° .

A noteworthy fact is that during such a long course, the Gy receives on its right bank only two affluents of any importance, namely the rivers called S. João and Tarumã; and it is also remarkable, that beyond this singularity, the bar of the first mentioned is exactly on the apex of the elbow formed by reason of the abrupt change of direction from N.N.E to N.W.

In contrast with this we have an abundance of affluents on the left bank. In the gap comprised between the two main feeders, the *Commemoração de Floriano* and the *Pimenta Bueno*, appears the *Barão de Melgaço*, already known to us. After the junction of the two feeders, we meet, first the *Luiz de Albuquerque*, inhabited by the *Uáturumbó* tribe, and then, the bar of the former *S. Pedro* or *Rolim de Moura*, a river of still dark waters, into which run two others: the *Antonio João* and the *Anta Atirada*. The more important of the two is the *Rolim de Moura* properly denominated *Djarú-uára*, by the *Kepikiri-uats*, who also gave me the name of *Capuá* as the designation of the tribe which lives there.

The *S. Pedro* is followed by the former *Muquy*, the trunk of the *Lacerda e Almeida*, the *Luiz d'Alincourt*, the *Acanga Piranga* and of the *Ricardo Franco*, which is the principal branch, below the mouth of which the *Uacucáp* indians, are settled, according to the information of the said *Kepikiri-uats*.

Descending further we meet the *Urupá*, the

Igarapé, the Bôa Vista, the Jarú, with which we are acquainted, and others which have not yet been mentioned, namely the Anary, the Machadinho, the Juruásinho and finally, on arriving at the Madeira, the rio Preto.

If we consider these indications in connection with those which we have already given in treating of the construction, we will see that the valley of the Gy-Paraná may be estimated as one of the richest and most varied ethnographical centres of the whole world. There we meet the civilized man, handling such remarkable and perfect implements of the industries of our days as the telegraph and gas motors, beside the uncultured *caboclo*; the tame and half-civilized indian; the aborigine scarcely initiated in the first steps of relationship with us; the wild indian not yet reached and even, finally, the almost extinct cannibal.

One might say that chance had made it a point to assemble in that strip of land a multiplicity of aspects under which Nature manifests herself a little everywhere. In the soil we find gold and mercury; diamonds and granite; the majestic forests, covered with precious essences, are rich — even as compared with the prodigious resources of the Amazon forests — but in certain places, fall off to harsh and desolate jungles, and in others opening up into level camps covered with beautiful grasses.

And this multiplicity of aspects is so great that we cannot think of detailing same. Even with regard to the population, many nuclei remain to be mentioned; we have said nothing, for example, of



Photo. Com. Rondon

Conferencias

Captain Nicolau Bueno Horta Barbosa

Chief of the first topographical surveying party of the river
Gy-Paraná

the Urumis, inhabitants of the valley of the Tarumã, the river which the Gy collects on its right bank half way up its total course ; and of the Parintintins, a warlike tribe, whose pacification we are promoting with the promised success of a near victory, and whose villages are to be found in a portion of the natural camps which extend to the right, in the direction of the River Roosevelt, cut by the Marmellos and the Manicoré, direct affluents of the Madeira.

Such a vast subject cannot evidently be included in the review of a rapid exposition like this. We will therefore retrace our steps and reascend the course of the Gy up to its vast headwaters in the Campos de Commemoração de Floriano. There we will see still, the sources of two more rivers belonging to the hydrographical basin which we are now examining : one is the Roosevelt and the other the Ananaz, a name which had scarcely commenced to figure in the geography of Brazil, when it had to be changed — through what painful misfortune we already know, — in order to give place to the perpetuation of the memory of the unfortunate Lieut. Marques de Souza.

In the lectures relative to the work of the Roosevelt-Rondon Scientific Expedition, we described the first one minutely.

With regard to the second, in spite of the fact that we had not considered same in such detail, we judge that the allusions made to it in various places in those lectures, and more especially in that which relates to the discovery of the river Capitão Cardoso,

are sufficient to make known the essential characteristics of its course. We would still have to mention the principal episodes of the voyage, so full of hardships and difficulties during the exploration which was being directed and carried out by Lieut. Marques de Souza, with that great technical competency and high moral character which we all know; at least those who had the fortune of being his friends and companions of work, accustomed to admire all the acts of his professional and private life.

As however, we had the good fortune to find, in worthy friends belonging to the staff of the *Jornal do Commercio*, full sympathy with the desire which we nourished to bestow on the memory of our much regretted companion one of the many homages of which we recognize we are indebted, we were placed in a position to offer to the appreciation of the public, in the columns of that respected organ of the daily press of this city, a minute narrative, from the diary which Lieut. Marques de Souza himself had written, of all the facts that formed the history of that unfortunate expedition. It is unnecessary therefore to repeat, here, in a simple and incomplete summary the principal facts of that narrative, which will be engraved in the hearts of all Brazilians, with the bright colours of the picture with which we know how to perpetuate the memory of those of our compatriots who dignifying and honouring human nature, incorporate themselves into the eternally glorious cohort of the heroes who personify the soul of our country.

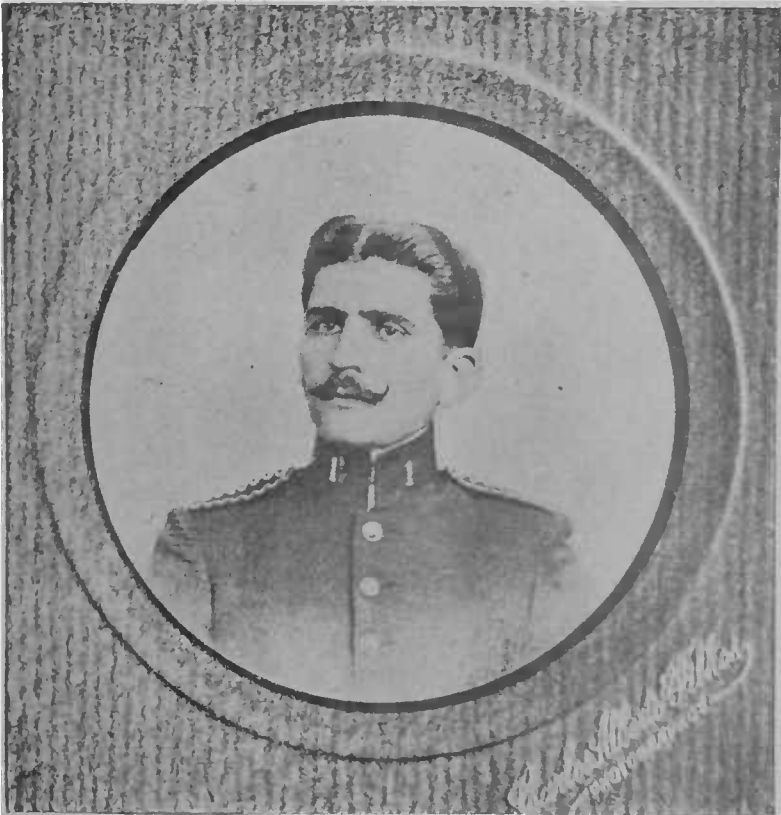


Photo. Com. Rondon

Conferencias

Lieutenant Manoel Tiburcio Cavalcanti

Chief of the 2nd. topographical surveying party of the river Gy-Paraná

We can, thus, transport ourselves to other zones of the great wilderness which we are studying in these rapid notes. Let us therefore march to the South, without, however, deviating ourselves from the meridian in which are to be found the sources of the river Tenente Marques de Souza.

Having journeyed not more than two leagues, we then cross the course of a new river, the Ikê, and afterwards successively, that of the Toloiry, the Doze de Outubro, the Nhambiquara, and the Camararé, known prior to the 1909 Expedition and noted in the geographical charts as a tributary of the left bank of the Juruena, at the point corresponding to Lat. $12^{\circ} 53' 52''$ and Long. $16^{\circ} 43' 2''$.

Since that year, we recognized that another river, also discovered by us and crossed in Lat. $12^{\circ} 54' 14''$ and Long. $16^{\circ} 31' 55''$ flowed to the right into the said Camararé: we named it at the time, Camararézinho, or in the Pareci language Zocámararezá, which it still maintains.

With regard to the four previously mentioned, I remained at first in doubt as to whether the Nhambiquaras would be the tributary of the Camararé or of the Doze de Outubro; but I was always certain, that the latter received on the left bank the Ikê, and before it, the Toloiry.

Anyhow, what immediately was self-evident was the preponderance of the Doze de Outubro, a river which descending from the opposite side to that of the principal headwaters of the Gy-Paraná, the already named Piroculuina, appeared to us to have its course independent not only of the basin of the said Gy, but also of that of the Juruena.

Observing that the enormous space comprised between the meridians of 17° and 19° and the parallels of 11° and 9° in which the chart of Pimenta Bueno and others more recent, figure four headwaters of the Gy,—which we have just verified do not exist,—remained entirely empty, we formulated the hypothesis that along it should stretch the valley of a long river, of which our Doze de Outubro would only be the extreme meridional portion.

Like every reasonable hypothesis, this one could and should be verified. In order to carry this out, I entrusted same to Lieut. Julio Caetano Horta Barbosa, giving him as assistants, the Inspector of Telegraphs, Francisco Mascarenhas, Joaquim Sol, and five regional volunteers of the 5th Battalion of Engineers. The expedition left from the highest headwaters of the Ikê and the surroundings of the portion of the telegraph line laid between Vilhena and José Bonifacio, at a point in which the river presented a width of 5m. and an average depth of 15cm. and a discharge per second of 2.222 litres. By the plan previously drawn out, the journey should be made by land along the river, up to the point where it should become favourable for navigation; but as the men for the axe cutting work were not as numerous as this hard work exacted for the felling of trees in the virgin forest necessary in order to give passage to the pack animals, Lieut. Julio Caetano was obliged to commence the transport by water before the Ikê became navigable.

Thus, in July 1912 the voyage commenced by land and from August 4th onward was carried out partly in canoes and partly on foot; but immediately

the possibility offered itself the expedition embarked and thus came out at the city of Santarem in Pará, having taken close on 5 months from the day on which they had interned themselves in the forest.

The essential result of the expedition was to destroy the hypothesis which had been formulated with regard to the course of the Doze de Outubro ; because the Ikê after receiving the waters of a few rivers, inclined itself still further towards the East and thus flowed until it met it. A little after this union, the Doze de Outubro entered into the Camararé, whence its waters are taken to the Juruena, Tapajoz, and therefore, to the Amazon.

If we now wish to have an idea of the enormous amount of energy which had to be displayed by the young officer of our army, to conduct to a good end this formidable campaign of five months of struggle against the brutal resistance of the hard and threatening nature of the wilderness through which he had to take his men, we will proceed to read a few topics of the report which he himself made on the march of his expedition.

After telling you how he constructed his first two canoes, on the banks of the Ikê, both of cedar wood, with a length of little less than 10 metres and a width of, the first fifty centimetres and the other forty, he says :

« Right in the first days, I verified that of the advantages with which I had counted, descending the river embarked, only one remained to me, which however, justified by itself alone the resolution which I took : the facility of transportation.

« The progress of the work continued to be very small and it even happened that we came down to 350 metres of advancement in a whole day of tireless effort.

« The work of the axe did not diminish, and on the contrary, it became more hard because it had to be carried out, mostly in water. The river extraordinarily blocked with very sharp curves afforded, with difficulty, a passage for the canoes; and numerous waterfalls obliged us almost daily, to discharge the baggage and transport same on our shoulders below the rapids, retarding our journey and making it still more troublesome.

« At the waterfall, we had to pass the canoes by hand, now over the stones, now over rollers and even at times we had to take them out of the water. These obstacles alone, quite natural to the service which I was commencing, but which I had not foreseen due to want of experience, justify that working all day long with the greatest effort, we did not attain an average of one kilometre per day during the first month of the service.

« Besides this, sickness and accidents cropped up. On the 18th of August, I had one of my workmen inutilized, as he had wounded the big toe of his right foot with a stroke of the axe, which almost severed it in two, it being necessary to amputate it, which I had done with a *Gillette* blade for the want of a better instrument. Before the wound healed, another man suffered the same mishap. The most serious was however that which occurred on the 22nd of September, the victim being a man who was cutting a *palmito* for our evening meal,

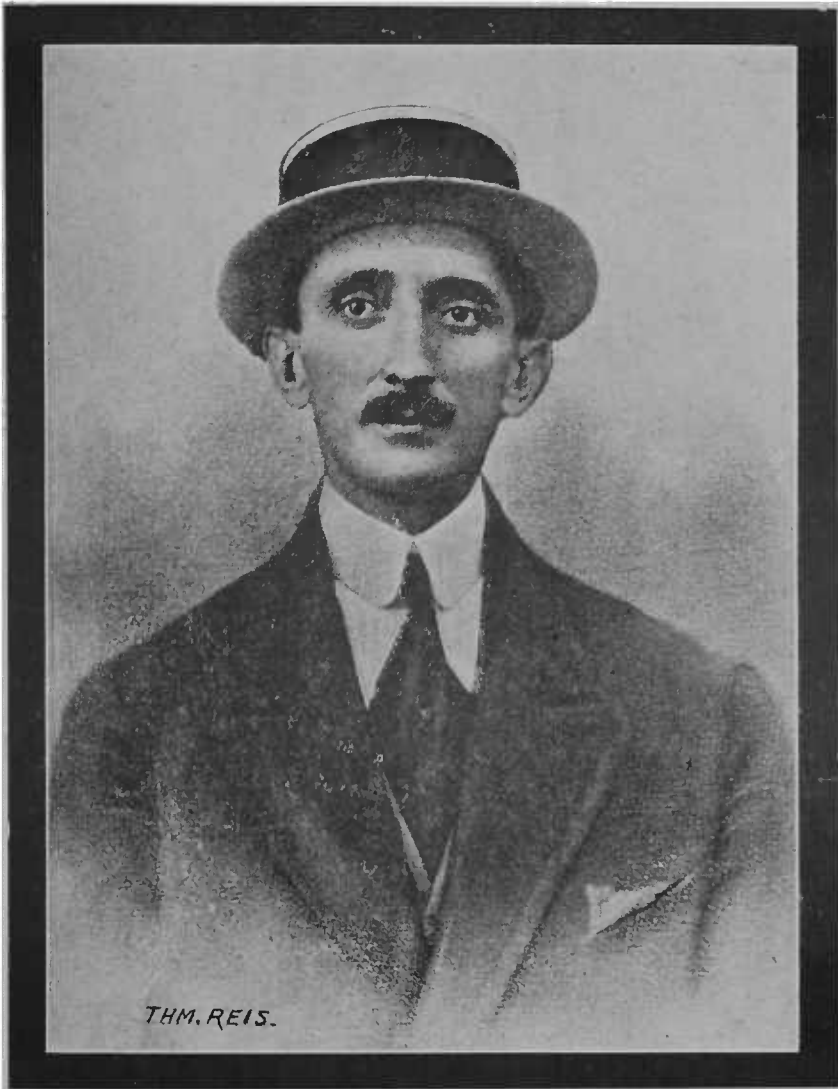


Photo. Com. Rondon

Conferencias

Second Lieutenant Francisco Marques de Souza

Chief of the exploration and surveying party
of the river Ananaz

Died on the 29th of May 1915 whilst carrying out the above work

N. B. — This photograph of this officier is published in « mufti », as it is the last one taken of him during his lifetime.

and he did this so unfortunately that he was knocked down by the palm-tree which caused internal ruptures of which he died six days afterwards, that is on the 28th of September. Carrying this unfortunate companion of toil with every care it was possible to bestow upon him in the situation in which we found ourselves, we buried him at the spot where he died and over his grave we placed a cross with an inscription.

« Our party therefore, became reduced to seven men including myself, and of the workmen only one, the regional volunteer Manoel Pedro Gonçalves, was well...! »

Now let us see a few parts of the description which Lieut. Julio Caetano makes of the natural aspects of the river explored :

« The Ikê, he says, flows in the wood for twenty kilometres, where the Campos Indigenas commence to appear, on the right firstly. At twenty seven kilometres they occur also on the left. These camps sometimes depart from, and sometimes approach the banks, scarcely ever meeting the river. Its bed is stony all along and the banks, now *firmes*, now marshy, are abundant with palm-trees principally Anajá, Burity, Uacuri, Tucum, Patauá, Assahy, Bacaba, Pacheúba, etc., according to the nature of the soil. It is poor in rubber trees; we met, however, with a few here and there; but there are sufficient Cedar, Guanandi, Faveiro, Jatobá, Pau Brazil, Soveira, etc.

« On its banks Salsaparrilha, and a lot of Congonha are to be found. The *campos indigenas* extend down stream and crossing same at nearly 24

kilometres, we come across a « *cerrado* » extending out of sight. »

After referring to various important features of the river, affluents; waterfalls and rapids, whose technical elements were conveniently noted, and the occurrences of the voyage, such as shipwreck, loss of baggage and food, and also of one of the canoes, Lieut. Julio Caetano gives an account in the following words of the entrance of the Ikê into the Camararé and of the latter into the Juruena :

« At 227 kilometres from the point of embarkation, the Ikê having then almost 30 metres width, discharges its waters in the Doze de Outubro which has from 80 to 100 metres width and flows in the direction of 60° SW

« Following same, 1800 metres below is to be found the river Camararé, which has approximately 120 metres of width and comes in the direction of 90° W. Here commence the large forests of indians, which follow the whole course of the river up to the Juruena, and is to be found 267.400 metres away from the point of our departure.

In order to finish these rapid allusions to the voyage of reconnoissance of the Ikê, we shall still transcribe a topic of the report made by Lieut. Julio Caetano, treating of the indian inhabitants of all the explored region :

« On the 31st of October, date of our arrival at the Juruena, we had the pleasure of meeting the Nhambiquara indians. It was about 9.30 a.m. when we heard in the woods, the noise of people throwing themselves off the trees and running.

« I immediately ordered the canoe to be moored to the opposite bank ; we shouted to the indians, showing them axes, beads and cotton thread ; soon two of them appeared and I called them up showing them the presents.

« At first they hesitated ; but afterwards they crossed the river and came to meet us. The pleasure which we all felt at meeting the Nhambiquaras is indescribable ; they seemed to us as friends expected after a long absence !

« The joy they showed at meeting us was not less than ours.

« They told us that they had come from afar and that they were going to Campos Novos.

« In order to cross the river one of them placed under his arms two thin floaters made out of the burity palm, while the other attaching himself firmly to the feet of the former was towed by him to the place where we were.

« We afterwards crossed over, taking one in our canoe ; the other swam clinging to her bows.

« On the bank where they were at first, then appeared other indians, men and women, who gave us tobacco, honey and necklaces, in exchange for what we had given them.

« When we proceeded on our navigation, one of the latter followed us along the woods, advising others of our approach ; a little lower down, where we halted for breakfast, others came to meet us ; a man, with his wife and a youth, and further down still we met others ; to all of them I distributed presents ».

From the summary of the narrative above transcribed it can be inferred that, if a person should leave from the Madeira into the interior of the woods, ascending the course of the Gy-Paraná or of the Roosevelt, with the decision to reach the most easterly headwaters of any one of these rivers, he would finally arrive at the meridian of 17° between parallels 13° and 12° and could even cross it a few minutes further east. However, once he should have arrived there however little he should advance further East, he would immediately commence to find waters taking the courses inscribed in the quadrant of Northeast.

The basin of the Madeira would therefore be ended and that of the Tapajóz commenced; as a line of division of the two basins, we can take the meridian of the Vilhena Station which is the same as that of Villa Bella

If the explorer should wish to proceed on his journey from this point, by descending as far as the Juruena and then departing from its right bank as much as might be necessary in order to attain the farthest point of all those which mark the headwaters of the eastern catchment of the basin of the Tapajóz, he would see his wish satisfied only when, having come to the end of a journey of approximately 1000 kilometres, he would arrive in the vicinity of the spot whence the Xingú emanates.

The fact is that the Tapajóz is like a prodigious vine, whose trunk advances into the interior of the lands from a point before the parallel of 3° up to a spot more than half way between those of 14° and of 15° , throwing off to one and the other side powerful

branches, some extending beyond the meridian of 16° and others, longer, more numerous and stronger which, from the opposite side, almost succeed in touching on the meridian of 11° . If we consider the enormous area invaded and covered by the net work generated by these branches, which in their turn also divide and subdivide themselves into branches and sub-branches, and if we remember that in them the movement of the water occurs in a contrary sense to that which occurs in the real vines, we shall see that the Tapajóz as the collector of the feeders of so vast a region, must necessarily assume that status full of majesty which assures to it a distinguished place among the largest rivers in the world.

This majesty, if it contributed to consolidate the fame which, since colonial days, is attributed to the name of the great tributary of the Amazon, it was not however a sufficient stimulus for some of those enterprising spirits who have devoted themselves to the study of the geography of our Country, to decide to carry out a scientific exploration of the whole of its course.

The Telegraph Lines Commission was to bear the brunt of making up for such a failing not only in regard to the Tapajoz itself, but also in respect to its most important tributaries of the right bank.

For the realization of the first part of the programme, a scientific expedition was organized in 1911 under the direction of Capt. Manoel Theophilo da Costa Pinheiro, assisted by the botanist Frederic

Hoehne and Dr. Murillio de Campos. On the 28th of December, having terminated the necessary preparations for the voyage, the members of the expedition, fourteen in number, took their places in five canoes and commenced to descend the Juruena leaving the place where it is cut by the telegraph line track, a spot which we reached for the first time, in 1907 and since 1908 we have occupied with a military detachment.

Alas, how many deep modifications had taken place in this corner of the great wilderness which, in those years, we had found immersed in the most absolute and hostile savagery! The same inhabitants of those then mysterious lonesome spots, who had received us in warlike attitude, and so ignorantly repelled in two audacious assaults, the friendship which we offered them, are now here represented by a group of the so-called Cocôzés, who had come to assist at the last arrangements of our expeditionary column. They are no longer the hard warriors of those days, but yes, trusting friends who were desirous of participating in the risks and the dangers which we were about to face for the first time in the descent of this famous river, whose access they had formerly defended with such staunch bravery. Unfortunately the total absence of accommodation of which the small craft was suffering — already excessively overcharged with quantities of baggage, provisions, implements and engineering instruments — obliged us to refuse the request which they made to accompany us. Afterwards, already on the voyage, the members of the expedition had further occasion of finding themselves in the midst of other

groups of the formerly so much feared Nhambiquara nation.

« Every now and again, says Capt. Costa Pinheiro in his report on this expedition, on both banks of the river, we noticed large openings in the woods, which indicated their plantations to us: landing stages on both sides of the river corresponding to one another; primitive rafts (bundles of burity palm leaves bound together) on which they used to cross from one side of the river to the other; finally we even found their war implements.

« On the 31st of December, a little before midday, I was at the mouth of the Juhina, taking observations from the sun, when I heard on the opposite bank some yells; I listened attentively and distinguished the word *Anaué* repeated incessantly. There was no doubt, they were Nhambiquaras.

« We all went to the bank of the river and saw some of them, completely naked, always crying out *Anaué* and showing us corn-cobs. Perfectly understanding their intention towards us, I manned a canoe and sent it to the other bank. As the canoe drew near, some of them hid in the woods, but four of them came to receive us, handing us some corn-cobs. In retribution of this we gave them some hatchets, the sole gifts which we had with us.

They were extremely satisfied! »

Besides the Nhambiquaras, Captain Pinheiro also referred to the *Apiacás*. It is as well to read out some passages of what the distinguished officer had to say at the time, in order that we may lift a little the edge of the veil which hides from our

sight the most inner localities of the territory of our country.

« Of the Apiacás, writes Captain Pinheiro, whom we were sure we would meet on the Salto Augusto, we could not even see traces.

« In short, only at the Revenue Office of Matto-Grosso at S. Manoel, did we succeed in meeting the first Apiacás, already then almost civilized.

« It was in talking with the Matto-Grosso Tax Collector and other persons of the locality, that I came to learn how the Apiacá indians had disappeared from Salto Augusto and other points up the S. Manoel.

« The Revenue Office of Matto-Grosso was established in 1902.

« The first Collector was Mr. Thomas Carneiro, who commenced his administration by entering immediately in to quarrel with the Apiacás, and persecuted them cruelly. So many were the punishments and ill treatments inflicted on the indians, not only by himself but also by his brother Ernesto Carneiro, commander of the detachment of police, that their revenge was not long in coming.

« With the intention of taking a just revenge, the Apiacás assembled one day in the neighbourhood of this place, and in the dead of night, without being suspected, penetrated into the Revenue Office and killed the Collector and his brother. In order to take the place of Mr. Thomas Carneiro, Mr. Fabio Freire was appointed and the latter continued with a series of persecutions against the indians, stating that he wished in this way to avenge the death of his



Photo. Com. Rondon

Conferencias

Captain of artillery
Manoel Theophilo da Costa Pinheiro

(Military Engineer)

Chief of the exploration and geographical surveying parties
of the rivers Jacy-Paraná and Juruena



predecessor. Once he caused the Apiacás to be invited to take coffee; the indians, in good faith, while rather suspicious, accepted the invitation, and when they were in the *barracão* (store) taking that beverage, Mr. Freire availing himself of the detachment at the service of the Revenue Office, which had been previously equipped and prepared, ordered them to fire thus killing nearly all of them. A woman was the only survivor. To this day, any one going to the Revenue Office can see, right in front of a *barracão* (store) which once served as the barracks, the place where they were all buried in one grave.

« After this feat, Mr. Freire assembled nearly 100 men, between rubber tappers and the personnel of the Revenue Office and conducted an assault against an old *malóca*, which existed at the Cachoeira de S. Florencio. The assault took place very early when the Apiacás were yet inside their *maloca*, and as the indians, frightened by the fire, came running out gesticulating and crying out exclamations, they were received with shots. Few of them escaped. To this day, whoever may pass by the Cachoeira S. Florencio, can see, already faded, the signs of this work of dismantlement and destruction. Mr. Fabio Freire was substituted by Mr. Antonio Gomes de Lima, who remained there for about three years, having been considered by all as a good Tax Collector. He was substituted by Mr. Paulo Corrêa who continued the persecution of the Apiacás and committed all sorts of violence against the rubber tappers. He prohibited, in an irrevokable manner, the Apiacás from descending the river as far as São

Manoel. Those who transgressed his orders were severely punished.

« Finally the persecutions against the Apiacás and the rubber tappers assumed such proportions that one day Mr. Paulo Corrêa was assassinated by his own followers. He was substituted by Mr. Sotéro Barrêto who reestablished normal conditions and inaugurated an era of peace and prosperity for the Revenue Station.

« As it is easy to surmise, the Apiacás, pressed hard, persecuted and subject to the violent treatment of the civilized people, interned themselves into the forests and abandoned the banks of the Juruena.

« The few of them who remained nearer, in contact with the rubber tappers, returned to the Revenue Station and are now there up to this day, content with the protection which is offered them by the Collector.

« When I went by there, at the end of February of the current year (that is to say, of 1912) there were at the Revenue Station 32 Apiacá indians composed of 16 women, 7 men and 9 children ».

As we can infer from these words of Captain Pinheiro, the persecutions and violent treatment used against the undefended Apiacás, by various public officials of the State of Matto-Grosso on the Tapajóz, transposed the limits of the most wanton barbarity and the hardest cruelty ; but however dark this picture may appear to us, it is well to know that it is yet wanting in many other tones, no less tetric than the former, beginning with the baseness of the intentions which prompted the Revenue Collector

Paulo Corrêa and his predecessors to commit such violence and atrocity; the purpose was to rob the indians of their wives!

Besides the Apiacás, the expedition for the study of the Tapajóz also met the Mundurucús, some of whose villages were built at the mouth of the S. Thomé; others, and in the majority, exist on the river Cururú, extending along the camps called Capepi-uat. They live there on the resources which they are able to provide by means of their small plantations, assisted with the elements they obtain out of their magnificent forests.

The actual number of these indians is estimated at about two thousand souls, the male portion being considerably greater than the female.

In the settlements on the Capepi-uat the Franciscan friars Hugo and Luiz Meus, have just built a small chapel, covered with *pindóba* leaves; the two priests however were not present at the time that the botanist Hoehne and Dr. Murillo de Campos visited the place.

We can resume the other work done by the expedition under Capt. Pinheiro, by stating that it effected the rapid survey of the river, from the telegraph station of Juruena up to S. Manoel; it calculated the discharge of the principal tributaries; it determined the altitude of the different points of greater importance, as also the coordinates of the mouths of the Juhina, Camararé, Papagaio, Sangué, and Arinos, of the famous and beautiful Salto Augusto and of the mouth of the S. Manoel, a river which had become celebrated in the chronicles of the

expeditions for the study of the territory of our country, by the sad fact of the tragic death of Capt. Telles Pires, who, in 1889, had undertaken to explore it, accompanied by a friend and distinguished companion, the engineer of our army Oscar de Miranda.

As a just, but tardy homage to the illustrious memory of this unfortunate officer, who lost his life in the midst of the hard work which he had commenced and with which he was proceeding, animated only by the thought and the desire of contributing to the aggrandisement of his beloved country, I submit to the appreciation of the Brazilian geographers the idea of naming this river « Capt. Telles Pires ». And as sad fatality had fixed for ever the ties which friendship and good comradeship had established between this officer and his illustrious companion of work and of suffering, associating the two names so intimately that it is not now possible for any one to remember one, without immediately having the other before him, I propose further that the waterfall where the sad shipwreck took place be called after the name of « Oscar de Miranda ».

The future of this modest remembrance, but most sincere and still more merited homage would certainly be very precarious if in order to help it and recommend it to the appreciation of my co-citizens, one should not have to count with the resolution of the wish of a worthy collectivity generally respected in the circles in which it should have to be launched and cultivated until it produced the fruits expected of it. Fortunately however, we others, admirers of the names of which we intend to make a cult, can

appeal to the Geographical Society of Rio de Janeiro, asking it to adopt as its own this double proposal, and to protect it with the same kindness and fervour which it dispensed to the organization of that bold undertaking, born of the civic enthusiasm which, in the years nearest to the advent of the Republic, inflamed the souls of the youth of our army and irradiated from same, causing to spring up associations of such beauty as that of the trimvirate formed by Capt. Telles Pires, with the Lieutenants, (which they were at that period) Oscar de Miranda and Ximeno Villeroy.

Full of hope that the support asked for will not fail us, and convinced that it, once at large, will immediately secure the victory which is desired, we shall no longer refer to the feeder of the Tapajoz under any other name than the river « Capitão Telles Pires ».

Another important result of Costa Pinheiro's Expedition has yet to be considered by us in regard to the mouth of this river, and the comparison of its volume with that of the Arinos and of the Juruena.

The first discoverers of the Tapajoz and its immediate navigators considered it as being formed from part of the trunk comprised from the mouth, in the Amazon, up to a point in which this trunk divides itself into two branches, one which continues in the general direction of the previous course and the other whose bed one sees laying in a sense most accentuatedly deviated to the East. To this last, in olden times, the denomination of Tres Barras or S. Manoel was given; this is our « Telles Pires »;

the other received the name of Juruena and with it continued as far as the upper headwaters in the *chapadão* (plateau) dos Parecis.

The dwellers on the banks of the Tapajoz, consulted by Captain Costa Pinheiro, still conserve this tradition : for them the Tapajoz commences at the confluence of the Juruena with the Telles Pires. The modern geographers however, accepted Pimenta Bueno's theory, published in his map of Matto-Grosso, which consists in making the name of Juruena die at the mouth of the Arinos, the Tapajoz therefore figuring as the result of the concourse of the waters which descend united from that mouth as far as the Amazon.

A similar modification which contradicts the historic tradition to be found in the chronicles of the two past centuries and the indications of a riparian population and of all the navigators, ancient and modern, are not supported by any reason of an order superior to these elements.

At the point in which the Juruena receives the Arinos, Captain Pinheiro verified its discharge to be 1975 cubic metres, its bed having a width of 1080 metres. The measurements did not give, for the discharge of the Arinos, more than 1283 metres and the width of 734 metres.

Comparing these elements it is easily seen that there is no reason for these two rivers to be considered there, equal to one another ; the power of one does not present itself in conditions to be utilised by the other so as to give place to the appearance of a new geographical feature, exacting also a new name.

The direction which the Juruena took, continues from there down stream; the volume is superior to that of the Arinos; therefore, it is perfectly plausible to consider this as a tributary of the other, which name should be conserved and prolonged at least as far as the mouth of the Telles Pires.

The Tapajoz is therefore formed by the union of the waters of the old S. Manoel, with those of the Juruena; the first contributes, in each second, for its formation, with a volume of 1747 metres cube, and the second with that of 2489.

In accordance with these conclusions, the real course of the river studied by Capt. Costa Pinheiro, the Aná-uiná of the Parecis, will have an extension of almost 1000 kilometres of which the first 207, which go from the headwaters, in the Serra dos Parecis, close to the sources of the Guaporé, as far as the telegraph station in Lat. of S. $12^{\circ} 50' 31''$,4 and Lon. W. of Rio de Janeiro $15^{\circ} 44' 50''$,4, have not yet been surveyed or traversed.

In the section of 792.872 metres, explored by Capt. Pinheiro's expedition, the Juruena receives through its right bank successively, from above to below, the rivers Papagaio, Sangue and Arinos.

Each one of these affluents constitutes a central collector of a secondary basin, sufficiently remarkable, whose complete description can only be made after terminating, during the current year, the conjoint efforts which in this connection the Telegraph Lines Commission developed.

With regard to the first of these collectors, the Papagaio, or the Sauêruiná, whose principal head-

waters rise in Lat. $14^{\circ} 30'$ and in Long. $15^{\circ} 50'$ where it runs in a contrary direction to the most northerly branch of the Jaurú, we saw how the reconnoissance of the part of its course, which was yet to be studied below the station of Utiarity, was effected in 1914 by the Lauriodó-Fiala party of the Roosevelt-Rondon Scientific Expedition.

On the left, and after the station of Utiarity, the Papagaio receives the Burity and immediately afterwards the Sauê-úiná, or the river Maracanã, with regard to which we had made the mistake, in saying in the geographical conclusions of the volume already published of our report on the studies and reconnoissances, that it was the direct affluent of the Juruena; the correction which I leave here consigned is a result of the work of the above mentioned Lauriodó-Fiala expedition.

On the right, the river Papagaio receives, after the station of Utiarity, but before the mouth of the Burity, the river Sacre, or Timalatiá, which comes to it ingrossed by its feeder the river Verde, or as the Parecis call it the Tahurú-iná.

This affluent of the Sacre marks the eastern limit of the sub-basin of the Papagaio; it did not figure in any geographical chart before the work of the Telegraph Lines Commission, and must also not be mistaken for the Agua Verde, or the Anhanazá, feeder to the Arinos, which was erroneously inscribed by Father Badarlotte, in the sketch of a chart which accompanied his Memorial entitled "The Exploration of the North of Matto-Grosso 1898" — as one of the feeders of the Jacúruiná, giving it the name of river Verde.

The river Cravary, or Curucú-inazá, which in the geographical conclusions of my alluded report is described as an affluent of the right bank of the Sacre, was subsequently recognized by us as belonging to the second of the above mentioned sub-basins tributaries to the Juruena.

This sub-basin has as its principal collector the river Sangue, or Zútiáruiná, which, before taking the waters of the Cravary received through its opposite bank, that is to say by the right the Sacuriú-iná, a river to which the old charts referred under the name of Xacúru-iná, inscribing it before Pimenta Bueno, as the tributary of the Arinos. Ricardo Franco himself was undecided on the face of the diverging information, which he obtained on same, of which some gave it as an affluent of the Juruena and others as of the Arinos, where he would arrive by means of the Sumidouro.

The reconnoissance of the river Sangue was effected by Lieut. Vicente de Paula Vasconcellos assisted by Dr. Serapião.

For this purpose, an exploring expedition was formed which left on the 10th of May of the current year from the point where the telegraph line crossed that river, descended it, embarked in two canoes as far as its mouth, in the Juruena, where he arrived on the last day of the following month. The total course run in these 71 days' travelling consisted of 425.400 metres, as set out by the topographical survey obtained with the assistance of a telemeter. By these figures one can see, that the result of navi-

gation did not attain per day an average of 9 kilometres, and this figure is, by itself, sufficiently eloquent to dispense us of here enumerating the series of obstacles which had to be overcome by Lieut. Vasconcellos, amongst which are a number of rapids, and two important falls, beyond the inevitable accidents of shipwreck and loss of craft.

The measurements gave for the discharge of the river studied, at the point of embarkation, a volume of 118 cubic metres, and at its mouth more than 360. With regard to the mouths of the two principal affluents, Lieut. Vasconcellos arrived at that of the Sacuriú-iná on the 6th of June, a little more than 100 kilometres from Passo da Linha; and that of the Cravary, six days afterwards, at 139 kilometres below the previous one. The discharge of the first river was, at the time, 59 cubic metres, through a mouth of 49 metres wide; that of the second was 101 cubic metres, with a width of 52 metres.

The most important incident of all was the meeting of Lieut. Vasconcellos with a few groups of indians of the tribe living in the lower portion of the course of the river Sangue. Only after having passed the mouth of the Sacuriú-iná, had the distinguished officer the opportunity of verifying that the river was inhabited. In order to remain more faithful to the exposition of these interesting episodes, I will here read the topics in which that officer refers to them in his report on this voyage:

« On the 9th (of June), he says, an important note offered itself to us: we saw the first indian!

« In a loop of the river, sitting on a dry tree,

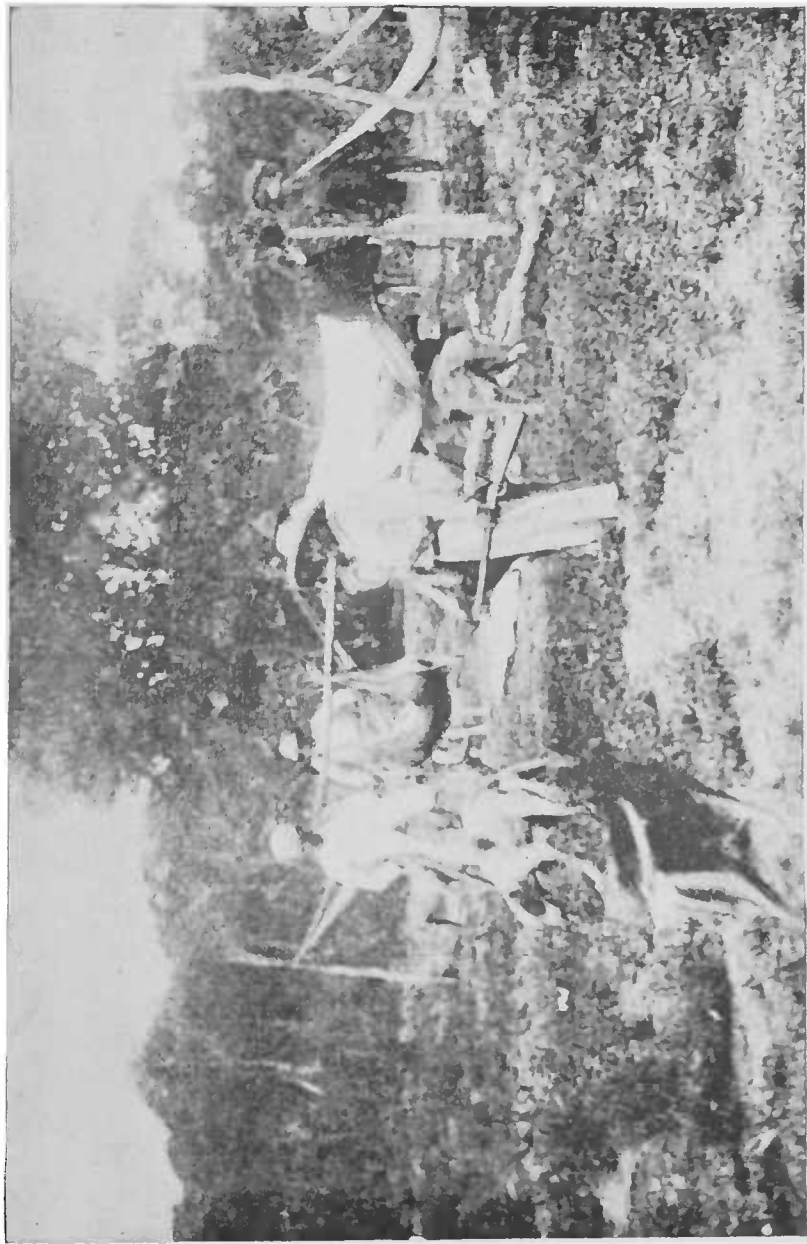


Photo. Com. Rondon

Conferecius

A bivouac of the location service for the telegraphic line, during the dry season



fallen over towards the bank of the river, there he was with his arrow in hand amusing himself fishing. I had not the pleasure of seeing him, not even from afar off, because with the noise which our craft made and the shouts of Antonio Corrêa, the prowman of the sighting canoe crying out to call my attention, he was disturbed and interned himself swiftly into the woods. At the point where he was seen I landed. I beat about the bush, but saw nothing except a few sticks broken here and there. A little before we found an old resting place of the indians whose stakes had been cut with a blunt knife; on the following day we saw a cluster of woods also old, the trees of which had been cut with a stone axe.

This was the first encounter noted by Lieut. Vasconcellos, even before that of the Cravary; but after passing the mouth of this river, another one took place, which is told by that officier in the following words :

« The signs of indians, limited until then almost exclusively to the encounter of the fisherman, were becoming more frequent and more recent, and we noted that all of them used our implements. On the 19th, we bivouacked on the right bank in a large and not very old camp belonging to them and where they passed some time occupied in hunting and fishing, for behind the bank and to a great extent there is a lagoon, most certainly rich in fish and wild ducks of which we saw various specimens. We were, in fact, not far from the indians and the most interesting episode of the whole expedition was about to commence on the following day in which we camped on the left bank at almost 317 kilometres

from Passo da Linha and 108 from the Juruena, well in front of a largely inhabited village, overlooking the river, on the top of a small hill.

« We had effected 12 kilometres of* survey, when those in the sighting canoe were aroused by shouts and laughter coming from the indians who further down were amusing themselves bathing. We proceeded to the front one more station, in order to get closer up, we interrupted the work we were doing, and pronouncing some Nhambiquara words which occurred to us at the time, we went on rowing down, with the intention of selecting a spot suitable for our bivouac, inasmuch as our desire was then entirely to enter into friendly relationship with those poor people. We were very fortunate in our purpose, for as we effected our crossing over to the left bank, we immediately caught sight of a clearing on that bank, in front of the landing stage of the *maloca* and where the indians were still amusing themselves. Taken unawares and not suspecting an importune visit, above all coming by water, and still more from up stream, they never even noticed that we were near them.

« We announced our presence. As soon as they heard our first yell, they naturally saw our canoes and became absolutely silent. If it were not for the smoke which came from the *maloca* and rose above the wood, and still more the thatched roof of the hut, which could only be seen from afar through the coping of the cluster of trees, no one passing by that spot at that moment would suppose that below each tree a human heart was throbbing.



Photo. Com. Rondon

Conferencias

**Second Lieutenant Vicente de Paulo Teixeira
da Fonseca Vasconcellos**

Chief of the exploration and topographical surveying party
of the river Sangue

« Having terminated the first work of the installation of our camp I took a canoe manned by three men, and we went to make a small reconnoissance down stream, with the intention above all of ascertaining as to whether we could get a better view of the hut.

« We had descended, a little more or less 150 metres, when we saw on the surface of the water hugging the right bank at a small landing stage, a *ubá* (*), which was flooded. We directed ourselves to this spot, in order to examine more carefully this primitive craft used by the indians, and which consists of a big piece of the bark of a tree, the extremities being turned up, to form the bow and the stern. A few stays of wood across same in its width in order to avoid the bark doubling to, and nothing more. It is in fact perfectly identical to those used by the Parnauats.

« Having made this short examination of the *ubá*, and as we verified that the *maloca* was entirely hidden by the trees, we decided to go up stream hugging the right bank, to see whether we could discover something new. The canoemen had scarcely given their first strokes to their paddles, when behold two arrows whistled past our ears one after the other, fortunately they missed their mark and were lost in the river.

« The fright which we underwent was not small, and I believe that the canoemen never paddled so quickly, so much so that they almost swamped the canoe, which being very heavily

(*) Vide Glossary.

laden did not respond to the haste which we had to gain the opposite bank. Those who had remained in the bivouac and who had not lost sight of us in that evolution were observing everything and became alarmed, but they could see that the arrows had passed over our heads without hitting us. On arriving at the bivouac, we left for our canoes and recommenced our shouts. The reply obtained however was always the same : silence.

« We then resolved to make a new attempt. This time we would go to their landing stage opposite ours, and there we would leave axes and short swords, for by this means they would see that our intentions were still pacific, in spite of the attack which we had suffered, and that they had nothing to fear from us. We took these with us, and directed ourselves carefully towards the bank of the river. Still on this occasion we were not well received ; on approaching the landing stage, two more arrows were shot at us. Fortunately, like the first ones, they missed their target. We returned hastily to our bivouac, without having succeeded, once again, to collect the arrows which were immediately carried away by the current. Some moments after this second unsuccessful attempt, the indians allowed themselves to be finally seen at various points on the bank of the river, richly adorned, with their feather garments of many colours amongst which predominated those of the *araras*, they were armed with bows and handfulls of arrows and yelled out similarly to the shouts which we had used to call them, imitating us perfectly.

« We immediately directed ourselves to the

landing stage ; from the canoes we replied to the yells of the indians ; and in a very short space of time we became familiarized and laughed together, mocking each other, imitating the song and chirps of well known birds. In a short time we were, both parties, in frank conversation, in which one repeated what the other said and nobody understood the other.

« As this was going on one could hear in the *maloca* a nasal chant of many voices, accompanied by regular stamping of feet and the sounds of some primitive instrument. Of all this show, and having in view the previous occurrences we concluded that that was a war chant, notwithstanding the gentle manner with which some and above all one, which we supposed to be the chief, endeavoured to imitate what we said. However, a few moments having passed, he who appeared to us to be the chief, having beside him a woman, took a few steps in front of the group which encircled him, and arriving as far as the brink of the river, where he remained entirely uncovered, presented us with his son, a boy of from 4 to 5 years of age, holding him by his wrists and lifting him up from the ground several times. We were delighted with that gest, interpreting it as being a promise of firm peace, and we immediately took to the canoe. We approximated ourselves little by little ; whilst we were manoeuvring and paddling we showed them the axes and the swords without interrupting the conversation which both parties were holding most enthusiastically. We did not lose their slightest movement, at least that which we could devise, because in spite of

everything we did, they, as soon as we got into the canoes, retired a little behind the trees. We were about 30 metres from them, when they again aimed and shot off their arrows. As on previous occasions, we manoeuvred as quickly as possible, turning our canoes towards our bivouac.

« On this occasion the arrows shot off were four in number, of which we were able to get one. In view of these happenings we found it prudent to attempt nothing further on that day. We therefore agreed to let the following day pass to see whether we would be more fortunate later on.

« Now dusk was falling, and we could do nothing better than contemplate them through our field glasses. They are good looking men and strongly built. I think there is no doubt that they are Nhambiquaras. They use arrows like theirs, with the difference that the directing feathers are disposed in the form of a screw. The men are decked for their defence and dress with hangings made out of fibre; the women carry nothing more than necklaces and bracelets, which are also used by the men. They paint themselves: one I saw with three lines of white and black dye on his wrists, and another had his face all smeared with white.

«« We counted in all twelve men, perfectly armed and adorned, we only saw one indian woman, the one that accompanied her husband when he presented us with the boy; she was young, beautiful, a good figure and tall; the others, the old women and the children formed a chorus, which we could hear. We also observed a small plantation, close to the

maloca, for we distinguished between the openings and the copings of the trees and above the hill, banana trees and the foliage of the manioc plant. Of the hut we could see nothing, not even the shape.

The project of remaining in the bivouac of the village on the 21st for the exclusive purpose of establishing friendly relations with these poor people was only a hope. After the third and last attempt, they became still more amiable; they repeated what we said and laughed heartily; they went to fetch a shirt with which they dressed the boy and with a sword, the same as ours, opened a small landing place, cutting the branches which descended almost to the surface of the water and there they stretched out a net. We thought that they wished to please us, showing us articles which had belonged to us. However, they were up to a new stratagem, destined to distract us and inspire us with confidence. And the proof of this we had on the morning of the 21st.

« During the night they crossed over to our side, using for this purpose an *ubá*, and completely enveloped us, awaiting for the dawn of the next day in order to open the attack. As usual, at 5.0 a.m. we commenced work. We directed ourselves to the canoes and cried out calling various times, but in vain. We thought that they were still asleep owing to the cold weather and to the darkness and mist which was falling. Withal, we did not fail to take notice of their silence which caused us suspicion. Far from us was it to be supposed that we were surrounded by them. We returned under cover, and made coffee. At this moment, behold there

down the camp without loss of time and to proceed on the topographical service.

« While the necessary dressing was being done, and the canoes were being loaded, we made a small inspection of the surroundings verifying the position occupied by the assailants on the occasion of the attack.

« We then saw that they were short of entering the small area of our bivouac, for the line of attack arrived at less than 30 metres from our tents. Some of them frightened at the shots, dropped their arrows and one of them also his bow.

« These were collected by us, many others being lost in the river. The plan of attack was well conceived: — above, below and from one of the sides, they placed themselves frankly resolved to annihilate us; on the other side was the river. In case any one wished to escape by same, he could not go very far because above and below there were groups of warriors as well as on the opposite bank where it would be madness to procure refuge.

« The banks were therefore protected, no one could consequently get close to them without risking his life. We remained therefore deprived of proceeding with the survey with the telemeter. We had to use, in order to calculate our distances, the speed of our canoes. I sent the ferry-raft down with the sick man and following it the sighting canoe, whilst I went up stream with mine as far as the point at which we had left service on the previous day where we recommenced the survey.

« The indians gave no further signs of themselves; they let the two canoes pass by; but when

our turn came, on facing the mouth of a small igarapé, existing a few metres below the bivouac, they fired a shower of arrows over us. We then saw at this point and close up to the opening produced by the bar of the igarapé, the group which had attacked us, also the *ubá*. In order to calm the crew of the canoe, and above all to avoid that some of them frightened should throw themselves into the water, I was obliged to fire two shots into the air.

« The indians with this did not seem to worry themselves very much. They commenced to mock our exclamations calling us and laughing heartily at our situation.

« For safety's sake, we carried out this work midstream by means of the velocity and thus continued for eight kilometres, at the end of which we found an island to which we moored; we then met together and reorganized our march to continue from there with the survey by telemeters...

« Before abandoning the camp of the village we left as a token of our farewell some axes and swords placed on a small platform. »

From the narrative of this interesting episode, in which one can see at the same time a striking example of the methods and procedure adopted by the Telegraph Lines Commission in their relations with the indigenous tribes, found in the wilds in which it had to operate, and the calm and resolute courage of the officer who directed the action, impressing it with a seal of such high chivalry, it must be inferred that Lieut. Vasconcellos supposed

that the indians of the lower course of the river Sangue belonged to the Nhambiquara nation.

Such a supposition however must be rejected, not only from the fact that Lieut. Vasconcellos himself had not heard from those indians, a single word of the Nhambiquara vocabulary as also, and principally by the verification that the indians in question possessed habits and customs which absolutely do not coincide with those of our known dwellers of the zone comprised between the Juruena, the Comemoração de Floriano and the headwaters of the Roosevelt. Besides the difference noted in the course of the narrative with regard to the manner of placing the directing feathers for the flight of the arrows, there is yet that which results from the the use of the net and of the practice of navigation. It is already known that the Nhambiquaras lay themselves down to sleep directly on the ground, without any other care than that of selecting for this purpose, places covered with sand, and that for their transports by water, which are limited to simple passing from one bank to the other of the rivers, they use nothing more than some floaters made out of the burity palm, with which they help their swimming.

Contrary to this the dwellers of the river Sangue sleep in hammocks, which they must necessarily make themselves; and furthermore, they know how to build *ubás* and to utilize them. From this last feature we are led to believe that they belong to the ethnographic group of the Tupys, and possess as it is known a civilization much more advanced than the Gês. We cannot, at present, determine the tribe from which these may have separated,

neither the epoch in which this may have taken place; but we are certain that with them occurred the same thing as with the Parnauats, who are part of the old Tupy tribe which, in times gone by, interned itself in the wilderness occupied by nations of another origin, and there settled and held itself aloof from the other people belonging to an entirely different civilization to theirs.

To many other facts of great geographic importance contained in the report of Lieut. Vasconcellos on the valley of the river Sangue, I will not refer on this occasion for absolute want of time. I will only mention that from the collection of the samples of rocks brought from there by this officer, the geologist Dr. Euzebio de Oliveira, who has studied same, concluded that the arenitic formation of the plateau dos Parecis rests, before the mouth of the river in question, on crystalline and eruptive rocks.

In order to terminate the description of the eastern watershed of the basin of the Juruena, there only remains for us to consider the Arinos, and its tributaries.

It is a well known fact, that since the colonial days, the navigation of this river was studied, in the hope of utilizing it, together with the Tapajoz, as a means of establishing direct communication between Matto-Grosso and Pará. The first attempt was made, in 1746 by the Sargento Mór João de Souza Azevedo; who having ascended the Paraguay, and afterwards the Sepotuba, portaged his canoes by land, until he arrived at a river to which he gave the name of Sumidouro, owing to the fact that a portion of its respective bed had sunk beneath

a mound of a width of three kilometres. From the upper part of this tunnel, the intrepid Portuguese explorer let loose his canoes with wide borders at the discretion of the current by which they were carried and caused them to appear intact, according to the statement of Ricardo Franco, on the other side of the mound. From there, Souza Azevedo continued to descend the Sumidouro, which took him to the Arinos and this river led him to the Juruena and to the Tapajoz, whence he penetrated into the Amazon and arrived at Belem do Pará.

But the difficulties offered to navigation in the section of the Tapajoz where the waterfalls exist are of such importance that Souza Azevedo did not attempt to return by the same way; and in order to return from Belem to Matto-Grosso he preferred the longer route by the Amazon, Madeira and Guaporé.

The corporal Manoel Gomes de Souza, in 1805, instructed by the Governor Alves Menezes, effected for the second time this same journey, but like his predecessor, he considered the route impracticable for the return journey.

It was only in 1812, that the Arinos and the Tapajoz were navigated successively up and down, by Antonio Thomé de Souza and Miguel João de Souza, who had the glory of being the initiators of this means of internal communication in our country; the traffic however, after continuing for some time, ceased completely.

Beyond this navigation of purely commercial purposes, the Arinos and the Tapajoz were also visited by the expedition of Count de Landsdorf, who studied both scientifically in 1827, and that of

the geographer William Chandless, which took place in 1861. But the elements collected by the first were never published and those of the second, whilst constituting the essence of all the information which we possessed up to that time with regard to these rivers, did not however, comprise the total course of the Arinos, neither did they give a regular topographical plan of same and still less of its levels.

As it was necessary to eliminate from the geography of our country such a considerable failing, I commissioned Lieut. Julio Caetano Horta Barbosa, in 1914, to organize an expeditionary party, with which he should leave Cuyabá for the headwaters of the Arinos and descend this river, exploring it carefully, so as to give us a complete and rigorous description of its entire course. Having organised a party with 14 workmen, a physician, Dr. João Meira, and a naturalist, Mr. João Geraldo Kuhlman, Lieut. Julio Caetano left the capital of Matto-Grosso on the 17th of October of last year, in the direction of Brotas, Guia and Rosario, which as we know are situated in the valley of the river Cuyabá, to the east of the Serra do Tombador.

After Rosario, but before Diamantino, the Telegraph Line, which the members of the expedition were following, crosses the headwaters of the ribeirão da Serragem, a tributary of the right bank of the Cuyabá. It was from the bridge over this crossing that Lieut. Julio Caetano commenced the studies with which he was entrusted and the first part of which consisted in reconnoitring the headwaters of this river. After having passed the Quiebó and the Cuyabázinho, its affluents of the

right bank, the expedition crossed the two principal feeders of the Cuyabá respectively called Cuyabá da Larga and Cuyabá do Bonito, the point of confluence of which is at a distance of 196.600 metres from the bridge over the ribeirão da Serragem. The headwaters of these two feeders run in opposite directions: those of the first with the rivers Genipapeiro and Piallas feeder of the Telles Pires, and those of the second, with the river Beija-flôr, an affluent of the Telles Pires and the river Novo, the principal branch of the Arinos.

From the valley of the Cuyabá do Bonito Lieut. Julio Caetano passed over to that of the river Telles Pires where he went over the polygon determined by the headwaters known as Corrego Fundo, Chapadão, Beija-flôr, Mutum, Verde and others, and finally arrived on the 9th of October, at the plain whence flows the river Novo.

Proceeding with the studies, still by land, Lieut. Julio Caetano reached the point of the confluence of this river with the branch which comes, right from the source, with the name of Arinos, and on taking the necessary measurements, he found for this river a width of 30 metres and a discharge per second of 3938 litres; and for the former a width of 28 metres and a discharge of 30.744 litres.

The considerable superiority of this last volume, combined with a larger extension and the direction of the course, which prolongs that of the main river, give to the river Novo the necessary characteristics for it to be considered not a simple affluent of the other branch, but the superior part of the main collector of this basin.

Against the above mentioned elements, decisive in the choice of the principal branch of a river, the anthropogeographical consideration which consists in the fact that the dwellers of the locality usually point out the other branch as being the preponderant cannot prevail, and it became however necessary to make in the books and maps the correction now indicated by these data.

From the bridge over the ribeirão da Serragem as far as the confluence of the two branches of the Arinos, the topographical survey revealed a journey of 447.000 metres. There the exploration by the river was initiated, and was continued as far as the entrance into the Juruena.

From the bulk of the work done resulted not only the extension of the Arinos becoming known, which is 828.364 metres, but also all the affluents of both banks, its waterfalls and rapids, the barometric levelling of its bed, the geographical coordinates, obtained from astronomical observations, from 5 known points of its course, the constitution of its flora and that of its soil studied by Dr. Eubezio de Oliveira on samples of rock brought to this capital by Lieut. Julio Caetano.

Of the affluents noted I will mention the following as they are the most important.

From the right bank : the ribeirão da Prata ; the river dos Patos, whose width at the mouth is 23,5 metres, discharging a volume of 2686 metres per second ; the Marapó or S. Cosme, with a width of 30 metres, a volume of 30.137 litres and at whose mouth Lieut. Julio Caetano registered the last recent vestiges which he had been encountering from the



Photo. Com. Rondon

Conferencias

Lieutenant Julio Caetano Horta Barbosa

Chief of the exploration and the topographical surveying party
of the river Ikê and of the geographical surveying party
of the river Arinos

headwaters, of the presence of indians, probably the Bacahiris; the Tapauninha, with a width of 18 metres and a volume of 12.600 litros; the Pary or S. Miguel, having a width of 27,5 metres at the mouth and discharging 32.503 litres; the Peixes, or as the Apiacás called it, the Itamiamy, of 110 metres width, with a volume of 249.043 litres and finally, a ribeirão to which Lieut. Julio Caetano gave the name of Apiacás, below the falls called by Antonio Thomé, Tres Irmãs (Three Sisters) as, according to his words, it is « divided into three interrupted streams ».

From the left bank the Arinos received: the river Preto; whose mouth measures 20 metres in width and whose discharge is 8033 litres per second: the Telegraph Line passes close to the headwaters feeding this river; the Sumidouro, of which Lieut. Julio Caetano ascended and surveyed a section of 36.854 metres, and measured the mouth and the volume, finding for the first, a width of 55 metres and for the second 213.554 litres; the headwaters of this river is cut by the telegraph line after passing the Parecis Station at a point in which it already presents itself with a width of 10 metres; the river Parecis, with a width of 37 metres at the mouth; the Tapanhuna, with a width of 37 metres and a volume of 78.742 litres; and finally the Sararé, whose mouth is to be found almost immediately after the largest waterfall of the Arinos, called by Antonio Thomé, Recife Grande.

The navigation for the study of the Arinos, begun on the 29th of November, only terminated on the 29th of December, the date on which Lieut.

Julio Caetona's expedition entered the Juruena and commenced to descend same, facing the troubles and dangers of the section of the waterfalls, which made it practically impossible to use this river above the Tapajóz, as a means of communication. In order to give an example of the nature of these obstacles, I will cite at random, the following passage from Lieut. Julio Caetano's report referring to one of these :

« On the 3rd we marched fairly well up to 12 o'clock ; we then entered over *travessões* and rapids which are to be found above the S. João da Barra waterfall. At 1,25 p.m. we were 1471 metres from the port where we were to rest, at the crest of the waterfall ; however it was only at 6 o'clock in the evening that we arrived there.

« This is a very dangerous section owing to the condition of the river at the time. The waters rushed wildly and were very agitated, making a terrible noise. We had to pass first clinging on to the rocks which form a strong scarp on the left bank and afterwards, holding on to a rope held by a man who jumped from one boulder to the other, whilst another with a long rod kept the canoes, impelled by the waters, from beating against the rocks. Later this became impossible and then whilst some with hooks from the inside of the canoes searched for some salients on the slippery rocks to secure same and not let the canoes precipitate themselves below with the current, others with rods avoided there being knocked up against the rocks. After a number of frights and much labour, we succeeded at last in arriving at the place where we were to stop, so as to

transport the baggage by land to below the waterfalls, which we did, having previously tied up the empty canoes, by the bow and stern, with short hawsers. This work was only concluded after 8 p.m. under a downfall of rain ; for the cargo had to be carried over a mound of almost 10 metres in height and of difficult access.

« On the following day we ascertained that the hawsers, which were holding the barges, had given way during the night. Fortunately, of this craft one barge was found below the waterfall in calm water and the loss of the other made no great difference to us for the consumption of the victuals had greatly diminished our baggage. »

We will still cite the following passage from the same report :

« Next to the waterfall of Santa Iria there is that of Santa Ursula, more dangerous still than the previous one and where the Canal do Inferno is to be found.

« The river passed through a canyon, and below in a short curve closely confined between rocks of from 7 to 10 metres in height, the waters beat against the boulders of the banks and form large whirlpools which twirl one after the other, and in the entire width of the river they continually fall to pieces with a thundering noise leaving on the surface the whitish surf of stormy waters. This is the Misericordia waterfall, formed by enormous and dangerous curves and rapids.

« The banks are composed of high rocks that only leave a width of 90 metres for the passage of all that volume of water which, above the Salto

Augusto, extends itself on an average with a width of more than one kilometre! »

Overcoming all the difficulties of navigation in such turbulent waters, the members of the Expedition arrived on the 18th of January of the current year at the Revenue Office of the State of Matto-Grosso, immediately below the bar of the river Telles Pires.

Thence Lieut. Julio Caetano, with five men of his expedition directed himself to the port of Airy Velho, on the Tapajoz, for the purpose of reconnoitring and surveying a portage road to the river Sucundury. Here are the words in which this officer himself refers to the objective of this undertaking and the result of his studies :

« Some of the dwellers on the banks of the Tapajoz were very desirous of opening up, by this portage road, a route for automobiles so as to get round the big falls of the Tapajoz. A similar road would bring enormous advantage to the industrious people of the São Manoel and the Upper Tapajoz ; but this would only be convenient if it were inexpensive, if it came out below all the waterfalls of the Sucundury and if at this point this river were opened to navigation during the whole of the year. None of these conditions existed however.

« The country is very mountainous, full of small rivers and swamps and would render the construction of the proposed road extremely expensive, and besides this, the bar of the Merity is above the last waterfalls of the Sucundury, which in its turn is not navigable during the whole of the year, except by small craft, and especially now that the

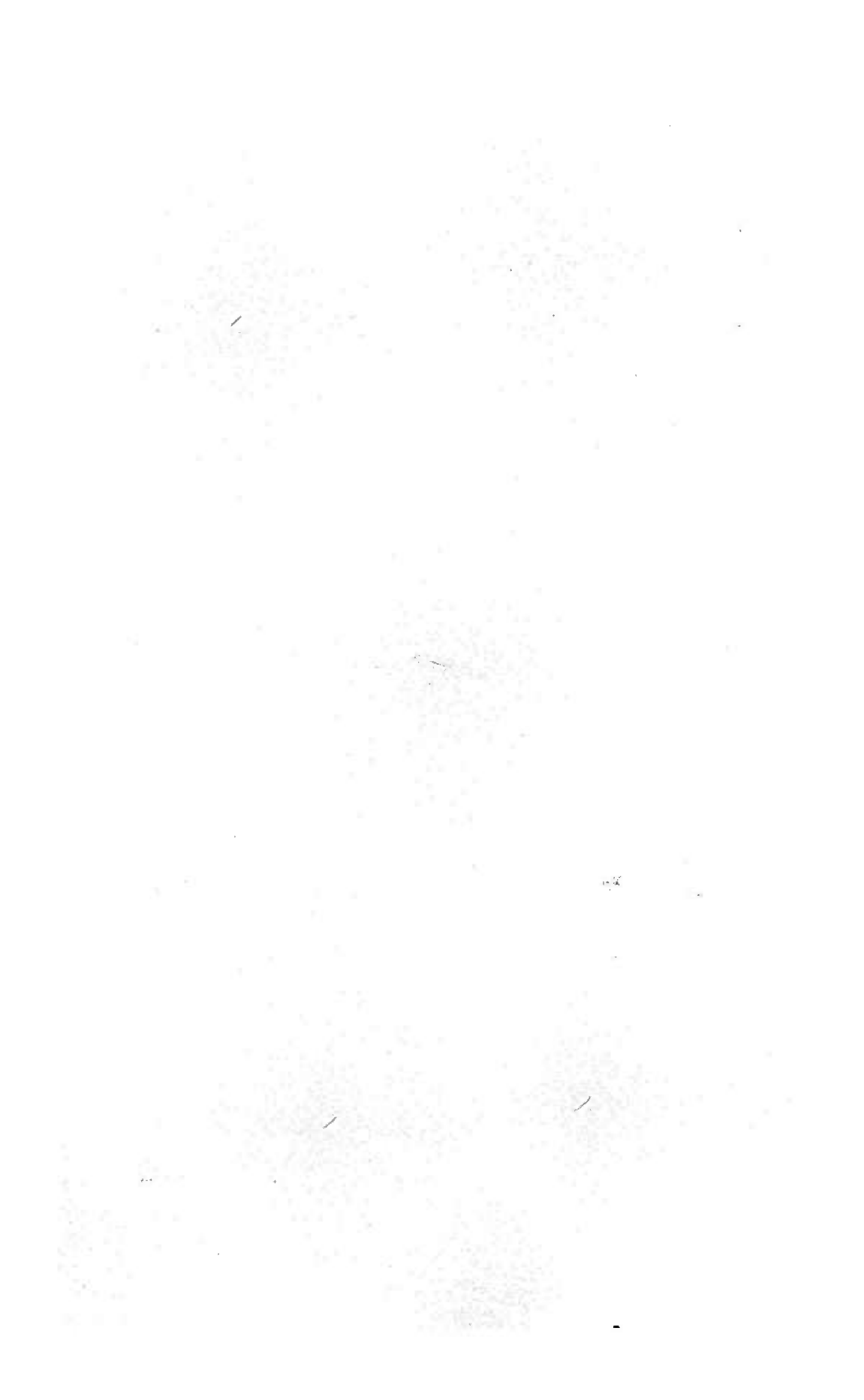


Photo. Com. Rondon

Conferencias

Lieutenant Octavio Felix Ferreira da Silva

Chief of the topographical surveying party of the river Jamary



navigation of the Tapajoz is being carried out in gasoline motor launches, with great economy of time, it appears to be more economical and advantageous to adapt the traffic of automobiles to the cart road already existing between Pimental and Bella Vista, with an extension of 17.700 metres, or the construction of a narrow gauge railway in this section, the only one which cannot be crossed by the craft. »

The study and survey of the portage road in question, which could not be carried out in 1911 by a European explorer whose name has on many occasions been cited in the newspapers of this Capital, was easily executed in the space of 12 days by Lieut. Julio Caetano. This work measured 67.200 metres, divided into two sections : the first of 49.700 metres extends from the port of Airy Velho to the igarapé Merity, whose mouth gave a width of 15 metres and a volume of 1.610 litres of water ; and the second, of 17.300 metres, joins the above mentioned igarapé to the river Sucundury. On the completion of this service the members of the Arinos expedition continued to descend the Tapajoz up to the Porto de S. Luiz, where they arrived on the 15th of February and, from there, left for the city of Santarem, embarking in a steamer of the regular service of the Amazonas-Tapajoz line.

Taken on the whole, the work carried out by Lieut. Julio Caetano on this expedition, comprised, of topographical survey alone, the extension, of 2.129 kilometres 923 metres, of which a part, to the extent of a little less than 514 kilometres, was done on foot and all the rest by the river. This enormous effort finished at the end of four months, starting

from the day on which he left the Capital of Matto-Grosso ; and he was so fortunate that it did not cost the life nor the health of a single member of the expedition.

With the conclusion of this undertaking the Telegraph Lines Commission set the last touch to the work which it had initiated in 1907, that is to say, of discovering and studying the river Juruena and the whole hydrographic basin which depends upon it.

Considered however from a geographical point of view, this work seemed to us to require an important complement. Really, the river to which we give the name of Juruena is the same as that which after receiving its contribution from the Telles Pires continues to descend to the Amazon with the name of Tapajoz. One is a continuation of the other ; and probably the diversity of the names resulted only from the fact that the Portuguese discoverers had arrived at this great fluvial artery from the lower and from the upper part of its course. Those who came from the Amazon, encountered for the first time its mouth, naturally calling it after the name which the indians on the banks of the Rio Mar, know it. Others however, had to guide themselves according to the information of the inhabitants of the highlands, from which it springs and from whom probably it received a new name.

But, whichever may be the origin and the reason of this duplicity of names — and it is certain that the course Juruena-Tapajóz forms one only geographical feature, — it continues intact just as much from a hydrographical as from a geological and botanical point of view.

The description of the one, therefore, should never be considered complete unless it comprised that of the other.

We had, really, terminated the first; but we did not consider that we could give our work as entirely finished whilst essential elements with regard to the second were wanting. Moreover, even if we wished to see in the Juruena a simple feeder of the Tapajóz, without any other name except that of its former S. Manoel, it is clear that the study of this should accompany the study of the other, as a necessary complement of the plan which we were desirous of organizing.

Having therefore decided to proceed with the exploration and the regular survey of the river Telles Pires, in February last Lieut. Antonio Pyrineus de Souza left from Tapirapoan at the head of an expeditionary column composed of 6 men, a physician, Dr. Alberto Moore and a naturalist, Mr. Antenor Pires. Taking the direction of the telegraph station of Affonsos, from the branch of the Barra dos Bugres the expedition ascended to the Chapadão dos Parecis passed by the place called Arroz sem Sal, to which I alluded in my first lecture in 1911, and from there reached the Ribeirão do Estivado, the direct affluent from the left bank of the Arinos, which is cut by the telegraph line from Cuyabá to the Madeira.

From Estivado he continued by the divisor of the waters of the Arinos and of the Cuyabá, joining

his march to that of Lieut. Julio Caetano; and having reached the headwaters of the river Novo passed from there across a *Chapadão* of black soil covered by a *cerrado* to the headwaters of the river Verde at a distance of two kilometres from the above, and already belonging to the hydrographical basin of the river Telles Pires.

From there commenced the studies which were the object of Lieut. Pyrineus's expedition.

The river Telles Pires, for which the topographical survey registered a total extension of 1386 kilometres from the last headwaters of the principal one of its feeders up to the point of the confluence with the Juruena, is the result of the union of two branches: the more important and the more northerly one rises in the Serra do Azul, under the name of Paranatinga, which it keeps during its course of 124 kilometres at the end of which it arrives with a width of 34 metres; its greatest depth being 5.5 metres and its volume 72 cubic metres discharged every second. There it meets or rather receives the other branch to which I propose it should conserve its old name of S. Manoel, taken from the trunk to which will be applied the name of the unfortunate Capt. Telles Pires.

As a matter of fact, the S. Manoel is nothing more or less than an affluent from the left bank of the Paranatinga; its course measures scarcely 74 kilometres in extension; its width at the mouth is 25 metres; its greatest depth 3.5 metres and the discharge, 42 cubic metres.

The river Verde, at whose headwaters Lieut. Pyrineus arrived after leaving those of the Novo,

is a tributary from the left bank of the Telles Pires. From there the members of the Expedition left for the confluence of the S. Manoel with the Paranatinga, which they ascended in *pirogas* (canoes) made out of the bark of the Jatobá, obtained in the indian villages of the Bacahiris, established at the port used by Von den Stein and by Colonel Paulo Castro in order to cross the above-mentioned river towards the Xingú.

Thus assisted by the indians, Lieut. Pyrineus could get as far as the last headwaters of the Paranatinga, at a place where the dwellers of the wilds of this river do not go, out of fear of meeting the Caiapós, who they suppose live there, and of whom, they are afraid.

Descending afterwards from these headwaters to the mouth, Lieut. Pyrineus noted all the special features of the river Telles Pires and proceeded with the necessary work for the future drawing of the topographical chart, the description of its fauna, forests and soil.

The number of affluents registered and measured in the whole length of its course reaches 25, of which many are still without names. Of these the most important are: from the right bank, the river Caiopó, with a volume of 62 cubic metres and a width of 30 metres; the Celeste, 751 kilometres from the headwaters of the Paranatinga with a width of 33 metres and an average discharge of 33 cubic metres; the Peixoto de Azevedo, whose name was given by Lieut. Pyrineus in homage to the memory of the first explorer of the former S. Manoel, with a width of 42 metres, and a discharge of 17 cubic

metres ; it is a river of dark and motionless waters ; the Crystallino, named for the first time, with a width of 55 metres, and a discharge of 154 cubic metres ; it is 1019 kilometres from the headwaters of the Paranatinga ; the S. Benedicto, with a width of 102 metres, and a volume of 103 cubic metres, the Cururú, with a width of 75 metres at the mouth, and a volume of 89.

On the left bank : the river Verde, 656 kilometres from the headwaters of the Paranatinga, with 90 metres at the mouth and 202 cubic metres discharge ; it is the largest of the feeders of the Telles Pires.

With regard to the waterfalls, Lieut. Pyrineus noted and described 45, of which 13 exist in the river Paranatinga ; and with regard to absolute falls, they are not more than three in number.

The first called Maggessi, is at 339 kilometres from the principal headwaters, and is formed by three successive falls, giving a total change of level of 13^m.5. Below this, on the left bank, there is a grotto which was visited by Lieut. Pyrineus who then found there the inscription with the name Telles and the date of 1889, carved in a stone.

Above the fall the width of the river is 102 metres and its depth almost reaches six and a half ; after it however, these measures are increased respectively to 150 and to 17 metres ; this height having been found in one of the two wells which are formed there ; at this place Lieut. Pyrineus fished a *pirahya* which measured one metre and ninety centimetres in length.

Eleven kilometres after passing the Sete

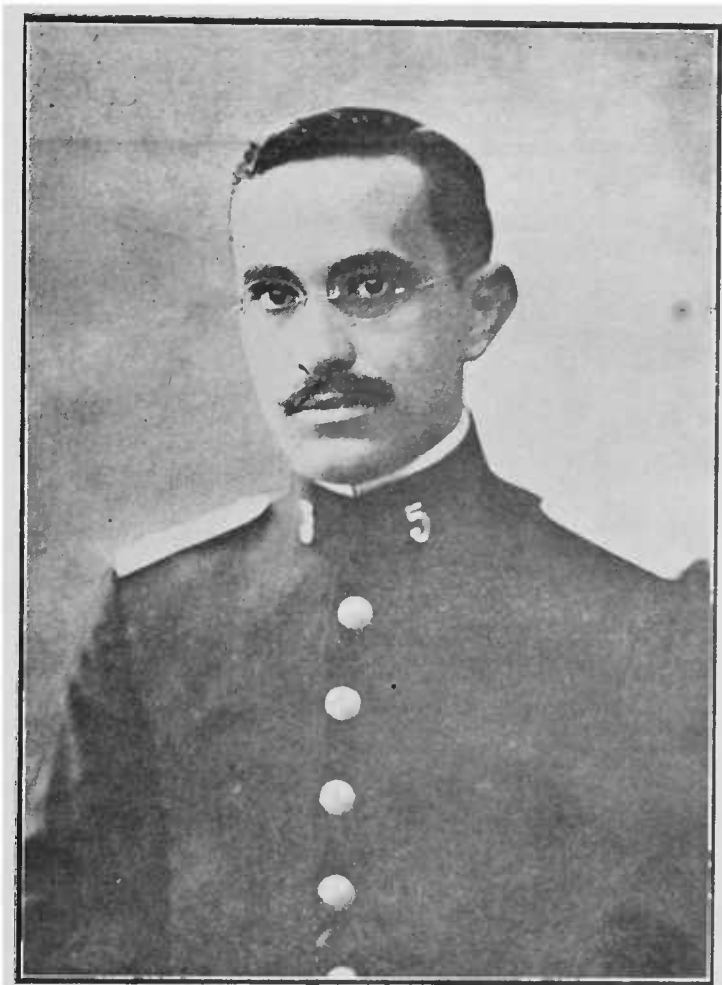
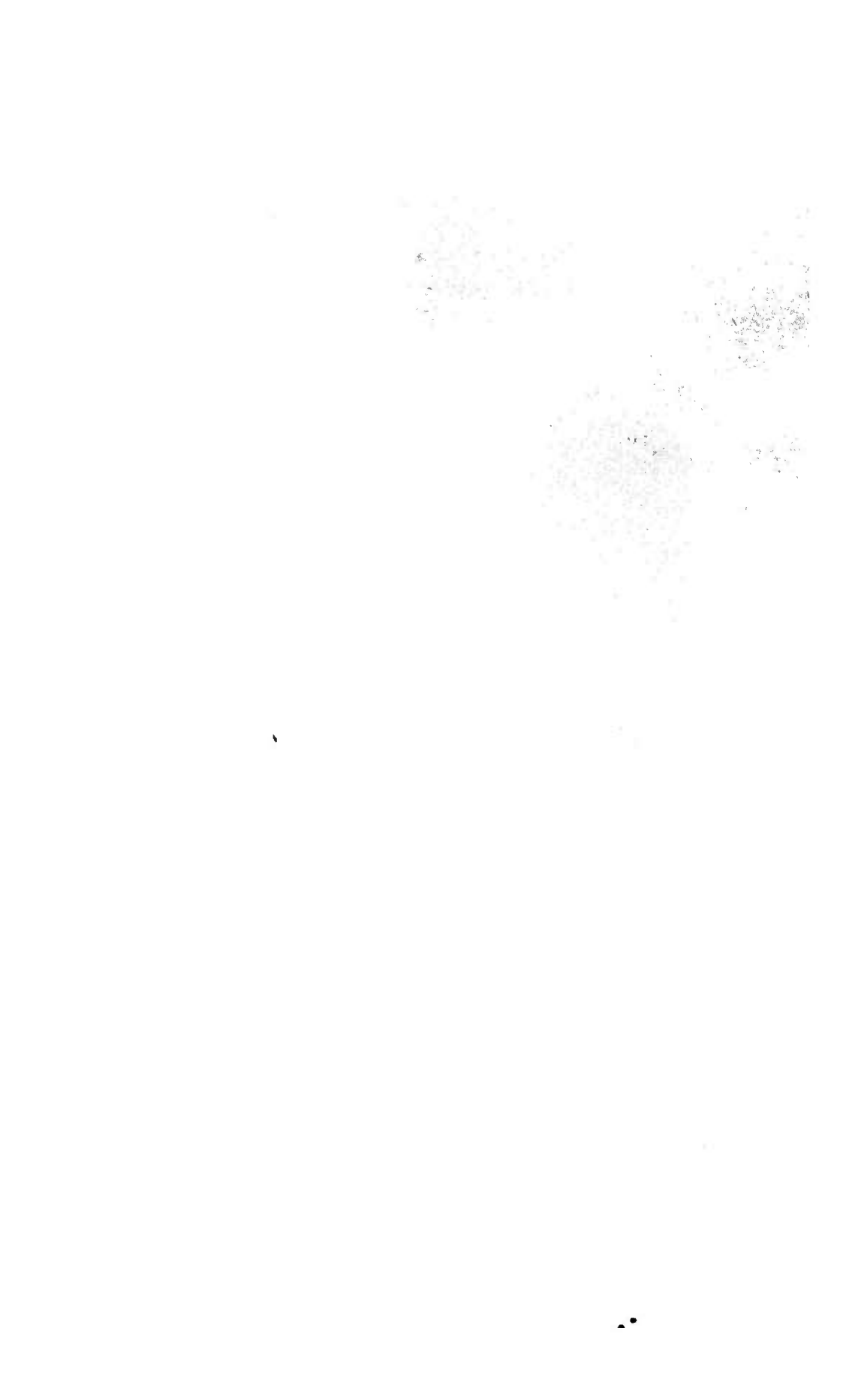


Photo. Com. Rondon

Conferencias

Lieutenant Antonio Pyrineus de Sousa

Chief of the exploration and surveying parties of the river Jarú (affluent of the Gy) and of the topographical survey of the rivers Paranatinga and Telles Pires (formerly S. Manoel)



Quedas, Lieut. Pyrineus's expedition met the third and last fall of the river which he was exploring. This is the old Salto Tavares, having 12 successive terraces, which reach out to an extension of four kilometres forming the sole serious obstacle against navigation : it does not however render it impossible.

This is the fall where, on the 3rd of May 1890, the shipwreck and death of the unfortunate Captain Antonio Lourenço Telles Pires occurred, and whose expedition lost at this place all the resources which it possessed, and which rendered it impossible for the then Lieut. Oscar de Miranda, adjutant and devoted companion of that chief to proceed on the journey and to come out on the Tapajoz. We all still remember quite well, that sad catastrophe and the martyrdom undergone at the time by the survivors, thrown on the banks of the river, deprived of any means of action, for lack of implements, which had been lost, and exhausted by fever and by the horrors of hunger. We all remember further, that it was only due to the diligent solicitude of another officier of our army, a friend and companion of the above named, the present General Ximeno Villeroy, that we are indebted for having been spared the extra sorrow of which we were threatened and of which he saved us by sending out from Manáos, where he had assumed the government of the State as the Delegate of the Provisional Government of the Republic recently proclaimed in our Country, a rescue expedition which after ascending the Tapajoz and the old São Manoel, succeeded in arriving in time to snatch from death the few still surviving members of the unfortunate expedition.

At. 769 kilometres below this, the river Telles Pires forms another fall, known under the name of Sete Quedas, since the days of the voyage of exploration of the Lieutenant of the Militia Peixoto de Azevedo: the canoes are able to cross this fall easily, for it does not offer any difficulty to navigation.

If the appeal which I have addressed to you, Mr. President of the Geographical Society and to your worthy co-associates, in the sense that you should accept as your own and recommend to the geographers of our Country, the idea of rendering homage to the memory of the much regretted Captain Telles Pires, should meet with your approval, this fall will henceforward be honoured in being designated by the illustrious name of Oscar de Miranda.

Leaving out other information of geographical value, collected by the expedition under Lieut. Pyrineus, because for this the time at my disposal would not be sufficient, I shall make a rapid allusion to the indigenous tribes found on the river Telles Pires.

In the first place I shall cite the Cayabis although this primacy does not pertain to them after the chronological order in which they were met. It was only after passing the mouth of the river Verde and before the Falls of the Sete Quedas on the waterfalls called Coatá, that the first village of these indians was observed; but from this point downwards five more were noted.

Lieut. Pyrineus informs me that the Cayabis are strong indians fairly tall, good canoemen

and great planters of corn, monkey nuts, manioc, potatoes, and other useful plants such as cotton.

Neither the men nor the women use any sort of clothing ; they weave cotton to make their hammocks in which they sleep and the sashes, some narrow and short for their hips, which they use after the Nhambiquara fashion. They pierce their ears and use very interesting ear-rings. They allow their hair to grow and have the habit of tying it up at the back of the head ; the women pull out the hair on their bodies. They used to offer the produce of their plantations in exchange for axes (*apinacó*), matchettes (*apinim*) clothes, and principally for hats.

They are much afraid of fire arms, but are perhaps still more fearsome of being poisoned : it is certainly in order to avoid this danger that they rejected all the food which was offered to them by the expedition, always on the pretence that they were suffering from their teeth, notwithstanding that they possessed these in a magnificent condition.

« At first, says Lieut. Pyrineus, the Cayabis, afforded me a good reception ; but when the provision of axes and of matchettes was exhausted, they began to attack me at the falls and at other places difficult to cross. It was however sufficient to cause our guns to be fired, for them to run off and leave us in peace.

« After the waterfalls they attempted a night attack against our bivouac, probably armed with clubs ; I avoided it however, by transporting myself at night, with all my personnel and baggage to the other side of the river.

« I had four assaults which I prudently avoided in order not to cause them any harm, and I endeavoured to make them understand that I was going to return bringing them *apinacós* (axes) and *apinim* (matchettes).

« On the night when I moved my camp, passing from one side to the other without being seen, I avoided a struggle which one of their chiefs wished to provoke entering into the water with his bow and arrows, and threatening with loud shouts : whilst he was given up to this mad bravado, from the interior of the woods on both sides the war cries became greater, coming from many men whom we did not see. On arriving at the opposite bank we tied up our canoes and remained in them awaiting events. In the morning, we perceived that the indians were penetrating into the abandoned camp and were beating all round it screaming, which served them more for the purpose of animating them rather than of frightening the adversary.

« They were certainly very much upset when they found out the trick which had been played upon them. »

Such are the episodes which occurred among the indians called Cayabis or Cajabis in Lieut. Pyrineus's expedition. Before, however, this officer had been in the villages of the Bacahirys, of whom he gives us the following information :

« Below the bars of the S. Manoel and of the Caiapó, I met the Bacahiry indians, who live there in three *malocas* : one belonging to the old Captain Antonino, who served as a guide to the German expedition to reach the headwaters of the Xingú ;

the other belonged to Captain Karutú, who two years ago had come from that river accompanied by a great number of indians, who had almost all died from influenza and *feitico*, on arrival at Telles Pires ; and finally the third, belonging to Capitão José Coroado, the son of the celebrated indian woman Rosa, who died in January 1913 in this same village.

« The Bacahirys, adds Lieut. Pyrineus, are half civilized and suffer a good deal from the bad treatment of the rubber tappers who explore their work in tapping rubber trees, in breeding cattle and on their plantations.

« They constantly make voyages to the Xingú in order to visit the villages of their tribe which exist there.

« On the Telles Pires, their number is small and the tendency is to their complete disappearance, in consequence of the slavery to which they are reduced by the rubber tappers and other dwellers on the river, who explore and vitiate them ».

Of all these facts, all of them equally interesting, there is one which requires special mention : that is the one which refers to the indian woman Rosa Borôro.

To the pen of a lady, the wife of General Mello Rego, we owe the fact of not having lost the remembrance of the great work rendered by that poor woman to her nation of origin, and also to the great part of the population of the former Province of Matto-Grosso, including that of the surroundings of Cuyabá.

For many years the Borôro tribe of the river S. Lourenço lived in open warfare against the civilized people, whom they hostilized in terrible attacks in the interior of their houses and establishments, killing many, disorganizing the traffic on the rivers and on the roads, and the work on numerous and important breeding estates where they played the greatest havoc.

For such evil, the President of the Province found no remedy except the organizing of a war of reprisal, having in view the extermination of the indians. The direction of the formidable beats which were then commenced, was entrusted to Lieut. Duarte, a brave and decided man, but incapable of liberating himself of the illusionary fascination which springs up from the idea that the value of physical force is absolute, to smooth over the disorders which arise amongst groups of human beings as the result of a different civilization, prejudices of race, letting loose of one's passions, in fact : that arise from the state of mind which conducted antiquity to place the foreigner and the enemy under the same heading.

One can easily imagine therefore to what point of cruelty arrived in a very short time the hostilities between the Borôros and the contingent commanded by Lieut. Duarte. War was thus raging and from day to day it took larger proportions and recommenced, when suddenly among the indians who were taken prisoners to Cuyabá and who lived there in masked slavery, a young girl, offered herself first and afterwards asked insistently to be permitted to accompany Lieut. Duarte's expedition in one of his

beats against the villages of her people. She promised to cause the war to cease, to save the rest of the persecuted nation and restore calm and quiet to the population of Cuyabá and to all the region ravaged by the raids of the warriors of the river S. Lourenço.

Received at first without attention, and afterwards with mistrust, the Borôro girl found a means, nevertheless, to persevere with such enthusiasm and fervour in this proposal, that she finally succeeded in overcoming the general lack of interest, and more still, the pride of those who considered themselves so immensely superior to her that it was difficult for them to admit the possibility of having to alter and to abandon their plans and their combinations, in order to adopt those of a miserable indian slave.

On one of his customary expeditions, Lieut. Duarte took with him the Borôro girl. On arriving at a certain spot on the river S. Lourenço, stripping herself of her city clothes, she interned herself into the forest and at the end of the number of days previously combined with the commander of the detachment, she returned to the place where the latter was awaiting her, bringing with her the Paguêmegêra, or the chief of the tribe of the Borôros, who came convinced by her to make peace and to become friendly with the civilized people, represented in the person of the same man who up to then had persecuted them, with untold of atrocities.

After this memorable act the pacific relations of that nation with the civilized people were never broken and the services which they have rendered in the swampy lands of the Paraguay are most

valuable. Amongst others I will recall to you that which I myself received when I was entrusted with the construction of the telegraph lines of the South of Matto-Grosso : during a whole year the work effected by these indians was carried out by over 500 of them who were incessantly at my orders.

The Borôro girl to whom we owe this beautiful page of the history of our country, who was the essence of the sweetness and kindness which is exhaled from those who tell the story without equal of the admirable Marina, so was this Rosa, whose son Lieut Pyrineus met on the river Telles Pires who assisted him personally and with his people to take him to the highest headwaters of the Paranatinga. On information received from Lieut. Pyrineus, Rosa Borôro died in January of this year in a Bacahiry settlement, of which her son was the chief. Her memory, therefore, still lives in the hearts of those who knew of her short and touching history ; and certainly the same will live whilst there is a Brazilian heart to vibrate with love and gratitude on recalling to mind the figure of whomever it may be, large or small, who may have given occasion by words deeds or sentiments, to inscribe in the pages of the History of the country one more trace which may contribute to the realisation of the wish of the Maranhão poet, where he says :

« I see a nation of heroes !

Mr. President of the Geographical Society : I had promised you as well as your illustrious associates the data which appeared to me necessary to

enable you to judge by its real value the nature and the extent of the services which you have attributed to me in the realization of the work carried to a successful end by the Telegraph Lines Commission from Matto-Grosso to the Amazon.

I now consider fulfilled and completed the promise which I made, although I have yet to refer to work of considerable technical importance carried out by my distinguished assistants, and which concur decisively to give to that work the touch of scientific exactness with which it is shown. Thus for example, I have not described the astronomical service mounted in Cuyabá by Captain Renato Barboša Rodrigues Pereira, in direct correspondence with the Rio de Janeiro Observatory for the rigorous determination of the Geographical coordinates of the principal points of the territory of Matto-Grosso. I would have in regard to this matter to refer to the means and the results already obtained on the eastern line with the friendly and competent assistance of Dr. Henrique Morize and Dr. Domingos Costa, director and assistant of our National Observatory.

But inspite of such great failings, the exposition which I here offer you and whose benevolent and honoured acceptance I declare myself eternally grateful to the ladies and distinguished gentlemen of this audience, as well as to you, Mr. President of the Geographical Society, it is sufficient to demonstrate to evidence that it is not to me but to the Brazilians represented by the Governments of the four successive Administrations of the Republic, by the Officers and soldiers of our valourous Army and by

the humble, diligent efforts of the dwellers of the wilds which constitute the foundation of our nationality, to them should be directed the homage of your thanks, of your admiration for the gigantic work carried out in the wilds of our country.

To me nothing else is due except the satisfaction of being proud of being the son of such a Country and of seeing my name associated with that of other sons who have devotedly served and loved the same.

But if persisting in the friendly violence of your good will you insist, in wishing to transform in personal merit my pride of having cooperated for the raising up of our nationality, I am forced to open up to you my heart and my soul to show you the real motives of all my sentiments and of all my strength ; the fountain whence spring the inspirations and the energy of my life ; the heroine who gave herself up to all sorts of privations and to all the hardships of long and repeated absences, to all the worry in imagining by thought all these privations and terrible risks to which I have placed myself for more than 25 years in this life of an eternal exile in my own country ; in fact, to show you as you will have already understood, you all « who have the intellect of love » that the efforts you attribute to me do not belong to me, but to my noble wife, at whose feet I deposit as they are due to her, all the applause and the flowers which you have accumulated around me in your unlimited generosity of men born in this beautiful country our dear Mother of infinite grace !

FINIS

GLOSSARY

- Abacaxis = Pineapple
Alori = An unclassified tree
Ananaz = Wild pine-apple
Apinacó = Axe (Caiaby)
Apinim = Hoe
Araputanga = A canoe
Ataléa = Ataléa
Arenito = Sandstone
Azagaia = Spear
Azagaieiro = Spear bearer
Anta = Tapir
Assú = Big (Guarany)
Avaria = Skin disease
Alochitu = Grass
Amure = Indian chief
- Bugio = Big monkey
Biguá = Water fowl
Beri-beri = Tropical disease
Busina = Hunting horn
Biotite = Mica species
Baquité = { Indian
 } Basket
Barrigudo = Big monkey (large belly)
Buro = Large indian pot
- Carandazal = Forest of Carandazal palms
Caboclo = Brazilian peasant of indian descent
Capibara = Water-hog
Camarada = Farm labourer
Chapadão = Plateau
Coxiu = Amazon monkey
Coatá = The largest black monkey
Capim gordura = { Natural
Capim mimoso = { fodder
Capim agreste = {
Cerrado = Thick wood
Cacique = Indian chief
Cará = Food bulb
Caboré = Cross between indian and nigger
Chiropamo-ita = Small basket
Corixa = Depression in the ground and serving for the outlet of the floods
Campos indigenas = 'Artificial camps made by indians in the forests

Caucho = A kind of rubber
 Cangussú = Jaguar
 Cipó = Liana

Defluxo = Influenza

Estirão = Stretch
 Esbelta = Well shaped

Feitiço = Superstition
 Furo = Opening made by river
 to change bed
 Firme = High ground

Gruta do inferno = Grotto of
 hell
 Genipapo = A tree, juice of
 which is used by indians to
 paint their bodies
 Guaycurú = Indian tribe (ex-
 tinct)

Hornfels = Hornfels

Igapó = A temporary rivulet
 with no source
 Igarapé = Small rivulet with
 source
 Innocencia = Book by Viscon-
 de Taunay
 Ikidas = Temporary indian
 hunting village.
 Icoio = Small indian pot

Loré = Vide Alori

Macaco prego = Marmasette

Matianá-Ariti = Game of head-
 ball

Milhã prahiba = Kind of native
 grass

Matuto = Peasant

Maloca = Indian village

Naru-Caguinindé = Pine apple
 juice

Orthogneiss = Orthogneiss

Paraná = Water

Pipirisa = Bushes of Pipiri

Pipiri = A small bush

Picadão = Clean cutting

Pinguella = Foot bridge

Parabens = Term used to ex-
 press satisfaction

Pirahyba = Savage fish

Palmito = Interior of palm tree
 used for food

Piroga = Canoe

Pujico = Arikeme hut

Putejau = Small stone axe

Picapau = Shot gun.

Quilombo = Nigger settlement
 formed by runaway slaves

Rodeio = Round up of cattle

Sumidouro = River so called
 due to its subterranean bed

Suçarana = Jaguar

Sertanista = Daring explorer of
 the sertão

Sertanejo = Inhabitant of the wilds	Taboca = Kind of bamboo
Saudade = Saudade	Tatú = Armadillo
Sertão = Wilds	Travessão = Large boulders causing falls
Sapé = Grass used for thatching	Urucum = Plant used by Indians to stain their bodies red
Tombo = Fall	Uacuri = Coco-nut tree
Taba = Indian village	Ubá = Canoe
Tamanduá bandeira = Ant eater	Upó = Indian chief
Tanga = Loin cloth	Xices = Nhambiquara villages
Taquara = Bamboo	

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