The lower Amazon : a narrative of explorations in the little known regions of the state of Pará, on the lower Amazon, with a record of archæological excavations on Marajó Island at the mouth of the Amazon River, and observations on the general resources of the county / by Algot Lange ; with an introduction by Frederick S. Dellenbaugh.

Contributors

Lange, Algot, 1884-
Dellenbaugh, Frederick S.

Publication/Creation

New York ; London : G.P. Putnam's Sons, 1914.

Persistent URL

https://wellcomecollection.org/works/bmehe264

License and attribution

Conditions of use: it is possible this item is protected by copyright and/or related rights. You are free to use this item in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s).

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

2

16.1.26.
10/6.

22501455323

Digitized by the Internet Archive
in 2016

https://archive.org/details/b2485587x

By Algot Lange

In the Amazon Jungle

The Lower Amazon



Overhead tapping

"Sometimes the rubber-worker finds it necessary to tap his tree to a height of twenty to thirty feet."—(Page 55)

(Photographed for the Brazilian Rubber Exposition)

45459

The Lower Amazon

A Narrative of Explorations in the Little Known Regions of the State of Pará, on the Lower Amazon, with a Record of Archæological Excavations on Marajó Island at the Mouth of the Amazon River, and Observations on the General Resources of the Country

By

Algot Lange

Author of "In the Amazon Jungle"
Late Officially Connected with the Bureau of Indian Affairs of the Brazilian Federal Government

With an Introduction by

Frederick S. Dellenbaugh

With 109 Illustrations and 6 Maps

G. P. Putnam's Sons
New York and London
The Knickerbocker Press
1914

Copyright, 1914
by
ALGOT LANGE

(2) ZDF.793

The Knickerbocker Press, New York

INTRODUCTION

WITHIN recent years the attention of Americans of the United States has been turned to South America, and it has been discovered that the possibilities there are immense. Development has been going on, and to-day the second city of the Western Hemisphere, and one of the finest cities of the world, is the capital of Argentina: Buenos Aires. But the largest country of South America, Brazil, has been hardly developed at all, and it is a vast country with limitless possibilities. It has an area greater than that of the United States by some 250,000 square miles, while its population, of which a large proportion is negro and Indian, amounts to only about 22,000,000. The monarch of all rivers, the Amazon, is comprised almost entirely in Brazil even to its numerous headwaters. The trunk river is a huge inland reservoir, rising and falling because of the enormous floodwaters poured into it, and periodically inundating the forest to such an extent that there is no shore line apparent—nothing but water spreading amidst the tree trunks. The really salubrious part of the country lies south of about 8° south latitude, and along the coast. This region, besides being

within more temperate bounds, is also elevated. The rivers flowing to the Amazon are broken by rapids and falls, and navigation even by canoes is difficult and hazardous in many places.

But while the immediate region of the trunk river is not salubrious and there are at present fevers and myriads of insects to contend with, to say nothing about poisonous reptiles, it is there, in North Brazil, that perhaps the most important commercial development will eventually take place, and in time the fevers, the insects, and the snakes will be controlled. There are no dangerous large land mammals, though animals of a size to be a mark for a rifle-ball are of small consequence in any country as retarders of exploration or development; it is not long before societies and laws must be created for their protection. The region bordering the Amazon on the south from Peru to the Atlantic is called Amazonia, and it covers two of the Brazilian States—Amazonas and Pará.

On his former expedition Mr. Lange explored in the region of the Javary tributary, at the extreme west of Amazonia. The results were published in his book *In the Amazon Jungle*. The journeys described in the present volume were made in the extreme east of Amazonia, the Lower Amazon regions, in the State of Pará. His principal operations were three: a trip up the Tocantins River, another to the headwaters of the Rio Moju, and

a third (two in fact) to the interior of the island of Marajó at the very mouth of the Amazon.

The Tocantins is a very large stream generally rated as a part of the Amazon system but actually an independent river. It does not join the Amazon at all, though at its mouth their waters are mingled, the Amazon sending, through channels behind Marajó Island, a portion, a small portion, of its volume to the sea by what is called the Pará River, which is, in reality, the mouth of the Tocantins. Between this estuary, or river, of Pará and the true mouth of the Amazon far to the north, lies the island called Marajó, somewhat larger than Jamaica, occupied in prehistoric times by an Amerindian tribe which, vanishing, left, to mark their former presence, a quantity of pottery of an excellence of design and ornament which indicates that here was a centre of advanced Amerindian culture. These people have generally been assigned to the Tupi (Indian) stock, but some archæologists believe they were Arawak, a people who were widely spread in Brazil and beyond. Representatives of the Tupi are still numerous in Brazil, and originally they were all along the coast and up the Amazon to a considerable distance. A corruption of their language forms the "trade" language of the country. They were good potters, yet their houses were extremely primitive, and they went entirely naked. The Ararandewaras, whom Mr. Lange found at the headwaters of the Rio Moju,

are of this Tupi stock and were living in primitive shelters of the usual Tupi character. The men wore no clothing and the women only a small kilt or filibeg. In the Appendix, Mr. Lange gives a large number of words he obtained, which, with his photographs and his descriptions, make a valuable contribution to the ethnology of the district.

His canoe voyage up the Tocantins presents a clear picture of the very primitive conditions existing there, and of the hospitable nature of the *caboclos* or mixed-bloods who live here and there along its banks, as well as of the character of this important river itself.

Pushing his way by canoe across the Pará estuary he proceeded up the Arary River to the lake of the same name, where he met with a small island in the lake which was literally covered with ancient pottery, much of it in fragments. He succeeded in collecting and bringing to New York some thousands of specimens of the pottery and of the peculiar terra cotta objects called *tangas*, three cornered, thin, curved and decorated pieces about the size of a human hand, which were used by the women for protection and adornment, probably their only covering. This is perhaps the largest collection of this pottery ever brought out.

Another feature of the book is the enumeration of the different kinds of timber available; the various nuts and fruits commercially valuable; fibre

plants suitable for paper making; and a statement of the possibilities of agricultural and grazing development. Some attention is paid to showing the defects of the North Brazilians. Criticism by outsiders is always valuable to any people, for even though they may not concur, there is generally a measure of profit in heeding a stranger's remarks. All books of this kind should be welcomed in Brazil and out, for they help to present the features of the region for the consideration of the world, and make intercourse easier.

FREDERICK S. DELLENBAUGH.

New York, September 5, 1914.

PREFACE

IN past years much has been written on the Amazon country, its people and its conditions. Any attempt, therefore, to-day to present new and exact pictures in this vast field is sure to meet with the disadvantage of comparison with these earlier works, some of which have grown to be almost classic. But times have changed on the Amazon as elsewhere since the days of Bates, for example; and so also have points of view. The most learned works of the tireless investigators of the early part of the last century, Martius, Spix, Humboldt, and Schomburgh, still maintain their rightful places as great authorities on Brazilian flora and fauna, etc.

Bates, Wallace, Agassiz, and Herndon have described most charmingly the topography, biology, and ethnology of the Amazon Basin, while modern authors like Steinen, Ehrenreich, Koch–Grunberg, have specialized on the ethnology of certain river sections. It is true that the mere aspect of the Amazon and its general conditions have not altered since the time of the early explorers, but the outer world meanwhile has decidedly changed in its attitude towards this, largely, still unknown terri-

tory. The requirements of human life, of business, have transformed methods of production, have created new and huge demands for raw materials, while more practical lines of investigation have superseded those of the olden time. The world, too, now requires to know the whole truth without misleading, though picturesque, exaggerations.

The Amazonian territory, whereby is meant the states of Pará and Amazonas, is an enormous tract still imperfectly explored in spite of the extensive work carried on down to the present day. Hidden within and behind its forest walls there lies latent wealth in prodigious quantity, not to be picked up like nuggets in a gold-placer or by any get-rich-quick method, but by the usual processes of commerce: by cultivating the soil, by developing lumbering, by introducing improved labour conditions. Fortunes are to be found in this region, but it is hardly necessary to remark that they are not to be secured through speculative efforts in high finance, but through common sense, hard work, and strong will.

In writing this volume here in the city of Pará, I have attempted the production of a consecutive account of this future great Amazonia, analysing as far as possible various phases of the life and conditions in order to present a true picture of what is bound to become, sooner or later, a world centre of industrial activity.

He, only, who goes to live among the wild

people far out in the forest can learn to know their habits, their mode of living and thinking; only he can fathom the mysteries of the Amazon jungle, the faunal and floral life, the legends and traditions of the population. The inquisitive stranger who journeys on the deck of a steamboat cannot discover more than points of superficial interest, for he is limited to the standard routes and can witness only that which others have often seen and described before.

The Amazon region is full of illusory pitfalls to every observer. What at first acquaintance appears to be a thoroughly established fact, upon later and closer analysis proves to be a mistake, and *vice versa*. Only time and patience can teach one the actual conditions here, even more than in other parts of the world.

During this, my second, sojourn in the Amazon country, I learned to appreciate the better side of Amazon life, and discovered more than I was conscious of on my first trip, when I wrote *In the Amazon Jungle*. Then everything was *Remate de Males*, "Culmination of Evils," to my narrower horizon. As in all places, the good and bad are intermingled, and here there is also much that is entirely novel. The difficulty is that one so soon becomes accustomed to the novel and strange that at times he must make a decided effort to rouse himself to their continued appreciation.

My desire, perhaps, is not as modest in its scope

as my capacity is to execute it, but it remains a sincere wish to offer here a clear presentation of things Brazilian, as I saw them, with the hope that the book may be of service not only to the general reader, but also to the business man and the student. It was for this purpose that I buried myself in the forests, sought the far reaches of little-known rivers and dark creeks, pushed myself everywhere, in fact, in order to learn. But I realize that I am far from perfect in my Amazonian knowledge—perfection could not be achieved in the span of several generations—yet I hope to add some small part to the information now extant; perhaps here and there something new.

For my statements in this volume I am willing to consider any competent criticism. I have more or less preserved the form of my diary, feeling that the reader will thus receive a more intimate impression of the scenes as they pass in review.

ALGOT LANGE.

Pará, May, 1914.

Contents

CHAPTER		PAGE
I.	Pará to the Tocantins River	1
II.	The Ygapō and the Pororóca	29
III.	Collecting and Smoking Rubber	47
IV.	The Ilha das Onças	64
V.	The Start up the Tocantins	77
VI.	Onward by Canoe	94
VII.	Nazareth dos Patos	113
VIII.	The Lair of the Boa Constrictors	130
IX.	Up the Moju	152
X.	Meeting Strange Indians	172
XI.	Alone with the Indians	208
XII.	Discovering the Tribal Name	227
XIII.	Success with the Camera	246
XIV.	To Marajó and up the Arary River	268
XV.	Ranches and Ranchers of Marajó	284
XVI.	An Archæological Mine	307

CHAPTER PAGE

XVII.—An Alligator Hunt, Speculations, and a Rough Run to Pará . 323

XVIII.—Conditions and Prospects . . 344

XIX.—Food, Health, and Sanitation . 358

XX.—The People 374

XXI.—Prospects of Amazonia . . 383

XXII.—What is Government Doing for the Country? 394

XXIII.—Amazonian Timbers 410

XXIV.—Notes on Amazonian Folk-Lore 422

Appendix 445

Index 461

Illustrations

FACING PAGE

OVERHEAD TAPPING . . . *Frontispiece.*
"Sometimes the rubber-worker finds it necessary to tap his tree to a height of twenty to thirty feet."
(Photographed for the Brazilian Rubber Exposition)

THE MOJU VILLAGE 12
This peaceful little village was founded in 1754.

ON THE MOJU 12
"The riverman's craft leaves a bright scar on the dark waters."

TYPICAL RIVER VEGETATION IN AMAZON DELTA 13
From a photograph in "Arboretum Amazonicum."

A RIVER TURN ON THE LOWER MOJU RIVER 13
This columnar tree stands tall and straight above its neighbours.

THE MIRITY PALM 18
Hundreds of acres are covered with this stately palm.

THE YGAPŌ 19

THE FAMOUS MOJU PLANTATION . . . 19

THE SIDE VIEW OF A RUBBER-WORKER'S HUT 48
(Photographed for the Brazilian Rubber Exposition)

TAPPING THE RUBBER TREE 49
(Photographed for the Brazilian Rubber Exposition)

A RUBBER-WORKER TAKING HIS BI-DAILY BATH 52

FACING PAGE

AN EXAMPLE OF DETRIMENTAL "OVERHEAD TAPPING" 53
(For the Brazilian Rubber Exposition)

THE RUBBER-WORKER ON HIS WAY HOME . 56
"His path leads across a narrow and deep ygarapé, where a tree has been felled."
(Photographed for the Brazilian Rubber Exposition)

AN EXPERT RUBBER-WORKER 57

A "SERINGUEIRO" WADING THROUGH YGAPŌ-SWAMP 57

A FAMILY OF CABOCLOS 58
Many *seringueiros* have grown wealthy through economy and industry.
(Photographed for the Brazilian Rubber Exposition)

THE URUCURY PALM 59
This noble palm is one of the most frequent and beautiful palms of the Amazon Basin.
(Photographed for the Brazilian Rubber Exposition)

A RUBBER-WORKER BALANCING ACROSS A SNAKE-FILLED CREEK 60
(Photographed for the Brazilian Rubber Exposition)

THE DEFUMADOR 61
"This is the place where the rubber milk is coagulated."
(Photographed for the Brazilian Rubber Exposition)

A DOMESTIC SCENE IN A RUBBER-WORKER'S HOME 61

RUBBER-WORKER IN THE ACT OF GASHING THE TREE 64
(Photographed for the Brazilian Rubber Exposition)

FACING PAGE

A Young Giboia 65
This young boa constrictor soon grew tame and playful.

A Boa Constrictor 65
This young boa was found, one morning, suspended from the upper branches of a fruit-tree in the author's Pará garden.

A Female Rubber-Worker on her Way to Work 70
"This brave woman is accustomed to fight the poisonous snakes abounding in the creek below."
(Photographed for the Brazilian Rubber Exposition)

The B. and W. Outfit 71
"There is hardly a day that I am not called upon to render some surgical service, and my medical case proved invaluable."

An Infirm Seringueiro from Ilha das Onças Making Andiroba Oil 71

Fruit Capsules of the Poisonous Assacu Tree 76
From drawings by the author.

Civilized Cayapó Indians in Pará . . . 76

The Connection between the Moju and the Tocantins Rivers. The Area within the Dotted Square Indicates the Neutral Tidal Zone Referred to on Page 82 . . . 77
From a sketch by the author.

A Settlement in the Thickly Populated Region of Ygarapé Miry 90
(Photographed for the Brazilian Rubber Exposition)

FACING PAGE

WEIGHING THE SERNAMBY RUBBER IN A MERCHANT'S HOUSE, TOCANTINS REGION . . 91

A SKETCH MAP OF LOWER TOCANTINS AND MOJU RIVERS, DRAWN BY THE AUTHOR . 94

THE RIVER LAUNCH "RIO MOJU" . . 95
"We finally arrive at an island in the Tocantins, called Xininga."

A CHAPEL IN RUINS OVERLOOKING THE BANKS OF THE TOCANTINS 95

TYPICAL VEGETATION ON BANKS OF TOCANTINS . 100

SKELLY ON CAMP DISCOMFORT . . . 100
"The trusted assistant and secretary, cook, musician, and chief hunter on all my expeditions."

CAMP DISCOMFORT 101
"We set posts deep in the sand and suspend hammocks between them."

THE TAIL OF STING-RAY WITH BARBED BONE 101
From a sketch by the author.

A GIGANTIC TREE ON THE TROCARA HILLS . 106
"One immense cow-tree I measured and found it fifty-seven feet in circumference."

TAPIR TRACKS ON THE MUD-FLAT . . 106
"We fall into a dismal stretch of soft swamp, where we find the tracks."

MAP OF CANOE JOURNEY 107
From a sketch by the author.

FACING PAGE

PECULIAR GROWTH ON BANKS OF TOCANTINS 110
"It is a most complicated *sous bois*, almost impossible to traverse."

PREPARING LUNCH ON THE BANKS OF THE TOCANTINS RIVER 110

TAKING MOVING PICTURES IN THE MIDDLE OF THE TOCANTINS. 111

A TRACACHÁ TURTLE 111
"It is making good speed down the sand-bank."

A FAMILY HOUSE IN THE URUBŪ SETTLEMENT . 138

AN ABANDONED HUT ON THE UPPER MOJU RIVER 158

RIVER TRAVELLERS 158
"We pass close to a young couple paddling their own canoe."

FAR ABOVE THE VIRGIN FOREST . . . 159
"After some climbing we reach the forest-covered top and obtain a splendid view."

THE INTERIOR OF A FOREMAN'S HOUSE ON THE MOJU 166

THE CAIRARY VILLAGE 166
"What a place of misery!"

A NATURE FAKE 167
"——through some caprice of nature it has subdivided into twenty-one trunks."

JAPIM NESTS HANG FROM EVERY BRANCH . 167

FACING PAGE

A Forest Clearing, the Work of Stone Axes 190
"I survey the work done by these true sons of the wilderness."

Tracambeua Rapid 190
"——it is out of the question to force the canoe against this whirling mass of foaming waters."

Indian Signal Sticks 191
"Four sticks, stuck at an angle, indicated that three men and a child had left."

A Shelter Built by the Indians . . 191
"A score of burned *jaboty* shells lie scattered over the ground."

Headquarters among the Indians . . 214
"I am at once shown the best shack where I tie my hammock."

Just before the Trouble Broke Loose . 214
"Hildebrando and Fielo take a few awkward dancing steps with their partners."

Indian Girls at Iraruna 215
"We discover two young women, slowly coming down the steep bank."

The Diplomatic Emissary of the Indians . 215
"He is a strongly built fellow with staring eyes."

Posing for the Camera 220
"Their only dress is the 'tanga.'"

Cipoagem or Bush-Rope Thicket . . 220

The Quiet Water above the Moju Waterfalls 221

FACING PAGE

THE CEREMONIAL DRUM IN THE MALOCA . 221
"In the middle is a long hollow trunk, suspended to a horizontal branch."

ARROWS MANUFACTURED BY THE ARARANDEŪARA INDIANS 228
From a drawing by the author.

A PRIMITIVE FARINA OVEN 229
"At daybreak the women set to work."

THE CHIEF OF THE ARARANDEŪARA INDIANS . 229
"His favourite position is on his haunches."

INDIAN ATTEMPTS AT DRAWING 236
"The scrolls represent his idea of the surrounding forest. Figure A the author's portrait."

THE TWO SAVAGES, TUTÉ AND DOMINGO . 237
"In the photograph made on my last day with the Arandeūaras he stands alongside of Tuté."

A "DWELLING" IN A CORNER OF THE MALOCA 237
"——this 'dwelling' is not many stages above an animal abode in comfort."

A DOMESTIC SCENE IN THE ARARANDEŪARA VILLAGE 240

AN INDIAN CEDAR DUG-OUT 240
"We find at the head of this rapid the small one-man dug-out."

THE OLD CHIEF AND HIS GRANDDAUGHTERS . 241
"——mobility of features and expression are as much a matter of individuality as with civilized people."

FACING PAGE

A Group of Hunters 241
"——he stands still with a group of hunters; however he is armed with bow and arrows."

One of the Indians 242
"One-man, another un-Indian type, portrayed later on in these pages."

An Ararandeūara Girl 242
"One maiden who, day after day, stands up against a tree staring at me."

The Coati or Nose-Bear 243

Ararandeūara Girls 250
"Even the girls consent now to being 'tick-ticked.'"

In the Maloca 250
"——she lets herself be photographed, but her features show that she thinks it all nonsense."

"Jaboty" Corral 251
"At the base of this tree is built a *jaboty* corral."

Zulu 260
"The mascot of the expeditions."

Resting during an Inland Exploration . 260

Farewell to the Indians 261
"——the tribe as one man sets up a mighty roar '*Kereketé.*'"

Iraruna, the Outpost of the Indians . 261
"——we sight Iraruna and the good ship *Florence* proudly flying the Stars and Stripes."

The Swampy Prairie of the Marajó Island . 278
(By courtesy of Dr. J. Huber, Pará)

FACING PAGE

A Grove on the Marajó Prairies . . 278
"The high-water mark of the wet season is shown by the cut-off foliage."

A Scene from the Lower Arary River . 279

A Marajó Cowboy 300
"The *vaqueiro* or cowboy here is but a poor imitation of our breezy Western 'bronco-buster.'"

A Dried-up River Bed on the Marajó Prairies 300
"Following a creek we come to its headwaters."

A Scene from the Upper Arary River . 301
"Dreary wastes of unreclaimable land on both sides."

A Cowboy's Hut on the Marajó . . 301
"——we stop at a weather-beaten hut on stilts."

Topographical and Archæological Sketch of Ilha Pacoval 308

A View of the Pacoval Island . . 309
"At the highest point of the island stands a tall *taperebā* tree."

Picking up Pre-Historic Pottery on the Pacoval Island 309
"The beach is a foot deep with fragments which crunch under my feet."

A Large Bowl Excavated on Pacoval. ⅓ Size 312
From a drawing made by the author.

FACING PAGE

THE FIRST DAY'S FIND. 313
"The specimens are placed on top of a large wooden case for later sorting out."

A PART OF LUDOVICO'S FAMILY . . . 313

A JAR FOUND IN THE WATER OF LAKE ARARY . 314

TANGAS. ½ SIZE 315
Reproduced from drawings by the author.

PACOVAL ISLAND DURING THE WET SEASON . 318

IDOL-HEADS WHICH SERVED AS HANDLES OF LARGE JARS. ¼ SIZE 319

STONE IMPLEMENTS AND CRUDE CLAY OBJECTS ¼ SIZE 319

THE ALLIGATOR GIVING UP ITS FIGHT . . 324
"When the alligator is mortally wounded it floats for a few moments with its belly upwards."

THE ALLIGATOR IS FINALLY QUIETED . . 324
"It measures exactly fourteen feet from nostrils to tip of tail."

AN ALLIGATOR HUNT 325
"Here I see one of the greatest pieces of recklessness I ever witnessed."

SUBMITTING TO SUPERIOR POWERS . . 330
"The alligator is at last entirely vanquished and the pickaxe is held ready for any emergency."

A BASIN EXCAVATED ON PACOVAL. ⅓ SIZE . 331
From a drawing by the author.

FACING PAGE

VARIOUS TERRA-COTTA OBJECTS FOUND IN A FUNERAL URN EXCAVATED ON THE PACOVAL ISLAND 332
From a drawing by the author.

A FUNERAL URN. 1/3 SIZE. EXCAVATED ON PACOVAL ISLAND 336
From a drawing by the author.

BROKEN IDOLS OF RED BURNT CLAY AND RICHLY INCISED. 1/2 SIZE 337

MARAKÁH 337
Rattling idol, yellow polished surface with red painted lines. 1/2 size.

MAP OF THE AMAZON DELTA AND MARAJÓ ISLAND 342

WRITING MANUSCRIPT IN THE WILDERNESS . 343

SKETCH MAP OF NORTH-EASTERN BRAZIL . 444

MAP OF THE STATE OF PARÁ . . AT END

In the Region of The Lower Amazon

CHAPTER I

Pará to the Tocantins River

IT was in April, 1913, that I started from Pará on my first journey of this expedition. At the appointed hour, six in the morning, I boarded a steam launch at the old docks and met there the owner, Senhor E. Levy, who presented me to Dr. Goeldi, a Swiss by birth, who occupied the position of director of a large plantation on the Moju River. I later learned to know this worthy doctor as a scientist and investigator of ability, and conversant with all phases of North Brazilian biology.

The steamer was not quite ready to depart as the engineer could not be found. He had been observed, by a fireman, to leave in the general direction of a *botequim*, or place for liquid refreshments, and a sailor was promptly dispatched to fetch him.

In the meantime I had an opportunity to study the water-front. An old cathedral, the Sé church, looms up behind the docks and the narrow streets flanking the river itself. This is the old part of Pará, or the *cidade velha*, where in former days the distinguished English naturalist Bates lived and studied.

Farther back—that is, farther from the ocean in a southerly direction, is the Navy Yard, where a couple of river gunboats lie idle, but, as it later proved, ready for trouble at an hour's notice. Still farther back, the water-front makes a turn to the east and we are in the Guamá River. The wide mouth of this river is divided by an island. A mile or so farther south are seen two small forested islands, the Great and the Little Benedicto; so called in honour of the protective saint of the blacks.

West of Pará appears a long island, whose scattered dwellings are barely visible from the city streets. It is the Ilha das Onças or Jaguar Island. North-west, scattered over the sea, are several small islands all jungle-covered.

I have now described almost the whole panoramic circle. There remains only the modern city works due north of our steamer; cement docks and large iron warehouses constituting the "Port" of Pará, constructed by foreign enterprise and indicating the absolute necessity of foreign activity here to inaugurate and to complete modern engin-

eering projects. It is a fact which Brazilians do not like to admit, but which is nevertheless true, that they themselves are at present unable to carry out any extensive constructive scheme.

Time flies and the clocks strike 8 A.M. Everybody is now eager to get off, but another slight disturbance occurs, for though the engineer, radiant with smiles, is discovered emerging from the aforesaid refreshment house and is brought on board, and everything then looks ready for an immediate start, it is found that the cook is missing. A fireman is sent to find him; probably he is buying supplies in the nearby market.

When the fireman has been absent on this search more than half an hour, a cry goes up; the cook has been found on board in a remote and secluded place philosophically consuming biscuits and cheese.

Finally, at 9.30, the fireman returns tired and disgusted, and at last we are ready to go.

But the outgoing tide has left us high and dry without even the captain noticing it, and now the *urubús*, the black disgusting birds, filth scavengers of the tropics, wade in the slimy ooze all around the ship, searching for morsels from the ship's galley.

I go ashore therefore, and walk home, deeply impressed by this striking series of obstacles to punctuality, and I come on board again in the afternoon, when the tide has turned and is raising

the river Guajará and the many affluents which discharge their waters into it.

Our vessel, a hybrid between a river steamer and a freight launch, is well loaded with passengers. Rubber-workers with their families, and with their assorted baggage, in rubber-coated sacks and nail-covered trunks, sit around in pajamas rolling cigarettes. Merchants or *aviadores* going up to their stations along the up-river water-front, at first vigorously discuss the eternal monetary crisis, the latest drop in rubber prices, and state politics, but soon the heat is oppressive and they slack off.

A very eloquent young gentleman struts around, important-looking, and he attempts to continue the active political conversation, but the heat proves too much even for him. The external heat from the boiler-room, and the internal calorics accruing from his tempestuous disposition create a reaction, and under the irresistible power of 98° F. in the shade of the roof of the launch, *Rio Moju*, he is subdued and soon lies fast asleep in his hammock.

I count 185 passengers including children. At least one hundred hammocks are strung crisscross and three high. The quiet, sedate Dr. Goeldi goes around to see that his several hundred young rubber plants are getting along nicely. These plants, stuck along the rail, have been grown at the Goeldi Museum in Pará and are intended for further cultivation on the Moju River plantation.

They are young shoots, some seven or eight months old, in baskets containing earth and moss covering the roots.

The usual crowding around the dinner table occurs and I sit down fully knowing what is going to happen. Three helpers have placed about ten different plates of food in the centre of the table, and we are all invited to go ahead and eat. Let us examine this meal, so typical on board the national steamers and for that matter ashore in hotels, and even in homes of people of means.

We begin with deep plates filled with the farina, the national substitute for bread. I shall later go into details concerning this food composed of dry fibrous starch grains of a woody consistency which never fails to make its appearance at every meal at the table of any Brazilian. Then comes jerked beef boiled up and served with a couple of potatoes cooked in the juice of the beef. Jerked beef fried in cottonseed-oil next follows; at times fresh meat in the following forms: stewed, fried in oil, broiled or minced.

These meats never have any sauce or gravy served with them. Of condiments one has only fresh peppers picked off the bush, and there is sometimes a little rough salt to be found. On special occasions fried eggs will appear swimming miserably in a bath of rank oil, and mutilated beyond recognition. Water is served, a little piece of guava jelly, and then black coffee and your meal

is over; eaten while the temperature is above 90° F.

It is hardly necessary to remark that such a diet is unappetizing to our Northern stomachs and palates. The meats even while fresh are of dubious quality; fried in the heavy oil they obtain a peculiar rank odor which, for the time being, pervades the entire atmosphere. People who are used to it find it good enough, but those who have had a different menu find it fairly repulsive.

Under these circumstances heavy meat can not be healthy in this equatorial region; the digesting of it must overtax the stomach and render one weak and dull.

We have by this time passed the mouth of the Guamá River and have run past the inundated islands till we approach the junction of the rivers Acará and Moju, which at their mouths do not exceed 3000 feet in width.

We pass a small settlement on the peninsula formed by the junction, and enter the Moju River proper. Here we can begin to study the river-front in a more minute and undisturbed manner, especially as the passengers are now all reclining after the dinner.

In saying, "The forest goes down to the water's edge on either bank," which would be the most natural way of expressing oneself, one commits a mistake, as there is no distinct demarcation between land and water. The forest goes to the

point where the current of the water becomes too strong for growth. The banks of the Lower Moju are periodically inundated by the tides. This action of the ocean is felt for about two hundred miles from Pará on the rivers Guamá, Acará, and Moju, all of which discharge their waters close to Pará.

At maximum high tide the water stands in the forests and covers the bottoms of the tree-trunks, filling the many creeks or *ygarapés*. Where the land grows higher farther inland the creeks merely swell, while close to the river front they overflow. This phenomenon occurs twice a day. As the water runs out with the falling tide; the water in the river that has been dammed up during the high tide, pushes down and accelerates the outward current. During these hours of so-called *vasante* or emptying much up-stream traffic is obliged to stop, and many vessels of different sizes are seen moored to tree branches along the banks. There are large freight canoes or *batelões*, and smaller canoes for rapid and light transportation. These small canoes are called, throughout the Amazon valley, *montarīas*. Now and then is seen some small launch with a heavy lighter attached, *alvarenga*, bound for the Tocantins River through the canals and channels of the Ygarapé Miry.

Our speed, which ordinarily would be seven knots an hour, is reduced to a scant four knots, and it is getting late when we pass the settlement of

one Rodrigues. The main building of this place, although old, is substantial in appearance. A wide porch runs around it and gives ample light and ventilation under a tiled roof. The house is erected on top of the elevated ground far above the reach of the high tide, and some twenty yards from the owner's dwelling; a chapel, built half a century ago, is still in use. On the river a wooden landing has been made at the foot of which is a small brick pavilion or store-room, where the chief product of the place, rubber, is weighed and assorted.

Soon we stop near a hut, built on poles close to the water, to let a pale, emaciated young woman disembark. She carries two wailing babies, a dog, a small parrot or *periquit*, and a gaily painted tin-trunk, into a *montarīa*, the rail of which is scarcely an inch above the water. In between the first rows of tall trees, we perceive a small, miserable hut, made of poles, saplings, and bushrope or *cipō*, and covered with leaves of the *ubussū* palm. A single candle is burning inside.

The woman's husband comes alongside our craft to take his family to this home. He receives them calmly without any demonstrations of affection, and they all disappear within their primitive abode, where the wife has to live a more secluded existence than if she were on a desolate island. Her activity is limited to the very small area of the hut, because water is everywhere; even now reaching

up the rungs of the ladder by which they enter. Only twice every twenty-four hours does it recede, and then she can wade through the sticky mud to the hollow trunk of a mirity palm, from which vantage point the family washing is done.

Beyond this place the river again widens to nearly 3000 feet, and what at first looks like an affluent proves to be a part of the river itself embracing an island of a mile in length.

The vegetation on the banks is splendid in its intricate variety of species and individual development. It is true that one does not see many very large specimens of trees, the tallest scarcely attaining fifty feet in height, but the picturesque profusion cannot help but attract the admiration of the most blasé of observers. Description fails me here to convey a sense of the splendours of the equatorial growth and I fall back on a dry enumeration of the species the eye discovers.

At least the practically inclined reader may find some satisfaction in learning the names and characteristics of some of the most commonly encountered plants which are conspicuous from the deck of the steamer.

In front of all river vegetation in the lower reaches of all the black water rivers in the great delta system of the Amazon, one observes a very characteristic plant, the *aninga*. This plant is instantly recognized by its large leaves of a regular, blunt arrow-head shape, and by its green and dis-

proportionally stout stem sticking out of the water, often reaching a height of fifteen feet. I have measured some that were twenty-five feet long on Marajó Island. The trunk is easily severed by one stroke of the bush-knife or machete, so light and porous is the fibrous structure of the stem through which long, tough fibres run. It grows only where there is a rich alluvial deposit such as is found in all the watercourses of the Amazon delta system. In May and June one will see the beautiful snow-white calyx with its stout yellow pistil transformed into a heavy fruit resembling a pineapple, which is greatly esteemed by such fresh water fish as *bakū*, *bagre*, and *tambaquī;* turtles also like this fruit. Here the *aningas* form veritable palisades impenetrable except by cutting a tunnel.

The second row, or degree, of vegetation, which comes immediately behind the *aninga*, is the *veronica*. Its stems are unable to sustain the weight of its hundreds of fine, ramifying, creeper-like branches and consequently it has to depend upon stronger plants for support. It is, so to speak, devoid of gratitude, because it soon overruns its neighbours, and because of its dense foliage it gradually chokes the supporting plants till they wither from lack of air and light; but in compensation it covers its victims with a blanket of green leaves and bright coloured flowers.

In the third row, composed of bamboos, *taboca de*

lontra or otter-bamboo, we are reaching what can be considered the river-bank proper where the true arboreal growth begins. The graceful and delicate branches with their finely subdivided leaves please the eye wonderfully by slow undulating movements as the breeze plays on the clusters overhanging the *veronicas* and *aningas*.

Interspersed with the bamboos one will see the truly characteristic Amazonian tree, the *emba-uba*, whose large palmate leaves are lighter on the under side than on the upper. I shall later return to a description of this interesting tree. We are now at the true forest edge flanking the river and here an infinite variety of species begins.

Close to the bank, sticking up above and amongst the tops of the *emba-ubas*, are seen continually, here and there, the large ovate leaves of the *andiroba* or "crab-wood" tree. These leaves, especially the top ones, have pretty red and orange colours, which later grow into a deep green. The tree bears some triangular nut-like fruits, which in June, July, and August, when crushed, exude a rich oil, the *andiroba* oil. It appears to be equal in lubricating value to ordinary machine oil, and the day is undoubtedly near when this oil will be utilized.

Frequently attention is attracted by handsome trees with straight trunks almost white except below a man's height from the ground where they are darker and thicker, with a rough surface.

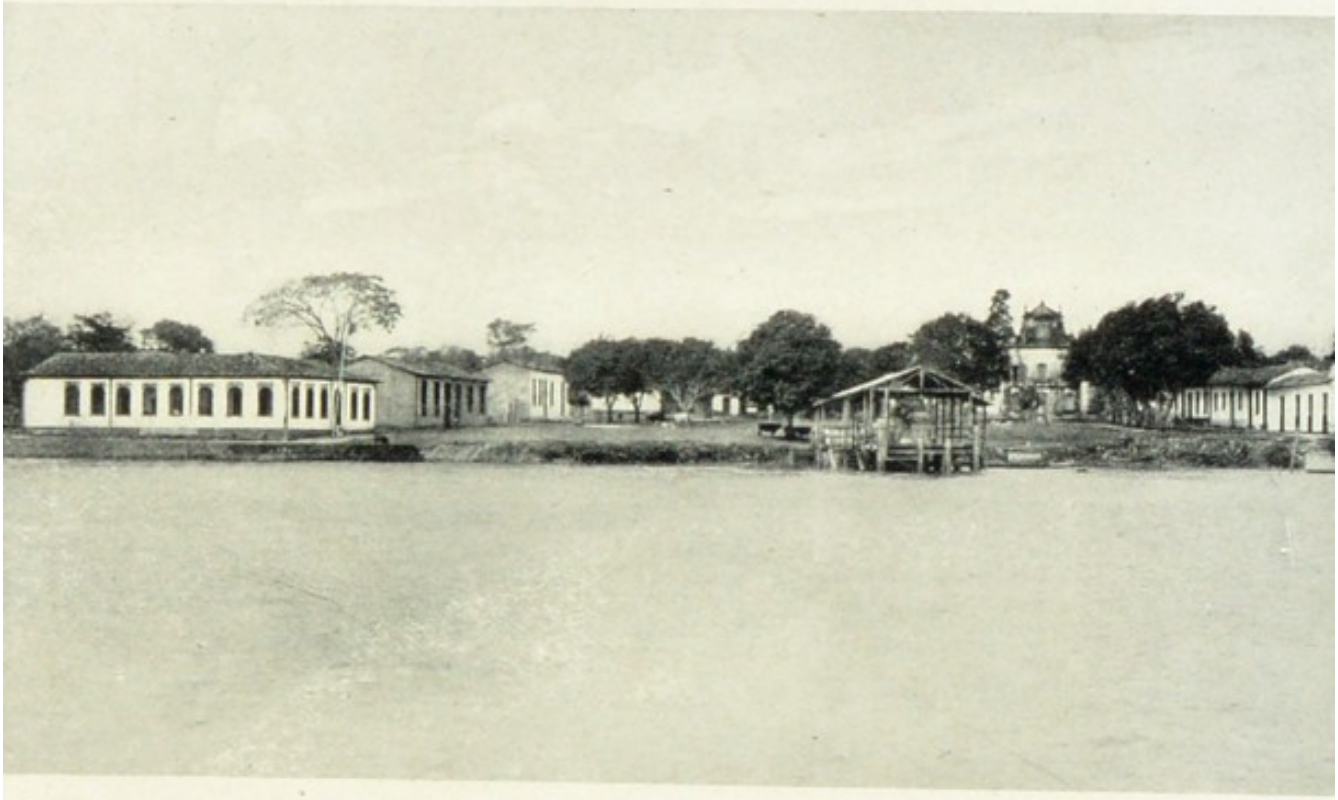
They are the precious *seringueiras*, the rubber-trees, almost the sole source of income of the Amazonian people.

We pass a little town, presently, villa Moju, with probably a hundred houses. This peaceful little community, founded in 1754 by a religious order, now does a small business with Pará merchants in rubber, tobacco, and farina. In the rainy season the water entirely floods the town.

A little farther up the river we stop at a merchant's house to land the greater part of our passengers. It is now quite dark. We have arrived at the so-called *bocca do canal* (mouth of the canal), a narrow channel dug in the early part of the last century, leading into a network of rivers and *ygarapés* or creeks to a point some twelve miles distant, where the tortuous creeks open into the great and majestic Tocantins River.[1] Less than halfway through lies a small town called Ygarapé Miry. This means in the Tupi language: "small canoe creek" from *ygara*—canoe
pé —path
miry —small

After the passengers leave we take in firewood for the boilers, before we continue our journey. The merchants here have wood for sale for passing

[1] The Tocantins is a large river heading in Southern Brazil and flowing north to the estuary of Pará. It is usually classed as an Amazonian stream, but it really does not flow into that river, at its mouth, but reaches the sea separately.



The Moju village
This peaceful little village was founded in 1754.—(Page 12)



On the Moju
"The riverman's craft leaves a bright scar on the dark waters."—(Page 15)



Typical river vegetation in Amazon Delta
From a photograph in " Arboretum Amazonicum "



A river turn on the lower Moju River
This columnar tree stands tall and straight above its neighbours.—(Page 19)

launches at the rate of thirty *milreis* (or ten dollars American money), for 1000 sticks. As every stick is counted and tallied it is well-nigh ten o'clock before we cast off and turn our bow up-stream against the outgoing tide. (The Government maps are correct only as far as the mouth of this canal.) On this steam-launch there are no accommodations for any but the officers. One has to string his hammock somewhere between the stanchions and, by the aid of some trunk or box, drop neatly into this nest-like bed of all Amazon travellers.

The hammocks used here in North Brazil come mostly from Ceará, one of the States of Brazil, where there are several factories. A few come from Germany but they are of inferior quality. The quality of the native product of course varies according to the price. The cheapest cost some nine or ten *milreis* or about three dollars; the ordinary everyday ones offered for sale in the Pará streets cost about five dollars, while the stores retail good cotton hammocks from eight dollars up in terms of American money. In Manaos, the capital of the State of Amazonas, elaborate hammocks, made of *tucūm* palm-fibres by the domesticated *Macouchie* Indians of the Rivers Negro and Branco, sell for the extravagant price of from one hundred to two hundred dollars (American). Some of these richly decorated with feather-work are offered at three hundred dollars or 1000 *milreis*.

The regulation length of a hammock, counting the end-pieces for suspension, averages fifteen feet. The cheaper sorts are made of gaily co,oured cotton-strands, while the dearer are unicoloured, often with finely decorated borders or "verandas." Hammocks are universally used. But few beds exist on the Amazon and these are in possession of foreigners or of those Brazilians who have lived abroad and have grown accustomed to the European or American mode of sleeping.

I string my hammock along the rail,—the only available space left—and try to sleep. At places on both shores, the steamer makes many stops to unload merchandise and now and then a passenger leaves having reached his destination. At some points there are landings, more or less rickety; at others the goods have to be transferred to the respective owner's canoes or *montarīas*, alongside, as there are no landings. With all this noise and commotion and blowing of the whistle it is not easy to sleep. At midnight there is a dead stop. Something is the matter with the air pump down in the engine room, and the engineer works till four in the morning, when he succeeds in putting things in order and we proceed. The river is slightly narrower and the flood tide is strongly felt. By this time the day-crew are arousing themselves from their short, interrupted slumber and indulge in their first morning coffee, after having poured buckets of river-water over their bodies to refresh themselves.

Soon all nature arouses from the twelve hours' sleep. Great flocks of little *periquit* parrots fly across the river to settle in some fruit-tree. Birds commence to sing and twitter, and in the distance a howling monkey, the *guarība*, pours forth its hollow roar. The sun comes up and disperses the haze overhanging the river and pervading the forests. From behind the trees on the next river-turn a thin blue smoke rises, where some rubber-worker family are preparing their morning coffee. Yonder a lone canoeman is paddling up-stream, taking advantage of the tide, to reach some merchant's store where he may buy a few necessities, to return, perhaps, with the next ebb-tide. His little craft, a *montarīa*, leaves a bright, contrasting scar on the dark waters where the boatman's round paddle has broken the surface-mirror. It presents a striking picture of man's infinite smallness in the loneliness of these vast forests, river-bound and inundated.

We all sit down at the table to have our coffee. The captain courteously offers me a seat next to him, while the remaining twelve passengers have to be satisfied with less honoured places. All are in their pajamas and sneakers, or *chinellas*, and partake of the strong, black, heart-disturbing decoction.

A careful observer would now discern a slight difference in the character of the scenery. The forest seems a little taller and denser in its growth,

and there is a greater abundance of palms. Long stretches of waterfront are covered with the mirity palms, while the *assaí* palms form veritable clusters with forty or fifty trunks grouped together.

Let us leave for a moment the steamer and its ambitious crew to continue their up-river course while we examine these two characteristic Amazonian palms. It is hard to find a more graceful palm tree than the *assaí*. Its trunk is lithe and almost white, and seldom more than four inches in diameter. It often grows alone on the shore but far more often in groups apparently shooting out from one centre. This may be because the cluster of berry-like fruits have fallen in one body to the ground and given rise to a whole collection of sprouts before the waters could wash them away. In the late summer one will see large, woody, racemose stalks thickly beset with blue-black berries. These are the much desired *assaí* fruits. The people of Pará would not be deprived of their *assaí* wine for all the European delicacies put together. "He who goes to Pará and drinks *assaí* goes never away," may be a true saying, yet it takes a considerable time before one can get used to it. The wine is made by macerating the berries and leaving them over night, then crushing, kneading, and finally straining the semi-solid mass. The juice thus produced is *assaí* wine, a devotee of which can always be recognized by his purple lips, teeth, and hands.

The leaves are thin and delicate and resemble green "willow plumes" as they slowly sway in the zephyrs. The wood of the *assaí* palm is worthless, like that of all other palms, as it is not a true timber structure but merely a mass of stringy tough fibres. It is said, and no doubt it is possible, that fats suitable for oils and soups can be derived from the fruits which, in fact, the botanical name suggests.

Hundreds of acres in the Amazon delta are covered with a stately palm, the *mirity*, also called *burity*. The botanists call this the *Mauritia flexuosa*. Unlike the *assaí* it never assumes picturesque attitudes, such as inclining elegantly over the tops of other lower trees, nor by forming decorative river-turns in bouquet-like clusters.

It stands straight, with a thick trunk, and carries a splendid crown of large, fan-shaped leaves with heavy stems. The uses of this tree are manifold. First the trunk is made into floats by the river-people. Fastened ashore at one extremity it floats at high tide, being light and hollow, and at low tide it remains half on land with the other end still in the water. At intervals of a foot one can see the rings, or scars, left by the leaf when falling off. The trunk is very smooth and one had better not try to walk ashore by balancing with shoes on as a fall would be certain. Only by walking barefooted can one succeed, as the suction

produced by the yielding sole of the foot helps to maintain a balance. The ribs of the leaf are very stout and straight; and, besides being as light as cork, are rather rigid. Therefore some people use them for building house-walls. Other good uses could be found for them. The fibres of the leaves are long and flexible and are used for hats and basket-work. The fruit which seems to ripen all the year round, hangs in big heavy clusters; often three or four thousand together. It is of a reddish-brown colour with firm, smooth scales. Under the scale is an orange-coloured pulp which is sweet and forms the basis for a confection or *doce*. At the heart there is a nut about 1–1½ inch in diameter and quite round. It is very hard and of a marble-like, transparent colour. When well dried it becomes like bone.

It is not quite as good as the "vegetable ivory" from the *jarina* palm, but it would form a good raw product for button manufacture as it is readily carved and turned by tempered tools.

Returning to the narrative of the voyage; I take a snapshot of the next turn of the river. Many new trees stand out in relief against the clear sky. *Marupās*, *taperebās*, and *ucu-ubas* intermingle with rubber-trees and *assaí* palms.

A peculiar columnar object rises to a height of, probably, seventy-five feet, suggesting a tree, and it is a tree, but overgrown and smothered by a species of *bignonia* now in flower with pretty,



The Mirity palm
Hundreds of acres are covered with this stately palm.—(Page 17)



The ygapō



The famous Moju plantation

yellow blossoms. It stands tall and straight above its neighbours like a massive pillar. We stop at several houses discharging cargo and proceed without much delay. The river margin is still inundated and we can see the water extending back into the forest. By this time we have travelled more than ninety miles from Pará and approach a place called Fabrica. Our whistle blows and we see at the end of the *estirão*, or stretch of straight river, an opening in the forest. The presence of such an opening on these closely walled-in rivers means but one thing: a human settlement with an area of clearing where a plantation has been made. One discerns with deep interest the proximity of such *roçadas* (plantations), just as one would the break in a long canyon, or a distant island in the ocean. It is a subconscious feeling which the forest-traveller has and which is developed in proportion to the acuteness of his perceptions and his stay in these regions. I have observed *matteiros*—that is, woodsmen, born in the forest, who actually can feel the presence of a small creek although still a mile or so away. This sense, or woodsman's instinct, has but slight development in the city-bred man whose eyes are not open to the ways of nature; only absolute concentration and isolation for months or years on these rivers will teach the secrets, and the novice some day discovers to his intense joy and satisfaction that the great forest is an open book which he can read and appreciate,

as does the woodsman and the savage. They know far more than the whites who come from the Far North to learn about the "things unseen," but they have not the advantage of comparing and analysing and of giving expression to what they know. Every tree, with its leaves and flowers, tells a story. Every broken branch, every trace of mark on the tree, has its origin in some phenomenon, either caused by the elements or by some animal or some human being. Each foot of ground, whether covered with dead leaves, bush-ropes, stagnant water, or floral life, reveals a history that would fill pages.

We make a sharp turn and discover before us a mile-long *estirão*, scarcely three hundred feet wide, with low banks, where lies a great *roçada*. One seems to breathe freer now that the forest wall along the river has disappeared and the eye can roam unobstructed to the far background where it meets the forest edge again. We steam past some small *barracas*, or thatched huts of the usual river-type, and soon see great fields of rice plantations, where here and there some charred tree-stumps stick up in the air. Tall, stately mirity palms stand on the water's edge like huge marking posts. On the right-hand bank three mirity palms stand together, and at their base one sees many small and crudely built wooden crosses,—a primitive and very wet graveyard.

On an elevation of the plateau to the right appear two wooden structures better made than any others I have seen. We rapidly approach a small landing stage where a lot of people stand, evidently awaiting our arrival, previously announced by the whistle. Farther back we see some large sheds and an iron chimney. From the shed come the noise of a steam-engine and the occasional shriek of a saw. The opposite river-bank shows large rice-fields and a few *barracas* scattered along the water-front.

We have arrived at the "Moju Rubber Plantation" owned by a Wall Street concern in New York. A gang of Barbadians stare at us as we make fast. Here I put ashore my baggage. A tall young man dressed in a natty riding habit greets me. He is the overseer of the plantation and proves to be a most pleasant and energetic American. The little tile-roofed house on the bank is old and in a most dilapidated state; the humid walls are everywhere cracked and broken. One part is occupied as a storeroom and shop, *armazem*, where the manager, a Hebrew, enjoys the lucrative privilege of selling supplies to the two hundred or more labourers of the estate.

There is a "drug-room" connected with the living-rooms, a sad-looking place with big breaks in the walls, Here hang three wooden check-boards painted black. Brass checks hang on the numbered places; but there are more blank spaces

than spaces occupied. The overseer explains that the blank spaces represent labourers who have died from fevers and similar causes.

We go up to his house, a clean and neatly kept little building made of wood. Around it is an enclosure, inside of which are stables, kitchen, and a pigeon coop. Here I make my headquarters for some time to study the country under agreeable circumstances. The plantation is large; I cannot remember its actual size or acreage but it certainly cannot be less than four square miles. It has lately attracted much attention and has been visited not only by Brazilians, but also by Government officials and visitors from Europe interested in South American agriculture, and also by the main stockholder of the company, Mr. E. C. Benedict, and friends, who on two different occasions during 1913 came all the way down from New York in his yacht.

Unfortunately the plantation does not seem to succeed very well. No doubt the trouble is to be found in the administrative offices and not in the field-work. The experiment deserves attention on account of the amount of labour and energy it represents. It is a proof of the ability and persistency of those who have been operating it; not the men who have directed from mahogany desks in their distant offices, but those who have been daily toiling in the field. There are few places where difficulties are greater, or more numerous,

than here on the Amazon, and this plantation has proved no exception; nature is constantly conspiring against the invasion of man. Literally speaking, every inch of cultivated ground has to be wrested from the grip of the jungle by the persistent and dogged efforts of the settlers. Every ten acres of broken land and cleared forest has cost the life of some man who had come up this river in search of work. Few enterprises in North Brazil have cost so many human lives as this recently developed plantation. In percentage it far exceeds the loss of life in the construction of the Madeira-Mamoré Railway, and, in proportion, even the Panama Canal during the time of the French. The persistence with which the work has been carried on and the results obtained strike one as being, indeed, wonderful. In 1911 the cutting down of the virgin forest was begun. The men lived in small unsanitary shacks, with no other food than jerked beef and farina; they worked from six in the morning till five at night, when they were not sick with fever, felling trees and clearing ground by degrees. None of the important agricultural implements now used in the rubber plantations of the East Indies were at their disposal—they had only the axe and the machete. At the end of the wet season when the cut timber had sufficiently dried it was set on fire and the land thus finally cleared. More men were then brought from Pará and the State of Ceará, and it is safe to say that one

half of them died. Under such conditions the work could progress but slowly. In the early part of 1912, when a sawmill was put in operation, conditions rapidly improved. Between the charred stumps on the *roçada* Indian corn was planted, and between the corn-stalks rice was set in long rows without wasting a single foot of space. Seeds of the rubber-tree were then planted in great numbers in small leaf-baskets, and when the sprouts appeared, they were transplanted in the open, in long straight rows. They are expected in the course of six to seven years to reach the state in which they can be profitably tapped.

As already mentioned, the work was continuously hampered by the excessive mortality of the labourers. Take one instance: A gang of men, arriving on the steam-launch, would be given their time-checks, their respective numbers would be entered by the timekeeper, and their baggage, a small tin trunk or a bag each, placed in the large shed which had neither sides nor walls. They would then go out in the field and begin work. A few days afterward sickness would seize them. At six in the morning, the overseer would make his roll-call, checking the number of each man as he answered. There would be five or six numbers, as a rule, remaining unanswered. When the overseer repeated these numbers, someone in the crowd would say: *Está doente*, "He is sick." After break-

fast, the overseer, going over to the long shed to see about it, would generally find one man already dead and the rest in a desperate condition. In the course of a few days the tide would turn with these, either for or against recovery. If against, the unfortunate would be taken in a small canoe or *montarīa* to the "Three Miritys" and there buried; but if he still survived until the next return of the steam-launch, he would be carried on board, where generally he would die before reaching Pará, and be dropped in the river. Many of the dead labourers were burned in a large fire close to the water-front. It was a frequent occurrence for the time-keeper and overseer, when working in the field, to be called to a man lying prostrate on the ground, and it was almost certain that the next day his space on the check-board would be empty. Out of respect to the sentiments of new arrivals, a check number once given would not be repeated, but the numeration continued, so that each always received an original number. Out of one hundred and twenty-five workmen, sixty-five died in the course of two months from the terrible, fatal disease. Nobody really seems to know what this disease was; a galloping intestinal disorder set in (probably a form of dysentery complicated by cerebral congestion), and in some cases death followed in a few hours. It is possible that the specific microbe of this malady met here a perfect culture-field, as there is no

parallel on record in the history of the State of Pará.

The men lived miserably bunched together in the sheds while the timekeeper and overseer lived with the director of the plantation in the humid and dilapidated storehouse on the water-front, where a constant, intolerably high temperature exists. Rarely does the temperature go below 89° F. inside the rooms. Several times, the director himself was seized by the strange malady and was taken down to Pará, to his family, where he prepared to die; but each time he escaped. The young American overseer also fell sick and for several months hovered between life and death, but his fine constitution and great will-power pulled him through, and he is still there.

But now all has changed. Scientific sanitation did it, as it does always when seriously applied, but generally it requires a lot of dead people to teach us that swamps must be drained to rid us of insects; houses must be raised above the ground and well ventilated; diet and habits of a community must be regulated to suit the climate they live in. It also proves that *it is not the heat that kills, nor the general climate*, but conditions due to ignorance and neglect and which can readily be conquered. The men now live in small, clean, and dry houses; the swamps are gone, and the bush is cleared. Consequently health conditions are vastly improved, and with the disappearance of mos-

quitoes existence is tolerable. As a result, work is progressing steadily.[1]

On the edge of the plantation the process of conquering the forest is still going on. Large branches and felled tree-trunks litter the ground. The forest edge is very abrupt, and with this dead stuff bears some resemblance to a *chevaux de frise.* When the dry season is well advanced the débris will be burned, thus clearing the ground, and at the same time supplying the soil with new food-elements. Another development on this estate is a sawmill. It seems as if the proprietor has the right idea in desiring to utilize the great timber and hardwood supply of the Amazon country, but, unfortunately, on this estate as well as on all others, lumbering is dying a natural death. It is the same old story of incompetence. There are needed here a few first-class timber-surveyors and lumber experts to plan and direct the work. Then when the subject has been well studied, the machinery should be forthcoming in sufficient quantity and quality to develop the field. At the present date, the many excellent varieties of fine hardwoods, suitable for all modern purposes and appliances, remain an unknown quantity to the world. Some day, I hope conditions will be ripe for a great industry in this line.

[1] When passing this same plantation in 1914 I noticed that work had once more been suspended and that the area under cultivation had relapsed into a secondary wilderness.

As it is, there occasionally arrives a miserable timber raft of Spanish cedar, at the foot of the sawmill, containing scarcely enough for local consumption.

CHAPTER II

The Ygápo and the Pororóca

I MADE my notes every day in the form of a diary, fixing definitely the structure around which further details could be built. Here and there some irrelevancy may strike the reader, but even apparently insignificant notes will be found to have bearing on some phase of Amazonian life, and may enable some future explorer or traveller to profit by my shortcomings.

April 20, 1912.

I get up shortly before sunrise, which here all the year round occurs at 6 o'clock, by rolling or rather "pouring" myself out of the hammock. I slept better last night, as my hammock had been improved since the night before, when it had twisted itself in such a manner that one side formed a sort of roof over me when I assumed the traditional hammock position, and I was therefore constantly threatened with a capsize. By changing the strands of the end pieces I manage to get a well-balanced, properly concave hammock, and rested in peace.

The workmen assemble in front of the house and they are sent out in the field under their respective foremen; while the director—Dr. Goeldi, the American overseer, his Barbadian bookkeeper, and I sit around a rough plank-table and consume hard-tack with a large cup of black coffee.

A little later there arrives a Mr. N——, an American civil engineer, who also belongs to the force on the plantation. He has recently finished an exploration trip with the so-called Lavandeyra outfit on the Trombetas River, and is still a little pale and weak from frequent fever attacks. He asks me to give him some quinine quickly, and I give him fifteen grains hypodermically in his left arm.

The cook is also sick and refuses to prepare lunch, so to avoid trouble I resolve to visit the overseer. Walking across the rice-fields I find him sitting on an empty soap-box in a small clay hut, his head all bandaged up, and looking with a melancholy face at his bride of two months, a young girl of about sixteen. I give him hypodermically twenty-five grains of quinine in his left arm, as he needs it badly.

At the overseer's house I find a young fellow from the Tapajos River, who is just ready to go into the bush to look for some herbs he needs for a headache; he says he knows of a plant that will cure him. I desire to go with him in his small canoe, and he invites me to do so.

A little *ygarapé* (creek) runs behind the house

and discharges into the Moju. It comes from the interior somewhere; nobody really knows its exact headwaters, but rubber-workers who have been four days' journey inland report that in that distance no diminution is to be noticed in its size.

We paddle up this creek. I cannot describe adequately the wealth of vegetation which exists here, nor its overwhelming splendour of development. I can only mention it prosaically, realizing that even the most accomplished word-painter would have a difficult task if he tried to do the scene half justice. But my paddler does not appreciate at all the beauty surrounding us; he merely scans carefully each leaf and branch as we pass, for the plant he is after.

The *assai* palms are abundant and add more than any other tree to the picturesqueness of the scenery, as they form themselves canyon-like along the narrow creek and the tree-crowns even touch on opposite sides. In places our way goes through a veritable tunnel of sombre green; in other places, especially at bends, the *ygarapé* widens and then becomes, of course, well lighted from above. Large patches of *aninga* plants form stockades behind which it is impossible to distinguish the trees. As I look into the forest on either side I fully appreciate the meaning of the term *ygapō*.

Ygapō is a word employed by the Amazonian river-people, and also by some of the Indian tribes

which belong to the Tupi linguistic stock, and it means "forest full of water." Scientists prefer to call it "forest insufficiently drained." It amounts to the same thing; the forest bottom never dries, nor allows certain plants to thrive. The entire main Amazon valley is, to a great extent, an *ygaþō*. We paddle our canoe into the forest, make fast to the nearest convenient tree-trunk, and climb overboard *into* the object of my study, and I let myself slowly sink into the ooze until at last I reach bottom at a depth of four feet. Of course, it soaks everything I wear, up to my waist, but my matchbox and tobacco-pouch are closed hermetically; everything else can stand it. The bottom is fairly solid as it is formed by many interlacing roots. I wade in between the trees and look around. I take a photograph but I have to expose fifteen seconds for the forest is dark overhead; besides, a shower comes up and soaks me down to the *ygapō* waterline.

The impression conveyed by this dense, submerged forest is not one of cheerfulness. I hear no singing of birds, nor any other sound indicating the presence of agreeable life, only the irritating hum of many mosquitoes which in this semi-stagnant swamp find an ideal breeding-place. I wonder, as I am being so constantly bitten by these dreadful pests, what they do when they have no human being to consume. It is not an everyday occurrence for them to have such a feast as I seem

to provide, judging by the way they attack me.

All the trees around are tall but they are rather slender specimens. As a rule the wood is soft and in many cases unfit for useful timber. The trunks are generally covered with moss and fungi, while the lower branches are well beset with several species of the orchid family and many of the bromelias. On hummocks slightly elevated, but not quite above the water, grow tall and splendid ferns. Large trunks stick up between half-submerged clumps of young palms and old palm-leaves. These trunks belong to the famous Javary palm. On them one sees many rows of hard, pointed spines from five to seven inches in length. The crowns of these noble Javary palms I cannot see, as they tower above all the other trees.

In the foreground is a tree called the *acapu-rana*. It would take some five minutes of hard labour to cross a small space of this *ygapō* on account of the complex mass of old leaves, roots, bushropes, and underbrush in general, together with new shoots, but it is everywhere most difficult to traverse, especially as the old Javary palm-spines are imbedded in every dead leaf. These spines are almost too strong to be wasted, and some use will be found for them. They will perforate ordinary shoe-leather with ease.

Trees of great interest which I see here are rubber-trees, still young and, so far, untapped,

although in a working condition; and the *ucu-uba*, of which I can get no free view of the tops. This latter tree produces in June and July a fruit about the size of a cherry which is covered with a paper-thin brown shell. If a match is applied to one of these nuts it soon bursts into a bright, but sooty flame and burns up leaving only a few grains of ash. The burning of one nut lasts about 4½ minutes. This at once suggests that there is here a valuable raw material for the soap and stearine industry. There are certain Indian tribes which, when they desire to employ artificial lights during their ceremonies and feasts, put ten or twelve of these nuts on a long spine of the Javary palm, and in this manner produce a fine torch that burns without attention for 45 minutes at least. The burning stearine drops continuously from the nuts with a sizzling sound and burns for some time on the ground. The nuts grow in great quantities, several thousand on each tree, and the trees are fairly abundant; two or three to the acre in the *ygapō*. It seems that there might be a profitable traffic established in this abundant natural product. The timber also of the *ucu-uba* is of a valuable quality; it is dense and hard, and of a reddish-brown colour, almost like mahogany.

Many smaller trees stand close together; some only a few inches in diameter. Of these a number have no indigenous names and can be identified only by their scientific classification. Others are

known to the native forest-men alone and have not yet been seen or classified by scientists.

The trees are interwoven with *cipós* or climbers, called in English "bushrope," belonging to the bignonia family.

Strange to say, it is remarkably cool in the *ygapō*. Only here and there does a sunbeam reach the bottom, and where this happens one perceives a warm, pungent air. Large blue butterflies (*morphus*) sail past with a peculiar, irregular, but speedy flight. Their azure-coloured wings shine beautifully as the rays of the sun fall on them. Otherwise all is dead and quiet in the air of the *ygapō*.

Long processions of *saūba* ants crawl from tuft to tuft, or across natural bridges from tree to tree, each carrying in his strong mandibles a freshly cut leaf. They look like lines of miniature sail-boats as they speed rapidly along, the great leaves swaying in their vertical positions, like canvas bending to the breeze. These *saūbas* are veritable plagues on the plantations where, in a couple of days, they have been known to cut and carry away all the leaves of the young tobacco plants. If one succeeds in burning them out with sulphur they soon form a new colony and begin all over again.

Another variety of ant builds large nests far up the tree-trunks. From this nest a clay, or mud, passage is constructed reaching to the bottom of

the tree. This passage is made like a tunnel so that the ants can walk home dryshod, the clay being impermeable to water, due perhaps to some glandular juice excreted during the construction. Still larger grow the nests of the *cupim*, a sort of white ant which is greatly appreciated by the climbing ant-eaters.

I now re-enter the canoe and we return by way of the creek to the plantation. The boy has not succeeded in finding the particular plant he was searching for but he cuts off an inferior substitute from the large bush or tree called *mamo-rana*. This grows only in water and is therefore always found in the *ygapō*. Its wood is soft and fibrous besides being very light in weight so that one cuts easily into it with a bush-knife. A bullet, however, does not enter far into the trunk, because of the extreme toughness of the fibres. The natives employ these fibres to caulk their leaky canoes. At 6 o'clock the sun sets. The singing of birds suddenly ceases, and instead of their music the many different frogs start up a deafening chorus from the *ygapō*, while the more musical *sāpos* utter metallic notes from the tall trees.

Fireflies with a reddish centre-light and two greenish side-lights dart between the trees, alternately flaming up and going out. Dark-brown crickets then begin their notes as they descend the trees and the walls and roofs of huts, especially before a rain. The Brazilians call these crickets *cigarras*.

One soon grows accustomed to this nocturnal concert, just as one grows accustomed to the roar of passing elevated trains in the streets of New York, or the rhythmic beat of engines on board a steamer. As soon as the noise stops the stillness seems oppressive and one feels relieved when it begins again. It is now dark. We sit around the supper-table and I try to enjoy the meal, but I am not successful. I eat merely to exist. After supper out come an old guitar, an old drum, and a jew's-harp to produce weird noises which shock even the forest denizens around us. Then we pause and light our pipes, and reclining in our swinging hammocks the conversation drifts homewards; we walk, mentally, in New York streets discussing the local sights; wondering what new skyscrapers are going up in our absence. We turn into well-lighted restaurants and order imaginary repasts that would kill an elephant; we buy choice cigars, see plays, and mingle with people of our kind. As we talk on I forget where we are and become enthusiastic in my imaginary extravagances, until suddenly a fat cricket creeps down my back and with one "fell swoop" recalls me from my dreaming, back to the forests of the Amazon.

These men of the bush are fine, virile specimens, a type which only this kind of life can create. The work is too hard to permit immoderate drinking, an otherwise too-frequent habit in the tropics where English and Americans are together. In

spite of sickness and death and poor food, these good men stick to their jobs without demoralization—on the contrary, showing considerable vim and energy.

Monday, April 21st.

To-day I had an opportunity of witnessing the *Pororóca*, the peculiar tidal-wave, or bore, of the Amazon delta. It occurs in all the rivers which discharge into the large estuary of the delta system.

When the ebb-tide has reduced the waters of these rivers to their minimum one notices a cessation of the flow for about fifteen or twenty minutes; then, all at once, as the tide turns, the waters overflow the banks and fill the *ygapōs* and so-called *varzens* or secondary swamps. Ten minutes afterwards the up-stream or flood-current is running in places at four miles an hour. Near the mouth of the main Amazon this rate is ten or fifteen miles an hour with a wave-front over five feet high. When a full moon occurs, the lunar attraction, as is well-known, exerts a stronger influence on the sea and gives rise to a larger tidal wave, or spring-tide. The same is true of the new moon. There are also many local factors entering into tidal action. This tidal wave is further accelerated around the equinoxes when the sun changes the direction of its parallax, and the heavy trade-wind from the ocean, blowing here almost parallel with the equator gives the waters a tremendous up-stream push.

At 9 in the morning the director of the plantation comes, with two boys carrying paddles, telling me to be ready to go down to the *ygarapé* to secure a film of the *Pororóca*. I therefore carry with me my motion-picture camera, and when we are all seated in the frail *montarīa* there is not half an inch between the gunwale and the water. First we paddle up the creek expecting to find a dry place on which to put ourselves and the camera, but although the tide is rapidly ebbing the *ygapō* does not show land anywhere. Suddenly the sky turns very dark, and a veritable shower-bath deluges us; I have to sit on the camera to shield it from the torrential rain. We turn back and go with the current at a great speed, the boys merely keeping the course with their paddles. In and out between thousands of heavy bushropes and aerial roots and *cipōs* we navigate; dozens of times I expect to go crashing into some tree-trunk growing straight up in the water, or have my helmet and glasses torn off by low overhanging *mamo-rana* branches, but the boys never fail. Without effort, without the gesticulations of the white Brazilians, they just paddle and steer and never utter a word, only now and then as chance offers, relighting their wet cigarettes. We shoot under festoons and garlands of yellow *malvacaes* and go like a swift and silent sled over *araceas* growing deep in the black water, only the tops sticking up.

We make fast at the little pier built out in the

creek behind the overseer's house. Here we find a dry spot on the bank, set up the camera (it has stopped raining), and then go to the house for a jerked-beef and farina lunch. During lunch it begins to rain again and I have to run quickly to the creek and fetch the machine to shelter. The water by this time has dropped very low and it will go down an inch or so more. I place a previously prepared stake in the creek, shoving it down till the zero mark is slightly below the water-level. The stake is painted white, and each six inches marked with black paint. The marks reach to twelve feet in all. The Doctor stands a yard or two from me while a boy with a surveyor's umbrella is shielding him from the rain, which has come on again. My position is about four feet above the water and after clearing the bush I obtain a free view of the creek as far as the first turn, some two hundred feet away. But it is sombre, and the trees close together on top so that I have but small hope of securing a good film.

The overseer leaves me for the mouth of the creek where he stations himself. He is to watch there for the *Pororóca* as it turns from the river Moju, far down at the extreme end of the plantation, and when he sees it coming he is to fire a shot as a signal for me. The critical moment is now rapidly approaching; the downward current has stopped and a peculiar, greasy deposit of vegetable matter is marking the exact junction between

water and land. They call it *gordura do rio*; river-fat.

My heart throbs and I look once more to see if everything is in order. I have my hand on the crank of the moving-picture machine and I am ready. Suddenly the rain stops, and a few seconds later the signal-shot is heard. The *Pororóca* is coming!

I start the machine going, and with a swish and a rush of water, with breaking and snapping of fallen trunks and branches the bore comes tearing towards me, with the overseer's canoe on the crest of the wave. He looks very much occupied with his own affairs as he shoots past amidst all sorts of forest debris, his boy steering frantically.

In the first ten seconds the water rises three and a half feet, reaching my elevated position and dashing branches and logs around me. Soon the water reaches my knees, and at that instant the Doctor calls out the time since the arrival of the *Pororóca*; "forty-five seconds" by his stop-watch.

Suddenly a large tree-trunk swings directly towards me and on a level with my waist. I seize the camera and try to lift the tripod to reach a safe place but it sticks fast in the mud and I prepare for a shock; but at the last moment the log swerves and strikes harmlessly into a mud-bank three feet away. When the Doctor calls, "four

minutes," the rod registers eight feet nine inches with the water still rising. Now follows another, smaller rush, of a secondary wave carrying a mass of weeds, twigs, and leaves. With this second rush come legions of spiders, ants, and assorted insects which have been surprised by the *Pororóca* and have been carried away from their positions on trees and bushes along the edge of the creek. Those that come near me climb on me for refuge. One large, ugly-looking scorpion, with its long, prehensile tail with the poisonous claw at the end, crawls up on the Doctor's coat and is about to creep on his neck when I manage to flip it away.

By this time the water is reaching to my shoulders and we conclude that the entertainment is over and retire to dry land where each takes ten grains of quinine.

Later I learn something different about the *Pororóca* from the mouth of a *caboclo*, or half-breed native, from the river Guamá. He is, of course, well acquainted with the phenomenon of the *Pororóca* on that river where the wave causes especial damage. There it tears from their moorings canoes, sailing craft, and even steam-launches and deposits them high and dry amidst the bushes, or crushes them against some tree-trunk. It is, therefore, greatly dreaded by the people who, as far as possible, protect their property from its ferocious onslaught. And the wave travels fast,—

it has travelled a measured statute mile in ninety seconds, or at the rate of about forty-five miles an hour. The centres of the rivers show less disturbance, while the crested wave breaks along both shores smashing all within reach.

This *caboclo*, a man of about thirty years, fully believes that the *Pororóca* is a little *cabocla*, or female native, and that by winning her favour by some act of charity or friendship, she will omit her disastrous visit to that particular hut, or piece of property. Thus, he related, on the day of the full moon, some hours before the high tide was due, the *Pororóca*, came to visit his hut in the shape of this little *cabocla* who, modestly enough, asked only for a drink of *cachassa* (native rum) which the owner gave in so satisfactory a quantity, that, the "spirit" of the *Pororóca* thanked him and promised that this time nothing should happen to his property. Later in the afternoon when the real *Pororóca* came charging up the river, it spared every one of his canoes, and even his shirts that were drying on a mirity palm float on the water-front. His next neighbour, four miles farther up-stream, suffered the loss of a brand-new canoe, had half a dozen ducks flung against a fence, and a lot of chickens drowned. But this neighbour had always been stingy and thought that he knew more. "That's what he got for not believing in the *Pororóca*," concluded my *caboclo* friend.

April 23 1913.

The beef killed two days ago, some of which was prepared as a stew, upset us all to-day. We had to remain in our hammocks rolling around with terrible pains in the stomach. In my observation, meat-eating has never failed to cause functional disturbance in this equatorial climate. The great, continuous heat is in itself a debilitating agent; therefore, when heavy badly cooked beef is eaten, it is hard to digest and the result is profuse perspiration, great pain and, if one is lucky, a fit of vomiting. I always come back to the old, established fact, which many people will not believe, that the torrid zone is not adapted to the diet and regimen of the more temperate climates. One cannot, with impunity, take alcoholic drinks, no matter in how small quantities, and he cannot eat the same highly-seasoned and spiced foods, nor work as hard here under the equator as elsewhere. The greatest care and judgment must constantly be exercised. The mortality of foreigners is often accelerated through ignorance and over-indulgence in pleasures which would overtax them even in cooler climates. The meat in Pará is generally of poor quality, besides being cut without any regard to the anatomy of the animal; simply a rough, slipshod, any-place-at-all slicing. The cattle as a rule are either starved or diseased. The meat is sold in dirty shops, and on wheelbarrows, covered by millions of flies and showing blue-black and green-

ish-red chunks of flesh, often trailing in the dirt. Such meat cannot fail to spread disease. The cattle come mostly from the Marajo Island where great cattle-ranches exist.

During the night the temperature is considerably lower than during the day, which makes the climate more agreeable than that of India. A great humidity is felt, especially after midnight when the temperature is lowest (71° to 75° Fahrenheit), and the radiation of the terrestrial heat is condensed into vapour. The better class of Brazilians at night change their clothes to pajamas of linen and continue often to wear these during a part of the day, except in cities. The pajamas are light and comfortable, but, nevertheless, the people always complain of some bad cold, or catarrh, and look sickly enough. I prefer to wear ordinary American all-wool underclothing day and night, and I never have any ills due to a cold although spending days and nights wet to the skin. The wool, although feeling heavy before one gets used to it, is porous and absorbs perspiration from the surface of the body, allowing an even evaporation to take place, thereby preventing sudden changes in temperature and insuring a regular radiation.

The owners of the Moju Rubber Plantation are chiefly interested in the future yield of the new growth of rubber-trees, which are now planted to the number of some 20,000. The surrounding

forests, those of *terra firma* as well as of the swamps, contain a few thousands also.

Let us follow a rubber-worker from his dwelling out into the forest along the *estrada*, so as to make a closer acquaintance of the rubber-tree and its product from the point of view of an observer with no pretension to technical knowledge. This precious material, first discovered by the Amazon Indians and now one of the most universally used raw products, is in these days the subject of keen competition. The British plantations in the Far East, and in Africa, are a serious menace to the Amazon industry, and only time will show if Brazil can maintain the supremacy of its famous tree, the *Hevea brasiliensis*.

CHAPTER III

Collecting and Smoking Rubber

PASSING up some river or creek one never fails to see certain light-coloured trees standing close to the water-front or at some seasons even in the water. These trees immediately arrest attention because of their peculiarities. Their lower trunks are thick, dark, and warty and their crowns are light, with trisected, medium-sized leaves of a beautiful light-green colour. They are the *seringueira branca* or white rubber-trees from which comes the finest rubber in the world or "fine Pará." The trunk to a height of ten or twelve feet from the ground is often very much thickened, caused by mistreatment by the rubber-worker, how, we shall understand by visiting a typical rubber-worker's hut and asking leave to follow this solitary forester on his day's journey. We pass along the water-front to reach the hut which stands back a little in the forest with a space cleared around it, and we notice several young rubber-trees of no more than eighteen months' growth rising not far from the mother-trees whence the seeds have fallen and taken root.

Now I stand in front of the *seringueiro's* (rubber-worker's) primitive hut and examine this most rudimentary forest dwelling which hardly can offer sufficient shelter for a human being during the heavy rains. I am surprised to see such a crude piece of construction, even where no nail, nor board, nor bit of metal has been employed. The hut in question is not more than fifteen by thirty feet and about twenty feet in height. Its floor is raised about four and a half feet from the surface. Poles made of young trees that have been cut and placed in holes in the ground are the main support of the hut. Other saplings are tied horizontally to carry the flooring made of split pieces of palm trunks. At the points where these horizontal poles are tied to the uprights with tough *cipós* or bush-cord, short tree butts are wedged in so as to add solidity to the floor. A simple quadrangular frame-work of thinner saplings forms the cross-beams and rafters which support the light roof which always leaks, and which contains untold numbers of the larger kinds of Amazonian creeping insects. The roof is formed by simply placing leaves of the *ubussú* palm overlapping each other. These leaves are broad and rather coarse and when a sufficient number of layers are superposed they keep out the rain; at least for a while. The back of this "natural" hut is covered half-way with these palm-leaves, but so primitive and crude is the arrangement that both rain and insects have unobstructed



The side view of a rubber-worker's hut.—(Page 48)
(Photographed for the Brazilian Rubber Exposition)



Tapping the rubber tree
(Photographed for the Brazilian Rubber Exposition)

entrance and exit. Stately *murumurú* palms overhang this side of the roof.

Finally turning to the last *façade* of the hut we come to the main entrance. Here a stout trunk of *assai* palm leads into the house. A few deep notches cut into this trunk serve as rungs or steps; the original, primitive ladder. This ladder-staircase combined is both cheap and good in dry weather, but treacherous when wet and slippery. The hut is internally divided into two rooms through the simple *ubussú* leaf partition going half-way across. One of these rooms serves as kitchen, dining-room, and tool-room. In this the owner builds his fire in an old tin basin or kerosene can filled with earth for insulation, and above it places an iron tripod upon which all his cooking is done. On a nearby post is stuck, half-way between the leaves, a square braided leaf-fan as a blower for the fire, and there are as utensils a frying-pan, a kettle, and a coffee-pot. Two cups and saucers of *demi-tasse* size, brightly coloured with roses and tulips, the best product of some Hamburg or Lübeck works, are placed carefully in a wicker-basket in a corner. A little iron axe, the famous, standard rubber-tapping tool of the Brazilian rubber-worker, the simple *machadinha* which has defied hundreds of patented improvements by reformers, stands against the wall, alongside of the *terzado*, the omnipresent machete, or bush-knife of the Amazonian bushranger who

accepts from the "blood-sucking" trader no other mark than "Collins." Try and sell him a German machete, even one with a gilt blade, and you will see the *seringueiro's* index finger oscillate as the national signal for "Nothing doing."

There are also two old tin pots with bushcord handles and a couple of *cuyas*, or calabash gourds from the tree of the same name, for holding water, and one for rubber-milk when tapping. This latter is strengthened by means of *cipōs* which have been tied around the vessel somewhat in the manner of the wicker-work on the well-known Italian Chianti bottles.

The other room is equally unpretentious and here I perceive the usual cheap, multi-coloured hammock, tied to the uprights by means of *curauá* fibres. (A plant of the Bromelia family.) A little rubber-pouch, made by covering a canvas or cloth bag with rubber-milk, contains tobacco and "Zig-zag" cigarette paper, or *abade*, and is suspended to the wall on some projecting leaf stalk. A muzzle loading trade-gun stands close to the hammock with a rag covering the percussion hammer. A large, but half-starving, yellow dog lies under the hammock watching his master's every movement.

The rubber-worker now prepares to go to his daily work. He has eaten his frugal breakfast, consisting of black coffee and a handful of *chibéh*; *chibéh* being merely a watery variation of the usual

dry and discouraging farina. This "cereal," consisting chiefly of woody fibres and starchy granules, is soaked in water in a gourd and this mixture drunk with apparent relish.

Perhaps it will not be out of place to give here a short account of the varieties of farina used by the Amazonians:

Chibéh, farina mixed with cold water; *jacúba*, farina in a gourd with water on top, only the water is drunk (extravagance); *mingau*, a farina gruel mixed with the milk of the cow-tree; *bijou*, farina mixed with a certain amount of oil and baked; *bijou chic*, farina mixed with water and baked.

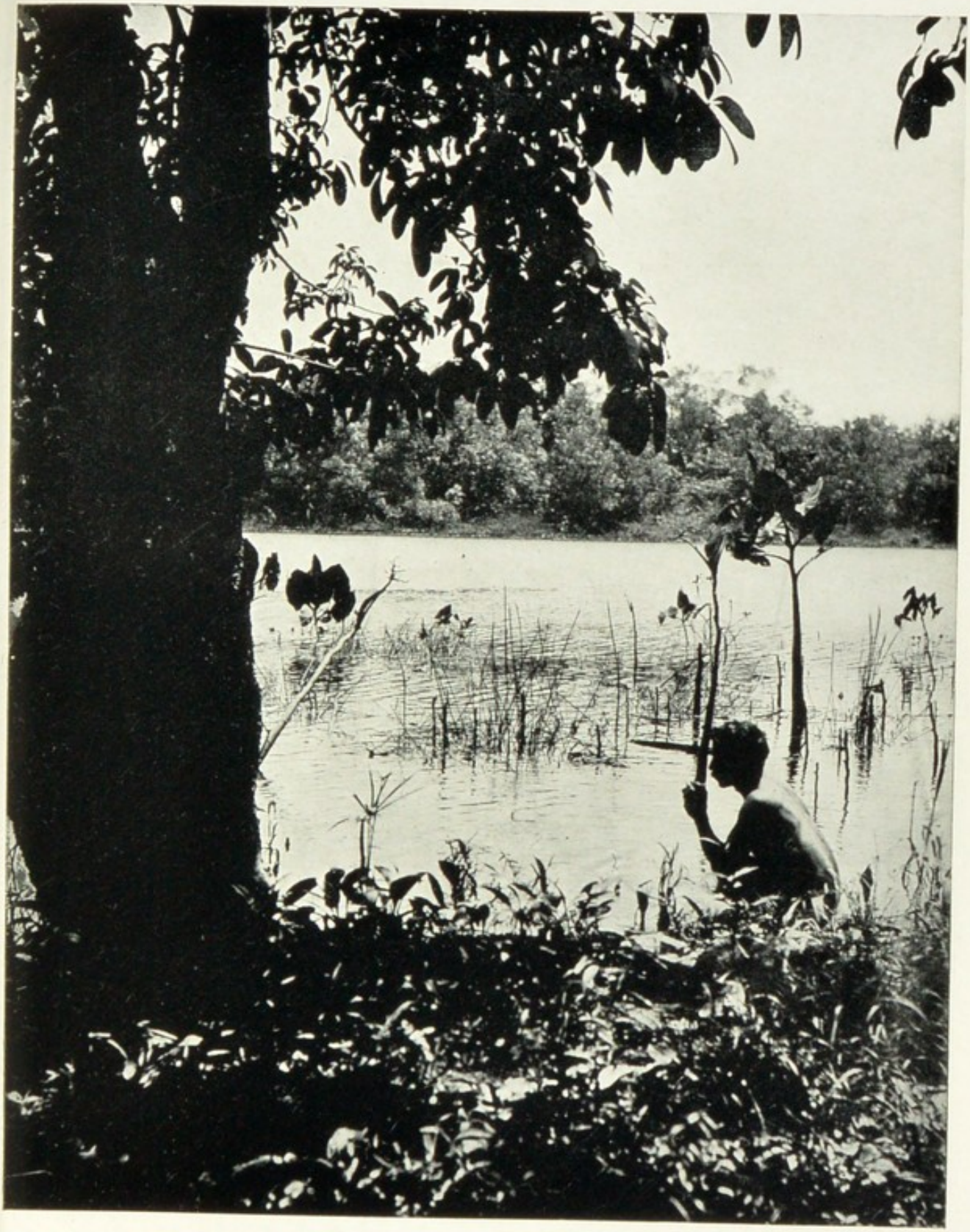
A blue calico shirt and short trousers of the same material, besides a straw hat or a cap made of striped blue or red trade-cloth finishes his usual rig. With the gun, a pouch with shot, and a small flask of powder; his machete in a home-made skin scabbard on the side; the little rubber-coated tobacco-pouch; the *machadinha* and the *balde*, or gourd for receiving the rubber-milk; our man sallies forth at 5.30 or 6 in the morning, according to his individual disposition, to begin the day's rubber gathering.

I follow him on his journey and notice how, after reaching the *estrada*, or pathway in the jungle, he places his gun against some sheltered trunk alongside of which he also puts his *balde*. He expects to be very busy for at least two or three hours, gashing the rubber-trees, and he cannot

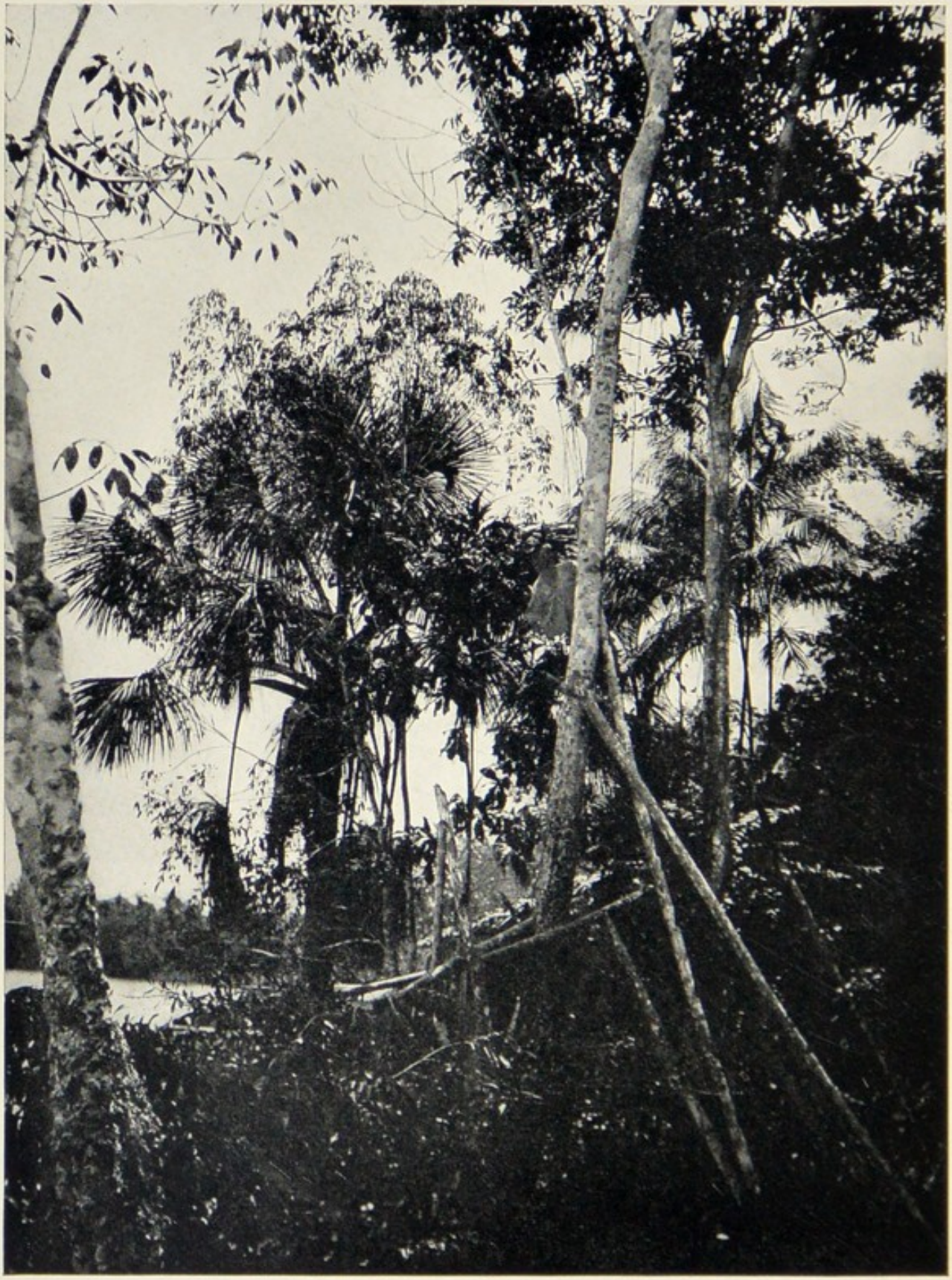
lose any time hunting game for dinner. That can wait till he returns after having finished his first round on the *estrada* tapping the *seringueiras*. He now puts on speed, going at a rate I would not like to follow for any length of time. His bare feet quickly find sure footholds on the moist, slippery ground, treading firmly yet so lightly that he is not heard, even at a short distance. After a time he takes his shirt off, which he wore merely for the sake of courtesy while entertaining a stranger, and tucks it under his belt, or hangs it on a nearby branch making a mental note of the place.

With his machete always swinging in his right hand, ready for use in clearing the *estrada*, he walks on through the densest kind of *cipō* jungle or spiny Javary palm thicket, without any apparent slacking of his speed. His mind is on his work, still he perceives every stealthy movement in the trees and in the *sous-bois*, called by the caboclos *caa-tinga*. He is always alert for any unexpected enemy or easy game. The *surucucú* snake belongs to the first, and the *jaboty* turtle to the latter category.

Suddenly he stops in front of a rubber-tree and I am able to catch up with him. Turning quickly around he seizes four old, half-rusty tin cups, which are bottom up on a nearby sapling. He runs his fingers around them to take out dirt and dead insects and, with the cups in his left hand and the *machadinha* or little axe in his right, he



A rubber-worker taking his bi-daily bath



An example of detrimental "overhead tapping"
(For the Brazilian Rubber Exposition)

takes a firm position, in front of the tree, ready to cut. First he examines the trunk to see where he cut the last time and he selects the area above that place for this day's tapping. Then with the blade of the axe he strikes one sharp blow, half-sidewise, at an upward angle, letting the stroke reach almost to the cambium, or formative layer, of the tree. Immediately afterward he sticks the *tigelinha* into the bark under the lower angle of the cut so that the slowly exuding milk can ooze down into it. He makes three or four of these gashes around the circumference of the tree; if the tree is healthy and not overtapped he gives it five to seven; but the prudent *seringueiro* does not exceed five.

Now, what has the rubber-worker just finished doing? He has severed numerous bundles of vascular ducts which carry the latex through the outer cell layers of the tree, causing it to exude. This fluid, which he then carefully collects, is the peculiar rubber-milk which, in order to make crude, first-class rubber, must be subjected to an artificial coagulation by smoke and heat combined. He has tapped only a comparatively small number of the cells of the tree, so as not to overbleed it. The little axe with which he did the work cuts a gash of about 1½ inch in length and no more than three eighths of an inch in width. If it exceeds these dimensions and goes more than one half inch into the trunk the operator is careless and he is liable to slowly ruin the tree; because, as the wound stops

bleeding or exuding milk in three or four hours, it is then frequently attacked by ants and other insects as well as fungi. These foes set to work to spoil the tissues in and around the gash, giving rise to "dry" or "wet" rot. One can well compare the gashing of the rubber-tree bark with the wounding of the human skin. For instance, take a razor and draw it quickly across the skin. The blood-vessels thus severed bleed freely for a while and then, in a sound body, close together with the edges of the wound meeting and healing with only a slight scar, but on the other hand, if the wound should be inflicted with a coarse, blunt edge, like that of an old axe, an ugly, lacerated wound results which pains more than it bleeds, and is slow and difficult in healing. Inflammation sets in and the surrounding tissue is diseased. So with the skin of the rubber-tree. The wise rubber-worker gives his trees an opportunity to heal their wounds, after having cut them in a careful manner. Many workers twist the blade of the axe when drawing it out of the cut thinking that, in this way, they increase the flow of milk, not understanding that the same vessels remain severed and that they have only succeeded in producing an unnecessary laceration.

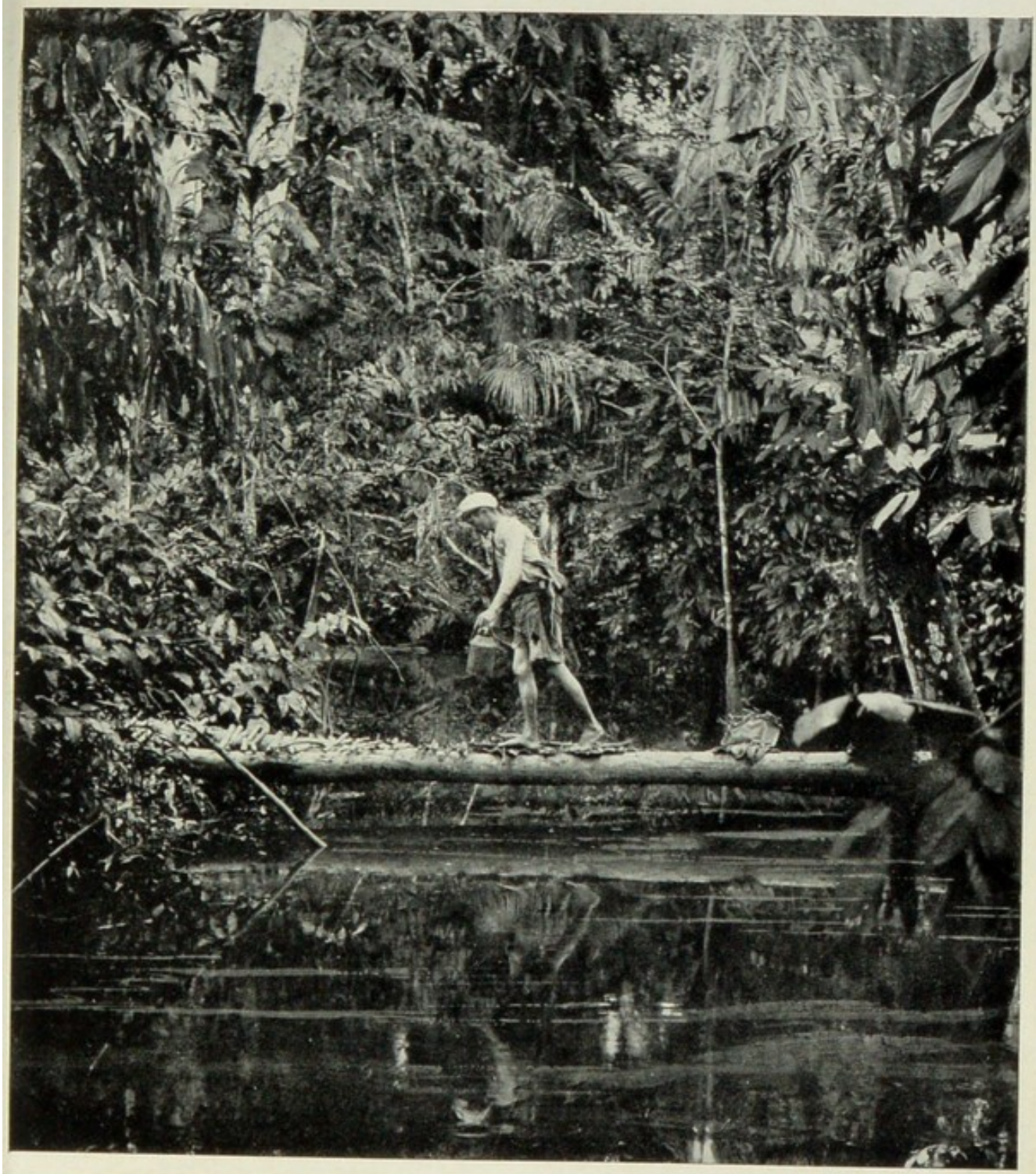
I said that in ordinary cases, the trees are tapped to a height of ten or twelve feet; but sometimes the rubber-worker finds it necessary to cut his tree at a greater height. In the photograph the ladder reaches the trunk twenty feet from the

ground and this "overhead-tapping" is said to increase the production of the tree many times. Some trees, in fact, are tapped to the great height of thirty and thirty-five feet; and to their detriment. The ladder used to climb up on is made from the trunk of the *assaí* palm with large notches cut four inches apart. In the picture is seen this kind of palm, the *assaí*, with its graceful drooping leaves. On the left hand bottom are the palmate leaves of the *emba-uba* tree, and close to this on the right are a few scattered leaves of *aninga*. This plainly indicates that the land is inundated during the wet season as *aninga* thrives only on water-soaked soil.

The rubber-worker visits between 150 and 200 trees on his first round. This pathway, extremely tortuous and at times practically retrogressing, constitutes what is understood by *estrada*, and it is always made to contain just the number of trees which can be conveniently tapped in the early morning, and which stand either off the path or in its very middle. Sometimes it leads to a narrow and deep *ygarapé*, where a tree has been felled in a convenient position, reaching from shore to shore, with notches cut into the wood to facilitate crossing on wet days. Over such a creek the worker has to balance himself four times a day; twice when tapping and twice when collecting. Often our man meets an obstruction such as a fallen tree, or an unexpected flooding of his accustomed trail,

and he has to make a detour. Often too, he is obliged to wade or swim for considerable distances through treacherous bogs in the *ygapō*. Our friend does not even attempt to take off his clothing but plunges into the water carrying his *balde* with the precious milk, and his other provider, the gun, high above his head. These brave *caboclos* always take great chances, in the face of the knowledge that in the soft bottoms of these swamps lurk snakes, especially the *surucucús* and the *jararācas*, and the voracious fish of cannibalistic tendencies, the *piranha*. But their recklessness is always great when young and healthy; and hungry and in a hurry besides. It is seldom one hears of accidents to rubber-workers from any other cause than snake-bites, which occur in the Pará country at the rate of one a week.

About nine in the morning the *seringueiro* has finished his tapping, or, as he expresses himself in Portuguese, "*Já cortei*," and will now return to his hut to leave his *machadinha*, and picking up his gun, and the *balde* in which he is to carry the latex home, he goes to the first tree where some hours ago he began his work. He quickly draws the *tigelinha* from the bark and empties its contents into the *balde*, and when all four or five cups are emptied, he places them bottom up on a stick alongside the tree, as he had done before. He quickly covers the ground which he traversed in the morning, emptying all the little tin cups.



The rubber-worker on his way home
"His path leads across a narrow and deep ygarapé, where a tree has been felled."—(Page 55)
(Photographed for the Brazilian Rubber Exposition)



An expert rubber-worker



A seringueiro wading through ygapõ-swamp.—(Page 56)

How much milk does he get? It varies according to many different circumstances, such as time; the sort of weather; the condition of the trees on the *estrada*; the skill of the worker. During my own wanderings in different parts of the Amazon country I have looked probably a thousand times into the bottoms of as many tin cups, *in situ*, and have never yet seen a full cup; even just before emptying. A cup containing two ounces of good, pure rubber-milk can therefore be considered a good average for an average tree. Some trees give three or four ounces, being young and healthy, others only one half to one ounce, being dry and wasted from abuse.

Returning with the rubber extractor to his hut with the *balde* filled with white, thick latex, he places it in a safe spot and covers the opening with a leaf. The day is getting hot as it is close to noon and before he proceeds he must have lunch.

I join him in this meal and wonder how any human alimentary apparatus can withstand such abuse. Hidden away in a tin trunk are his supplies. A slice of jerked beef or *carne secca* is first dipped for a moment in water, and then stuck on a spit. One end of the spit is put in the earth-hearth of the fireplace at such an angle that the beef is in the flame. In ten minutes it is thoroughly roasted. A basket of farina is at hand and copious doses are taken by simply seizing a handful and throwing it into the wide-open mouth. On Sun-

days or on days of feast there might be some black beans to throw in with the jerked beef. Black coffee ends the meal. Then the tobacco-pouch is opened and cigarettes are rolled; sometimes thin strips of *tauary* bark are used when no regular cigarette paper is available. Pipes are seldom smoked by the men; but the women smoke the *cachimbo*, as it is called by the Amazonian natives, the common type of which is a modest affair, hardly holding half as much tobacco as would be required to make a cigarette. My own well-proportioned pipe never ceased to cause a great sensation among the native population, from the capacity of the briar bowl and the volume of smoke issuing therefrom; in fact they compared it with a *defumador*, which it is now in order to inspect.

This is the place where the rubber-milk is coagulated in the smoke of certain palm-nuts or wood chips. Every rubber-worker has a *defumador* or rubber-smoking hut, close to his dwelling. It is an indispensable part of his work, as it is here that the actual manufacture of the crude rubber in *pelles* or balls, as well in "hams" smoked on a paddle, takes place. The *defumador* is even more primitive than the dwelling; in some cases it is merely a hole covered with inclined palm-leaves. The photograph shows an elaborate *defumador* where several rubber-workers come to smoke their milk; a sort of central establishment



A family of *caboclos*
Many *seringueiros* have grown wealthy through economy and industry
(Photographed for the Brazilian Rubber Exposition)



The Urucury palm
This noble palm is one of the most frequent and beautiful palms of the Amazon Basin.—(Page 59)
(Photographed for the Brazilian Rubber Exposition)

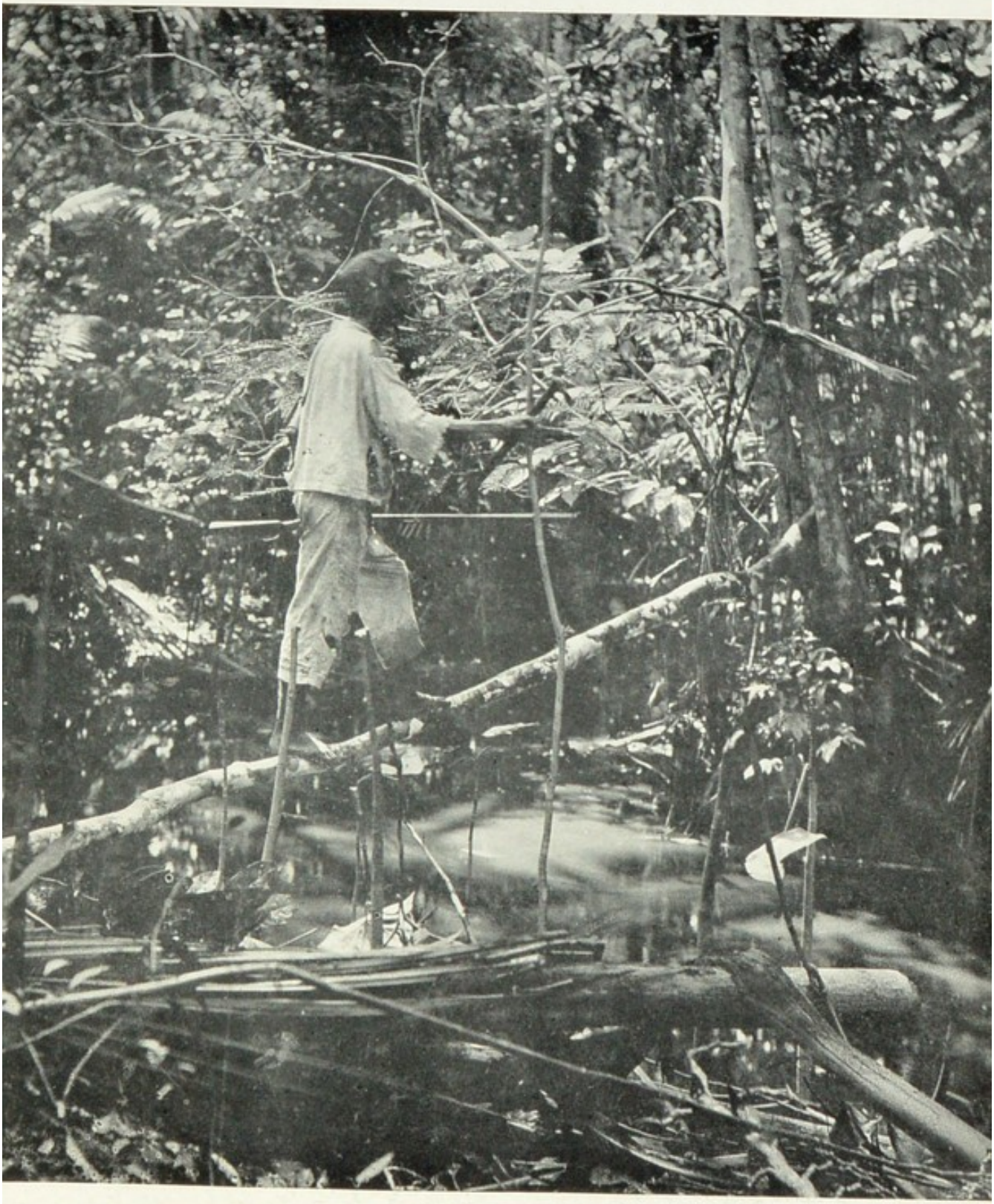
for this branch of the process. The main equipment is a hole in the ground, over which is placed a funnel of burnt clay, or sheet iron. This smoke funnel is called *boiãO*. Alongside of this is a large, pressed basin of galvanised iron called *bacīa*, wherein the rubber-milk is poured after branches and leaves have been removed. First the worker takes a piece of rubber scrap or *sernamby*, the rubber that has trickled down the tree and hardened by the heat of the air alone, and puts a match to it. Over this he places little twigs and dry leaves to get a good fire, often adding an ounce or so of kerosene, and he begins then to put dry *urucurȳ* palm-nuts on top. Soon a dense, stifling smoke issues and more nuts are piled on until a strong blaze is established, whereupon the funnel is superposed, causing a great draft, and the smoke rolls up in a thick column. The *urucurȳ* nuts come from a noble palm, the *urucurȳ*, which the botanists call *Attalea excelsa*, one of the most beautiful and frequent palms of the Amazon basin. Its heavy trunk is scarred, showing plainly the former attachments of the great plumate leaves often twenty-five to thirty feet in length. The flowers are sweet-smelling and are constantly visited by certain bees. The flower stalks are placed at the base of the lower leaves and ripen into great heavy clusters of nuts often counting 1000. It is safe to look for rubber-trees in the neighbourhood of these palm-trees, for it seems as

if nature has ordained that the tree yielding rubber-milk shall grow close to the tree whose fruit enables man to transform the milk into a product to benefit all his kind.

When the smoke is rising steadily the worker, sitting with a wooden paddle alongside of the blaze and the basin containing the milk, dips this tool into the milk and quickly twirls it over the dense smoke. A few drops fall to the ground, but within a few seconds the milk is coagulated and begins to turn a cream-colour. After a dozen turns in the smoke he has on the paddle a thin layer of fine rubber. Again he dips the paddle, and this performance is repeated until the milk is exhausted, when the layers of rubber may have attained one to two inches in thickness according to the amount of milk on hand. But this operation has consumed about three hours' time and required some 1200 to 1500 arm movements.

When all the milk has been smoked, the fire is extinguished, and green leaves stopped into the funnel. The paddle is supported upon sticks in such a manner that the shape given to the still very plastic rubber shall not be distorted.

The rubber-worker's professional task is now done for the day and he deserves a good rest, but this he cannot often afford to take. There may be household duties to attend to; jerked meat to put to soak for supper, the kitchen fire to make; but before doing these things he goes to the water-



A rubber-worker balancing across a snake-filled creek
(Photographed for the Brazilian Rubber Exposition)



The defumador
"This is the place where the rubber milk is coagulated."—(Page 58)
(Photographed for the Brazilian Rubber Exposition)



A domestic scene in a rubber-worker's home.—(Page 61)

front and takes his bi-daily bath. With a gourd, or *cuya*, he pours water copiously over his heated, perspiring body, finding in this great refreshment; often he imbibes freely the muddy, turbid water. In this frequently he lays the foundation of future disease, or at least is subject in the course of the year to unaccountable attacks of rheumatism. Many rubber-gatherers work alone in the forests and have no helpers in their isolated households, but many others have their families and settle down for indefinite periods. In such cases the huts are built slightly larger, with one room closed for the women.

In the photograph we see a truly domestic scene. The man is sleeping heavily after a busy day's work collecting on the *estrada* and smoking the milk. His Ceará-made hammock is strung from post to post. His good wife, also from Ceará, is busy mending clothes; her sewing outfit is in a fibre-woven basket on the floor. The little boy, born in this hut, sits meditating profoundly, while a bright-eyed baby lies close to the mother's side. The furniture is sparse, and Spartan in simplicity. An empty soap-box is the only thing that can be used as a chair; the bare floor is the substitute for all such furniture as couches, chairs, tables, bureaus, etc. In some dwellings the floor is made of split trunks of *assaí* palm, or *mirity* palm, in which case one feels justified in calling it a hut; but when the floor is made of real boards, closely

joined, the designation "house" seems more appropriate as everything else is in keeping with the floor. A "house," then, is the building in the photograph, for here we have a smooth floor and a little furniture; the owner too is a man of some means.

One day there arrives at the Moju Rubber Plantation a very smartly dressed individual whose manners are calculated to impress all with a sense of his importance. He declares that he is commissioned by the federal government to take charge of the economic and agricultural phases of the newly established department called the *Defeza da Borracha*, or Rubber Promoting Bureau; and is anxious to make observations on the plantation. As such a well-remunerated official, we all show him considerable respect and take him through the forests and fields to assist him as much as we can. On one occasion he returns from a trip through the rice fields with mud covering his patent leather boots and spats; yea, even his finely creased trousers are all spoilt, and his nice, new Parisian suit is all bespattered with clay and mud. His field-glass, which proved of little use in the jungle with its fifteen-foot range, is dirty; not to mention his derby hat.

His disgust is great, and we feel ashamed to have enticed this great agricultural expert into the grimy field of observation in this reckless manner; especially when we are informed that he had

studied agriculture and aviculture during two winter seasons in Paris. Another time the director joined me in an excursion through the inundated forest and invited this federal expert, but soon the tax upon the tailored suit became too much and he declared that to-morrow (in Portuguese *amanhá*), when the *ygapō* dries up, would suit him better. But *amanhá* never comes; neither does the *ygapō* dry up, except through some cataclysm or terrestial revolution.

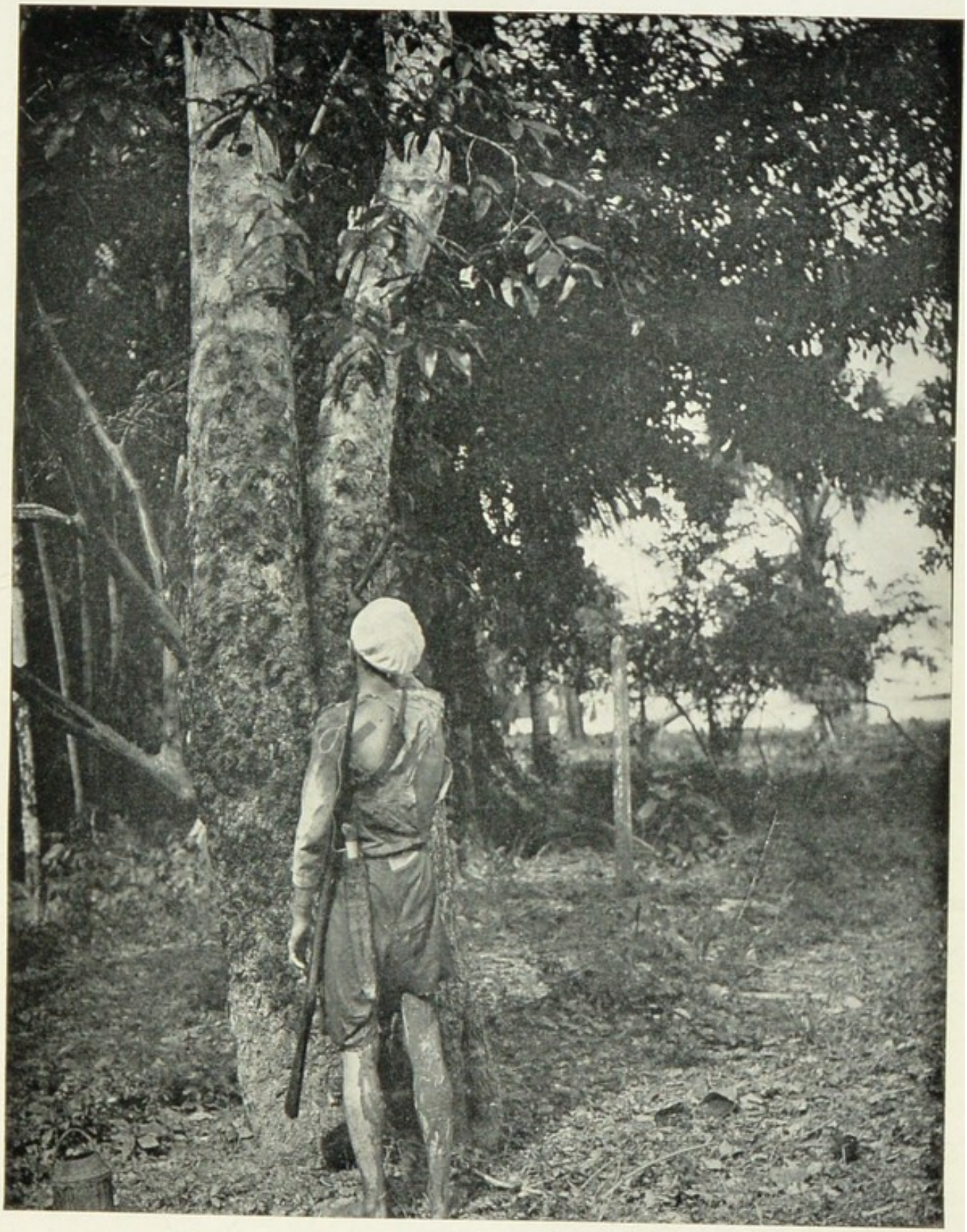
During my stay on this plantation many other Brazilian officials visited the estate, but none ever prolonged his stay sufficiently to get into the rice and corn fields, as all were anxious to get back to Pará in time for supper. One, indeed, entered the rubber plantation, and left it, inquiring for the rubber plants.

These statements seem rather humorous, if not ridiculous, but they are nevertheless authentic to the letter, and the incidents for months afterwards were the subject of amusing conversation among the English-speaking contingent.

CHAPTER IV

The Ilha das Onças

IN obedience to official instructions I return to Pará and prepare my report on timber for the Department of Agriculture. During the last week in May, 1912, I found opportunity to pay a visit to the long island, Ilha das Onças, which lies opposite the city of Pará. Although so near that the arc-lamps on the docks of the city can distinctly be seen from there at night, one is apparently hundreds of miles away. Until a couple of months ago the Amazon Steam-Navigation Company had their repair-shops on the north-eastern shore of this island, but this is now gone, and there remains of the establishment nothing but a few houses, or huts, along the water, where the people lead the same monotonous lives as in the interior. There are a few rubber estates on the island but all seem to be half-abandoned. The land lies very low and to a great extent is constantly inundated. The forest covers every square foot of it and even reaches far out into the actual river, leaving no distinct shore-line. Numerous *ygarapés* intersect the island, running dry at low tide and filling up at



Rubber-worker in the act of gashing the tree
(Photographed for the Brazilian Rubber Exposition)



A young giboia
This young boa constrictor soon grew tame and playful



A boa constrictor
This young boa was found one morning, suspended from the upper branches of a fruit-tree in the author's Pará garden

high. The typical character is that of a *varzea*, a Brazilian term used to designate forest which is periodically flooded.

I land a little beyond the old Amazon company's works, and, entering the forest, soon find a narrow path leading across some low swamps and a deep creek. Tall *assaí* palms grow in the soft alluvial soil, and here and there I recognize a rubber-tree. After a little while I come to a creek with no other bridge than a slippery tree-trunk. It looks precarious to cross this, wearing hob-nailed boots, especially with a moving-picture camera and tripod. There is nothing to do but to take off the boots and fling them across the water together with the tripod. Then I cut a long slender sapling, stick the large end in the bottom of the creek, and, seizing the heavy camera with my left hand, and the sapling with the other, I slowly balance across. The rod cannot be considered exactly a material support, for the angle of it begins at about 45°, is reduced to 0 as I reach the middle, and then again grows to 45° as the other side is approached; but if one has an actual grip on a support, however unstable, it is at least a mental encouragement. Once on the opposite side I proceed along the pathway and discover between the trees a rubber-worker's hut. As I bend down to pass beneath an overhanging branch, something suddenly seizes the sleeve of my left arm with such a powerful jerk that I am forced to let the tripod drop. I am

accustomed to being caught by spines and bush-cord when walking through jungle, and therefore I do not for a moment think it unusual. Then I feel another and stronger movement which could never originate in anything inanimate. I quickly turn to defend myself, and find that a young boa-constrictor has buried its fangs in the loose part of my khaki shirt-sleeve, and is now swiftly coiling itself around my arm. My companion steps back, horror-stricken, unable to move or utter a word. I perceive that the boa is only a short one, although very stout around the middle, and I let it tighten up around my arm as much as it wants to, its fangs still in the cloth. It undoubtedly believed it had caught some passing small animal and was making heroic efforts to constrict it with powerful side-pressure. To let it know that it has made a mistake it is a comparatively easy matter to grasp it with my right hand just behind the head and give it a good squeeze. My companion then regains his speech and shouts, "Let it go; it is poisonous in the months of May and June," at the same time taking good care not to come too close. I unravel the snake from its vice-like grip around my arm, and, still holding it tightly behind the head, I command my brave companion to take hold of the tail and help me stretch it out on the ground. He does this very unwillingly, and then I sever the snake's head with a stroke of my machete. Throwing the still gaping head into the

bush I measure the body. It is about nine feet long and some six inches in diameter.

Then we go on to the rubber-worker's hut. A lot of nondescript curs, of all ages and kinds, greet me as I hesitate before the ladder leading up to the main room. I clap my hands, at the same time shouting "*Oh, Compadre*" ("Oh, Godfather"). The answer came from the creek I had just passed, "*Ah, Compadre,*" and, turning, I see an oldish *caboclo* climbing with great difficulty up the slimy banks of the *ygarapé*. He carries a green-and-yellow painted paddle, and a machete, besides a basketful of *urucury* nuts for smoking the rubber-milk. He eyes my tripod and outfit with suspicion, but invites me upstairs, and I balance across the yielding boards of palm-wood and sit down on a soap-box. It is an ordinary rubber-worker's room, open on all sides except the one which forms the wall of the private room. Little clusters of orchids grow on old wooden boards, and are suspended outside. A hammock hangs from post to post, and the usual rubber-worker's knick-knacks are all around. Gaudy patent-medicine advertisements decorate the walls, and a sewing-machine stands in one corner.

"*Compadre,*" I say, "I have come for a stroll (*passeio*), and I want to take some pictures that move, of the cutting and smoking of rubber." The man grins assent, expressing his wonder about pictures that can move. He excuses himself very

gracefully, after talking fondly to a most miserable and ridiculous looking cur which he calls "*Cupido*," and starts a fire in the kitchen to prepare coffee.

The hut faces the expanse of water which connects the Guajará River, in front of Pará, with the Marajó Bay some five miles farther north-west, leading past several islands. Some ten yards from the hut mangrove-trees begin and extend far out into the water, forming an impassable belt with their interlocking roots. This characteristic "ocean-tree" is found in immense quantities wherever the littoral is composed of pure alluvial deposit, throughout tropical South America, and it generally grows in front of a belt of *ciri-uba* trees, which, with their whitish trunks and small leaves, remind one not a little of our North American birch-trees. The mangrove is named in Portuguese *mangue*, and it prefers salt water, but thrives nevertheless a hundred miles from the ocean itself. The main trunk of this tree often rises, with its branches, to a height of forty feet, counting from five or six feet above the roots, which are bent like bows and converge to form the trunk. The roots are studded with protuberances, and are very soft inside. When cutting into a mangrove tree with a polished, or clean, machete, the shiny surface soon turns a bluish-grey, from the tannic acid the sap contains oxidizing the iron. If one bites the bark, or a root, one's mouth is disagreeably affected by the action of the tannin,

which is present in a quantity that doubtless would have commercial value. The roots are disclosed only at low tide, when all sorts of crustaceans scurry in and out between the tangled mass, and as the waters fill up the delta the roots again disappear.

Many grasses of a wiry, tough growth, and *cyperaceas* thrive among the mangroves. Where one sees such clumps as these it is impossible to land; the mud is too soft to support the weight of anything heavier than a bird, and too solid to allow of swimming, or even of paddling a canoe. Only at high water can one reach the island, and then only by navigating between the trees till high land is attained.

The man is now ready with the coffee and serves it to me in a gourd richly carved and painted. He tells me then about his long, eventless existence on this very island. He judges that he may be around fifty-five or sixty years of age, but he is not sure, as he lost count many years ago. Perhaps he does not know how to count very far. He feels himself growing infirm and old, and showing me a withered arm claims that it is due to repeated snake-bites. As I soon discover, there are plenty of poisonous *surucucū* and *jararāca* snakes about. Every time he has been bitten, some six or seven, he has been very sick and complained of rheumatism in his arms and legs. For fully thirty-five years, he calculates, he has worked in the rubber

estradas; now he is tired, very tired, and would rest. Fortunately he has a wife younger than he who takes the main load from his shoulders, leaving for him only the household duties and such other light work as he can easily perform. While he is speaking I hear a hollow sound as if somebody were beating a heavy drum. It is his wife, he says, who, with their son (or grandson), is striking with a club a buttress or *sapopema* as a signal of her return from the forest. She always makes this signal at some distance so that her husband can put the food on the fire before she arrives at the hut. About fifteen minutes later I meet this remarkable woman. Smiling on her husband whom she playfully calls "*Meu caboclo velho*" ("My old caboclo"), and sporting a moment with *Cupido* who wags his little, miserable tail, she greets me with a firm handshake. Without wasting time she puts the muzzle-loader in its corner with her *machadinha*, and calls to her bashful boy to ascend the ladder and put the carcass of a deer, which he is carrying, in the kitchen, wash his hands and face, and come over to get the blessing of the "doutor." I am called doctor because I am near-sighted and wear glasses. The woman is no longer very young, probably about thirty-five, but she has an unusual vitality and health. Her figure is small, and originally it was delicate, but the constant performance of a man's work, tapping rubber-trees and hunting game for the family table, has hardened



A female rubber-worker on her way to work
"This brave woman is accustomed to fight the poisonous snakes abounding in the creek below."—(Page 71)
(Photographed for the Brazilian Rubber Exposition)



The B. and W. outfit
"There is hardly a day that I am not called upon to render some surgical service, and my medical case proved invaluable"



An infirm *seringueiro* from Ilha das Onças making *andiroba* oil.—(Page 74)

her limbs till all the muscles stand out clearly; and it has given her a sight as keen as any woodsman. Even at her best this singular woman could not be called attractive, nor even comely, as her features, mixed Brazilian and Indian (true *cabocla*), are too pronounced and hard to be pleasing; besides, her manners are brusque, almost imperative, as a result of her ceaseless responsibilities. The rubber-milk she brings is turned over to her husband at noon-time to be smoked, while she gives her attention to various general duties such as sewing, or collecting *assaí* fruit, and paddling across to Pará with the youngster to sell them; hunting deer, or paca (a large rodent), or birds for supper; working on the little patch of mandioca behind the house, or transacting business with the owner of this small estate. She remarks to her husband that she has killed, with a club, three *surucucús* nesting under a tree root on the banks of the *ygarapé*, and that she is getting disgusted with these snakes because they interfere with her work.

After some forty minutes of rest she gets up, and, taking a large round gourd for collecting the rubber-milk, calls her boy whom she orders to carry the gun. She bids me farewell, "*atē logo*," and disappears in the forest, armed with a machete strung by bushcords across her shoulder.

After she is gone I also start out. A narrow path leads directly into the forest. For fully fifteen

minutes I walk under a huge roof of *assaí* palms and between the majestic leaves of the *murumurū* palm, the nuts of which are also used by the rubber smokers, and the *jupaty* palm whose enormous unspined, equally plumate leaves are thirty-five to forty feet in length. Walking is tiresome; my heavy boots sink deep into the soft mud and the energy required to pull one foot up forces the other one down. Swarms of mosquitoes buzz around my head and are often quite accidently drawn into my nose by my breathing, or even into my throat. Before me on the path I can plainly see the track of the woman and her boy. Their footprints are not so deeply impressed as mine, and show the natural, unimpeded development of the human foot as it ought to be. The tangent between the great and little toes touches the remaining toes, forming a line practically at right angles to the foot. Such a foot has never known a shoe, that is certain.

The courage of these people calls for admiration. I come to the bend of an *ygarapé* where dozens of beautifully coloured snakes wriggle around on the soft mud from which the waters have just gone with the ebb-tide. As I throw a branch into their midst they do not disappear in fright, but angrily poise their heads, and a portion of their bodies in graceful curves, daring me to come down. But instead of doing that I went farther around, and came to a tree bridge, but it was too steeply in-

clined and too slippery for me to venture to cross it. I must express my deep admiration for the woman who braves these difficulties to support her household and the poor, incapacitated husband. At a turn of the *estrada* I overtake her as she is about to tap a rubber-tree. She is an expert in judging her trees which she does with a precision which only necessity can teach, and she is equally expert in preserving them. Evidently she has found that the base of the tree in the picture needs a particularly careful tapping to avoid infection and consequent early destruction. From here we return to the house. It is now time to start the fire going in the *defumador*. This smoking-hut is the simplest affair imaginable. A wall-roof is formed by inclining two pieces of sheet iron together. A hole in the ground with a tin box hammered to a conical shape, and an empty soap-box completes the rubber curing plant of this worker. The nuts soon begin to burn and yellow smoke belches forth from the tin cone. The process of smoking rubber here is the same as that I described on the Moju River.

The woman tells me that her trees are old and wasted; that from one hundred on her small *estrada*, only two litres of latex are extracted daily, some days yielding only one kilo of rubber.

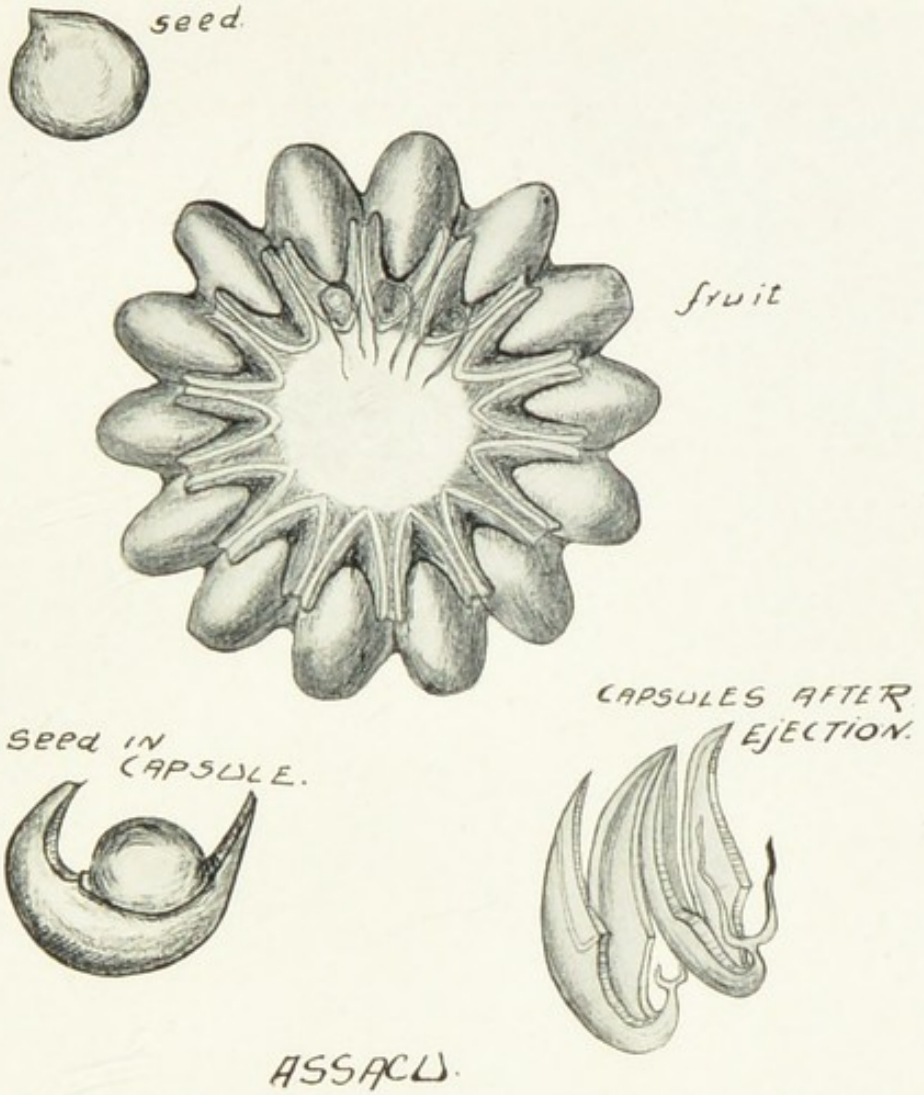
At the present low price of four milreis for Pará fine rubber her average daily earnings would be about one dollar in American money.

I had an opportunity to see the husband extract *andiroba* oil, a good lubricating oil made from *andiroba* nuts which are first crushed to a pulp. It is the second stage of the process which I now watch. The man places half a dozen balls of pulp upon an inclined trough and kneads them with his hands. The oil exudes slowly and drips into a pail placed beneath. When the sun shines brightly upon the pulp, the chemical action is accelerated and the oil flows quicker. During the night the oil stiffens into a paste but it soon becomes liquid again with the heat of day. Of this oil, the wife once in a while takes a couple of bottles over to the Pará market and realizes there about thirty cents each for them.

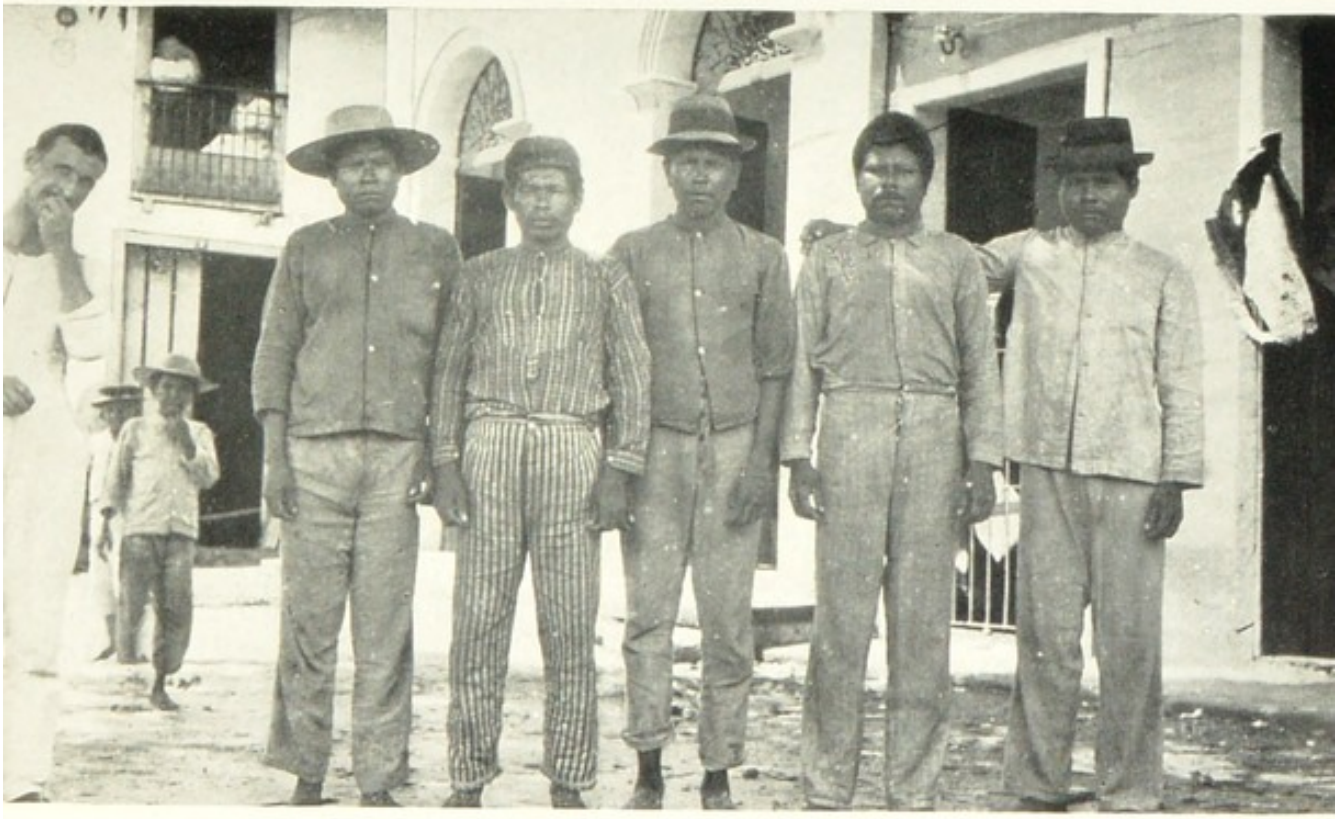
When the daily toil is over the three members of this happy little family sit down on the springy floor and eat their frugal, often insufficient supper, while the dogs, headed by Cupido, snatch up the crumbs. The conversation may then turn to the topics of the bush. Politics find here no discussion; nor is there gossip, because there is nobody to gossip about; and there are no fashion talks. They discuss this and that rubber-tree and its condition; the animals observed during the day's work, or the probable destination of steamers seen far out on the river. For example, the conversation may start in this manner: "You know the old rubber-tree that stands a little way beyond the *assacū* tree where you saw a *jararāca* snake last spring,

well—that tree is not giving any more milk." Their local knowledge is surprising and minute; they can place practically every tree on this part of the island, representing some six square miles. Not many yards behind the *ygarapé* stands a gigantic tree called *assacū* (pronounced *assacoo*) with a great and dense crown. This tree is shunned by the people, throughout the Amazon region, as it is said to be highly poisonous. Its scientific name is *Hura Braziliensis* and it belongs to the same family as the rubber-tree. The fruit is scattered in great quantities on the soft ground and is remarkable for its almost geometrical structure, consisting of fourteen symmetrically radiating capsules, each containing a flat kidney-shaped seed. This fruit, or rather collection of capsules, explodes when ripe with a considerable noise and throws the seeds in all directions as far as ten feet. When I say good-bye to these people I take one of the pods home with me to Pará to make a drawing of it. I place it on a table after almost finishing the sketch, and when I return, after a brief absence from the room, my wife assures me that she has heard a loud crack and thinks rats are eating it. I then perceive that half of it is gone, and as I observe this, the remaining half suddenly is raised bodily from the table and with a whipping sound bursts to pieces which are flung to the other end of the room. In this way nature assists this tree to propagate its kind. If

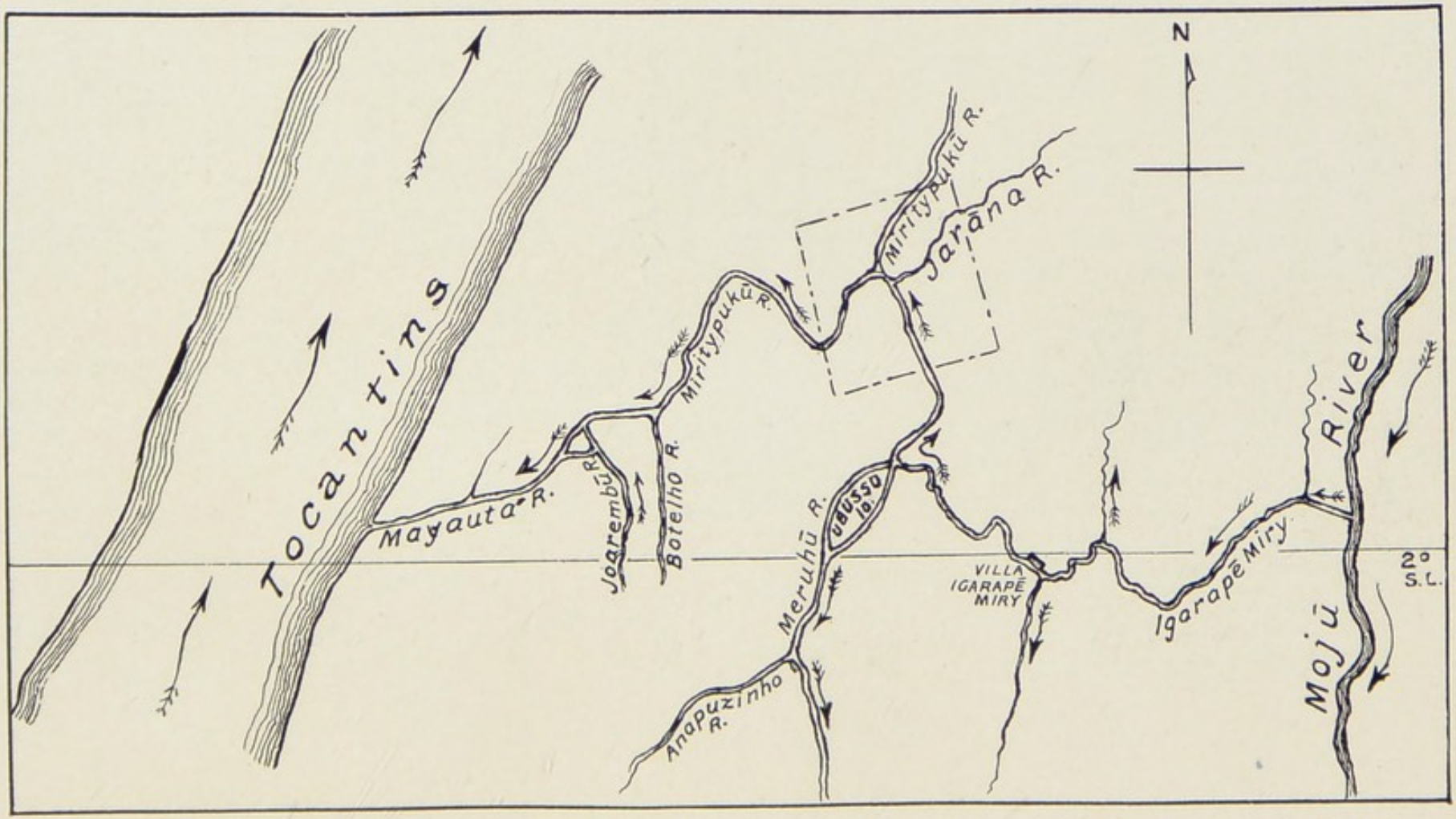
the fruit falls, for example, in soft mud near the base of the mother tree, or beneath dense underbrush where the chance of growth is small, a great tension in a short time is developed on each side of the seams of the capsule and then it opens suddenly, flinging the seeds away from the spot. They are, therefore, given fourteen chances to germinate instead of one.



Fruit capsules of the poisonous Assacu tree.—(Page 75)
From drawings by the author



Civilized Cayapó Indians in Pará



The connection between the Moju and the Tocantins rivers. The area within the dotted square indicates the neutral tidal zone referred to on page 82

From a sketch by the author

CHAPTER V

The Start up the Tocantins

IN the month of June, 1912, I resolve to undertake a journey of general observation up the Lower Tocantins River, reaching, if possible in the short time allotted me, the first rocky hills to be found in the Tocantins valley. Before starting out I make local inquiries about a suitable canoe in which I can make my journey, but I find only one specimen available, a *batelão*, or large freight canoe of the so-called Ygarapé Miry design. When I decide to leave, the matter of the canoe has not yet been settled. It is a matter of payment. The owner, the mayor of the little town Ygarapé Miry, asks 700 milreis or about 210 dollars, a sum which, under the circumstances, is far too high. I find that a river-launch, the *Rio Moju*, is scheduled to make a journey up the Tocantins to the island of Xininga, starting at midnight, June 16th, and with my complete outfit, and accompanied by a young *caboclo* whom I name "Skelly" for the sake of brevity, as his real name is Manoel Arcibaldo Tavares Nascimento dos Santos, I ignore

the offer of the canoe at the exorbitant price and go on board.

The Tocantins is a great river of the first order,[1] flowing from south to north. From its mouth, situated some six hours' steaming west by south from Pará to its headwaters in the southern part of the State of Goyaz, it offers 900 miles of much obstructed navigation. The true rapids commence at about 3° 40′, south latitude, and they become very frequent and troublesome in ascending farther, particularly after passing the confluence of the large affluent Araguaya at about 5° 20′ south. The Tocantins at this point comes sharply from the eastward and presently its course is again almost due north, traversing, from its headwaters to the Araguaya, several hundred miles of desolate lands inhabited only by Indian tribes.

We leave Pará at midnight with the incoming tide giving us a good nine- or ten-knot speed up the Guajará River and into the Moju. We choose this short cut in order to save several hours' going around the dangerous points of the outer bay.

I sit on deck until two in the morning contemplating the deep waters where the moonbeams play. Soon we are running along the dark shores of the Moju River, not a tributary of the Tocantins but

[1] While the Tocantins is really a separate river from the Amazon it is generally considered in conjunction with that stream because its mouth is practically in the Amazon estuary and it is assumed to belong to that system.

of the Pará estuary, its south to north course being relatively parallel to that of the Tocantins. A little light in some rubber-worker's hut, set into the opaque forest wall, looks insignificant enough among the almost weird surroundings. The man must be either sick or nursing someone, otherwise there would be no light at this hour. The night becomes unusually cool and windy and I feel actually chilled to the bone. Fortunately, I have a vacuum bottle full of hot coffee brought from my Pará home the previous afternoon, and this grateful beverage, still so hot that it is steaming, warms me up thoroughly. The pilot has wrapped himself in a bed-quilt, and he stands at the wheel shivering like a man with ague. He expresses his amazement at tasting coffee made yesterday which is still as hot as if it had come just off the fire. All the passengers are in deep slumber, tightly wrapped up in their hammocks. It soon becomes too chilly for me, and I go down to the engine-room where the pilot who was relieved at four is already curled up in his blanket. I find the temperature to be 70° F. in the bow of the launch, and 97° in the engine-room; 70°, be it remembered, is chilly for the equatorial regions. Finally I string my hammock up against the smoke-stack where I await the dawn. A box of Ceará cheese has been placed close to the stack and the mixed, hot odours permeating my locality, were not what I would have chosen for a fragrant accompaniment to my dreams.

How delightful is the morning when again all becomes light and animation. The cold, clammy mists disperse with the gloom and the landscape reveals itself in virgin freshness. But soon the night and morning breeze dies out and by ten the great heat of the day is felt descending upon us like an all-surrounding wave. We stop at the mouth of the canal (mentioned on page 12) leading past the town Ygarapé Miry and through numerous rivers and creeks to the Tocantins River. Here we unload and continue navigation in a western direction leaving the Moju River behind. The first three hundred feet or so of this canal were dug by hand in 1835 to link these two waterways, the rest is the work of nature. The canal is hardly fifty feet in width and appears still narrower through the tall palms meeting some fifty or sixty feet above our heads. The water rushes along with a five-mile speed, forming at one place a dangerous passage for the navigator, as the depth is less than seven feet, due to an elevation in the bottom. We literally jump this bar and feel a sliding motion as the vessel glides across it and finally again reaches deep water.

Here and there we pass some *seringueiro* paddling his way home with merchandise. When he hears the approach of the steamer he quickly seizes hold of branches to steady the canoe. The wave caused by the launch often upsets lesser craft and generally swamps small *montarīas* moored to the landings. We work through a series of small

channels, now and then stopping to unload cargo. The land is mostly *varzea*, or periodically inundated by the high tides, with the typical *ygapō* vegetation. The passage, as far as the town Ygarapé Miry, greatly exceeds in beauty and interest that which tourists delight in through the narrows of Breves going to Manaos. We stop at Ygarapé Miry to unload. The greater part of the population have assembled on the wooden landing-stage and they sit there on the railings staring at the launch without showing signs of any mental activity whatsoever. This town is governed by a worthy gentleman popularly named Arāra, after that noisy bird. His raucous voice, heard in the mayor's office at all hours, penetrates to the farthest limits of the town. His popularity is unquestioned, as he is good-natured and feeds all hungry persons at his own expense. The exports of the surrounding country are *cachassa* or sugar-cane; alcohol of secondary quality; rubber smoked, or in the form of *sernamby* or scrap; cacao in small amount. Formerly quantities of the *urucú* or *anotta* plant were exported, but this valuable dye industry was soon abandoned for the more profitable rubber business. There still remain many half-wild trees.

We proceed up the Mirity-pucū River and I note a singular phenomenon. It is noon, and the waters of the Moju River and its by-creeks are still filling with the incoming tide while the great

Tocantins some few miles away, I am told, is emptying. Arriving at a position about half-way between these points, I observe a peculiar turmoil of the waters; although apparently neither falling nor rising, they are in violent motion, creating whirlpools or *rebujos*, and eddies, in places quite contrary to ordinary river rules. The tidal effect extending through from the Moju system is still marked even a little farther on, while that of the far mightier Tocantins is active in the opposite direction. The channel, emptying on one side to follow the Tocantins ebb, is as rapidly filling from the Moju dependents on the other. This accounts for the mill-race currents in the neutral zone of the Mirity-pucū River, with the confusion of direction of the flow of the many rivers and creeks, which have connection with it.

On the Meruhū River, widening to four hundred feet, I notice a comparatively dense population, that is, some twenty inhabitants to the square mile, and several cane-plantations and *cachassa* mills.

The mirity palms are extremely plentiful, often forming forests to the exclusion of all other species. *Andiroba* trees grow at every twenty-five feet of the water-front, in places also forming groves. We are passing thus through a region whose economic value would be enormous under favourable circumstances, but at present it remains undeveloped. The *aninga* grows so profusely that the munici-

pality compels the river-people to clean their sections of river from this obstacle to easy navigation, just as we of the North have to clear our sidewalks from dirt and snow. What embryonic fortunes are here slumbering in the industrial value of its fibre!

The launch deviates considerably from her regular course in order to deliver merchandise to some people on the Meruhū River. I go ashore for a while and wander into a small plantation of cultivated rubber.[1] The trees are still untapped, although the plantation is six years old. They reach from twenty to twenty-five feet in height and stand about ten feet apart; too close for good development, and they look, therefore, stunted and weak. Continuing on the launch we pass places where the falling waters disclose treacherous mud-banks in mid-river; great skill and knowledge are required to steer a steamer through these intricate waters without accident. At the junction of the Aranaquāra and Maya-uatā rivers, we run aground.

On these rivers there is a bird, the *japim*, which prefers to build its nest near human habitations. The *japim* will select any kind of tree, preferably one in front of a river house, and there establish a colony. They build of dry leaves, twigs, and bush-

[1] Rubber is obtained from trees growing wild, as has been told, and also from the same species which is found to thrive under proper cultivation in many regions.

cord well interwoven and fastened to the end of some branch from which these long, pouch-like nests are suspended, swaying in the breeze. The birds fill the air around the houses with merry carollings all day as they pass in and out of the little opening at the bottom of the nest.

It is getting towards sundown when we pass through the shallow Maya-uatā River. The wave we raise in such a narrow and shallow place is violent in its destructive effect; almost like a *Pororōca*. The water recedes from the margin, loosening long ridges of mud and sending small fish and crabs quickly to the bottom. We approach a fisherman and his son. When they see us coming they jump into the water and in this position the "wash" leaves them unharmed.

At sunset we steam out into a great sea-like water. It is the Tocantins River. For half an hour we continue due west and then reach a point less than half-way across. This course is taken in order to avoid hidden shoals, and not till it is considered absolutely safe do we turn almost due south, that is *up* the Tocantins, which, be it remembered, flows from that quarter.

A feeling of joy seizes all of us as we emerge from the closed-in, dark rivers into this open sea. Here and there an island protrudes from the water like a square rock. The trees grow into the river and end there abruptly. There are three series, or rows, of islands parallel with the shore. Of those

close to the Delta, few are inhabited, while higher up the stream the estates of the rubber people and cacao growers are frequent enough. The second row of islands appears like a narrow, black line, while the third row is invisible but for some tree-tops appearing on the horizon. Terra firma is beyond this last row.

The water is beautifully clear, and of a greenish transparent colour, so unlike other rivers of the Amazon region. This may, to some extent, be due to the quiet undisturbed conditions of the dry season.

At 9 P.M. we see the distant lights of Cametā and an hour later we stop there at the landing for the night.

Before running alongside the dilapidated dock we pass a small settlement called Cametā-Tapēra. It appears that the original Cametā village was founded, in 1635, by the king of Portugal. More than a hundred years later it was transferred to its present site, a few miles from the original location. From here it was that the famous Pedro Teixeira expedition to the Amazon and Quito started in 1637. The geographical position of Cametā is 2° 16′ 00″ south latitude.

A certain grade of rubber, known to the rubber importers as "Cametā" or *sernamby-scrap*, comes from this place.

A band is playing popular airs in front of the venerable, old cathedral. I sit down in front of a

shed and when the band stops buy a lemonade and the bandmaster comes and sits beside me. I turn and behold at least fifty people, standing in a circle, watching every movement I make. I relieve the situation by suggesting that the leader of the orchestra drink with me. He promptly orders a generous glass of good old *cachassa* and, quaffing it, goes back to the band to play for an hour, slightly out of tune, to be sure, but with vigour and gaiety. A young Brazilian, dressed in black, comes to me and engages in conversation. He does not like foreigners, he says, but he does not know why; on general principles, it seems to me. In the meantime a gang of fishermen come up and settle in front of the old church. I take a walk around the now silent streets with the sinister young man following to explain to me the political and administrative affairs of the country. He knows but little of the topography of the river nor does he care much about it, for he is a reporter and a school-teacher at the same time.

At midnight the river-men bring out guitars and clarinets and begin to play and sing. Sad but melodious songs they sing, so full of pathos and so harmonious, that I stay listening till two in the morning. One song tells about the lone canoe-man travelling up the river by night. Although the singer improvises in his own simple manner, knowing nothing about theoretical music, one can feel in his tones the immensity of the desolate

stream and forest. Another man strikes up, also in a minor key, telling in his song about the stars of the firmament getting lost when a dark cloud comes hiding their mother, the moon; and then the stars cried,—how the lone riverman (himself) will get lost when, like the stars, he is abandoned. It is indeed beautiful, but melancholy, to hear this band of string- and wood-instruments accompanying the tenor, all so much in keeping with the life and ways of thinking of these men when on their long, lonely journeys, deprived as they are of ordinary human comforts. I then go on board the launch and wake up at five when the crew is preparing to leave.

Soon we are amid a labyrinth of islands separated by narrow channels called *furos* or *paranās*. The latter word is derived from the Tupi Indian language and means river or water. Many small sailing craft are passing, some ascending, others bound down for the capital with cargoes of cacao and Cametā rubber for which they have traded goods.

The mainland, on the left-hand bank, is hardly above the river-level now and will be put entirely under water during the rainy season. Splendid timber tracts are visible from the river. We can plainly see such fine hardwoods as: cow-wood, satin-wood, green-heart, purple-wood, and Spanish cedar; the shore, in fact, is one uninterrupted forest wall.

Among the islands we cruise the rest of the day to deliver the usual merchandise to the densely populated homesteads, stopping in all at thirty places before reaching the town of Mocajuba on the opposite, or right-hand, bank. The islands do not vary much in size. They are mostly of a *varzea* character, that is, inundated for a couple of months during the early summer, April and May, when work, of course, has to stop. The trees growing on them are not very good as timber, although some would serve well. They are *andirōba*, *mungūba*, and *suma-ūma*. The white rubber-trees grow well among the cacao-trees and it is from these that the people derive their living. The islands vary in population but some have as many as fifty inhabitants, of whom the greater portion live in the *barracão* of the local merchant. *Barracão* means large hut and is a regular river expression. These *barracões* are fairly well constructed houses built on piles made of the *acapú* wood, or even of cow-wood, driven into the water or close to it. As a rule they are roofed with tiles placed alternating convex, and concave, and overlapping each other. A porch occupies about one half of the front of the house. Here the men often sleep nights while women and children sleep inside in dark rooms with no windows, but with thousands of mosquitoes.

As we make the landing the owner appears and directs one or two sleepy boys to make fast the

vessel's hawser to a post on the pier. Here we see large canvases and palm-leaves spread out with the yellow-skinned cacao-beans drying in the sun. The merchandise intended for this stop is put ashore and sacks of dried cacao-beans taken on. Then follow barrels of *Cametā* or *sernamby* rubber. Let us stop a while and examine this rubber of ill-repute coming exclusively from the lower Tocantins basin and the adjacent delta islands.

The *Cametā* or *sernamby* rubber is nothing but rubber-milk spontaneously coagulated in the *tigelinhas*, or tin cups while on the tree, and then collected and left in the water for months. The rubber-worker taps the tree in the ordinary manner, but he leaves it for several days, at the end of which time the milk has collected in the bottom of the tins together with insects, water, and all kinds of vegetable debris. These cylindrical pieces of semi-coagulated rubber are then slapped together and tied into great chunks and lowered into a hole, or *purão*, specially made for the purpose. Some *purões* are out in the river, made of poles stuck close together in the mud, while others are built of boards under the house, permanently full of water. Here the *sernamby* is dumped and left until convenient for shipment. In the course of a month a foul odour emanates from this mass of imperfectly cured rubber. If the merchant can afford it he leaves it under water for half a year. He thinks that the rubber from this process

becomes more elastic and also that he does a clever stroke of business by letting it absorb water to add to its weight. He never thinks of the great injury he actually causes himself and the rubber. He forgets, or ignores, the fact that rubber rots if put in water before it has reached the actual properties of rubber. The milk coagulated to some extent by the atmosphere, cannot be as good rubber as that which is carefully smoked. The rubber importers, it seems, are not satisfied with *sernamby* and offer for it only low prices. The Pará price at this writing is about sixteen American cents a pound. Some day this inferior, slovenly manufactured, and much condemned product will cease to be made, and if the Amazonian main industry still continues in the face of competition with cultivated or "tame" rubber, this *sernamby* will be replaced by the superior and only reliable grade, "Pará fine."

At night the launch arrives at a town called Mocajuba, latitude 2° 42′ 37″, south, where some passengers from Cametā get off. Later, on approaching the village of Baião at 3° 2′ 39″ I notice, for the first time, stones on the beach. It is too dark unfortunately to note their kind and colour. The next morning we continue navigating out and in between the islands, unloading here and there as usual. We are now in the real cacao district. Great areas are covered with cacao-trees, some undoubtedly planted, but the great majority



A settlement in the thickly populated region of Ygarapé Miry
(Photographed for the Brazilian Rubber Exposition)



Weighing the *Sernamby* rubber in a merchant's house, Tocantins region.—(Page 92)

growing wild. The fruit pods never reach full development here on the Amazon, nor do the seeds possess the delicate aroma of those grown in other parts of the world. This is due to the ignorance and carelessness of the growers who do not study methods of cultivation in order to improve on what nature so freely has offered them. They want simply to reap all the profit while the trees yield and then sell out to someone who is still more ignorant. I never see here cacao-trees trimmed or pruned to stimulate the development of the beans: all are left to grow haphazard.

In several places I assist in weighing the rubber as it is delivered by the workers. In the accompanying photograph is shown the owner of a *barracão* in the act of weighing *sernamby* rubber while the workers stand around. Their wives and children have come with them, travelling often in their small, frail *montarīas* ten or twelve miles to arrive at the *patrão's* house. They now sit stiffly, looking at each other, hardly daring to speak while the *patrão* cries out the weight of each lot of rubber. Quickly deducting his profit and his tax, from the market price, he writes down the amount due to the *seringueiro*. Let us examine a typical case which will tend to explain why the *sernamby* rubber, although being a very inferior product, is still preferred in these regions, and why the local people do not attempt to break away from a ruinous habit. Suppose that the *seringueiro*

arrives at the merchant's house with, let us say, ten kilos of scrap-rubber and ten kilos of fine, smoked rubber. He is subjected to two taxes by the trader in this manner: First, the trader invariably discounts the weight ten per cent. and pays for the remaining nine kilos at the rate of ten to fifteen cents, American, less than the Pará buying price. This is for *sernamby*. The weight of the smoked rubber he cuts down from twenty to thirty per cent., according to his estimate of the poor worker's clear-headedness, and the remaining seven or eight kilos are then paid for at the rate of from fifteen to twenty-five cents the kilo, less than at Pará. Under these circumstances, it is natural for the worker to follow the line of least resistance and make *sernamby-scrap*. One cannot blame the *seringueiro*, who is continually under great pressure from his *patrão*. With the money received he then buys from the merchant his necessary supplies; and he has brought his whole family to select stuffs of bright and multi-coloured patterns, and other luxuries, for which he pays high prices. As a rule these men are constantly in debt to the merchant and they have a hard, futile struggle to get clear. Their condition, however, is not so bad as that of their kind on the remoter rivers and in the State of Amazonas, where they cannot possibly get away. In these densely settled islands of the Tocantins region they can paddle easily to the nearest town and then to some other river where

they may find better treatment. The remedy for these unfortunate conditions is not very evident, and no doubt they will exist for a long time. It must be stated that prices on ordinary merchandise are not as exorbitant as they are on the rivers farther away from Pará. The absurdly high prices which existed on the Upper Amazon affluents, such as the Javary, during my first visit to these regions in 1910, have now been considerably reduced, due to the general drop in rubber prices.

Here are some actual prices in American currency:

coffee	$ .20 per pound
sugar	.15 per pound
farina	1.65 for a basket
rice	.12 per pound
beans	.12 " "
kerosene	1.65 5 gal. can
.44 Winchester cartridges	1.50 for 100
matches	.06 a box
salt	1.50 for 30 lbs.
fresh eggs	7 to 8 cts. apiece

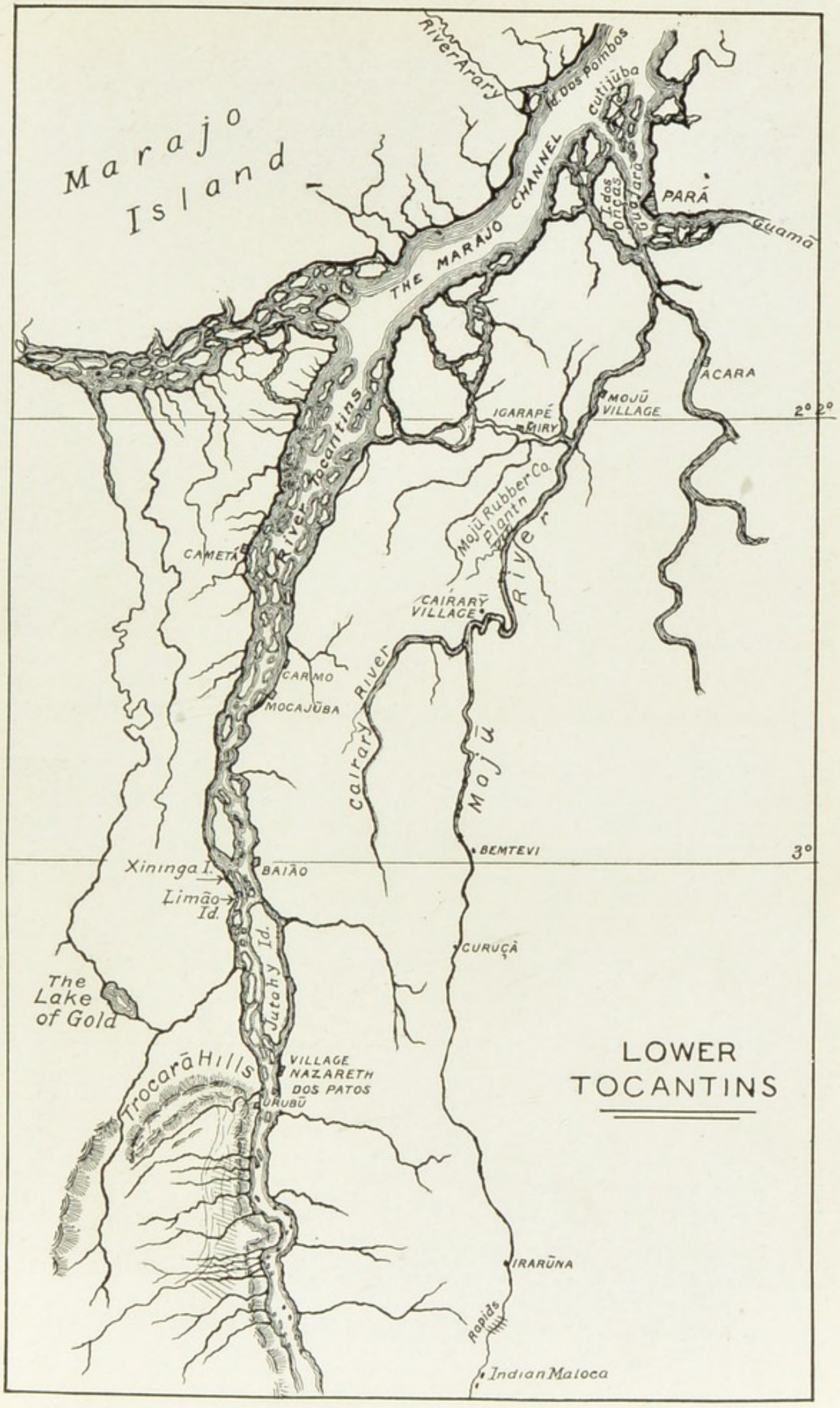
Proceeding on our cruise between the beautiful islands, I am filled with admiration by the luxuriant way in which the hand of mother Nature has furnished such splendours of the floral kingdom, but I sadly confess that the dwellers in the midst of all this abundance are most inadequately equipped to reap the benefits of their resources.

CHAPTER VI

Onward by Canoe

THE launch keeps on up the Tocantins and we arrive finally at an island called Xininga. This is the last stopping-place, as there are no important centres of population above, accessible by launch. In the rainy season the two towns Alcobaça and Arumateua, situated farther up the Tocantins, are visited by launches, but at this time of the year the river, beyond this island of Xininga, is not navigable for vessels of more than four feet draft.

Here at Xininga I get off with my *caboclo* helper "Skelly" and put our baggage on the bank. I immediately visit the local merchant, a Hebrew who immigrated long ago from Algiers. This man receives me well, introduces me to his family, and even invites me to take supper with him. He promptly lends me a canoe with a *tolda*, or roof, over part of it and gives me a paddler to accompany me farther up-river. I agreed to pay this fellow fifteen *milreis*, or about five dollars American, at the termination of the trip which I judged would last about ten days. This is considered very liberal



A sketch map of lower Tocantins and Moju rivers, drawn by the author



The river launch "Rio Moju"
"We finally arrive at an island in the Tocantins, called Xininga."—(Page 94)



A chapel in ruins overlooking the banks of the Tocantins.—(Page 95)

pay. (In 1910 on the Javary River, when I had an ordinary steamer trunk moved along a road for about one hundred yards, I had to pay ten *milreis*, or about three dollars for ten minutes' work, but that was when rubber was at three dollars a pound.)

Xininga island is well populated; and must once have been a centre of considerable commerce. Old brick walls still remain among the forest trees, and a chapel in ruins overlooks the banks. I walk from hut to hut and I am not much impressed by the agricultural development of the place. With the exception of one establishment I see no sign of any paying cultivation. The owner of this one shows an ambition far above his colleagues on the island. An acre had been cleared out of the jungle and here he had planted tobacco at the end of the wet season. When November arrives the upper and finer leaves will be "stripped" and hung up to dry, and afterwards they will be rolled into long spindles and wound over with a layer of split bush-cord, the kind that we use for chair-seats (ratan). This modest but well-kept plantation reaps seven *arrobas* of tobacco, each *arroba*, or thirty-five pounds, selling at about thirteen dollars (American). An acre would thus give this hard-working man about ninety dollars in American money. Besides this he has a nice *maniwa* plantation from which his equally industrious wife will manufacture farina in a large roasting-shed behind her house. The plantation is fringed by banana-

trees and here are some of the most delicious bananas I have ever tasted. They are called *banana cassada*, which as far as I can understand means "married" bananas. Some two hundred cacao-trees grow here scattered among the forest trees. The ground is very wet, and light and air are lacking to a great extent, consequently the cacao-trees do not yield a good crop. Hundreds of pods are atrophied and rotting on the ground.

In a corner of the plantation I discover a natural bed of ginger plants, with long grass-like leaves, the tubers of which are well developed. The people tell me that it grows wild in the forest. There is a great deal of sickness on the island, and I am informed that I shall find it the same all along the up-river journey. Cases of chronic malaria, dysentery, and erysipelas I find among the rubber-workers and their families.

We load our baggage on the canoe, which in the meantime has been caulked and furnished with a few new palm-leaves to improve the roof. As we paddle up the river we pass beneath great banks of yellowish clay mixed with sand, and make, against the three-mile current, about two miles an hour. The day is hot and no breeze disturbs the unruffled broad surface of the Tocantins. We follow the shores of the next island called Ilha das Onças, and arrive in the late afternoon at an extensive sand-bank sloping gently up from the water. A *resacca*, or cul de sac, has formed here, extending some one

hundred yards inland. We run the canoe up on the bank to camp for the night, but scarcely have I stepped ashore before I find that we have committed a serious mistake in selecting this huge sand-bank, or "*praya de limão*," for a camp. However, it is getting late, and, as the sand-bank is about three miles in length, we decide to remain and fight it out. The *praya* is enormously populated by insects of all kinds.

Tiny *meruhims* attack us the first minute we set foot on the sand. The *meruhim* is a very minute bee, its bite is not very different from that of a mosquito, as far as sensation is concerned, and it would not surprise me if eventually it is proven through medical research that its bite carries infectious diseases like the *anopheles* or *stygomia* mosquitoes.

Here also are the notorious *piúms* in thousands. Their bite is different in appearance from that of the *meruhims*. When some fifteen minutes have elapsed after suffering a bite, a small blood-red spot appears, about one thirty-second of an inch in diameter, surrounded by an inflamed area about one quarter of an inch wide. After a day or so the red centre becomes black from coagulated blood and the inflamed area subsides. Our hands and necks, specially behind the ears, are attacked and the continuous slapping becomes tiresome. I try to tie a handkerchief or even a towel in approved Morocco fashion under my helmet, just leaving my face free, but it is of little use.

Then there are the genuine mosquitoes in countless numbers, biting, as it proved, day and night. It is something new in my experience, and perhaps a little contrary to scientific theory, that mosquitoes should swarm around from an absolutely bare sand-flat and bite while the sun is still blazing and radiating heat. As a rule mosquitoes do their vicious work in sombre corners, or after dark, but these specimens work throughout the twenty-four hours with unabated energy. They seem to take a spiteful pleasure in defying science! For camp we select the highest point on the bank, and the two bucks, Skelly and "Xininga," busy themselves with preparing supper. I call the new hired paddler "Xininga" because he is a native of that island. This *praya*, or sand-flat, is about one half-mile wide and, as before remarked, about three miles long. The lower and middle portion is devoid of vegetation while the upper is scattered with grass tufts, some creeping plants of the convolvulus family, and here and there clumps of low trees, called on the river *sarān*, with delicate leaves and inconspicuous flowers, and it is probably in this vegetation that the mosquitoes originate.

We soon observed that in leaving Xininga Island, at about 3° 10′ south latitude, we have entered a zone topographically and biologically different from that of the Lower Tocantins. By comparing the notes given before with those now to be presented this fact is quite apparent. The open, ex-

tensive *prayas* give a vastly different aspect to the river, and the islands are no longer inundated, with forest reaching out into the water, but are fronted by high banks and *terra cahidas*, or falling lands, trees being precipitated into the river through the washing down of the steep earth. These *terra cahidas* gradually wear away until they are transformed into sand-flats or *prayas*, erosion thus working to level the land.

Let us examine the forest growth around us. We see newly formed islands covered by a few species easily recognized. First the *sarān*, a species of willow, settles on the thin alluvial deposit formed on top of the sand-flat. Next follows the *emba-uba*, though this is a different species from the one found lower down; it has the under side of the leaf white instead of a velvety brown. Then follows the *mungūba* whose silk-fine seed tendrils I had occasion to examine later. With *ingā-rana*-trees growing on this new islet the primary elements are on hand for a new forest, as compared with that lower down.

The *mungūbas* grow in veritable dense jungles, often dominating all other species. Their smooth, green trunks are so soft and pulpy that they more resemble weeds on a gigantic scale than trees. Groves of white-stemmed *mukura-caa's* take the place of the *assaí* palm which disappears entirely. Their pinnate leaves show that this unclassified tree belongs to the family of the Leguminosas.

Now and then the stately *castanha*-tree appears on the water-front.

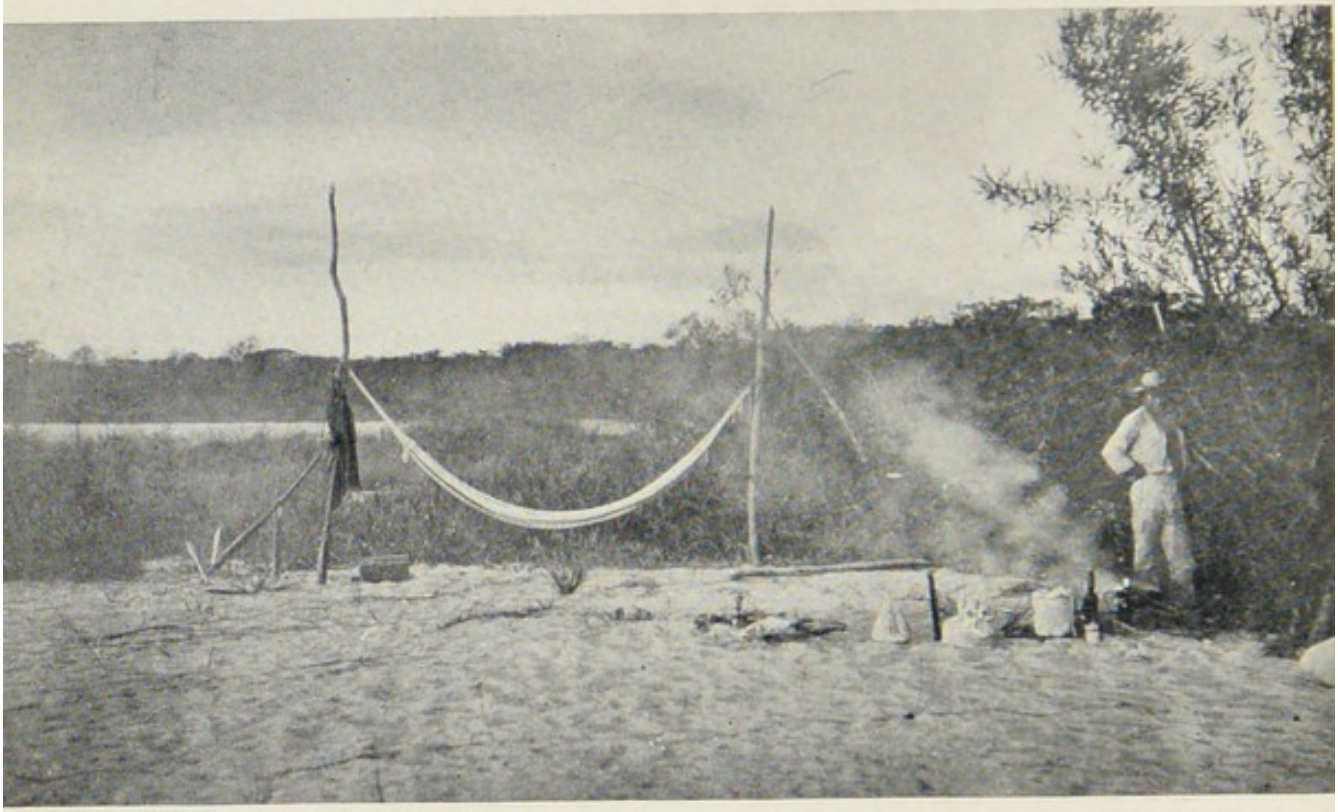
We build our camp-fire and set the kettle boiling with rice. The *carne secca*, or jerked beef, which forms the main food for the bucks when nothing else is available, is prepared in the usual manner of roasting on the spit. The stomachs these fellows have are wonderful when one considers that at six in the morning they will eat no other food than this truly destructive substance,—roasted jerked beef, and at six in the evening relish it just the same. To prepare our resting-places for the night we set posts deep in the sand, strengthen them with shorter stumps, and suspend hammocks between them. In the photograph a bottle standing near the camp-fire is really quite innocent although its appearance is suggestive. It contains only kerosene oil with which to start the fire. The cylindrical bags contain special, tight-fitting tin-boxes in which such things as flour, sugar, coffee, and rice are kept safe from insects and water for an indefinite period. But our meal this evening is a dead failure in spite of our preparations, for it is impossible to stand still even one minute to eat. The various kinds of insects fairly fall over themselves to attack us, all at the same time, attracted doubly by our persons and the smell of food, and they make it impossible to exercise any defence. Even piling fresh, wet, leaves on the fire to make a smudge, and covering hands and faces with kero-



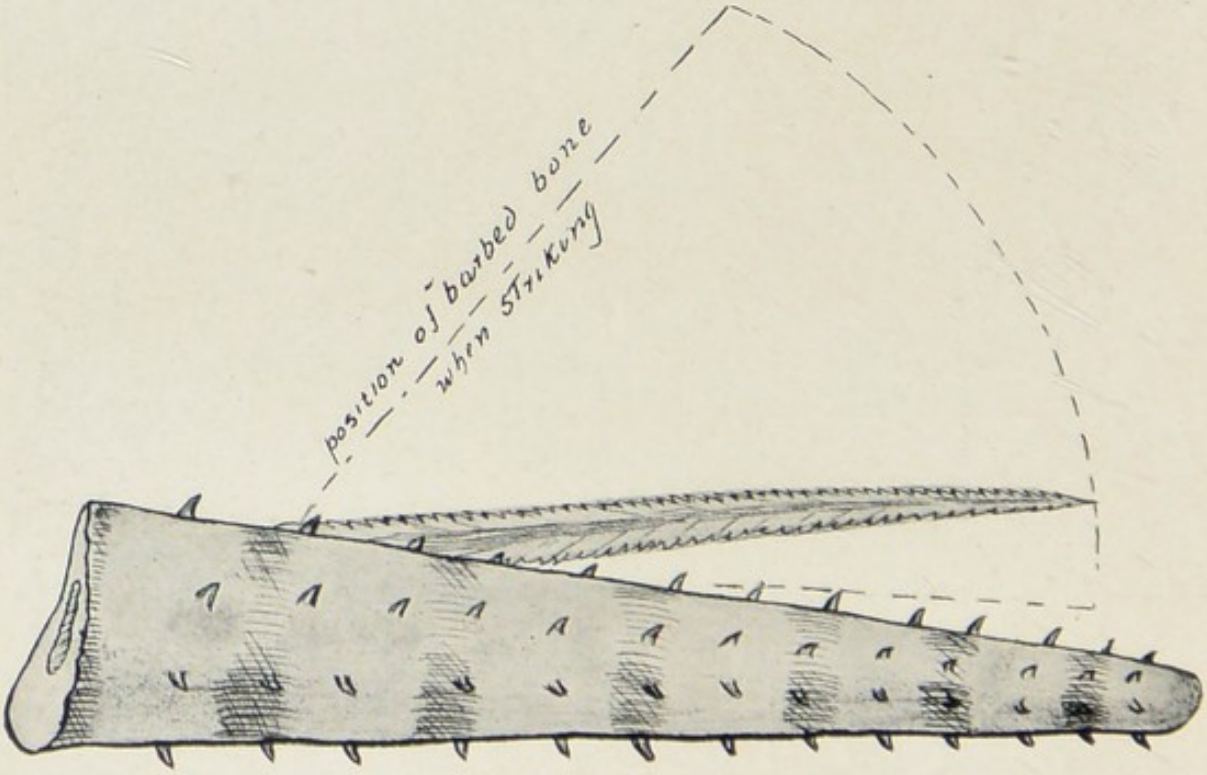
Typical vegetation on banks of Tocantins.
(Page 99)



Skelly on Camp Discomfort
"The trusted assistant and secretary, cook, musician, and chief hunter on all my expeditions."



Camp Discomfort
"We set posts deep in the sand and suspend hammocks between them."—
(Page 100)



The tail of sting-ray with barbed bone
From a sketch by the author.—(Page 102)

sene, avail nothing; we suffer great discomfort from the unpleasant odours while the insects are not at all affected. On this occasion I prove that even blowing dense tobacco smoke directly upon these voracious mosquitoes, about to go to work, will not alter their intentions in the least. I baptized this place, "Camp Discomfort."

Great flocks of wading and swimming birds congregate on this and other great sand-flats. *marēcas*, or wild ducks, sit close to the water or on the small sand-flats in the water. *Gaivotas*, or river-gulls, fly constantly around, never resting, occasionally diving into the water to catch a fish. *Massarīcas* trip around close to the water-front on their neat, red legs. Once in a while they appear seized with hiccoughs, the body jerking up and down for a few seconds; then they run quickly away. The *colhereiro*, or spoon-bill, standing close to the water with its long, strong beak flattened to a paddle-shape at the end, extracts all kinds of molluscs and young fish and throws them into the air to neatly catch them again and swallow them. Large, white *garças*, or egrets, fly slowly and with "S-"shaped neck from pool to pool where they wade around and with a swift movement of the neck spear fish or frogs. There are dozens of other species, which an ornithologist only would recognize, filling the air with plaintive cries and whistlings, or raucous, hoarse screams.

As I wander around on the lower *praya* I see

Skelly come running with a machete and jab it into a circular pool which has a narrow outlet to the river. Excited cries, and a commotion in the water, send me running towards the spot. Here I find Skelly battling with a viciously whipping sting-ray which he finally perforates with the large bush-knife and drags ashore. The sting-ray, or *araya*, has been sleeping in its mud bed at the bottom of the pool. This bed appears like a shallow cavity in the muddy sand and if one is not accustomed to looking for such things one would never see the grey object of disgust hidden in the bottom. It is a flat fish which has its eyes on the upper side and the mouth on the under. The remarkable tail is about eighteen inches long, tapering till it ends abruptly. It is thickly beset with heavy spines capable of dealing an ugly stroke with the power of the muscular tail. Close to the end on the upper side is situated a four-inch long, barbed bone. The barbs are numerous and sharp as saw-teeth.

The sting-ray in action whips sidewise, raising simultaneously the sharp bone, which has been hidden, or rather has remained inactive, parallel to the tail. A remarkable thing occurs, at least to me; when I open the ray with my knife, I give exit to three young rays, in breaking a sack. These tender rays had under their mouths a yellow yolk-bag. I put them all into the pool to see what they will do. For a moment they float

motionless, then some air-bubbles escape, and instantly they all swim gaily about wiggling their tails. In them the barbed bones are still covered with a soft membranous sheath. I shove them out into the river itself to give them a start in life, but hardly has my stick left them when a vicious snapping attack of something terminates their sudden career. The "something" proves to be the much-feared "murder-fish," the *piranha*.

After our insufficient, and I may say painful, meal hurried through on account of the *meruhims*, *piúms*, mosquitoes, and sand-flies, we retire to pass the night. When I have spent about ten minutes in my hammock I am forced to jump up. The *meruhims* and *piúms* have partly ceased operations but it is only to be relieved by additional forces of mosquitoes. There is no limit to our persecution; we try to cover ourselves with blankets, and wrap ourselves in the hammocks like sausages, but all of no avail. The mosquitoes find the remotest crack by which to sneak in and bite. The discomfort of the night is great. The camp-fire is kept going, giving us a great deal of exercise to bring fuel from half a mile back in the wood. At midnight we hear voices and soon two *caboclos* appear. They have seen our fire on top of the great sand-bar and are come to visit us to satisfy their curiosity. They sit down and have a cup of coffee and a smoke, telling us about their lives as fishermen. They are out for the large *pirarucú*, a fish which is abundant

in this, and most other, Amazon streams. All the while we are slapping hands and faces, and uttering strong and rather unrefined phrases in condemnation of the pests. Then the boys rise and we all go down to the water to watch the fishermen depart on their lonely cruise. We can see the reflections of their little oil lamp, tied to a stick in the bow of their canoe, and one of the men standing with his *assagaia*, or spear, poised high in the air to harpoon the big fish, when, attracted by the light, it comes near. The rest of the night is passed in walking up and down the long stretch of sand. A faint breeze is blowing but not enough to give us relief.

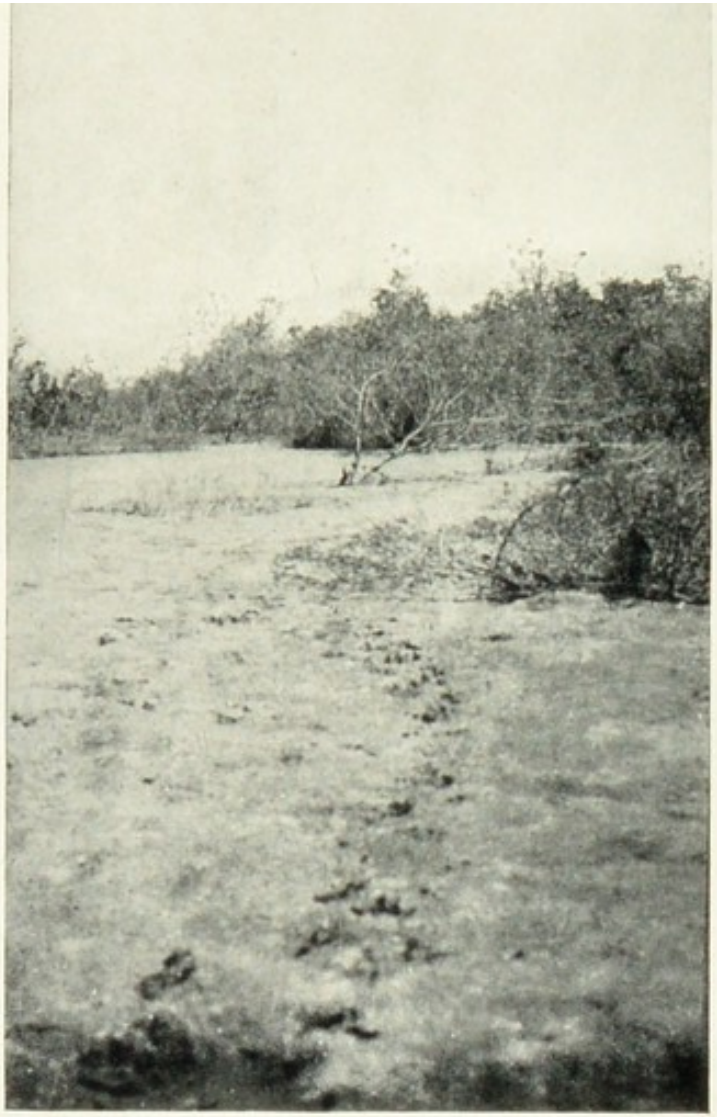
June 18, 1913.

We take a bath at five, rub *cachassa* over our sore, insect-mangled bodies, and pull away up-river in the canoe. The banks become higher and steeper showing the same yellow mixture of sand and clay that we saw just after leaving Xininga Island, on top of which is a layer of dark soil, about a foot or so in thickness. We land to explore the land behind, and, with machete in hand, open the way into the bush. We soon find ourselves in surroundings different from the dense jungle lower down the river, obscured by the overhead foliage. Here there is no forest growth apparent, nor is the ground level as on a camp or field. Yet this sort of land is called *campo* by the natives, but the name

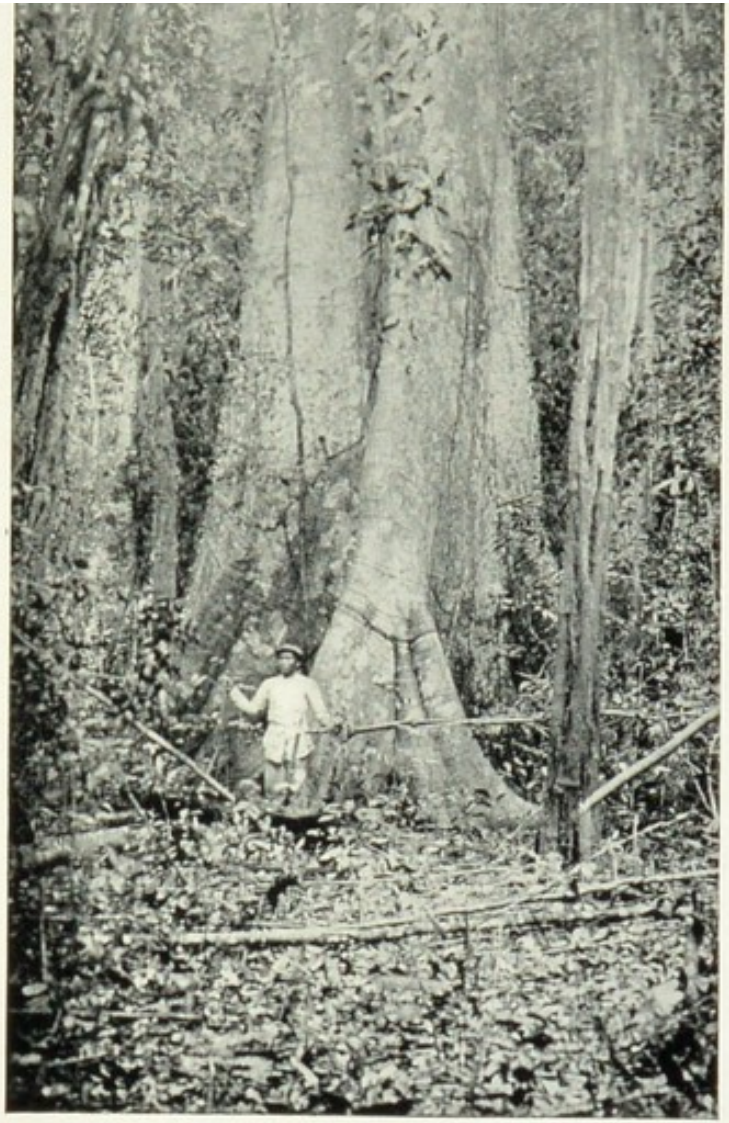
must be taken only comparatively. A people that constantly live surrounded by dark, heavy forest, have a natural tendency to call anything that is less dark and less closed-in by a name that suggests the wide and the open, even if it is not actually so in the sense in which we understand these terms. There are but few trees here and they are all overgrown with *bignonias* until one cannot recognize what kind of tree the support is. It is a most complicated *sous-bois*. Its average height is seven feet, allowing in no place an unobstructed passage. We have to hack the bush, and throw ourselves backwards to avoid the recoil, and in this way slowly force a passage. Only by cutting the creepers and their main stems in June and July, and setting fire to the dry bush in October and November, can such a difficult and unprofitable region be transformed into soil fit for a plantation. This has an advantage over a forest where trees must be cleared away with an axe.

Taking a south-east course across the river toward a small island dividing the channel in two, we choose for landing the right hand called *Agua Choca* or "stagnant water island," not because of a predilection for so unattractive a name, but because it is the nearest shore. The water-line is bordered with mangroves and *mamo-rana*-trees, and it is not easy to find a landing-place. Something crashes through the underbrush and we hurry ashore, through mud and tangled roots, to

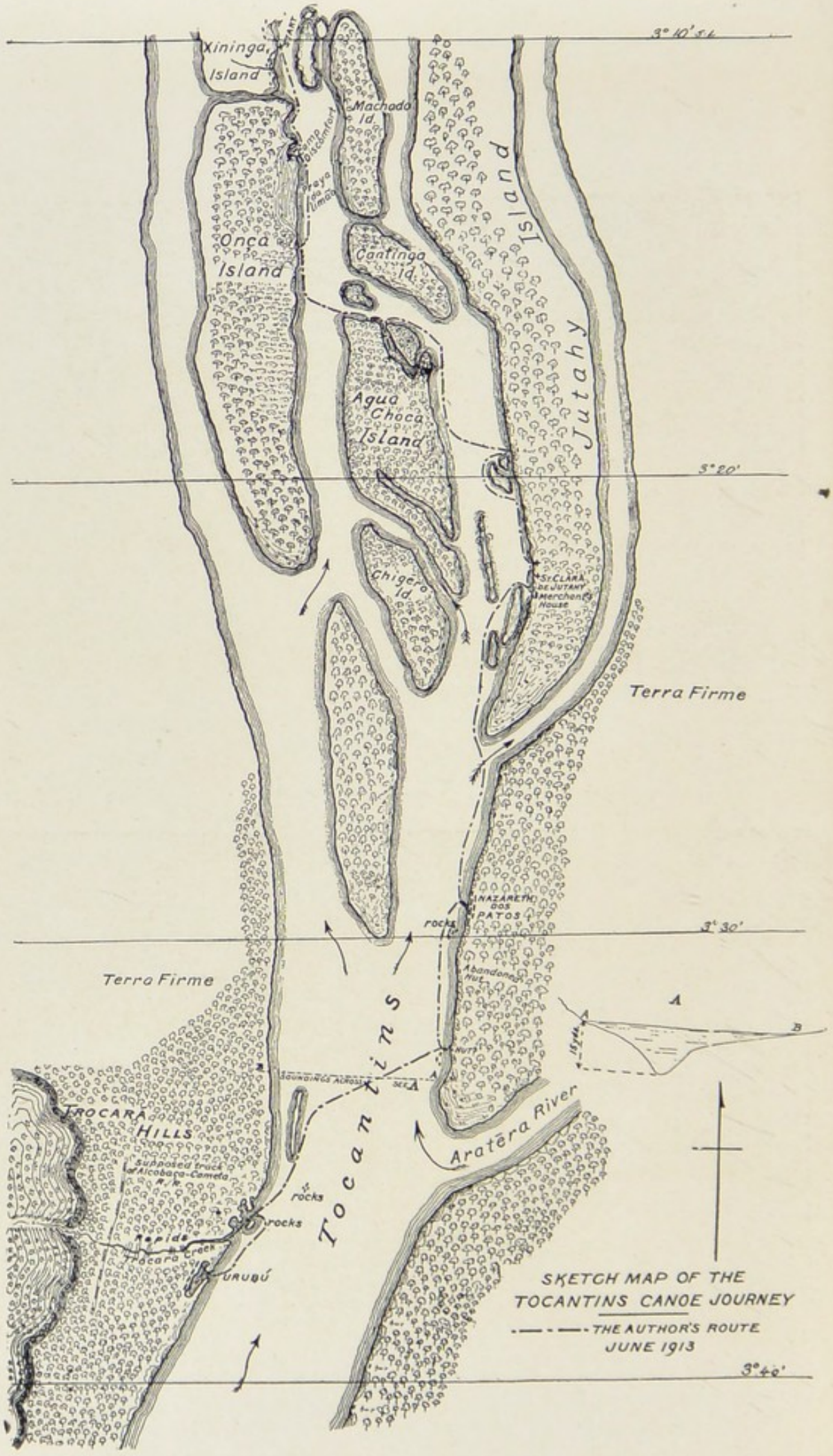
discover what it is. In so doing we fall into a dismal stretch of soft swamp covered with low bush, mainly composed of *sarān*. An animal track shows that a tapir was about to take a drink when we frightened him by landing. This pachyderm is the largest land mammal to be found in South America, and it furnishes to the sportsman whose object is to hunt tapir only, days of good sport. It grows quite large; many a full-sized female will outweigh an ordinary cow, although in height it may be hardly taller than a large hog. Its colour varies from a grey-black to a dark-brown according to age; while, when young, it has pretty, white stripes or patches on a sepia-coloured skin. The tapir is immensely fond of water and cannot thrive unless it can spend several hours of the day partially immersed in the ooze. With its long prehensile nose, a cross between a pig's snout and an abbreviated elephant's trunk, it easily pulls up tufts of herbs and leaves, and does not seem to mind even the prickly leaves of the young shoots of the *murumurū* and Javary palms. This animal is remarkable, just as is the capivara, by the facility with which it propels itself through all kinds of natural obstructions. Through the heaviest underbrush and *cipōagem* or bushrope thicket it easily forces its great bulk, and it swims, or rather pushes itself, through mud that would engulf any other animal. It can stay for fully fifteen minutes under the surface of choking ooze, and come up one



Tapir tracks on the mud-flat
"We fall into a dismal stretch of soft swamp, where we find the tracks."—(Page 106)



A gigantic tree on the Trocara Hills
"One immense cow-tree I measured and found it fifty-seven feet in circumference."—(Page 133)



From a sketch by the author

hundred yards away, thus eluding the hunter who faithfully watches the spot where it disappeared. Even air-bubbles fail to mark the course taken by the animal, for the consistency of the mud is too heavy to allow of their rising. As a food its meat is good when well prepared. There is a sweetish taste to its succulent flesh reminding one of beef to which a sprinkling of sugar has been added.

The legends created in the minds of the natives about the tapir are many. In Portuguese it is called *anta*, in the Tupi language, *tapira*. It seems to be a rather stupid animal, according to Amazonian accounts, and many are the tales of encounters between the tapir and its arch-enemy, the *jaboty* or forest turtle. Among the aborigines the greatest hunter, and the man whose skill is admired most, is he who can lay low the tapir, whether it be with bow and arrow or with a modern Winchester rifle.

In a small pool under a tree I find a *curimatã* fish, quite fresh and but recently killed. Its viscera has been torn out but a few minutes; evidently by an otter. This latter powerful and beautiful animal, called by the natives *lontra*, resembles its North American brother in the softness of its fur, and in the sinewy beauty of its long graceful body. I have often seen them gambolling in the river, uttering their dog-like barks, and, when swimming towards me, showing their canine heads with great tufts of whiskers radiating

from either side of the mouth. They are not easy to shoot, diving instantly and coming up elsewhere quite unexpectedly. They are very good fishers, catching most of their victims through actual pursuit to the river-bottom, unlike the jaguar, which lies in ambush behind a trunk or snag, and with its paw scoops up the fish that come too close to the margin.

Leaving this disagreeable camping-place we paddle up a channel where we finally land and make camp in a grotto-like forest recess. Here we build a fire and rest a couple of hours, after a cup of coffee. The rest, however, is not very restful; merely a stretching of arms and legs after being cramped up in the uncomfortable little canoe. We call this "*Camp Garça*," or egret-camp, from the great flocks of egrets which evidently have their breeding-ground here when we came to disturb them. It is impossible to make notes during the day on account of the hosts of *meruhims* and *piúms* and mosquitoes.

Out into the river again we push, and, running a steady on a south-east course, bring up under some heavily forested banks of the great Jutahy Island; the longest and widest on the Tocantins River. As we pass a stretch of sloping *praya* we see a large water-turtle on its way down to the water. It is making good speed, so we pull quickly ashore and I snap it with my kodak and then add it to the supply of food on board. It is a large male

tracachā turtle weighing in the neighbourhood of twelve pounds. What it was doing at this time of day on the sand-bank none of us could fathom, as they only crawl ashore at night, and then only the females to lay their eggs.

All this while we have seen no human habitation or any sign of human beings whatsoever, but now we discern a long canoe paddled by six men and women, aided by a sail, slowly making its way across the river in the blazing sun. They fire one rifle-shot, as a friendly greeting to us no doubt, and we promptly answer in the same manner. The steep banks at one place show a crude staircase carved into the hard clay, a canoe is moored at its foot, and we ascend, inasmuch as the day is waning and a heavy shower is coming up in the north-east sky. We crawl up the bank and are received by barking dogs. Stern voices shout "*Sho! cachorro*" (*Sho*, a universal exclamation, and *cachorro*, dog), and we find ourselves at the top of the bank. Here is discovered a small hut, built level with the ground on the hard stamped soil. A man comes up to greet me and invites me to sit down in his hammock. Women and children peep out from the interior of this simple dwelling; and finally they come out. The young children come demurely up to me and, with large, questioning eyes, holding up their right hands mumble something. When I say, "*Jā benzou*," "You are blessed," they retire with evident relief. The hut is not different from those of other rubber-

workers, except that the man has a quantity of bows and arrows and steel-pointed harpoons used in his turtle and fish-shooting excursions. The household soon resumes its normal activity and I witness the process of shelling the cacao-pods, just brought in from the forest. This procedure is extremely simple in the hands of these people. In fact, too simple to be good for the cacao. They seize the yellow fruit and simply hammer it on the hard floor, breaking open the shells and freeing the beans. The beans in their rich, white, slightly acid pulp, are then squeezed in the hands, allowing the enveloping juice to ooze out between the fingers into a *cuya* or gourd. A quantity of beans are, at the same time, sucked into the mouth, the operator expelling the cleansed (!) beans with great force into a large basin together with the hand-cleaned ones. The whitish pulp is put into a circular earthen vessel of home-manufacture. When the baskets are all emptied, the beans are spread out on any convenient piece of sheet iron or fibre-matting to dry in the sun. I walk with interest about this most simple plantation and find that the man has planted two hundred cacao-trees and also possesses about eight hundred in the forest behind. His numerous family are all simple, good-hearted people; they help him and he manages to produce from four hundred to six hundred pounds of cacao-beans yearly.

The threatened thunderstorm now breaks upon



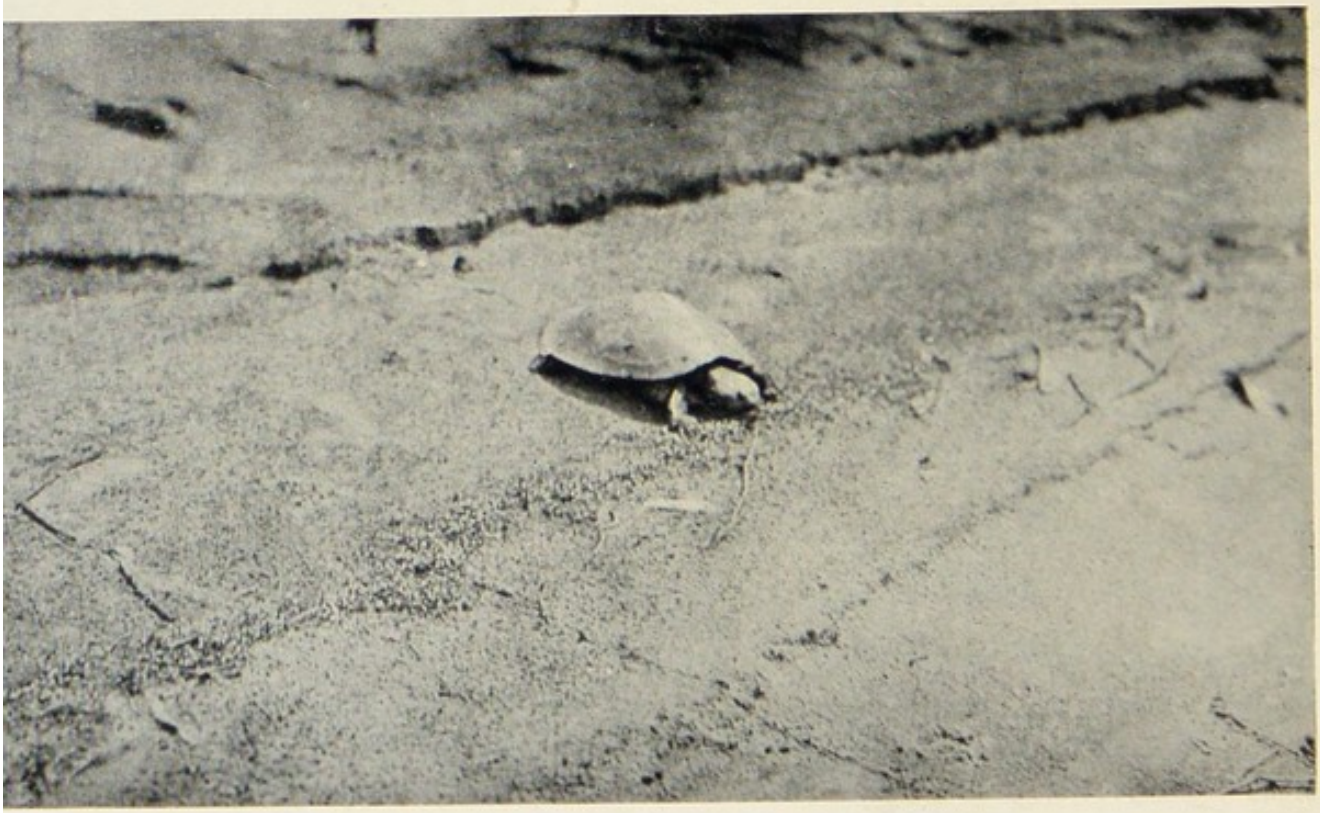
Peculiar growth on banks of Tocantins
"It is a most complicated *sous bois,* almost impossible to traverse."—(Page 105)



Preparing lunch on the banks of the Tocantins River



Taking moving pictures in the middle of the Tocantins.—(Page 125)



A Tracachá turtle
"It is making good speed down the sand-bank."—(Page 108)

us with great force: first comes the wind roaring through the forest, bending the great crowns, and starting all arboreal animals to scurrying for shelter in hollow tree-trunks or well-covered holes. Branches and fruit fall to the ground; the heavy *castanha* nuts, the Brazil nuts in their cups, come crashing down with a momentum great enough to kill a man. *Periquitos*, the small parrots, fly screaming to shelter. In fact, they are never known to do anything but scream. *Gaivotas* (gulls) sweep close to the water to catch the fish that rise up in numbers to gasp for air. Then come a few drops from the weirdly black sky; an approaching din is heard through the forest like the breakers of a distant surf; a strange feeling of coming danger takes hold of all creation, and presently the full rush of the storm is on. The rain is torrential, but the lightning and thunder, it seems to me, have not the terrific power we know in the United States.

Two of the boys belonging to this family of *caboclos* combine with my bucks to go hunting turtle eggs. The large fresh-water turtle called *pitiú* lays her eggs in the present month of June, while the heavier *tracachã* waits till August and September when the *prayas* are even more extensive than they are now, due to the low water. The four boys paddle across the river in the face of the storm that has whipped the Tocantins to a troubled mass of foam. They return after midnight,

waking us up with exclamations of joy and playing on guitars, for they bring home three fat and plump *tracachā* turtles, still alive and tied together with bush cords, as well as four baskets filled with *pitiú* eggs, 228 in all. The rest of the night for all of us is sleepless. My body itches from the insect invasion till it nearly drives me crazy. I try to be sensible and desist from scratching, but find the infliction conquers my determination. He who can refrain from scratching *meruhim* and *piúm* and *moquim* bites deserves a gold medal.

I will return to discuss the *moquim* sometime when I am less troubled with its bites. Maybe I shall be able to find some virtue in this terrible pest. Under harrowing circumstances men are driven to drink, and, if the *moquim* ever enters the States, the sale of liquor, I am sure, will multiply without measure.

CHAPTER VII

Nazareth dos Patos

THE following morning I depart in a clear, cool north-east breeze, and with a temperature of only 77° (F.), after having been cordially embraced by every member of this family, and having taken a cup of strong, black coffee. As we run due south, that is upstream, along the high bank of the island, I notice that the clearness of the water increases, being but little different in transparency and colour from ocean water. We stop at the next habitation and ascend the bank. Nobody is at home; to use a river expression, the family is in the *centro*, meaning somewhere in the forest, or simply gone for the time being. The hut is well kept. A quantity of home-made fishing-gear stands up against the wall, such as bows and arrows, single and double pronged spears; and a *tarafa*, or circular throwing net, is hanging from the rafters.

We deduce that the family must be on a friendly visit to some relative or neighbour, especially as there is no canoe at the landing. From the top of the bank we have a splendid view over the Tocantins. Looking down we see two sand-flats extend-

ing far out into the water. Very shallow water surrounds these flats and we have to give them a wide berth when passing. Some fifteen or twenty miles away, south-south-west are to be seen some hills, the hills of Trocará, which run south as far as the eye can reach. Their sides and tops are forest-clad; at this distance they have a bluish hue. I mean to go and climb them.

Our kerosene burner is started at once to prepare food so as not to waste time cooking on arriving near the hills. To start our camp-fire always consumes hours, as the bucks loaf around looking for fuel, and are afterwards inclined to rest interminably. We now boil two dozen of the *pitiú* turtle eggs, and I find them under the circumstances fairly acceptable to my civilized palate. They are the size of pigeon eggs, with a semi-transparent, cream-coloured shell of a parchment-like consistency. After boiling, one squeezes the egg steadily and awaits the result, which arrives when enough pressure is brought upon the shell. This opens and the yolk starts out accompanied by the white. The bucks dip the bulging yolk into a gourd containing farina and then suck the remaining part up. Nothing in the wide world can replace this food in the eyes of the native. I prefer to pinch off a piece of the top of the egg, squeeze the contents into a tablespoon, and add salt. After this egg-meal comes for me "grape-nuts" from a sealed tin, with condensed milk, and with river-water to

drink. The water is now so clean that it runs through a Berkefield filter without delay, leaving no sediment; even after a week of constant use there is none. The cereal meal of the men consists of *chibēh*, or farina, soaked in river-water.

Coming to a "port" or primitive landing we investigate the habitation on the banks above after shouting the usual "Oh, *compadre*," but nobody answers. The house is built of clay and has a tiled roof, under which rats and long, green lizards run. The two rooms have regular doors, painted green, which are locked. The house has the appearance of having been abandoned for some time as the small clearing has been transformed into *capoeira*, or secondary growth, and the bush is fast encroaching upon the house, sending flowery creepers around the rafters and posts.

A few pots and kettles lie around, making me believe that some one is taking liberties and camping here at night. I find a bag of salt in a corner, and I appropriate a handful as we are in need of this article very badly.

Into the river, close to the shore, I fire two shots at an alligator, but either I miss or do not kill him, as he dives and does not return to the surface. Going on up the Tocantins we arrive after noon at a hut, well-built, in the centre of a clearing. Here I spend an hour in pleasant conversation with a numerous family, who were sitting in a circle on boxes, on stools, or in hammocks. A young, bash-

ful maiden was operating an American sewing-machine, the only and the great treasure of these people. The chief was a *cabocla* woman of large proportions. She was sitting in a hammock with a tiny black clay pipe in her mouth. Much information of local importance is to be gained from the people of the river, and especially those of her kind. Somewhat advanced in age, she has acquired a local knowledge of no little value, coupled with a common-sense and a worldly wisdom that are admirable.

Although she has never been in Pará, nor ever left this river-section, she has a keen business sense and knows the value of money and labour as well as anybody. She dominates through her "bigness" the seventeen other members of the family as well as all neighbours who have any transactions with her. She tells me that rubber becomes rather scarce at this extremity of the island of Jutahy, but that she makes both ends meet by selling cacao to the trader who lives a mile farther up, close to the end of the island, at a place called Santa Clara de Jutahy. Asking for information about the hills of Trocará she replies that she knows about a hunter who had been up there years ago; a Frenchman he was, an engineer, who had explored the hills looking for mines, but nobody else can tell me anything about them. We left after I had treated the old woman's knee, where a large malignant ulcer had formed years

ago. I sprinkled it with iodoform, leaving a small bottle with her for future use. The two men constituting my crew paddle the canoe upstream while I follow a *picada*, or pathway, leading from the homestead to the trader's house. This latter establishment must have been built in days long gone by, as the solid brick walls, chapel, and great clearing with old cocoanut trees would testify. Here I buy salt; and one dozen eggs at six cents a piece. This merchant, being a business man, is not very willing to give me a light for my pipe. When I visit a *caboclo* family close by I receive a present of three dozen turtle eggs and many cacao-pods. The banana and cacao plantation of these *caboclos* was the cleanest and best kept of any I had yet seen on the Tocantins. Most of the inhabitants have in addition to their chief crops a little tobacco plantation for their own use.

Resuming my place in the boat, we stem the current once more, and, shortly before sundown, pass the mouth of the channel formed between the mainland and the Jutahy island. We steer now under the banks of the right-hand shore of the Tocantins—that is, on the port, or left, side of our vessel. We notice a considerable narrowing of the main river, the opposite bank of which is still hidden behind an island abreast of us. Farther up, this island terminates, and both sides of the Tocantins become visible for the first time. Our side of the river is growing rapidly darker while the

island opposite, two miles away, is borrowing an orange light from the setting sun, giving to the landscape an indefinable charm and soothing calmness. The poorest and most abandoned piece of land; a settlement swept by fevers and death; a swamp full of poisonous reptiles and disease-breeding insects,—all look pink and rose-coloured, romantic and inviting, in the Amazonian sunset illumination. It is like a painting or photograph which can show the outer appearance, but not the misery and pain hidden behind it.

We hear a peculiar noise coming from the forest, sounding like the distant blowing-off of a large steam-boiler's safety valve. There is a regular interval, then the vibration of the air comes again and penetrates, it seems, into our very brains, so intense yet so far off seems the noise. Xininga, my hired paddler, says that he often hears it after very hot days. He thinks it may be some *bicho do matto*, some beast of the forest; so does Skelly; but this I am not willing to admit, though unable to define its probable source.

The vegetation here is again different, to some extent, to what I observed lower down. I find no *saráns* lining the banks and very few *emba-ubas*. Instead a low bush, stretching its thin stem in a wide arc over the surface of the water, called *jukiry*, grows in great quantities, forming a wide belt. Small boulders and rocks begin to appear in the water. Between these grow such hardy bushes

and trees as the *tartarugeira* or turtle-tree, *goiaba-rana* and *acapu-rana*, all of which are knotty, tough woods of low and twisted growth, with smooth brown bark. Higher up are palms resembling *assaí* palms. They are called *morototó*. On top of the bank, the stately *castanha*, the Brazil-nut tree, rivals in height the *suma-uma* tree. Now the Trocará Hills loom in plain sight above the virgin forests at their foot. Between the base of the hills and the river lies a belt of forest apparently four miles in width, and there, far off, the grey smoke from some human habitation curls up and dissolves, losing itself in the dark-blue background.

It is getting late when we pass some men bathing in a hole by the shore, where a tract of forest is being cleared for a plantation. I inquire about the next settlement, which, from information I have had, should be on this bank not far away, and I receive the response, that the town Nazareth dos Patos or "Nazareth of the Ducks" is some little distance away.

When you ask a Brazilian about the distance to a certain point, wishing to obtain the reply, if possible, in miles or yards, you can expect one word which will have to do for any distance between, say, ten feet and about one million miles. This word is "là," meaning "there." For example, you ask him where his dog is, and he will point at it some yards away and say "là." You ask him

where you can buy some ammunition, and he will answer "Là," but with stronger emphasis on the "à," denoting that the place in question is quite some distance away, probably all of two or three miles. If you ask him where the moon is, he will answer "LÀ," with great emphasis on both "L" and "À," accompanied by snapping of the fingers of the right hand. To judge distances after such information is, therefore, a matter of doubt. When I ask about the distance to Nazareth of the Ducks, I am merely answered lightly "là," from which I conclude that we may get there before midnight.

Tired, but somewhat encouraged, we paddle on in the growing darkness. Heavy clouds accumulate of a sudden and by seven o'clock a flood of rain falls, soaking us through and through. All our foods are safe in sealed tins and rubber-coated bags, and they do not suffer. My moving picture camera and the films are in a large waterproof canvas sack under the thatched part of the canoe. Only our persons get soaked, but this is unavoidable when travelling on the Amazon.

It happens that we arrive at this modest town of the "Ducks" without even suspecting its presence. We look eagerly for signs of human beings on the banks and for a "port" or landing stage, but there is not the slightest indication that we are again in civilization; not a canoe; nor any washing-boards on the river-front; nor any piles

for mooring craft. Tired of looking without finding, we finally crawl through some palisades of *jukiry* plants and tall grass up on the banks and lo!—we are in the centre of the town. Not a lamp is visible; not a sound to be heard;—just a row of sad-looking houses constituting the village. A faint flicker of light shines behind a door ajar and I call out. A young man rises from a table, in the clay hut without roof, where he has been reading Rio magazines by the light of what we in the States call a boiler lamp, consisting of a wick stuck into a conical tin vessel. He greets me cordially enough, and after I have explained my business he takes me twenty yards to the house of the local "boss." The house of this important person is also in a very neglected condition. It seems that these people lack sufficient energy to stop up the cracks and holes with mud even when the walls threaten to collapse. At any rate free entrance and exit is offered all sorts of vermin, mammalian and even reptilian. One hole in the wall leading into the bedroom of the "boss" would have accommodated a full-grown tapir.

Old women, all *caboclas* with dusky complexions and wrinkled, drawn features, appear and reluctantly ask me to enter. I go into the shop, conducted by the "boss," who by profession is a merchant, and sit down on a box. A dozen miserable people enter with me and stand around me in the dark room, without saying a word. Mos-

quitoes buzz their melancholy music, singing of fever and disease.

I open the conversation by asking for the trader. I am told that he is sick and cannot come out, and I offer my services knowing that the drugs in my medical outfit can be depended to remedy the ordinary kind of fever found on these rivers, but the people refuse, evidently mistrusting, fearing perhaps that some travelling doctor is about to inaugurate his professional duties at river prices. I assure them that no charge will be made; I simply want to help wherever it may be possible. That seems to impress them a little, for the man now comes staggering into the shop. His complaint is erysipelas of many years' standing. I promise to help him, but when I fill the hypodermic needle with anti-streptococcic serum to administer a dose of this reliable cure he excuses himself and retires again to his hammock

The young man I first met then offers me a shack for the night. This is better than sleeping outdoors as the shack actually has a roof over it. We put up our mosquito-screens and creep under, fanning the air wildly so as not to draw too many mosquitoes under the net. The young man is a good entertainer. He starts telling about the Moju River which he knows is inland somewhere, and especially about a treasure that was buried there during the war of the Cabanas in 1835. While the storm is raging outside and the malaria

mosquitoes are circling about our screens, he declares there is jewelry and money galore in this hidden place. The exact spot, he volunteers, is easily recognized through heaps of bottles. When I ask if the bottles are still full, he confesses his ignorance but considers it worth while finding out. Where he ended his narrative I do not know, for while he was talking I passed over to the land of Nod.

June 20th.

Awaking from a comparatively peaceful sleep, I find the two bucks busy preparing the canoe. Many things were wet, especially our clothing, but placed on top of the thatch these soon dry in the bright morning sun. Four pounds of jerked beef have mysteriously disappeared. The crew must be fed well in order to work well, so I buy ten pounds at twenty cents, American, the pound. We bid farewell, *até logo*, to the sick trader who informs me that many Americans lived for a time farther upstream at a place called Alcobaça, doing construction work for the North Brazilian Railway Company, but they had left when this work was abandoned. Very little rubber is obtained in this section of the river, which seems to be thinly settled and suffers generally from all sorts of miseries. Wild Indians of the hostile *Gavião* tribes, he says, appeared a month ago on this river bank

(right-hand), opposite a small settlement called Urubū, but they had gone away without doing any harm. He is probably mistaken about the tribe, as it is more likely that the savages living at the headwaters of the Moju River would explore in this territory so near their own hunting-grounds. At the time of our visit, this town has twenty-eight inhabitants, of whom four suffer from chronic rheumatism, eight from old age and arterio-sclerosis, one from hernia, one from erysipelas, and seven from chronic malaria. Bread, matches, and sugar are not obtainable at any price, yet four people gain a living making fireworks! The fireworks are used during local celebrations and religious occasions.

Somewhat discouraging conditions these, for a town, which, if placed in the United States under similar topographical conditions on a waterway almost twice as large as the Ohio River, surrounded by natural resources of a supreme order, would inevitably have developed into a bustling "Cincinnati." But this place remains a miserable, neglected hole containing a score of sickly people, lazy and disgusted with themselves, their country, and the God that made them.

We are happy to get away from such human stagnancy and paddle hard to gain headway against a three-mile current. As before remarked, stones begin to appear in the bed of the river at this point. In places we must make wide detours

to avoid flats barely covered with water. We stop at a hut close to the mouth of the Aratéra River and cross to the left-hand bank of the Tocantins, following the directions received from a resident, in order to reach the Ygarapé Trocará, which is said to take its sources in the Trocara Hills. A small settlement, named Urubū after the carrion crow or vulture, was pointed out to us lying some four miles up. While paddling across I made a series of soundings to ascertain the depth of the river-bed at this time of the year. A long, slender line was fitted at the end with a piece of lead weighing about three pounds, and at one yard intervals were tied strips of cotton rag of a bright red colour. Beginning at a *pedral* or accumulation of stones and boulders on the right-hand bank, I obtained the following depths expressed in yards:

1—3½—6—9—15—13—10—7½—5—4—3½—3—2½—2—1—1½—2.

There is, at times a channel forty-five feet in depth and at least fifty feet in width, the bottom sloping up to lesser depths on either side, as shown by my soundings, sufficient for almost any steamer to navigate. Accurate hydrographic observations must be made before any practical benefits can be derived. When I was about one hundred yards from the other side of the river I took a panoramic view, placing the camera tripod of the motion picture outfit in the water. The Tocantins now

makes a turn from the south-south-west and we run in amongst large *pedrals* of black rocks. The current becomes rapid, and difficult to conquer, but soon we enter the mouth of the Ygarapé Trocará. The margins are at first *varzem*, or periodically inundated forest, but soon rise and become terra firma. I shoot at a large chameleon, no less than two feet in length, but miss him. If we had to depend upon my ability as a hunter for our food-supply we would apparently have to starve; fortunately we have plenty of turtle eggs, farina, rice, jerked beef, and other similar delicacies.

The sun has passed the zenith when we come to what resembles a primitive landing-place under a large *acapu-rana* tree. Here we make fast to reconnoitre. On the high sloping bank of this narrow *ygarapé* lies an old rotten canoe, and beyond this a newly felled *genipapo* tree with fresh chips still on the ground. A tortuous path leads through a *capoeira* or abandoned plantation up to a small primitive hut. So small seems this shack that it appears unsuited for occupancy by even one full-grown person. A piece of wrapping paper, written on with a pencil and stuck on a Javary palm spine into the wall, asks somebody "J. F. B." to furnish a basket of farina as the writer is himself unable to leave the house. I surmise this person may still be there, possibly dead, but nobody is to be seen or heard.

Returning to the bucks they are ordered to

prepare lunch, while the situation and the next move are being considered. I desire to ascend as far as the Trocará Hills and climb them, but I realize that without a guide this will be impossible. Pots are soon boiling with farina and jerked beef in full swing and the fragrance of good coffee wafting around between the tall trees, and body and soul are once more satisfied. Afterwards the boys are sent out in the canoe to find the settlement called Urubū, bearing a letter of introduction from the young man who had the "boiler-room" lamp at Nazareth dos Patos.

I sit in the hammock, strung between two trees, waiting for the return of the two messengers. In the distance I hear the low, constant din of a *cachoeira* as the Brazilians call a rapid. In the swift-moving current of the *ygarapé*, not ten feet away, there is now and then a splashing, as if some large fish were snapping for insects or for air. Huge trout-like fish, called *tucunaré*, jump clean out of the water as some imprudent fly passes near the surface. My mouth waters as I recognize this splendid game-fish of the Amazon; but my tackle is on board the canoe. Now and then leaves and twigs crack in unseen places when some animal moves cautiously along near the water's edge. A large, green chameleon is lazily moving on a dead bough on the opposite bank. I clear my throat from the smoke of the camp-fire, and at this slight noise the reptile takes alarm and disappears to the

farther side of the branch. When the imagined danger is over, it comes again looking around with swift turns of its head. Its green skin and fringed thoracial crest shine brightly in the sunbeams that break through an opening in the dense foliage overhead.

A pair of noisy *arāra* parrots settle for a few minutes in the highest branches of a satinwood tree. A more vivid colour contrast than that now presented it is not easy to find. The tree is covered with brilliant yellow flowers, and the parrots are blue with scarlet heads, wings, and tail-feathers. With hoarse "rah-ra-ra" the bright-coloured couple fly away towards the hills. A gigantic *castanha* tree towers gravely alongside with its sombre-coloured foliage from which hang suspended the heavy fruit capsules.

A bluebird with a long black beak comes at a great speed flying up the *ygarapé*, uttering a peculiar cry as it flies close to the surface. It skims along the water, with its beak probably picking up insects, as the locomotive on some railways takes up water while running at full speed. This bird is called *aribamba* in some localities and *corta agua* (water cutter) in others. Something heavy drops into the water close by, sending ripples in concentric circles to wash the muddy edges. Constantly the mosquitoes and *meruhims* swarm buzzing around the hammock and disturb my contemplation of the idyllic landscape. Hardly

is my pencil set to paper when a sting on the neck or ear compels instant and active defence. Ears and neck become red and swollen. At last all grows quiet under the power of the great afternoon heat. All nature seems as if sleeping. The water only keeps on moving, with little foam patches turning slowly around. A sharp noise is heard, as of somebody cutting wood up in the abandoned hut. I shout, but there is no answer. The noise increases. Now and then branches fall and I rise to investigate; nothing but a woodpecker.

As the canyon-like forested banks of the *ygarapé* begin to throw long, dark shadows across the water, the boys come back with three men, all young *caboclos*. Their leader is named Manoel Rodriguez and he lives at the place called Urubū about a mile towards the south. He advises that we all go to the settlement and spend the night, and in the morning set out for the *passeio* or trip to the top of the Trocará Hills.

CHAPTER VIII

The Lair of the Boa Constrictors

WE return to the main river on board the canoe, and, after paddling awhile, reach the mouth of a long lagoon on the banks of which are seven huts constituting the Urubū settlement.

Entering the house of Rodriguez I greet his wife and two little *cabocla* girls whom they have adopted from farther up the river. According to the custom, the children come to get the blessing of the newcomers, and then retire behind their mother's skirts. This hut is clean and neat in all respects. Against rain, two sides of the house are protected by large roller curtains made of mirity palm-stalks tied together, parallel. The floor is made of such elastic wood that each board in its turn acts as a springboard. Around the outside are dogs, cats, geese, ducks, chickens, turkeys, *jacamīs* of the forest, *arāra* parrots; while to the kitchen post is tied a red monkey. The family seems healthy, well-fed, and, consequently, happy. A road leads past the six other huts, where live the brothers, nephews, cousins, and brothers-in-law of our host, all ap-

parently content with their lot. They are an industrious little colony, these Urubū people, growing *maniwa* (farina plant), tobacco, corn, *cajú* trees, orange and banana trees, besides collecting rubber and cacao. One fellow proudly showed me ten old kerosene cans filled with the precious *copahyba* oil.

At night we sit around the host's fibre-mat on the floor, with our legs crossed Oriental fashion, and eat huge chunks of fried *pirarucu* fish caught in the lagoon outside. A little lamp, burning *pirarucu* oil with a cotton wick, is put on the mat amongst the plates for light, and everybody helps himself without the formality of plates, forks, or knives, just cutting, with a small machete, pieces in proportion to his appetite and eating out of a black-painted *cuya*, gourd of the calabash tree. They tell me there are many good fish in the lagoon, and the forest around the Hills is full of such game as tapir, deer, wild hog, and paca. There is also an *ygapō*, or swampy tract, stretching a mile or so inland, where there are always to be found large *sucurujūs*, or water boa-constrictors for those who want them, but as there is nothing to be gained by hunting snakes nobody ventures there, although a few good rubber trees are known to exist.

Saturday, June 21, 1913.

At five o'clock we get up and drink some coffee,

and, fully prepared, we go to the canoe and paddle up the Trocará creek, passing my camp of yesterday, and paddling farther arrive at the foot of a rapid, the first to be found in any direction from the city of Pará. It is a beautiful sight to behold this mass of water hurling itself amongst and over the rocks. On each side the banks rise high above the water-level. At the foot of the *cachoeira* we moor the canoe and leave Xininga in charge. Then I plunge into the forest, guided by Rodriguez and his sons. It is now six and the air is deliciously cool and refreshing. Our direction is south-west and we pass a portion of the great swamp that extends half-way to the slope of the hills. A long, reddish snake slides away in front of us, and after running along the path for a while, disappears in the underbrush. The bucks stop and tell me that it is a *surucucū*, which, I think, is called by the English in British Guiana the bushmaster.

At first the march is easy, but after travelling about five miles I begin to feel the weight on my shoulders of the moving picture camera, and I have to stop to rest. The going becomes very difficult here, as everywhere on the Amazon. Every step has to be taken with deliberation by the man who is not born and raised in the woods. Thousands of snares beset his path mostly from *cipó*, or bush cord, and horizontal roots and creepers that trip him constantly.

About eleven o'clock we enter upon a pathway of

somewhat larger dimensions than the narrow trail we have been following, and we keep to this going due south. Tall, splendid timber grows here; some trees are true giants. One immense cow-tree I measure and find it fifty-seven feet in circumference.

We are on the line of what is supposed to be the North Brazilian railroad. If I did not consider Rodriguez a truthful man I would not believe it. Thousands on thousands of dollars were spent only a couple of years ago in clearing the way leading from Alcobaça to Cametã. Now it is an overgrown path of the rubber worker's kind, which is not saying much. Here begins our upward climb, and with this ascent our difficulties increase. The boys also have to rest themselves frequently. Whenever we stop for a second great swarms of mosquitoes begin their attack and we have to be off again in order to be rid of them.

In the early afternoon we reach the top of the Trocará Hill and rest. The forest around is so high that we can nowhere get a free view over the valley below. After an hour's work we manage to fell enough trees to produce a narrow vista and then we behold far below in the bright sunshine the top of the vast virgin forest and, far beyond, the blue ribbon of the great Tocantins.

Satisfied with knowing that my visit to this remote forest-clad hill is the only one in years, we descend through the jungle and about three o'clock again enter the railroad "trail."

It is not easy to understand just how it happens, but, two hours later when we should have passed around the edge of the *ygapō* swamp, and with the distant roar of the *cachoeira* in our ears, we find that, instead, we are in the very midst of the dismal place. The men have separated, in search of the path, each unwilling to acknowledge that he is temporarily lost.

Something strange now happens which is destined to impress itself upon the minds of all of us for months to come, but probably less upon the minds of my companions, accustomed and hardened to the ways and things of these great forests, than upon me.

The *ygapō* swamp is densely forested. Tall crabwood trees stand in clusters, throwing deep shadows on the blackish-brown water through which we are wading. Large tree-ferns here and there grow out of the slimy ooze. The entire *ygapō* is a depression in the ground covering a considerable area, causing much of the water flowing down the Trocará Hill to accumulate so as to form a stagnant reservoir, half ooze, half water. It is a cheerless place to be in; there is not a stir of a leaf nor the twitter of a bird; nothing but dead leaves and treacherous mud.

As we come to a pond-like hole in this profound forest-swamp, we are halted by a fearful sight. The hole is full of snakes!

There we behold a writhing mass of long, blue-

grey snakes of all sizes and lengths, some no more than six or seven feet, others over three times that length. At first they do not notice us. They are partly sleeping, some with their bodies under the surface of the lukewarm, shallow ooze, while others, mounting on the bodies of their brother-snakes, or half creeping and resting on the margin of the pond, are happy, so to speak, in the family bosom. Some of them are as thick as a man's leg, while others are thin and slender as eels. The whole mass of this snake nest, however, is at rest. A few of the smaller ones are lazily creeping in and out through the labyrinth of snake bodies.

It would, indeed, have been a nice predicament to have walked into the middle of this congregation! Another hour's delay on the hill itself, and it would have been too dark to distinguish anything on the ground. Walking into this heap of snakes not only would have been hurtful to one's æsthetic feelings, but it might have ended fatally for some or all of us, for we quickly recognized these snakes as *sucurujūs* or anacondas, the ill-reputed boa-constrictor of the Amazon region. All depends upon a man's presence of mind as to what may happen when a constrictor makes his one quick and dangerous loop around his body or neck. If he is frightened and loses his wits (which is quite excusable under such circumstances), he is gone, but if he stands the choking grip of the snake for some seconds, enough to take his knife and

gash the body of his enemy, preferably trying to sever or injure the spinal cord, then he stands every chance of winning, for the snake will loosen his gradually tightening grip to defend himself or will attack with another part of his body. The bite of even a large boa is not poisonous, nor very painful. On several occasions, I have been bitten by such boas and found the bite hardly worse than that of a domestic cat. The bite is made by the snake merely to secure a hold for its body simultaneously with its great constricting and paralyzing twist. Some *caboclos* say that the bite of the boa is poisonous in May and June.

I really feel quite safe as we stand there not twenty feet from the numerous reptiles, but my four men at first feel nervous and one is ready to run, but his father, Rodriguez, tells him to remain. *Fica com Doutor*, "Remain with the Doctor," he says. Again we survey the situation and now notice that none of the *sucurujūs* are paying any attention to us; merely playing their bifurcated tongues in our general direction. I feel safe because I know that under such conditions the snakes will not leave their lair to attack a man. I tell the bucks that we will have some fun shooting into the heap, as I am forever on the look-out for a large skin to take home to the States to show my disbelieving friends. The boys readily assent and they fill their .44 Winchester magazines. Rodriguez's youngest son has no rifle, but carries an

ordinary "trade-gun" of the old muzzle-loader pattern, and he pours a goodly quantity of black powder into the barrel with a shaking hand, chews some leaves for a wad, and pours a measure of buck-shot on top, closing this with another layer of chewed leaves.

Skelly stands next to me with my old military Mauser loaded with a clip of five cartridges, while I cram my Luger-pistol magazine with nine bullets. Then we take a few steps back, and with careful aim at the constrictor heads, resting our weapons against tree-trunks, almost as one man let go.

The reverberations scare us almost more than they do the snakes. A tremendous commotion follows the volley and the snakes seem to tangle themselves up worse than ever. We shoot again, now without aiming in particular; and some of the long, unhurt bodies stream out like black ropes over the margin of the pool and vanish among the trees and ferns into the gathering darkness.

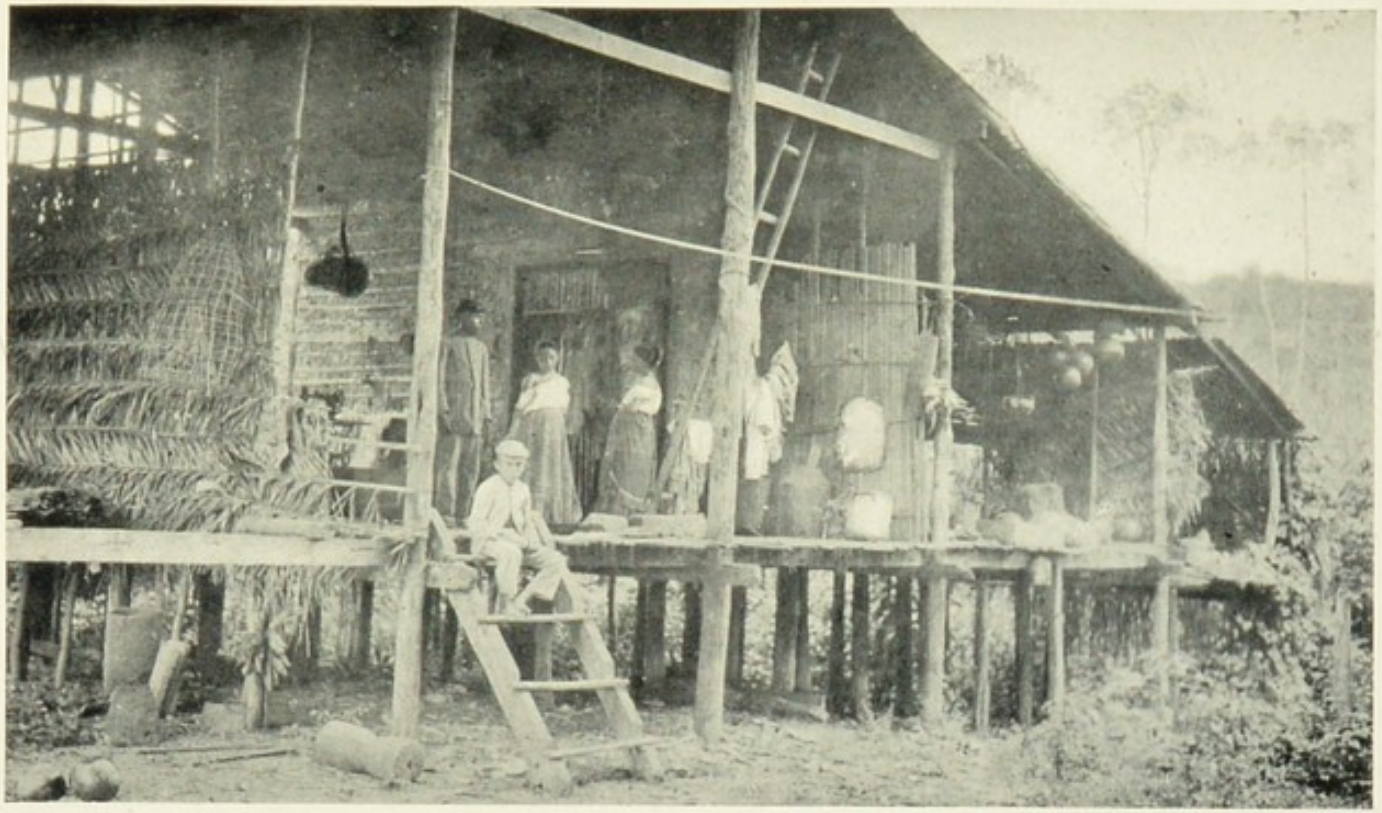
Only Skelly and I keep on firing. Rodriguez's son has cried out with pain of some sort and his brother and father are attending to him. I notice, with a peculiar calmness of mind, that in spite of our evident carnage in the bunch of snakes there is not, by any means, such an infernal hissing and writhing as I expected. The snakes do not seem to hear the shots and many of them lie waiting, or inert, looking at us with their small, protruding,

beady eyes, which we can see as we walk around reloading our guns.

The barrel of the muzzle-loader of young Rodriguez has burst with an overcharge and has torn some skin and flesh of his left thumb and ring-finger. I order Skelly to take out the medicine chest, which we always carry with us, and as he is well versed in these matters he soon has some iodoform sprinkled in the wound and a tight bandage around it.

In the meantime I have emptied another round into the snakes and diminish the number considerably. The swarm is still in constant movement, but as it is getting late, and the fun is gone, we resolve to make our way home before it grows too dark. Besides we are anxious to avoid stepping on some of the escaping boas which cannot have gone very far, and in the gloaming they might not be visible in time to avoid them.

With a last glance at the disgusting mass of half-mutilated, half unhurt *sucurujūs* we depart in the direction of the noise from the *cachoeira* rapid. It takes some time to find the path and more than once we imagine that we have some fugitive snake right under our feet. At the canoe we find the fellow Xininga very wide-awake for he has heard our many shots. When we tell him what it was about he just nods his head and makes no other comment. It is after dark when we arrive at the little Urubū homestead where the good wife of



A family house in the Urubū settlement

Rodriguez puts some boiled fish on the fibre-mat on the floor and invites us to sit down. We have hearty appetites and clean the "table" in a short time. Afterwards the bucks take down their guitars, and a drum made out of goat-skin stretched on a section of hollow *emba-uba* tree, and the long hours of the night are passed in energetic music. So monotonous are the guitars and the steady "tom-tom" that I drop off into deep slumber, dreaming all night about snakes and creeping things. I dream that I am standing with old, mythological Thor, Norse God of War and Thunder, looking straight into the mouth of the *midgaards-orm*, the snake that girdles the earth, ready to swallow it on the day of *Ragnarok*. I even have the impudence to fire my pistol into the cavernous mouth of this dreaded, mythological monster, when I wake up, bathed in perspiration in spite of the cool night. The boys have struck the final note of their orchestral efforts, with a mighty bump on the drum and are about to retire. It is this bump that wakes me up.

The next morning I take photographs of the settlement and rest from the wanderings of the previous day. Rodriguez appears shortly before our noonday meal with a snake-skin he has stripped in the forest. He found a *sucurujū* on the pathway, and as the snake was almost dead he cut its head off and skinned it. It measures, however,

only eleven feet in length, and I want one five times that length.

Throughout the afternoon the boys sit around, squatting on the mat in the large room, singing, and playing the guitar and telling stories of the woods. No mention is made of the snake encounter of the day before. I wonder if it can be superstition that accounts for this omission? At night we paddle in canoes around the lagoon fishing with a *tarafa* net, a circular net attached in the centre to a line and weighted down on the circumference with lead. A great many two- and three-pound fish are caught with it. Such fish as *acarī*, *pescada*, and *tucunarē* are caught to the number of forty at a time. The fish are distributed among the Urubū families who have not fished for themselves.

At night preparations are begun to celebrate a feast in commemoration of *Soã João* (St. John), and incidentally to give our little party a fitting good-bye, as I am desirous of turning back here and descending the Tocantins the next day to catch the launch down at the Xininga Island.

The boys leave about nine o'clock to hunt tapir and wild hog, so as to be well supplied with provisions befitting such a festive occasion as is to come off the following night, and I send Skelly and Xininga out to find *tracachā* turtle eggs on the wide sand-banks of the main river for the same occasion.

The entire next day is given to preparations for

this grand feast; children are set sweeping out the houses and also the clearings around them. Women and men sweep the road, which so prettily overlooks the Tocantins and connects all the houses of Urubū. This road, probably two city blocks in length, is then decorated with a long line of what I may call torch-stands. Each stand is made by cutting a thin sapling to a length of five feet, the end being then split with a knife into three parts so as to hold a *tigelinha*, or milk-collecting tin cup. In this cup are then poured a few ounces of *andiroba*, or crabwood oil (or, lacking this, some oil of the *pirarucu* fish), and a cotton wick is stuck in. Fifty stands of this description are lined up from the first to the last house ready to be lighted at nightfall. Branches and twigs are collected and put into a large heap in the middle of the open space in front of the house of Rodriguez.

All the while, pots and pans are busy in the kitchens. Women are sitting in front of their huts pounding cacao beans into a paste in large, crudely hewn and carved mortars. While all these elaborate preparations are going on, I have my canoe made ready to depart, as I am merely waiting for the passing of the feast to say good-bye and paddle away down the Tocantins.

At five in the evening two rubber workers arrive. One of these, called Raymundo, is unusually gaunt and tough-looking, but with a dry humour worth

gold. With him comes a man carrying two *jabotys* or forest turtles still alive and two *coatis* or nose bears, and one *cutīa*, a large rodent. I admire the *coati* (*Nasua rufa*) for its beautiful striped fur.

Rodriguez soon comes to fetch me to supper. With great solemnity we sit down on the floor (after first chasing a couple of hungry ducks away from our gourd containing fried river turtle liver and boiled *surubim* fish). A tremendous gourd of farina is handy at my right side. Water is served in large, black gourds; everybody takes a drink and passes the gourd to the next man. I send Skelly to my canoe for a can of *goyabada* or guava jelly and great enthusiasm reigns upon the arrival of this Brazilian luxury. After the meal the bucks tune up the guitars, while one new-comer who lives on the opposite bank of the Tocantins brings forth a two-foot-long clarionet. The drum is taken down from its place and duly tested with a substantial-looking mallet, carved for this special occasion and calculated to stand the greatest stress. It is only the strict orders of old Rodriguez that keeps the music-thirsting bucks from pouring their very souls into renderings that would stir a sleeping cow-fish.

The men walk out to the fire-wood, which is all stacked up, and a fire-brand is applied. The flames soon leap up, scorching the leaves overhead. The fire must be seen far across the Tocantins or even from the top of the Trocará Hills. We arrange

ourselves, directed by Rodriguez, in couples standing behind each other facing the fire. The wife of Rodriguez is also here, a little brown forest-hardened woman. When the fire has somewhat abated, Rodriguez tells me to watch and do what he does. All the while the boys are standing behind with guitars and drum and clarionet; now they are pouring forth tones so dreary that I wish myself back in the snake lair. A chant begins to fill the air, though what they sing I cannot distinguish, but it is solemn and monotonous. This keeps on for some time and I join in on general principles. Suddenly Rodriguez grasps my hands and walks into the fire, or rather leaps over it; walks around and leaps it again. During this fire-test the orchestra keeps on playing frantically, the "tom-tom" beats furiously, and the chanting grows louder every moment. When we have jumped through the fire nine times, I, feeling by this time comfortably warmed up, Rodriguez turns to me and shakes both my hands, saying in solemn fashion that having stood the test of São João like brave men, he, José Something de Rodriguez, is in the future by eternal bonds bound in the capacity of *compadre* to Doutor Algot Lange. Hurrah São João! Hurrah *Compadre* Lange! Hurrah *Compadre* Rodriguez! Hurrah Everybody! We then embrace; everybody shakes hands and embraces, even to the drummer, who then renews his efforts in a glorious manner. As we

are the only three strangers in this settlement there are only three to make *compadre*. All the others have been *compadre* for many years, of course. But as each one of us, *i. e.*, Skelly, Xininga, and myself, have to undergo the fire-test with everyone present, it takes a considerable time, until I venture to suggest that at least half a dozen *compadres*-to-be might jump through the fire at one time. Having thus been made *compadre* with the entire population over seventeen years of age, the little tin-cup torches are lighted and a procession forms to march through the brilliant avenue of blazing *pirarucu* oil.

I am given the place of honour at the head of the procession, having on my right side *Compadre* Rodriguez. From now on it is nothing but Compadre Lange, *Compadre* Rodriguez, and so on. Behind us came the rest of the family and visitors all dressed in their best shirts; the women in truly resplendent skirts with polka dots and green stripes criss-cross.

Everyone but the musicians, who form the rear-guard, carries either a piece of tapir meat, newly fried or roasted, and still sizzling in a large gourd, or some *surubīm* fish and forest turtle stewed and all prepared. Some carry a piece of *macaxeira*, or sweet *mandioca* root, as an offering, and some a dead *coati* by its long bushy tail. I carry the tin of jam the boys had not finished and a can of unopened condensed milk officially designated to

serve as an offering to São João, but really *pro bono publico*.

Now the "band" strikes up the same old, weird tune and we solemnly march past the houses where we are joined by other worshippers each with something in their hands, such as cacao soup, a basket of ripe lemons, or a couple of fresh eggs. Finally we arrive at our destination, the last house of the settlement where a young *caboclo* lives with his numerous family. Here a party of fifteen await our arrival and we are formally introduced, *Compadre* Lange, *Compadre* Antonio, etc., etc. They are all dressed for this gala occasion and some look very proud, while others, especially the young *cabocla* girls, are bashful and awkward.

Young *inajá* palms are cut and stuck in the ground outside, or else arranged in garlands and arcades between the rafters of the large open room. Little home-made lamps with crabwood oil are stuck in the clay wall in the back of this room, throwing a faint flickering light over the festive congregation. Benches have been put up along the walls and everybody sits down stiffly. Black coffee is served and the orchestra strikes up again, this time a gay tune, directed by my indefatigable and ambitious Skelly, who yesterday proved a virtuoso on the guitar and to-day, to my surprise, proves equally glorious on the clarionet! He is much appreciated by everybody.

At a signal from *Compadre* Rodriguez every-

body kneels in front of a pretty little home-made wooden chapel, draped with blue cloth. Inside is a highly coloured paper image. A long mass is read by *Compadre* Rodriguez and the congregation repeats certain phrases in Latin, at the termination of which a large sky-rocket is set off, whizzing away to lose itself far out over the river. At the termination of the hour-long mass twelve extra heavy sky-rockets are set off, eliciting much admiration. Now joy breaks loose; the chapel is closed up till next year; the orchestra after partaking of inspiration in the form of *cachassa*, renews with pent-up vigour its former efforts.

The moon is uncertain in coming out, hiding its round face behind some ugly rain-clouds. Thunder rumbles over the forests and we are advised to wait till midnight to start as the moon will then be high and the clouds probably dispersed.

Now the dance begins. A hammock is strung up in one corner of the large room and there I sit down to rest and partake of fried tapir, cacao soup, and other delicacies of Amazonia.

The young *caboclo*, before referred to, who seems to carry a certain authority, now arranges a "lancier" dance and cotillion in which everybody takes part with the gravest faces imaginable. He even shouts the changes in the dance in what is intended to be French. It is here, among these good *caboclos*, way up on the Tocantins River, in a small isolated settlement that I now enjoy one

of the heartiest laughs it has ever been my good luck to experience. When the stiff-legged, tough old forester and rubber-worker, Raymundo, ventures out on the palm-room floor with clumsy, antiquated boots greased over with tapir fat, a diminutive relative in a green and scarlet skirt for a partner, trying to keep time with feet, hands, and head, but always two or three bars behind the rest of the dancers, running backwards when he should be in the middle of the floor, and running in circles when he should stand still, now and then repeating the French words such as "Avancez, dames,—messieurs," then my self-control vanishes and I roll out of the hammock absolutely in convulsions. The dance and the music stop, all want to see what has happened. Even *Compadre* Raymundo halts his antics and comes over to me. There certainly is merriment in little Urubū that night.

At midnight I start up and announce my intention of leaving at once, so as to be able the following night to reach Xininga. In spite of the loud protestations from everybody I am determined to go. I am warned that the moon is still hidden and that the night will be ugly, but nevertheless we say good-bye and are escorted down to the canoe by the whole party embraced by everybody in turn, and set off.

As we turn our bow downstream in the darkness of the night I glance toward gay little Urubū and

I see a farewell sky-rocket cleave the firmament in our honour. I fire a couple of rifle shots by way of a return *adeos*.

Where could I have received from the hands of white, or more cultivated, people such cordial, frank, generous, unselfish treatment as was here accorded me by these poor, hard, struggling river people? My reception could not have been more cordial if they had been told that I was an ex-president or a high official.

The current is strong and in our favour, helping to make three or four times the speed we could in going the other way. At 2.30 we pass Santa Clara de Jutahy. The night grows very dark and it is almost impossible to see. We pass some rocks at great speed and a little too close to suit me. Skelly soon falls asleep at the paddle, but Xininga keeps on, glad to be going homewards. I wake Skelly at 4.30. The current is getting too rapid and the rocks too many to make the journey safe in the dark. Therefore we stop at a small wet sand-flat in the middle of the river and, dragging the canoe out, spread a canvas on the sand and all drop into a deep sleep almost immediately.

The sun is shining in our faces when we wake up. After preparing coffee and shaking the dampness out of our clothing we take to the paddle again. Early in the forenoon a stop is made at the large *praya* called Tijuc-assū (the large mud-flat), where we spend some time looking for turtle eggs

in the usual places but without success; the river people have been ahead of us. We find, however, a number of jaguar tracks on the sand, leading down to a recently abandoned camp-fire of which the ashes are still fresh. We also see a lot of chameleon tracks. Many sting-rays have built their hatching holes close to the water's edge.

At 10.30 we make a modest lunch on an *acarī* fish that Skelly surprised in a small lagoon where it was imprisoned by the receding waters. I take a bath under somewhat difficult and uncomfortable circumstances for insects are as bad and persecuting as ever. Shortly before sundown we arrive at the Xininga Island where I return the canoe, pay off my hired paddler, and settle in a hut waiting for the arrival of the launch that will take me back to Pará.

During the following day I have occasion to treat a number of sick people by administering hypodermic injections. They all seem pretty well used up by fever, and particularly two men, one very old and one very young, who are so far gone that it surprised me to discover a sign of life in them towards night. There are also some people with ulcerated legs. These I bandage after applying iodoform. The gratitude of these people is great and I am given all sorts of things as well as pets which I accept as curiosities.

At eight o'clock I creep carefully under the mosquito-net, taking particular precaution that

no mosquito shall accompany me, but nevertheless after about two minutes that distressing, nerve-racking buzz in a high falsetto begins. The rest of the night is then spent chasing the mosquitoes and killing them as fast as they can get in. Never before (and never later) have I experienced anything like this place for torture. It seems quite inexplicable to me how the little pests can get through the fine mesh of the net—but in they get.

About one in the morning I hear the whistle of the launch and lose no time in getting my baggage together and piling it up on the beach. An hour later I am on board, comfortably seated in a hammock and steaming at full speed downstream—that is, northward toward Pará. I open the B. & W. medicine chest and take a heavy dose of quinine. Unnumbered times I have been bitten by malarial mosquitoes when visiting a patient groaning next door. I actually saw a mosquito in the act of biting a delirious fever patient, and a few seconds afterward the same mosquito changed victims and had its proboscis deep under my skin before I could kill it. This invaluable medicine outfit has so far saved the lives of three men and perhaps saved me prophylactically in a like manner.

In the morning we hop over some sandbars in the river bottom. The captain rushes to the rail, lead in hand, but we hop no more.

A little later we land at São Joaquim on the right-hand bank of the Tocantins. This settlement, containing perhaps one hundred inhabitants, is prettily situated below some high banks. The entire right-bank is here densely forested with fine cabinet woods. Little work of any kind is going on. The people are all poor and in a sad state of health, and the towns we pass on our way down-stream, such as Baião and later Mocajuba, do not give any favourable impression, but the forest around these places is dense and full of some of the finest timber in the world. Very little or nothing is cultivated here. Two days later I arrive at Pará in the best of health excepting that my legs are badly swollen from the insect bites.

Here ends my first Tocantins journey.

CHAPTER IX

Up the Moju



AVING in view a journey up the Moju River, to visit a savage tribe said to live there, above the first five *cachoeiras*, or rapids, I secure a large canoe or *regatão* from the Mayor of the town Ygarapé Miry. This boat measures about thirty-five feet in length, has a beam of seven feet, and draws about twenty-four inches of water when fully loaded. As it later proves an ideal exploring vessel well-suited for such journeys as I undertook, withstanding even the hard knocks in being dragged over rapids, while some months later successfully buffeting heavy seas that foundered an Amazon steamboat of five hundred tons burden, almost on the same spot, it has a claim to careful description, including as well the outfit for the journey and the crew. The hull of this excellent craft is made of so-called *ita-uba* or ironwood, giving both strength and elasticity. The keel and ribs are of *jarána* wood, which even excels our oak in strength and durability. The rising and gunwales are made of the famous Amazon wood, called by the natives *acapū*, making

as hard and tough a boat as could be desired, although with a disadvantage in the great weight of the craft when afloat. However, I do not consider this a drawback as I do not intend to go into the unknown with an insufficient crew. From about four feet abaft the bow begins a solid deck extending to the cabin or store-room. This room is capable of holding about one ton of merchandise, and takes in the whole width of the boat, extending from about amidships to within four feet of the stern. Here a wide-bladed hinge rudder governed by a solid tiller controls the direction of the boat.

My full crew for this staunch vessel consists of four men at the oars and one at the rudder. On all my journeys these places are occupied by the following bucks: Skelly, the ambitious, athletic, short-set *caboclo* whom I have promoted to the rank of "forest-secretary"; Fiel, the remote brother of Skelly, a tall, muscular *caboclo* of quiet almost morose character; Hildebrando, another still remoter relative, a *caboclo* of a very light complexion, as strong as his brothers and of a lively temperament, unreliable in many things. The fourth is the notorious character Curupira (a name that in the Indian language means forest-spirit), an old hardened *caboclo* of great and varied experience and of remarkable individuality. The fifth I manage to pick up on the rivers, in any place where I may go, as there is usually some man anxious to go on a journey. Such men as I secure

in this way prove invaluable because of their local knowledge, and therefore as a rule are assigned to piloting, where necessary.

The food supply of the expedition is plentiful, and I count upon giving much away in lieu of money payments for favours. Money is of no use to the up-river people; they obtain all necessities through trading without ever beholding a coin or a bill. I have included in my supplies sugar, rice, salt, beans, flour, coffee, jerked beef, condensed milk, some imported packages of Quaker oats and grape-nuts, four large baskets of farina to serve the boys as a substitute for bread and cereals, and a sack of *pão torrado* or machine-toasted bread. Of vegetables we are absolutely deprived as there is nothing in the Pará market to allow a supply to be put in—not even enough to last a few days. Of tools we carry a quantity of machetes or bush knives, steel axes and carpenter saws, besides a quantity of large nails and a few hammers. I have more than three thousand fish-hooks of all sizes, and a few dozen double pronged steel-harpoons. The tools, I judge, will be more acceptable to the savages than any other gifts. Our arms are plentiful and calculated exclusively for game, as it is my policy to handle the forest people with "kid gloves" and patience. The photographic outfit consists of a plate camera ($6\frac{1}{2} \times 8\frac{1}{2}$) very troublesome, and a small 3A kodak giving but a minimum of both and equally good results. I

also have a complete moving picture outfit with one thousand yards of negative film, but this proves a great encumbrance and invariably fails at the critical moment, causing me no end of disgust. The B. & W. medicine case, of course, accompanies the expedition and proves itself invaluable; there is hardly a day that I am not called upon to render some service in this line.

Thus equipped, we launch our craft, newly painted white, with the name *Florence* inscribed fore and aft.

On a stormy September evening at eight o'clock we make our hawser fast to the stern of the steam launch *Rio Moju*, bound for the upper part of the river Moju with merchandise.

My last impression as I leave Pará with the *Florence* merrily trailing behind is the dear brown eyes of the patron and namesake of my exploring craft.

Just as two bells in the first watch strike on an English tramp steamer anchored in the bay of Guajara, and as taps are sounding for the garrison of the city, we slip our moorings and, swerving and pitching, our craft trails out into the dark waters, towed behind the launch. Three boys were on board taking charge of its affairs. We expect to pick up the famous old Curupira some way up the Moju River. We enter this river at 11.30 and taking shifts at the helm and towing-line I spend the moonlit night looking at the pitch-black

forests while the vessel makes the usual stops. "Zulu," my white bull terrier, the official mascot, sleeps on top of the upper deck of the *Florence*.

In the early morning we arrive at the mouth of the canal Ygarapé Miry where I am to receive four oars from the builder of the canoe, but I find none there. We continue upstream and at a point below the Moju rubber plantation the steamer whistles for somebody to come out in mid-river.

Soon an old, wiry, black man is seen paddling out and then he climbs on board. It is Curupira. At first he hesitates to come with me on such a long trip for his wife cannot be left in need during his absence and his legs besides are badly ulcerated. He finally assents, however, after I have given him a quantity of farina, sugar, coffee, beans, tobacco, and salt for his wife. With this he paddles back to his hut and soon reappears with his baggage consisting of an old, battered, tin trunk and a steel harpoon. We are quickly underway again and soon land at the plantation, where I am cordially greeted by my friend Dr. Goeldi. Here I purchase some gunpowder for the muzzle-loaders as this was neglected in Pará. The captain of the launch is not yet sure whether he will navigate as far as a place called Curuçá or only proceed as far as a homestead known as Bemtevī, some fifteen miles below the first named place.

For lunch the bucks prepare some jerked beef and swallow *chibèh*, while I indulge in a handful of

rolled oats and some river water. The water that I drink during my journeys is always filtered in a Berkefield filter; and this river is very muddy and turbulent.

In the afternoon we stop at a half abandoned village, Cairary, where some demijohns of *cachassa* are put ashore, the only merchandise that this wretched place seems to require. And what a place of misery! The village is prettily situated on the high bank, the soil is fertile, the land never inundated, the forest full of hardwood timber, but nevertheless the people are starving, sick, and dejected, abandoning themselves to whatever new trouble comes along. There are two streets, one having eleven houses and the other five. Of these sixteen miserable dwellings, ten are uninhabited. A few old women stare at me as I stroll through the town; they look emaciated and half insane. One has a terrible deformity. Five little wan children stare wonderingly at me. I hurry on board and the launch is off again on its southward journey up the Moju. A mile farther our course is west, with numerous northern and southern deviations throughout the next four hours of navigation. The river-banks above the Cairary village, which is marked in the *Album* published by the State of Pará as a very flourishing city, are rather densely populated, *i. e.*, a family living on each mile of water-front. We pass close to a rubber-worker who, with his young wife in a canoe, is

about to pay a visit to a neighbour living some four miles downstream. The gunwale of the canoe is dangerously near the water, but they paddle merrily along, knowing perfectly well how to balance themselves in the frail craft. Now and then some rubber-worker's diminutive hut appears between the luxuriant but useless foliage of the river-bank. Ladders lead from the hut platforms to the water, showing that we are now independent of the ocean tides, whose effect as far up the river as this is but slightly felt. The water backs up during the high tide but has not the force of the tide farther down, consequently the annual rise of all the Amazon affluents is here more keenly felt. Long ladders have to be built in order to connect the houses with low water.

Late in the evening we arrive at a homestead called Bemtevī, owned by a young and enterprising Brazilian who has commenced clearing the jungle for future agricultural development. The captain of the *Rio Moju*, finding that there is no cargo to be obtained farther up, decides to turn downstream without delay, and we set to work taking our goods out of the hold to transfer to the *Florence* for the dash into the wilderness. Before leaving, the captain gives me some mail to deliver up the river, and ten minutes afterwards we are moored to the rickety landing-stage and our bond with civilization is broken by the launch's shrill departing whistle. I stop here to have a talk with the owner, who in-



An abandoned hut on the Upper Moju River.—(Page 187)



River travellers

"We pass close to a young couple paddling their own canoe."—(Page 158)



Far above the virgin forest
"After some climbing we reach the forest-covered top and obtain a splendid view."—(Page 180)

forms me that some years ago a German engineer attempted to ascend the Moju but was forced to give it up as his crew revolted. The Indians, he says, have a bad reputation up there and are constantly lying in ambush for any "whites" who venture far above the place called Curuçá, a day's paddling upstream from here.

The bucks are so tired from loading the canoe that they fall asleep, all except Skelly, who helps me dispose the cargo so that the handling of the craft will not be impeded. At midnight we all turn in to await the morning flood tide to help our progress up-river. Old Curupira, who has selected the stern as his permanent resting place while on board, complains of ague and I give him ten grains of quinine; he lies shivering, coiled up like a monkey, so I cover him well with my army blanket. Skelly wraps himself in a hammock and goes to sleep on the roof. The others snore on top of packing-boxes. I had ordered six large tin-lined wooden chests to hold perishable goods during the expedition. These serve from now on as beds at night and as tables in the daytime.

At 3.45 in the morning the alarm clock gives the signal for up-river paddling, and before I have my eyes well open we are off. The tide is merely perceptible, going less than one mile an hour, but with our steady paddling at twenty-six strokes a minute we make almost three miles an hour. As the promised oars were not forthcoming

at Ygarapé Miry we have to tie the round paddles to long rods, using them as ordinary oars. At 11 A.M. we stop at the mouth of a small creek called Zino where we find fine clear water. Here I make a short reconnaissance into the forest and find on a low hill traces of an ancient human dwelling, with old, broken pieces of pottery scattered around. It had once been a substantial dwelling, but now trees are growing on the old brick walls. Old Curupira is sure that this was an old stronghold at the time of the war of the Cabanas (1835).

It surprises me to find no insect pests of any kind, neither *piúms*, nor mosquitoes, nor *meruhims*, nor sand flies, nor any others of the great variety of species that the Amazon valley offers the traveller for discomfort. In fact the air is cool and free, close to these brooks, and for that reason we always seek such places for the noon rest and perhaps even secure a refreshing bath. The land does not rise much above the level of the river, but the floral conditions have changed very markedly from those of the lower part. Species to a great extent remain the same, but their "grouping" and "draping," so to speak, are different. The trees become higher and stouter, growing closer, as in a forest one would call "dense timber." In the afternoon at four we stop at the only available landing place—that is, the only place we can find where the trees and bushes at the margin of the river allow us to approach the land itself. Here

we find an abandoned hut. Around it grow three lime-trees. We pick a sackful of limes. The boys climb the trees in a manner which I truly admire, and when I tell them to throw all the limes at me a genuine bombardment ensues. In their turn they express admiration for my skill in catching the fruits as they come sailing. A thing I often notice is that no natives can ever catch an object no matter how slowly and carefully it may be thrown. Afterwards we all take a bath and the bucks show great skill in swimming and diving. There are evidently no *piranhas* in this river, otherwise bathing or even rinsing one's hands and feet would be out of the question, for the savage *piranhas* will tear a man to pieces if they get a chance.

As the flood-tide sets in at five o'clock we proceed, paddling at a regular rate. Thus working the first day from 4 to 7, 7.30 to 11, 1 to 4, and 5 to 11, or about sixteen hours, we are making good headway towards the far-off region of the mysterious savages. The incoming tide at last is very weak; hardly any movement at all of the brown-black waters.

At eight in the evening we stop at the house of a man called Candido dos Reis (Candido of the Kings), who has been recommended to me as an expert woodsman and friend of the up-river Indians. Unfortunately he has been instructed by his *patrão* at Curuçá to bring down a float of lumber as

far as the Moju plantation and is therefore uncertain what to do, as he wants to go with me. The question is solved by deciding that Candido shall remain until the matter can be settled by his employer at Curuçá. In case he is allowed to accompany me a messenger will be sent back to advise him. I depart feeling doubtful about getting him.

After the evening-meal the bucks feel disposed to row. Without resting they pull well and we make all of four miles until the tide turns. Towards nine o'clock I fall into a heavy sleep inside the little cabin, which is so low one cannot stand upright. Skelly, who acts as the cook of the expedition, has built a wood fire in an empty soap-box in the bow of the boat and grills the jerked beef on a stick which has been stuck into the moist earth with which the box has been filled. For my personal delectation he has prepared a potful of rice boiled with condensed milk. The bucks do not find enough nourishment in this dish, and prefer to eat their regular jerked beef with *chibéh*. They are willing and good-natured; they like to talk and sing while paddling, but they are steady and untiring workers and need but little urging.

Now and then I wake up to attend to various parts of my anatomy which are being attacked by carnivorous ants that must have come on board by the hundred and are paying for their passage in this ungrateful manner. Even the dog is half

crazy from the rapacity of these little fire ants. At 11.15 we moor at the entrance of a dark cavern-like *ygarapé*, called Saúba, after the voracious ant that always carries a green leaf in its mandibles. At first I object to spending the night at a place called after such an ant, but I finally decide that things could not be worse as far as torment is concerned, and I give in. Some creoline is dissolved in water and with this the sides, floor, and roof of the cabin are saturated.

The next morning I wake up late—that is, at 5.30, and the crew, tired from their sixteen hours' paddling of the previous day are still asleep. I hate to wake them, they sleep so hard; but, overcoming my sympathy, I gently pour a bucket of water down their backs. They spring up, wide-awake, and smiling as soon as they open their eyes and shake the water off, and about thirty seconds later we are under way.

These morning hours, until nine o'clock, are wonderfully cool and fresh; everything looks very beautiful, every leaf and branch stands out with the greatest distinctness reflected in the waters, and the birds all wake up and shake their plumage. All Nature is alive and joyful. Soon, however, come the dead, hot hours of the day, when all humanity suffers and even animal life seems dead. Then not a leaf stirs, not a twitter is heard, until four in the afternoon. The last hour before sunset grows tolerably cool again, thousands of crickets

sing, and birds keep in constant activity until nightfall. Then come the long hours of dreary, soul-depressing darkness lasting twelve "eternal" hours, when nothing but the croaking of the frogs and toads in the swamps is heard, and the harrowing noises of all the prowling, nocturnal denizens of the Amazon jungle. The only pleasure on such occasions is to throw hook and line into the water, and the constant excitement of the catch keeps you awake till late.

This morning only Fielo, Curupira, and Hildebrando paddle, while Skelly builds the breakfast fire in the soap-box and prepares coffee. We all have some toasted bread crusts with this and feel perfectly happy. We pass a settlement owned by a thrifty Portuguese. He has built a vegetable garden on stilts out in the river close to his landing-stage. We stop and ask for permission to pluck a few leaves of a cabbage-like plant. He gracefully assents; we thank him and give him a few fishhooks and go on. We soon pass a high bank, some twenty-five feet above the river, on which a settler has built a pretty little *mandioca* establishment.

Swarms of swallows (*andorinhos*), veritable clouds of them, are flying close to the water, making the air resound with twitterings and singings, now and then splashing the water with their wings. They are taking their morning bath. At 7.30 we heave in sight of Curuçá. This is the ultimate

point of steamboat navigation on the Moju River. Above there are no commercial settlements to make it worth while for the steamer to ascend. Only a score of small habitations are to be found higher up and they receive any merchandise they may need from Senhor Irineu, the "boss" of Curuçá. Curuçá is situated at a sharp turn of the river, on a plateau about fifty feet above the water. It consists of about three houses, all of wood and palm-leaf construction, overlooking a large clearing where *mandioca* is grown on a large scale. The distance from here to Pará is calculated at 225 miles.

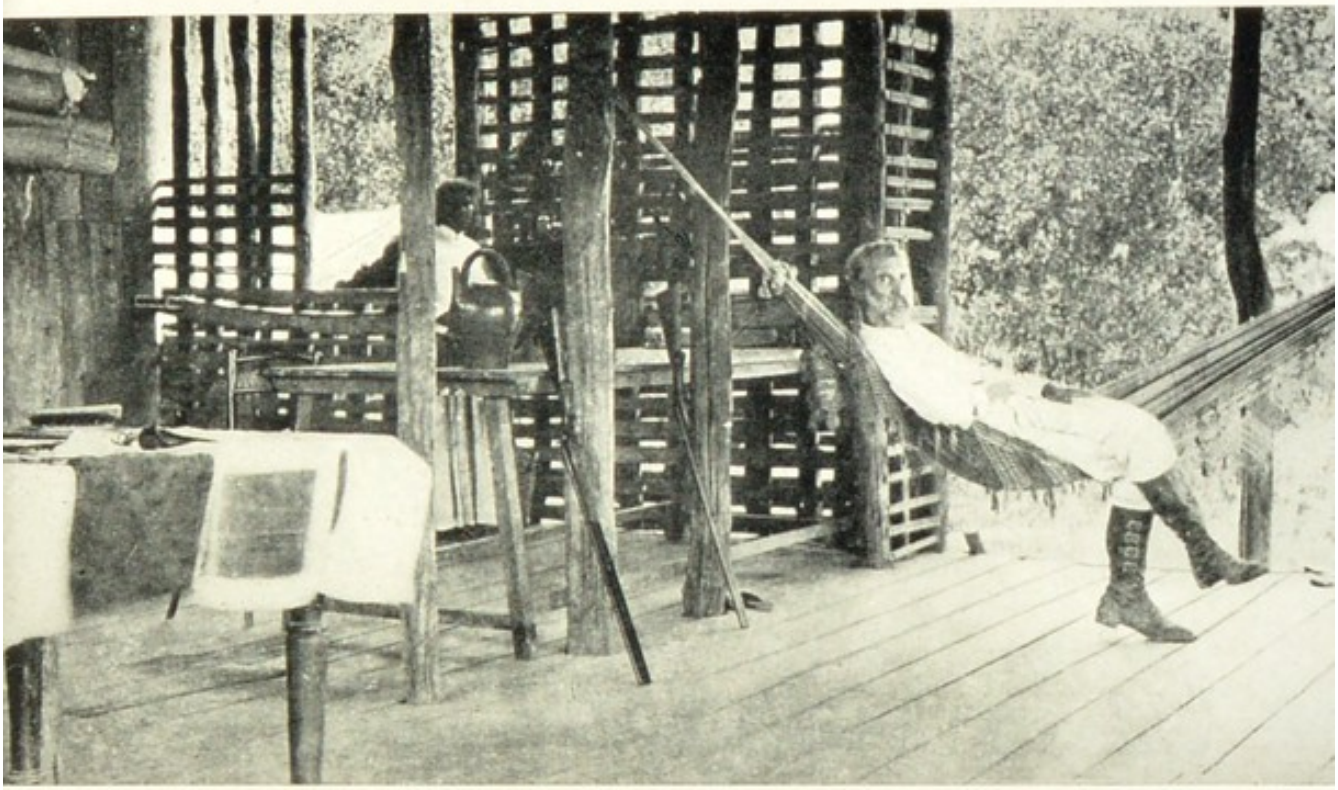
I spend some twenty minutes in conversation with this progressive man and explain my desire to obtain Candido's guidance on my journey up-river. He promises to send this very morning for Candido, ordering him to follow me at express speed in a small canoe (*montarīa*) so as to overtake us in a couple of days. Before leaving I secure a needle and some thread to mend my clothing and, besides, we are presented with a dozen eggs. In return I give a can of condensed milk and a picture of the "Flatiron Building" in New York. His surprise is great in seeing such an architectural monster, and I have my doubts whether he understands it yet, because when I last saw him he was looking at the famous building upside down.

The bucks paddle steadily. The river does not seem to have become much narrower, its average

width approximating three hundred feet. Later we take an accurate measurement some twenty-five miles farther up and find it is 230 feet from shore to shore.

The marshy character of the banks still predominates, showing that in the season of high water this part of the land becomes at least partly inundated. In places the elevation is comparatively great and we find through reconnoitring that some distance from the river the land invariably rises to a plateau on either side.

At ten o'clock we pass what the people call a "port" or landing place behind which is a human habitation. We see two brown-skinned, little tots watch us from behind the trees and then they run full speed up to a little house. Curupira, who stands at the helm, speaks in a voice that one would not judge could carry very far, but nevertheless it is heard some three hundred feet away by a woman. The conversation, translated, takes this course: "Hello, child Maria, how is Dona Luiza your mother, and godfather (*Compadre*) José, your father?" "Thanks,—very well, and how are you, *Compadre* Curupira?" "Thanks,—I have had the fever the last two months, but *Compadre* Doutor Lange here is treating me, and with the help of Our Lady, I am better." "Won't you stop and come up and see the family?" "No, *Compadre* Doutor Lange is journeying to the headwaters and we are in a hurry." Finally we decide to



The interior of a foreman's house on the Moju



The Cairary village
"What a place of misery!"—(Page 157)



A nature fake
"—through some caprice of nature it has subdivided into twenty-one trunks."—
(Page 167)



Japim nests hang from every branch

stop and go ashore for some ten minutes. This house, standing in the forest at the foot of the sloping bank, was once well built with clay walls, but now it is rapidly decaying. We greet the family and give the little children the usual traveller's blessing.

At one point we pass a cluster of palm trees, Javarys, of which one tall one may be classed as a "nature fake." Instead of ending in the crown of long, graceful, plumate leaves as any ordinary Javary palm would do, it has, through some caprice of nature, subdivided into twenty-one trunks instead of twenty-one leaves, each one of these trunks being supplied with the usual crown. At 5.30 we sight a "port" or rather a hole in the right-hand bank, where I decide to moor our canoe. Just opposite once stood the Pedreira settlement, now deserted. Were it not for the typical and distinct *capoeira* growth this abandoned little village would now be indistinguishable. In holes and scattered around I find old bricks, and pieces of pottery of modern origin, and here and there a piece of glass, and other signs of settlement.

7 P.M. We are through with our modest supper and are resting a while waiting for the moon to appear. The night is too dark, the current too uncertain, and the navigation generally too difficult to undertake to go on in the absolute darkness that is experienced only in the Amazon region. I

make myself comfortable on board smoking my pipe while the bucks roll cigarettes of scrapings from the long, spindle-shaped roll of tightly compressed Acará River tobacco. Skelly, the artist of the expedition, accompanies himself on the guitar, singing sad and weird river songs about the stars and the "lonely mother moon," now and then changing over into some love song. He plays with a truly remarkable technique which could never be obtained by study; and the neat rapidity and certainty with which he plays the more advanced chromatic scales is really wonderful when it is remembered that he is nothing but a *caboclo* with no education whatsoever. They are a merry lot of boys, laughing and joking at everything they happen to think of; even the hoarse croaking of some frog is to them a source of merriment; the poor frog is criticized and made fun of till it certainly would be mortified could it understand.

I creep out of the hatchway of my cabin roof (where a sliding door has been made) and talk to old Curupira. As usual he is huddled up in the stern, not mixing much in the merriment of the bucks. He likes to meditate in his own peculiar manner. We have already become great friends, and he seeks constantly the advice of "*Compadre* Doutor" in many things and affairs of the outer world. He is truly a forest spirit. The deepest and densest jungle holds as little mystery for him as a familiar New York street for me. As he walks

through the forest he knows all the trees and plants, the birds, the reptiles, and the mammals; he talks to them with confidence, and he pours out the tales of his troubles to the trees. He feels, no doubt, in his own unfathomable manner, their psychism, as a spirit in each tree and plant. They are to him, therefore, living beings with souls with which he can enter into communication. Many are the times, in later days, when I would see this thin, sinewy man of sixty or seventy (or even eighty, nobody can know or judge not even himself) walk around in the thick jungle, absolutely nude, ferreting out the hiding-places of all sorts of animals and, with his long claw-like fingers, crushing the life out of them.

When I ask him what he has in his old battle-scarred tin trunk he shows me the oddest things of a man's travelling outfit that I have ever beheld. An old pair of trousers with thousands of stitches and patches; an old jack-knife; a flint-and-steel; a couple of rifle cartridges although he never owned a rifle; thread and needle; four or five kinds of dried roots of medicinal herbs; three little pan-pipes made of reeds, to charm tapir, deer, and forest turkey (*mutum*), and a jaguar tooth to be tied around his neck to ward off attacks at night of this big cat. "This *bahū* (trunk)" he says, "has travelled with me throughout the CENTRE." It looked it, indeed.

By this time the night is beautifully moonlit,

and we go on. From the pitch-dark mysterious forest issue strange and bewildering sounds; many sounds I am familiar with, especially those of the various frogs which continually call for "Rubber—Rubber" and "Oohuh—Oohuh," but so many unknown to me that I listen with profound interest to Curupira's tales and his descriptions of the source and peculiarities of each other.

Every day around nightfall—*i. e.*, about six o'clock, we hear a sound as if several factory whistles were tooting in the distance, bidding the toiling workers "knock-off" for the day. The illusion is striking and to me pleasant, through its associations, although here an absurdity.

It carries one's mind from the wilds of the jungle to the busy, overcrowded life of a great city.

There is another sound as if a heavily laden, slowly drawn waggon is passing over a rough country road, the dry axles continually creaking, and there is the dismal turmoil of the howling red monkey pouring forth a series of roars that would cause the uninitiated to believe that a hundred lions have broken loose. Another is a sharp, intense cough coming from the jungle cat prowling around for game. Then is heard an innocent whistle, as if somebody around the corner recognizes me and wants to call my attention; this comes from the tapir,—a short, repeated "Phwuit."

Towards nine in the evening we arrive at a place

where the river suddenly narrows and has the appearance of a deep canyon-like canal.

I have travelled through many a remarkable stretch of Amazonian landscape, but here the majestic beauty of the tall trees with their foliage of twisting creepers and bushrope produces an overwhelming effect as we glide slowly and silently between the dark shapes, the moon now and then shining down on us.

We are approaching the last human habitation on this long river with a mysterious source. At 9.30 we pass Santa Maria, a small hut, where no light nor sign of life is visible. A few minutes later we are opposite the house of José Pantoja, which means that we are now leaving behind us the last habitations of men who speak a civilized tongue and wear civilized clothing.

There lies now before us nothing but virgin territory. The next inhabited human dwellings, I hope, will be those of the Indian tribe at the headwaters,—people who have not yet entered into definite relationships with men of the outer world. There I shall be in a region where few men have been, and, as far as known in modern times, no European or American has ever set his foot.

At 11 P.M. we make fast at the mouth of a small brook, babbling gaily between clusters of Javary palms. Zulu, the bull terrier, makes her usual vigilant round from bow to stern, licks old Curupira's face, and drops off to sleep at my feet.

CHAPTER X

Meeting Strange Indians

AT five the next morning I arouse the boys and after a quick breakfast we push on. At the next turn of the river we see a small peninsula formed by the mouth of a small creek. The ground on this tongue of land is pounded flat by otters. The character of the landscape now reminds me much of the banks of the Javary and Itecoahy rivers of my former expedition on the Upper Amazon with their broken, steep banks of yellow sand and clay. The forest is growing low and serrated again, the real timber tracts appearing farther inland.

At seven we pass the outlet of a large and tortuous lake; at eight an abandoned hut built years ago by a man called Diogo. Almost opposite is a sand-flat, the first we have seen so far on the Moju River, and there we go ashore to look for turtle eggs, as formerly we did on the Tocantins River. Tied to a tree we discover *an old empty match-box* and the faint indistinct remains of a camp-fire. These may be the traces of a half-insane river

character called Chico who has been heard of in these river sections.

The high bush growing close to the water front constantly reveals large flocks of brown birds with fine crowns. They cry hoarsely as we pass, flop heavily some ten or fifteen yards ahead, and settle on the swaying branches. With my air-rifle I kill one of these birds called *ciganas*, to provide bait for the night fishing. My air-rifle is no ordinary one; it sends a .22 bullet clean through a half-inch pine board. It proves efficient in killing small mammals and birds even eighty feet away. Shortly after lunch we arrive at a great sand-flat where we again go ashore to look for turtle eggs, but to our disappointment find that they have been collected by some one else. By whom? is the question. Can it be the Indians already, or is some downstream hunter ahead of us? Then from between the trees on the opposite bank I discover a thin film of smoke rising vertically into the calm atmosphere. Instinctively, I feel an increased pulsation of my heart. I call, and receive an answer in a distinct, childish voice. In a hole in the forest wall I discover a man and two boys busily engaged in skinning three wild hogs which they killed a few hours before. A fire is burning and over this they are heating water in a large pot to scald the hogs. They receive us with tokens of great friendship, saying that they are on their way down the river to the *povoado* with their

game. *Povoado* means "populated (territory)." The man proves to be the owner of a hut we passed yesterday below the last habitations. His name is Crispim, and the two young boys helping him are relatives of his wife. They look like smart, bright youngsters of about thirteen and fourteen years of age. Crispim gives me the side of a hog and in return I give him some biscuits and a few fish-hooks.

At 3 P.M. we leave this place, which I christen *Porto dos Porcos* or the Port of the Hogs.

In the later afternoon we reach the outlet of a lake close to the turn of the river. The banks here are very high and forest-clad, giving the river again the appearance of a deep and dark canyon. We take our great iron-pot ashore to prepare the pork for supper, and I mark down this place as *Porto do Panellão*, the Port of the Great Pot. In this practical manner I shall always be able to identify locations by characteristic names which are more easily remembered than others less differentiated, such as trees or even numbers. A peninsula rising some fifteen feet above the river level is here formed by the junction of the two water-courses—the lake and the river. The appellation "lake," therefore, is not appropriate, as there is no source; it would seem more correct to designate this body of water as a *cul-de-sac* merely.

While bathing I fill the soles of my feet with the long, needle-fine, and very tough spines of the

Javary palm which have dropped into the river and are now treacherously resting on the bottom close to the banks. I have a painful time extracting the spines, most of them having to be cut out bodily with a scalpel.

The bucks have lit a great fire on top of the bank, and are boiling the side of the hog. They squat around the fire and sing and play the guitar, now and then giving a stir to the contents of the pot and inhaling the appetizing fragrance. They are happy at the thought of filling their stomachs.

At 9 P.M. we start off through the narrow river winding out and in; hardly ever running straight for more than two hundred yards. The left bank is high and gently sloping, while the right bank is low but steep.

We continue to paddle upstream, steadily. I fall asleep in my cabin with the hatch wide open for ventilation, and I am aroused by a heavy downpour. Even after closing the hatch the water keeps on dripping in and wetting everything. The carpenter made a structural mistake, and it will cause me some inconvenience until I can get it remedied.

Exactly at midnight we cease the labours of the day and tie to a tree on the bank. We are at Porto das Chuvas or the Port of the Rains. Old Curupira has eaten too much of the stewed hog for his comfort and is coiled up in a knot at the stern with an acute attack of indigestion. I

give him a B. & W. pepana pill and in one hour he is as talkative and mysterious as ever.

The next morning at 5.45 we are under way and encounter a strong current from the very outset, but after some miles have been traversed with hard work everybody pulling on the oars, the river widens again and the current slows down to two miles. In the early forenoon we pass a long and unexplored affluent which we call *Mamorana* from the predominating feature of its vegetation. Curupira has travelled up this creek five days in a light canoe without coming to its headwaters. It is a left-hand affluent—that is, from the west, and probably comes from the south running parallel with the Tocantins for a considerable distance.

Close to the mouth of this stream we pass under a high bank or *terra cahida*, which means "fallen land." The brink is some sixty feet almost vertically above the river. The cut shows reddish-yellow clay and sand. As the water in the wet season comes rushing down upon this from a right-angle turn, it keeps on excavating, and the forest on top falls with the caving in of the foundation. This phenomenon is seen on a much larger scale on the Tocantins and on the Amazon during the rainy season, when whole *estirãoes* or stretches of river-bank often miles in length fall in. Such *terra cahidas* are often dangerous to passing vessels.

I keep myself busy during the forenoon by

stowing things away and taking notes of all kinds, after first having washed the cabin and painted the ribs and planks over with concentrated creoline as a disinfectant. Later we stop at the old, abandoned hut of a Pará merchant. Some years ago he sent ten men up here who worked the rubber for a season and left. The reason for the desertion of the house was evident when I saw last season's highwater mark a couple of feet below the roof. The house itself is comparatively well built and is situated in a clearing in the dense forest around it. No cultivation has been attempted. The trees surrounding the house at a distance of fifty feet are tall and very stout, giving the appearance of an impenetrable inhospitable wall. The roof is covered with shingles and the floor is well made of boards, and, excepting the upstream side of the walls washed away by the river, the house is well preserved. A scale with a twenty-five-kilo iron weight tells the story of much rubber in the forests. Some human bones lie under the floor in a corner of the room. The kitchen bears signs of recent occupation; charred wood and *mutum*, forest turkey feathers, lie in a heap under a wooden tripod arrangement.

We leave this desolate place as soon as possible. The average temperature is rising to 93° Fahrenheit in the shade at 3 P.M. This is probably due to the fact that the river is cutting through deep forest, with few cooling breezes reaching us at the

bottom of this channel. The humidity is fairly constant and averages 90 per cent.

A little after noon we reach an opening in the forest accessible from the river, and I call it the *Port of the Dish*, as our only piece of crockery is accidentally broken here. Boiled eggs, "corn-flakes," and cooked pork make up my lunch.

As we go on, the current grows very strong and we stop to cut *varas* or ten-foot poles with which to punt the canoe along. We sight the mouth of the *Ygarapé Ipēka*, so-called by the Indians according to old Curupira and Skelly, who last year had been up to these upper reaches of the river on a rubber-hunting expedition equipped by the Mayor of the village Ygarapé Miry on the Lower Moju. In front of the mouth of this creek there is a little island the first we have noticed so far, and on this island is a bank formed of sand and earth and dry leaves.

Old Curupira, even long before we set foot ashore, shouts that here we will surely find turtle-eggs, or chameleon eggs, for supper, and, sure enough, we discover some forty newly laid *tracacha* eggs.

Close by, a steep hill, about one hundred feet in height, rises abruptly, forming a *terra cahida*. The river becomes narrow, scarcely forty feet in width, and the current is consequently very strong. I timed it and found it to be six and a half miles an hour. The ten-foot poles are here inadequate and

we have to pull the craft by the line to conquer this "mill-race."

The landscape soon becomes open and less monotonous, producing imperceptibly an exhilarating effect on us all. There is something different every moment for the eye to rest on. At five we pass the mouth of the lake called Ipēka. A long, narrow sand-ridge is in the middle of the river, with but scant vegetation, and on the left-hand bank we see a flock of howling monkeys who are not howling but just going from tree to tree at a good speed. It is a family excursion of several hundred, with mothers carrying their little ones tightly clasped around the belly. A swarm of ugly black wasps is the next thing. Their nest must have been disturbed by some inquisitive monkey for they appear very angry, and for a moment we come near running aground because the bucks are forced to scurry for shelter.

Anxious to reach a good place for camping, they push hard on the paddles and poles and at eight o'clock we arrive at one that is satisfactory; in fact it is a very dark night, so dark that we must give up navigation. Supper consists of coffee with the toasted bread-crusts bought in Pará, and, not thinking of any better name, I call this camp *Pão-torrado*, which translated from Portuguese means "Toast."

We get away early in the morning, anxious to make time up the river. I notice that the wood we

cut for the camp-fire is a beautiful purple colour and is besides very hard and dense. It is part of a large tree on top of the bank, and its colour and fine grain interest me.

The river grows wider as we continue, the current slower, and we take to the paddles again as the water is eight feet deep. The temperature at seven in the morning, that is one hour after sunrise, is 77° Fahrenheit. The average height of the land above the river is now some fifteen feet. At eight we sight a high bank at the end of a long *estirão* where we moor at the foot of the forest-hill, and accompanied by the boys I climb up the steep red clay. In places the clay formation of this hill has been eroded by the rain and shaped into peculiar pillar-like projections which through the action of the sun have become partly baked and solidified. Many curious figures stand here and there. The incline is steep, almost perpendicular, and I have to use a pick-axe with which to haul myself up. After some twenty minutes of steady and difficult climbing we reach the forest-covered top and obtain a unique and truly splendid view of the immense surrounding forest. Nothing but forest and forest extending as far as I can see.

The height of the outlook above the water can not be less than 250 feet judging by a tall *castanha* or Brazil-nut tree below. It is a sight one cannot easily forget, after travelling in the sombre, closed-in swamps and rivers, now to look down upon this

vast and majestic desolation. I feel as if I were up in a balloon. Below flows the Moju River like a twisting ribbon, making a turn at the foot of this hill and running almost parallel with itself for a distance until it comes from a true southern direction and is lost to sight among the trees. From the top of this hill I take some photographs, after having first cut an opening through the trees to obtain a better view. Our descent is rapid as we let ourselves down by the aid of bushropes attached to the trees.

We paddle and punt on up river till eleven o'clock, then reaching a fine little brook with cool crystalline water. Its merry rippling sound is heard at a great distance, and I call it the "Rumbler" (*Ygarapé Zoador*). It falls into the Moju from a bed of hard, iron-coloured clay worn smooth by the water. Here for a couple of hours we stop, and lunch after taking a bath. We enjoy sitting down on the wet clay facing the mouth of the brook and allowing ourselves to be whirled or shot at great speed out into the river when the pressure of the water on our backs has grown sufficient.

At eight that night we are in a fairly good place, and the bucks having travelled a long distance that day are talking themselves to sleep on the roof of the canoe. They are covered with old trousers and shirts, and will soon be oblivious to ordinary sounds.

We are suddenly aroused by the violent barking

of Zulu, my mascot; somebody is approaching in a canoe. We all start up, not knowing what to think, because we are now in the region inhabited only by Indians. Curupira hails the strange canoe and voices answer gaily.

It is only Candido arriving with the two youngsters we had seen the other day skinning the hogs. He had received the message at Curuçá and had soon followed, paddling day and night to overtake us. We all get up and warmly greet this welcome addition to our crew for we will now be fully equipped to fight against the heavy current. At last I can give the full roster of the crew of my exploring vessel. It is:

1. Algot Lange, chief.
2. Candido, counsellor and paddler.
3. Curupira, counsellor, scout, hunter, and steersman.
4. Skelly, secretary, cook, musician, and paddler.
5. Fielo, paddler and tool-greaser.
6. Hildebrando, paddler and lampman.
7. Antonio, handyman and scout.
8. Eneas, handyman and scout.

Refreshed by a cup of hot coffee we start again and paddle all night. I name this last place *Port Union*. At 5.30 in the morning we see a hut built by Chico, the half-witted forester. Skelly

and Candido go ahead in the small *montarīa* Candido had come in, and which from now on serves as a scouting canoe, to examine the shack for traces of recent habitation. On the floor they find a broom of the style adopted by the Indians (according to Curupira), made of Bacaba-palm fibres. Moored under the banks we find a *ubá* or cedar dug-out, a small fifteen-foot affair made by Indians.

The forest again is growing less monotonous, and the land is higher. In places we meet the unusual sight of a forest-clad ridge rising to a height of some one hundred feet above the surrounding tree-tops, forming a grand amphitheatre.

At seven o'clock Skelly shouts, "There are the Indians!" At the extreme end of the *estirão* appears a canoe manned by three naked men. But they are not Indians. By the painted canoe we judge that we have some down-river hunters returning from a long expedition. They approach and we hail them. They have a boatful of wild hogs, and one tapir trailing behind in the water, bloated by decomposition. This is a typical case of the stupid ignorance of these people. There are good and bad river people, fortunately most of them are good. The bad are usually natives of the southern Brazilian states. Take these men for example. They have about eight hundred pounds of meat; some in the boat and some floating behind towed with bush-cord. They have deliberately gone some eighty miles from their homes up the

river and into the woods with no salt nor any preservative for the game which they expect to kill. To-morrow night when they arrive at their homes down in the *povoado* they will have nothing but a heap of putrifying and stinking meat, not fit for human food. They pass us with hardly a greeting and hurry down with the current. Curupira and Candido tell me that some months ago these hunters on one of their excursions had been camping below the *Port of the Big Pot* when a canoe with Indians came in search of the "civilized," to enter into friendly relations with them, and that some of the Indians were killed from ambush by these hunters armed with rifles, the Indians having nothing but bows and arrows. The Indians were further handicapped by having with them their wives and children. Such an attack tends to keep the Indians wild and suspicious and it certainly will not make my reception any more cordial if I come to the tribe to which they belonged.

At ten we stop for rest at the mouth of a creek and lunch on fried *tucunarē* fish. Afterwards I take ten grains of quinine on general principles and sleep until one in the afternoon.

Then we are off again. No unusual incident occurs and there is no change of scenery to break the monotony. The heat during the afternoon grows intense and I have to do all my writing under the hatch. A few days ago I was careless in letting the sun strike my neck and arms, and consequently

these places are now scarlet, with the skin peeling off by the square inch. When we camp at eight in the evening Curupira and the two youngsters return from some advance scouting and bring with them seven large game fish; one *piracupū*, two *jacundās*, and four *tucunarēs*. Some are now being boiled, some fried, to suit the various palates. I can recommend the *tucunarē* and *jacundā* as fish of the first order—even for an epicure. After our supper the alarm clock is set for two in the morning and we all turn in to sleep the sleep of the just.

This is Sunday morning. Nobody heard the alarm clock, so the bucks claim, and it is very likely, as I did not hear it myself although the clock is scarcely twenty-four inches from my head. It is now 5 A.M. and we are under way trying to make up for lost time.

My fountain-pen generously furnished by the Waterman people in New York is unfortunately swept overboard by an overhanging branch under which we glide, and I moan the loss of so useful an article. The pen, especially a Waterman, is indeed mightier than the sword, or even the rifle, for me.

During the forenoon I measure a typical *estirão* with a tape line to obtain an average length for one of these straight stretches of river. This one is 1520 feet or something more than a quarter of a mile. Then we paddle at our regular rate of twenty-six strokes per minute with all hands working, and it requires fifteen minutes to cover

the distance. This gives an actual speed of one statute mile an hour or about fourteen miles a day. The river here measures 134 feet in breadth. At noon we stop at a *praya*, or sand-flat, called by the Indians *Tapi-ȳra*, where we collect thirty-seven chameleon eggs. These taste good providing you eat them when they are well boiled, and with salt; and when you are hungry with no other food in prospect.

At length we come to an *estirão* cut through sandstone, which has a foot of sand and humus on top, sustaining a forest growth as dense as ever. In the afternoon at four the stream narrows to about forty feet and the current grows swift. At night we moor at the mouth of a dark *ygarapé*, and here I develop one of my photographic plates to verify the accuracy of my exposures. It rains and we spend a miserable night, as the rain drips through the roof. At four in the morning we are off again, using the poles. We soon pass the "Monk Island," where about forty years ago some Jesuit priests were slaughtered by the Indians whom they had come to convert, and a little later we see an abandoned *ubá* or dug-out which has either been left there by the Indians or has drifted down from their territory.

Just before noon we make a rich find of turtle eggs, over one hundred, and we revel in these for lunch. On a small island above our lunch-camp we find the footprints in the sand of what appears

to be Indians. Curupira thinks so on account of not finding any marks of the toes; he claims that Indians walk with their toes turned upwards. I don't believe it.

In the later afternoon we discover a small abandoned hut, which Skelly points out as the one he inhabited last year when he was exploring rubber for his former *patrão*.

A small island comes in sight just before nightfall, which I call *Pedregulho* Island on account of the gravel that covers it. As usual we find tapir tracks all around, but we make so much noise in travelling that we scare the game away long before we can get as hot. Skelly gives us his usual serenade on the roof. His voice, when singing love songs, is a bellow having little of an amorous character. I greatly doubt if a bashful maiden would venture near the source of such a volcano of unearthly noises. Candido, whom I have entrusted with the actual work of navigation, is a serious man of about thirty-five. He presents the usual type of the *seringueiro*, square of shoulder, heavy deltoid muscles developed through paddling, and an enviable pair of arms. Otherwise he is lean and of an unhealthy colour. He has Indian blood in his veins.

We map out our plans for the morning believing that it will be an important day and then we turn in.

At four we are up beginning to prepare and to

trim our gear to be in readiness for the *cachoeira* or rapid which we expect to encounter and resume our journey.

Half an hour later we reach a *travessão* or channel of the *cachoeira Itapeua* (Indian for flat stone rapid). Some rocks half submerged slightly obstruct the river bed causing a fall of about half a foot. We soon get stuck between two rocks and we all push hard with our poles. As we jerk loose the craft tips over and I fall into the water so awkwardly that my back strikes a submerged rock. Curupira hauls me up as I am unable to help myself. It takes us, excluding the time lost in fishing me out of the water, just five minutes to pass this first *travessão*. At eight sharp we halt at the foot of the first *cachoeira* or rapid on the Moju River. The bucks undress completely and let themselves slide into the water to explore the river bottom. We find a good piece of rope some sixty feet long, and a frying pan, left by some civilized *cachoeira* traveller who undoubtedly was wrecked. We greet the acquisition of the rope with joy as we need all we can get. Two of the bucks wade with the rope through the rapid current to a tree on the shore. Taking a turn around the tree, the canoe is pulled up to it by the seven men working together. Arrived at the tree, we jump into the water to steady the canoe against the force of the current, while the rope is made fast at another point some fifty feet higher up and the

process of pulling repeated, till we are safely through this first rapid.

At last we reach the calm water above the head of it and feeling pretty well used up we stop for rest and lunch.

Not knowing whether the next *cachoeira* is near or far, we start ahead to reach it as soon as possible. Although some of the boys have been in this region before, their ideas of distance are confused and unreliable. To one the distance of a mile is NEAR, while to another forty miles is only a little way off. Near in Portuguese is *perto* and very near is *pertinho*. I well remember a certain *caboclo* who used to accompany me on the Javary River who would call a four days' march *pertinho*. I give the men a good talking to as they misguide me too often on distances, until I learn to understand their meaning of the words *perto* and *lá*.

Now we are practically in the hunting grounds of the Indians whom we expect to encounter to-morrow, if we succeed in passing the next and much larger rapid. In the afternoon I fire two rifle shots with the intention of being heard by the Indians.

Candido and Skelly tell me that when they want to announce themselves they always fire twice, as the Indians identify their established friends with the two shots.

The next morning we are off at five. The scout canoe is sent ahead with Curupira and youngster to reconnoitre. It is our plan to proceed as far as

we can. No doubt the Indians will investigate our identity and acceptability without revealing their own presence and will then, if the impression is favourable, come openly to us. I should much prefer to take the exploring vessel to the very *maloca* or tribal village of the Indians than to make my headquarters below the falls at a considerable distance from them, but all depends upon the navigability of the next four rapids. We sight a landing called by the Indians Iraruna, and Curupira scouts ahead shouting for the Indians.

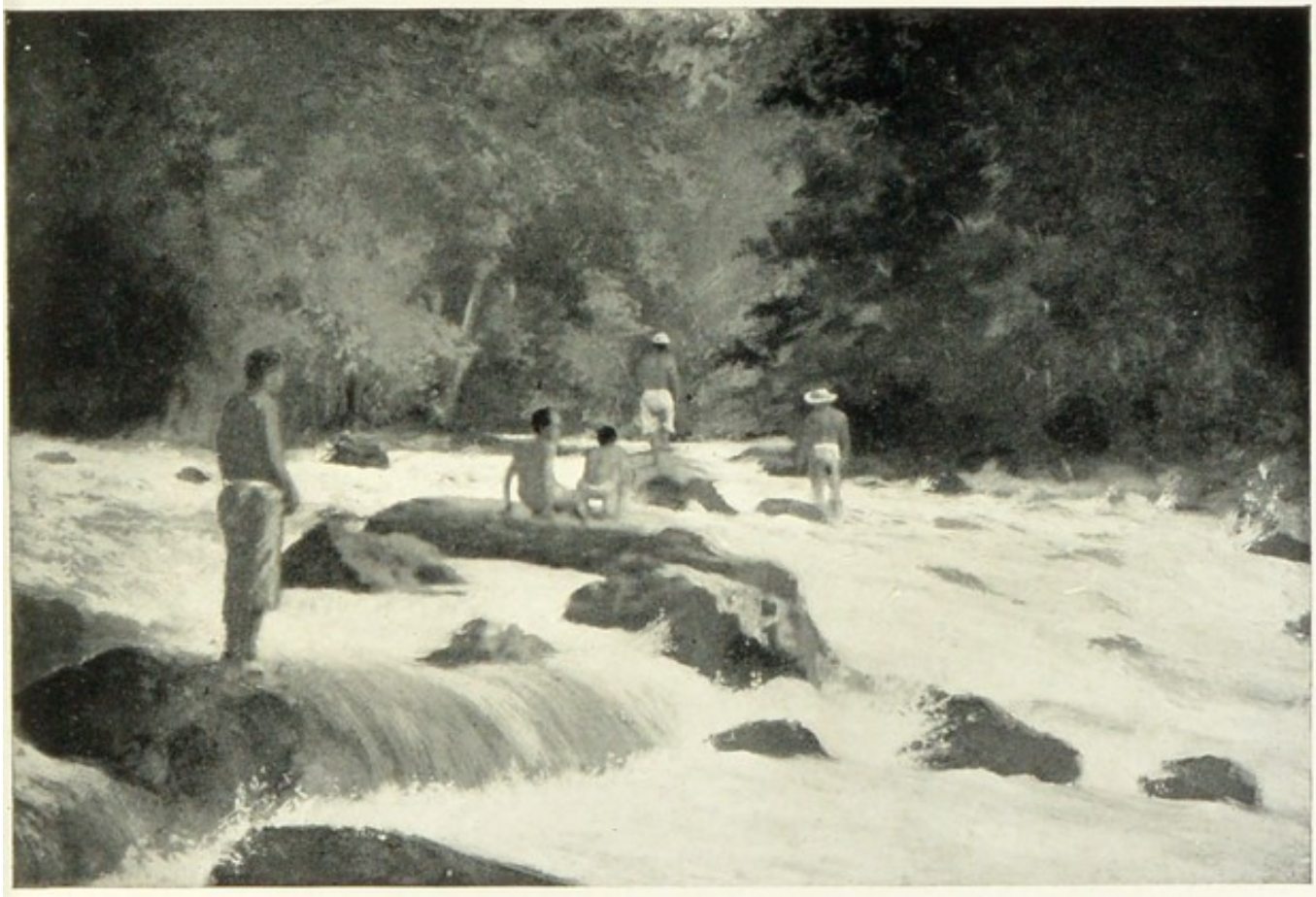
At 7.15 we land at the first "port" of the Indians. The bank is some fifteen feet above the river. Trees and bush have been felled and lie half submerged at the foot of the bank. Here we moor the craft and crawl up to investigate a little shelter built on the top.

A small primitive shelter it is indeed, the work of our savages, whose tribal name nobody yet knows. The roof is covered with *ubussú* palm leaves. The floor has three large square holes dug into the earth, in which the Indians bury their meat. Four sticks, three long and one short, stuck at an angle in the ground outside the shelter, clearly indicate that three men and a child have been in the hut recently and have returned up-river to the *maloca*. Otherwise there is nothing in the hut, except a fan braided of broad fibres, no doubt used to blow up the fire.

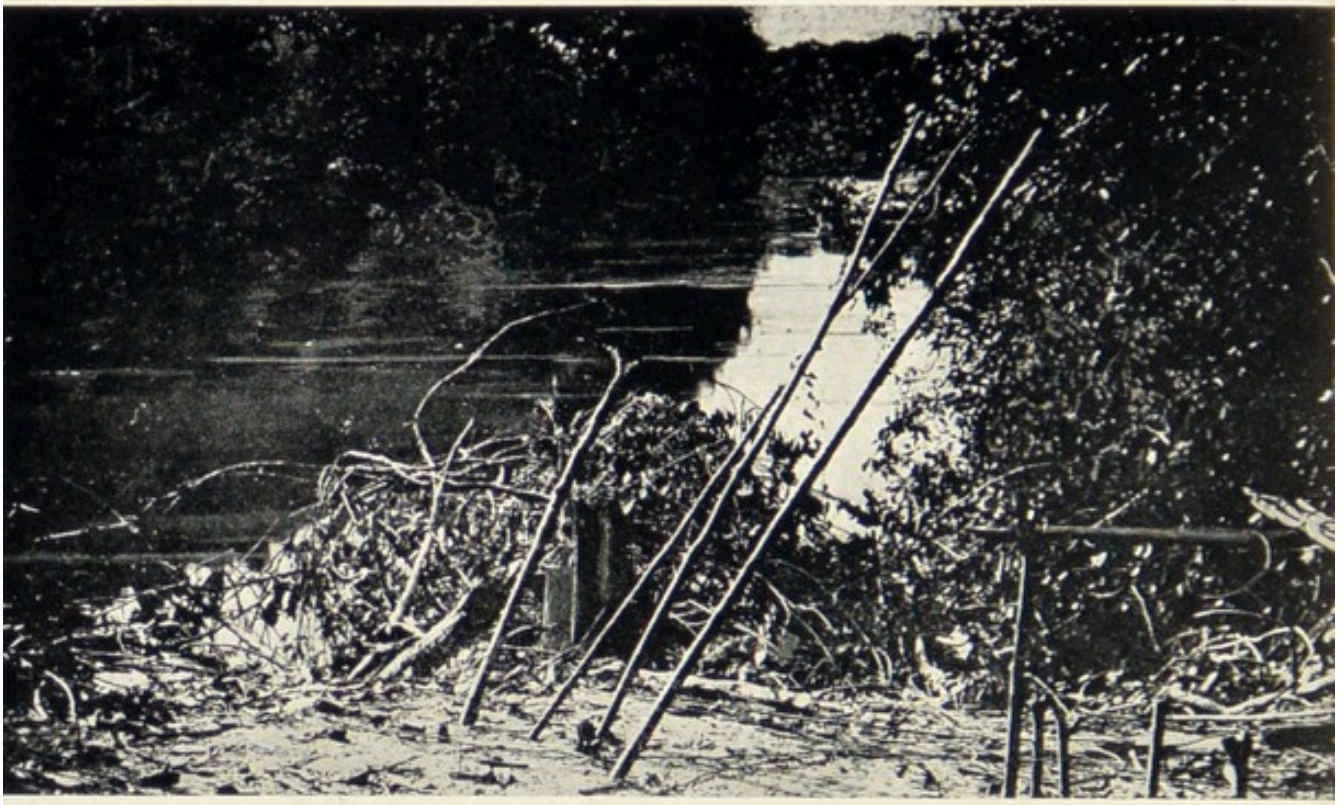
From here we follow a well-defined path through



A forest clearing, the work of stone axes
"I survey the work done by these true sons of the wilderness."—(Page 191)



Tracambeua Rapid
"—it is out of the question to force the canoe against this whirling mass of foaming waters."—(Page 193)



Indian signal sticks
"Four sticks, stuck at an angle, indicated that three men and a child had left."—
(Page 190)



A shelter built by the Indians
"A score of burned *jaboty* shells lie scattered over the ground."—(Page 191)

the forest; a path broader than any we have seen among the civilized *seringueiros*. The forest now opens and we reach a large *roça* or first clearing preparatory to burning and planting. It is the work of the Indians I am seeking.

I stand on a tree stump and survey the work done by these true sons of the wilderness. This clearing, I found later, measures about 1000 by 1300 yards. All the trees have been felled, some with steel axes which Skelly and Candido brought here last year; others have been burnt and look as if they have been chewed off. Nearly all the trees were fine timber, such as Spanish cedar, stone wood, lignum vitæ, greenheart, cowwood, and the Amazon wood called *acapū*.

Around this *roça* we discover numerous signs of the Indians; some in fact were no more than a day old. In one corner of the clearing is another shelter roughly put together and covered with *murumurù* palm leaves.

A score of burned *jaboty* shells lie scattered over the ground and there are signs of a fresh fire outside the hut. Under the thin rafters supporting the roof is a roughly braided basket with remnants of Indian farina still adhering to the sides. In one corner of the roof is a fibre sifter used to sift the farina in the early stage of fabrication.

I fire two shots to attract the Indians and await developments. As no developments occur we retire to the canoe to discuss further plans, and we resolve

to proceed to the foot of the great *Tracambeua* rapid, a mile or so farther up the stream, and there wait.

Before leaving the Iraruna port I tie a steel harpoon and six fishhooks carefully to the four signal sticks, indicating thereby our good-will, as well as our destination. I also fasten yellow slips of paper taken from our tobacco packages to the sticks by means of fine cord and make eight knots on the cord of the harpoon shaft, to tell any Indians that may return to Iraruna that we are eight men in a canoe.

At noon we are under way upstream. The bucks now and then stop to listen to some bird (or maybe Indian?) and then laughingly, as if translating, repeat what the bird has said. I think they are a little nervous; rather that than poetical. We pass a long and grass-grown sand-flat called the Tracambeua *praya*, where Curupira in vain searches for turtle eggs, and then we hear the roar of falling water.

At two o'clock sharp we attack the *travessão* or forerunner of the real rapid. Three reefs of boulders obstruct the river here and after about thirty minutes of hard work with poles, ropes, and pushing we reach the calm water that precedes the main *cachoeira* right ahead of us.

We are now at the foot of this rapid. The river Moju here divides in two arms thus forming a rocky island. After having one look at the tur-

bulent waters, it is plain that it is out of the question for us to force the *Florence* up against this fifteen-mile current—a whirling mass of foaming water rushing madly amidst a veritable chaos of boulders of all sizes. Therefore we make the canoe fast behind a rock at the foot of the fall. It is now 2.40 P.M.

Not far from where we are, and in plain sight on the other shore, are two newly made *ubás*, hewn and burned out of the beautiful Spanish cedar or "cigarbox wood." These canoes of course belong to the Indians who cannot be far away. The bucks get ready to ascend the rapid in the *montarīa*, and we all go exploring on the rocks.

We stay here all night in the hope of seeing Indians, but not one appears. Rain pours all night and we feel wet and miserable until the early morning sun dries us up. We caulk the roof of the *Florence* and put new boards on to cover the cracks, caulking and tarring these. After that I expect no more misery from getting wet during my sleep.

The next forenoon we decide to paddle back to Iraruna and from there seek a trail through the forest to the Indian stronghold.

We pass the *travess˜o* successfully fifteen minutes later and paddle leisurely downstream while Curupira and the two youngsters are scouting ahead.

At 1.30 we little realize how close the Indians

are to us. I am sitting on the roof of my cabin with paper and pencil in hand, just like a reporter, and feeling in my bones that something is about to turn up.

As we run in sight of the *Tracambeua* sand-flat we hear a lot of shouts from the left-hand shore. The crew stops paddling and Curupira in the small canoe comes quickly alongside, exclaiming, "The Indians!"

Loud distinct cries of *Katú Kama-rāh* come from the dense bush and we answer immediately to the extent of our lung powers *Katú Kama-rāh*. I realise that I am talking the Tupi language and that the hidden persons who by their greetings imply "Good friends," are really disposed to be friendly.

Suddenly we see six brown men emerge from the bush and come into full view on the grassy sand-flat shouting all the while *Katú Kama-rāh* and I order the scout boat and the *Florence* to run for the bank.

Here I leave paper and pencil and discontinue my notes, to spring ashore and have my first meeting with these new savages, taking the notes up again at six o'clock. From them I compile the following account.

I wave my old hat and advance on the sand, closely followed by Skelly, my "secretary." By my orders the others remain on board. A tall fellow, perfectly nude, with an aquiline nose,

advances, looking me straight in the face with small brown eyes. Five other Indians equally naked, unarmed except for one machete, follow close behind their leader who in all respects looks a chief.

While they are still some thirty feet away they beat their broad chests with both hands, boisterously laughing and shouting *Karí Katú Kama-rāh* (White man good friend). I answer, nervously laughing, *Katú Kama-rāh*, also beating my chest, as they do.

They come up to me and seize my shoulders and body, only to let go their hold and beat their chests again like angry gorillas. Strangely enough I feel instinctively that these savage men are good friends or at least want to be, and our meeting therefore is a pleasant one forecasting nothing but good.

With gestures I invite them on board the *Florence*, which invitation they accept after talking to each other in, to me, uncomprehensible terms, and we set off into the stream paddling slowly down to Iraruna.

It was indeed a gay, hilarious meeting, which filled the forest and river with merry shouts and loud laughter.

One handsome young fellow pushes himself up to me, taps his chest and shouts (although his face is within six inches of mine), *Karí Petro*. By this he intends to convey to me that his name is

Petro and that he is a white man. His skin is the colour of an Italian's; remarkably light for an Indian I admit. A slim, long-legged youth, with a straw hat and with equally aquiline features, points to himself, shouting with great enthusiasm, *Kapi-tāh Domingo.* I introduce myself with a laugh and a beating of chest, shouting *Karí Katú*, calling myself, without any reservation, a "good white." They all accept my statement at its face value and laugh immoderately. They laugh again and playfully pat the shoulders of each of my crew, particularly Candido whom they call "Cantito," and Skelly whom they style "Tapanyúh." This title, however, does not flatter Skelly as it means "black man," and he is sensitive about his complexion.

They speak very rapidly to each other and at times address us in their language, which I do not understand.

Karí Petro has his splendid neck coloured pink, no doubt with *urucū* juice; an empty .44 Winchester cartridge shell is tied in a cotton string around his neck and hangs ornamentally down his neck. He is an inquisitive fellow and wants to feel over my clothing, eye-glasses; and everything in the boat, so I order one of my boys to lock my cabin door.

Before going on board a middle-aged fellow comes right up to me and quite unceremoniously takes my pipe out of my mouth and begins to puff

violently to everybody's delight. Eventually he places the pipe top down. It is then seized by the next Indian, and the next, and everybody takes great, long draughts, filling their lungs with the smoke, and finally it is returned rather unwillingly, almost all the tobacco consumed. It is filled anew and the scene is repeated amidst shouts of laughter and assertions of *Karí Katú Kama-rāh.* In fact, during the short descent to Iraruna this was the limit of our conversation.

As we make fast at the landing we discover some human forms moving in the hut, and slowly and timidly two young women, one with a baby in a sling-cloth on her side, crawl carefully down, evidently suspecting our slightest move to be hostile. Without being noticed I here obtain my first two kodak snapshots.

These women (one is a young girl) are absolutely naked but for a narrow brown loin-cloth, or kilt, of cotton which they call *tanga.*

I give them some farina which they voraciously devour with gurgling sounds of enjoyment, beating their chests.

I have secured Zulu, the mascot, inside the cabin, for through his suspicious temperament he might attack the Indians and cause trouble. I remain in the observation tower of my boat, trying to enter into some intelligent relation with these men who crowd around me on the roof, while the women hide ashore unwilling even to greet us in

the usual manner. I have with me a vocabulary of the Tupi language but cannot make myself understood.

For one thing the Indians do not seem to comprehend the tone in which a question is made. When we "civilized" raise our eyebrows in asking a question and simultaneously terminate the sentence with a brief rising inflection, the entire world, no matter of what nationality, understands that we are seeking information, but not these people; they seem deaf to inflections.

They finally take my old hat off, asking plainly enough, accompanied by laughs, that I give it to them, but when, with a gesture of pain, I shield my eyes and face from the burning sun with my hands, they laugh and evidently understand what I mean, for they ask no longer for the hat, but for something else.

We have made fast under much noise and excitement. Four of the Indians, among them one light-coloured, serious-looking fellow with brownish black hair, sit on the benches and boxes listening to Skelly, who produces the guitar and sings his best love songs. The *Karí Petro* begins to sing a peculiar melody, if so it can be called, but soon he stops.

They go over everything on board; nothing escapes their attention. I give the Indian who calls himself Domingo a brand-new axe head, some fishhooks, an empty mineral-water bottle, a

machete, and some 4-inch wire nails, all of which make him a happy man. He smiles, and embracing me exclaims, *Karí Katú Kama-rāh.*

By and by we go ashore and they lead me through the forest by the path we saw the other day. I cannot help admiring their slender naked bodies, and the grace with which they move over the bushrope obstructed path. They seem hardly to tread upon the soil, but rather to glide noiselessly, like snakes, and indescribably fast over ground that I stumble and half fall upon with my clumsy boots and non-Indian experience.

I feel perfectly safe; I am even proud of walking thus alone with my savage friends who are anxious to show me their *roçada.* On the way we pass an immense cedar tree which has been felled for the purpose of making an *ubá* dugout. The trunk on the ground is thicker than my height. A half finished canoe of the same wood lies behind the little hut with the many *jaboty* shells. An unskilful stroke of the builder's axe had gone through the side when almost finished and spoiled it.

Hildebrando and Curupira come after me. At this hut we all stop, and now the Indians point with their hands and heads towards the interior of the forest in the direction of the rapids, and indicate to me that they are about to leave for their *maloca*, and that they will return to-morrow.

The six savages glide into the thicket and are instantly out of sight. A little way off they shout

Kereketé (Good-bye), and then begins a regular fusillade of farewells like the following:

Kereketé Kama-rāh

Karí Katú Kama-rāh

Kereketé Karí Katú Kama-rāh (Good-bye, good white friend).

All these greetings we answer every time, to be polite, and *au fait* with the jungle. Soon the shouts grow weaker and fainter till they die away in the distance. I count in all seventy-eight of these parting calls and as many answers. Then we return to the boat and discuss the doings of the day, and prepare our supper; and I write down my notes. By eight o'clock everybody is fast asleep. It is the first good opportunity for sleep we have had for many nights and we all take advantage of it.

The next morning we scrub and disinfect the canoe, stow everything away that we do not want the Indians to appropriate, and prepare generally for a visit from our new acquaintances.

About nine in the morning, just after we have finished a hearty breakfast, we hear a shouting of *Katū Kama-rāh* from the top of the bank and immediately a dozen of the naked forest-men come springing down and enter the boat with their noisy protestations of friendship.

Four new persons appear among them, all of whom have keen features and are of a light colour. They are tall, graceful creatures with few physical

blemishes. Two have their underlips perforated and a small "toothpick" inserted in the hole. They place themselves on the seats and boxes and ask for *uī* (*oo-ee*), meaning farina. I give them large handfuls which they mix with water and eat. This farina and water, held in the hollow of the hand, they term *uī paraná*.

Suddenly one fellow pulls the pipe out of my mouth, takes a few puffs, and passes it around to his tribesmen. Now another figure comes climbing rather carefully down the steep bank. It is an elderly man with a deformed left arm, carrying a baby on his back. The baby cries when it sees me. I immediately give it a spoonful of sugar and it stops. The old man then holds his hand out for sugar, shouting in his turn, like a true diplomat, "Good white friend." Close behind follows a little brown maiden, scarcely ten years old, a six-inch-wide tanga and a bead-necklace her only covering. The old man, who by now is smoking my pipe, calls out *kunyāh* pointing up to the bank, and we see two women, each carrying a baby, coming hesitatingly. They too wear only the narrow kilt-like tanga and are by no means attractive with their hypertrophic stomachs and pendant breasts.

I call out to them in a friendly manner, *Katú Kama-rāh*, which they answer, but without the aggressive impetuosity of their men. After distributing some cups, axes, and machetes among

the men, we all go up to the shack on top of the bank where Skelly prepares coffee for all hands. After critically testing the hot liquid, the old man makes a wry face and, taking the hint, I add the desired sugar and they all drink happily. To one young fellow I give a straw hat and a shirt, in return for which he smilingly gives me a big-game bow and three arrows which he had hidden behind a tree before coming on board. Then I try to get the Indians together to take a snapshot photograph of the group, but this proves impossible—indeed, as I shortly perceive, dangerous.

When the men and the women discover that my kodak, the small black box, suddenly opens and grows bigger, showing one menacing black eye glaring in the centre, they become suspicious, and when I turn this "evil eye" towards the group they are positively frightened, and the women stealthily disappear in the bush with their babies. But I still cling to my intention of taking a photograph and I turn my back on the men, calling out to my crew in the boat to come up and dance and play with the Indians. Hildebrando and Fielo accordingly mount the bank and with beaming smiles on their dusky countenances raise their arms, as if to embrace a dancing companion, and take a few awkward steps in the bush with their native partners, in this way jollying the Indians. Then I wheel around, having first set the focus on fifteen feet, and snap the shutter. In the picture Hildebrando

is seen in the foreground dancing with a tall Indian who is still smiling and unsuspicious, but when the shutter clicks his smile fades. Fielo is in the background dancing with the young fellow to whom I presented the shirt and the straw hat. On the right, in the background is a young girl looking straight at me, and to the left is an Indian who wore a suspicious look at the moment of the exposure.

Now the trouble breaks loose. The men standing around begin to growl and stamp their feet, like angry children. The old man with the withered arm comes close to me and tries to push the machine away from me.

I call Hildebrando and order him to go on board the boat with the other bucks, take the camera along, and quickly hide it there, for the damage I have done to secure one picture is already great enough. The Indians retire a few steps in among the bushes where I see some of them bending to pick up their bows and arrows. They then arrange themselves in a circle not fifteen feet away from me. An ominous silence follows.

I begin to understand that something is going to happen and that speedy diplomatic action must be taken to avoid unpleasantries. The old, cripple Indian, to whose child I had given sugar, at length saves the delicate situation and prevents my being used as a target for the skilled arrows of the bowmen.

He walks slowly up to me in a peculiar dream-

like manner with closed eyes, and seizes hold of me with his good hand while with the withered one he fumbles over my face, neck, and chest. Then he bends down and touches my legs, his hands violently trembling, and all the while he shows the whites of his eyes. His body then becomes as if convulsed with spasms; his breathing grows heavy and laborious; he utters strange words, almost inaudibly, his voice now and then breaking into a high pitch, all showing a great nervous tension. His eyes open and close; his facial muscles twitch as if in the greatest agony, while I stand quiet and with a grave face, realizing that even the coveted tobacco pipe would not appease the aroused anger of the Indians. This strange performance lasts about five minutes, when he opens his eyes, as one who wakes from deep slumber, looks me straight in the face, and smilingly shouts, *Karí Katú Kama-rāh.*

Immediately all the Indians again come out from their ambush, but this time all are armed with long bows and many arrows—enough to finish my crew before we could think of defence. But their faces denote that the protective blessing of the old man, who undoubtedly is their *shaman*, has had a good effect upon their minds. I offer my pipe. Nobody accepts it, not even Karí Petro, the tobacco fiend.

With shouts of *Karī Katū Kama-rāh* they quickly disappear in the bush. Returning on

board, Candido greets me with a disapproving smile. I have scared the Indians and only through the intervention of the old *pajē* have I escaped disaster. He is afraid that we will see no more of the Indians. The black kodak has produced a deep fear in them. They think, no doubt, that some wicked spirit is housed inside the mysterious box that stares so intensely through the lens—to them an evil eye. What are we to do? Merely wait and see? Under no circumstances would it do to show them the camera again if they return, and certainly the moving-picture one would produce open warfare. With these unpleasant questions and facts I occupy my thoughts till late in the night.

The next morning at seven I sit pondering in my hammock, strung between two trees on the bank, while Skelly and Candido are on a foraging expedition downstream. Curupira and the youngsters are hunting in the forest, and only Hildebrando and Fielo are on board the boat, where they are mending their torn clothing.

I wait all day for the Indians to return, but not one appears. There is now no doubt that we have aroused their mistrust and they keep themselves away from us in their *maloca*, or village, in the distance.

How many problems present themselves to my mind concerning them. Who are they, and what is the name of the tribe? Where does this mysterious

tribe with so many un-Indian features come from? Here are a people dwelling in a state of absolute savagery, judging from the few tribal members I saw, and knowing not one word of the language of the nation in whose country they live. What are their ideas of property; what their social development; their agricultural skill; their industrial workmanship? What are their linguistic limitations and the scope of expression; their ideas of a supreme being; their rites and ceremonials; their domestic life; their ethics?

Can I not, through patient indulgence and frank treatment on equal terms, together with personal gifts and tokens of friendship, perhaps win their confidence?

I feel sure that I can win over these savages, these children of the wilderness, and make them come to me trusting implicitly; overcoming the constant fear they entertain towards all foreigners, especially Brazilians.

I conclude there is only one way of winning them, of entering into intelligent understanding with these savage men and women, and that is to go to their *maloca*, their stronghold, alone and only partly armed, and live for a time there in their midst, unaccompanied by any other being of the outside world. Their savage minds will readily grasp the intention of such a visit I believe, and will at least eliminate from their thoughts any idea of harmful intent on my part.

I resolve, therefore, to go and live alone with the savages and I begin to make the necessary preparations for the trip.

Candido's small canoe, the one that we have used for scouting, is the only craft that can ascend the rapids, on account of its lightness, but as it lies too low in the water for the hard and violent work in the rapid with its high waves, we build a much higher gunwale, adding thus a considerable lot to its displacement.

CHAPTER XI

Alone with the Indians

I SELECT Candido and Skelly to take me up to my destination and prepare the following gifts in my knapsack for distribution among the tribe:

six steel axes
six Collins machetes
two old bayonets
six knives
eight cups
six steel harpoons
seventy-five fishhooks
some candles
a few long wire nails
a small amount of sugar, some rice, tobacco, and a bag of salt weighing thirty pounds.

Some of these things, it is true, might not prove useful to my prospective friends, but not being as yet acquainted with their needs I will have to trust to luck. The Indians, however, appear to need everything. My personal outfit consists of: record paper, pencil and compass, pedometer, thermometer, magnifier, Borroughs and Wellcome medi-

cal outfit, a kodak with two rolls of film, one cotton hammock, some biscuits, three cans of condensed milk, one can grape-nuts, the moving-picture camera and four rolls of negative film for it, my Luger automatic pistol and a few rounds of ammunition.

Of this outfit, the limit of the boat's capacity, I expect that at least the photographic part will be of doubtful value as I naturally can not attempt to photograph anybody in the *maloca* itself under existing circumstances. But circumstances may alter. It would be most distressing to visit these Indians and return without even so much as a photographic proof, and I mean to watch my chances. The pistol is easily hidden under my khaki coat. It will serve as an eventual game supplier, while in case of emergency it might save my life.

My boys salute the American flag as I leave the *Florence* moored peacefully at the "port" Iraruna and thirty minutes later we jump into the turbulent waters of the *Tracambeua* rapid, seeking a narrow channel through which to pull and push the small scouting canoe we are now using.

The stones are slippery, and the pressure of the waters great, and many a time one of us slips and has to hold on to the gunwale of the canoe to escape being hurled by the current out between the boulders and crushed to death, while the two others steady the canoe with its added weight

until safe footing has been gained again, and the slow, laborious wading, climbing, and pushing, always clinging to and supporting the canoe, continue.

After a few narrow escapes we reach smooth water above this bad *cachoeira* (rapid) and paddle our way on between the high banks, in absolute silence.

At the next turn of the river we strike the *travessão* of the next or third rapid, called by the Indians Yuaquara, and, one hundred yards farther upstream, the rapid itself. It appears that each rapid has a *travessão* or collection of smaller boulders and rocks at some distance below its foot. The Amazonian *cachoeiristas* or rapid-men generally size a rapid up by its *travessão*. If this is much obstructed and troublesome, the main rapid is sure to be a dangerous one to ascend.[1]

Large flat boulders here have buried themselves in the river-bed with only twelve or fifteen feet slanting up out of the water, their highest extremities pointing upstream. Large rocks on the waterfront look as if they have been cut with a huge concave knife, all at the same time and to the same depth. There are deep, parallel grooves on the smoothly ground surface.

A small island of rocks and sand occupies the

[1] There is a popular saying on the Lower Amazon: "There exists no purgatory for the *cachoeiristas*, because they go through it in the rapids."

middle of the river. A few trees of stunted growth stand there twisted by the constant winds that blow. Some *japīm* birds have built their suspended nests from the branches of the trees on this wind-swept island. Some of the rocks show crystalline formations in cave-like holes. These crystals are small and of an amber colour; others are lavender.

We are soon working up the middle of the rapid and often stand in water up to our necks. Candido pulls at the bow, Skelly amidships, and I push from the stern, now and then slipping with my spike-studded boots but holding on to the canoe. Then the bucks stop to keep control of the boat till I recover myself, otherwise everything would be swept into the maelstrom and vanish.

At length we conquer Yuaquara and above it paddle once more in smooth water. At the next turn of the river we cross an ugly *travessão* belonging to the fourth rapid, a rapid which I name *Florence* in honour of the namesake of my expedition vessel, and because we have good luck in conquering the choppy stretch of boiling, seething waters. Directly above the head of this last rapid appears the *travessão* of the next one, the fifth and by far the worst so far encountered. This rapid has no name, but we soon give it one—a name which stated in Portuguese is *Cachoeira dos Mares* or the Rapid of the High Seas. The actual rapid itself from its foot to its head is about one mile in length,

of which every yard had to be conquered at the imminent risk of our cargo.

It is an easy matter now, when we are all safe out of the clutches of that whirlpool, to run pen over paper with a few remarks about this "boiling kettle" of rocks and crushing waves, but little do my thoughts turn to writing and recording during that long two and a half hours' struggle to get the boat up: now wholly immersed, dropping into a deep hole, letting the canoe go from sheer necessity, and now wedged in between rocks meeting at an acute angle in the river-bed. Unfortunately at one point our canoe turns broadside on and gets stuck between two rocks, shipping water to the rail, but we manage to manœuvre it around and save the contents after almost giving up. The sun is at the zenith when we run into a small creek, above the head of this long and dangerous rapid, and let ourselves drop on the rocks and pebbles of the beach, panting and wet to the skin; exhausted. We boil a few *tucunarēs* or Amazon trout caught in the early morning on a fly hook (*sirirīca*), drink some water, and rest a while.

The rocks are of a black colour and of a very uneven surface, with many deep holes extending deep into the stone. In appearance they remind me much of certain meteorites, particularly because of these bubble-like cavities. Here I have Skelly take a snapshot, unfortunately later much deteriorated through the excessive moisture. Beyond

us now we have nothing but smooth water as far as the village of our savages. We paddle in good humour and pass a very long dugout half hidden at the mouth of a small *ygarapé*. I conclude that this is one of the ferry-boats of the Indians, as there is a "port" on the opposite river bank. The forest here is very tall and dense, and the banks rise high above the river.

Now we see in front of us a very long *estirão*, probably two miles of straight river. Candido tells me that in the middle of this *estirão* we shall find the mouth of an *ygarapé* called by the Indians themselves Ypitinga. As we paddle ahead we see smoke rising in a column above the forest and we hear the strokes of an axe on wood.

I fire three shots into the air; the hammering ceases. We paddle on rapidly and soon come in sight of a lonely shack close to the bank. This, Candido informs me, is their outpost. Nobody lives here, but on certain occasions when requiring a point from which they can have a convenient look-out over the straight river, they post a family at the place.

We stop and look around. We are now on the left-hand bank of the Moju River, about three hundred miles, as the river flows, from Pará and from civilization, in a small canoe looking for savages. It is their own undisputed territory too. I shoot again, but there is no response. Then we paddle up the Ypitinga creek and strike quick-

running, shallow water absolutely clear and cool. Little gold-glittering grains shine up from the snow-white bottom. These grains, or flakes, are perhaps mica.

For about fifteen minutes more we paddle ahead in silence and make fast then at a place which is evidently the general landing spot of the Indians as the bush has been cleared so as to form a tunnel under the dark forest roof. The ground on the low bank is stamped smooth by human feet.

I shout loud and persistently—loud enough to be heard for a couple of miles in the dead silence of the forest, *Katū Kama-rāh*, but no answer comes; nothing follows but an ominous silence. Then, here I sit in my canoe, waiting for the Indians to come and recognize and accept me; but they do not come. Their *maloca* must be close by. It cannot have been anything but Indian fires whose smoke we saw, and it must have been Indians whose hammering we heard so distinctly.

Candido and Skelly feel uncomfortable. They think the Indians would have answered long ago if they were disposed to be friendly; that the refusal to acknowledge our arrival may be an indication of general disapproval, probably caused by the camera affair of the other day. I venture no opinion as I have none at this time. I simply wait for events. I advise the two nervous bucks, in a joking manner, to "let nature take its course."

I mount the bank and look around. All about



Headquarters among the Indians
"I am at once shown the best shack where I tie my hammock."—(Page 218)



Just before the trouble broke loose
"Hildebrando and Fielo take a few awkward dancing steps with their partners."—(Page 202)



Indian girls at Iraruna
"We discover two young women, slowly coming down the steep bank."—
(Page 197)



The diplomatic emissary of the Indians
"He is a strongly built fellow with staring eyes."—(Page 215)

is dense forest. Where I stand there is a narrow path winding upward to a plateau hidden by the forest. Behind me is the winding creek, closed overhead by the trees; below is the canoe with the two men sitting, nervously looking around. They even think that the Indians may be lurking behind the trees sizing us up. Perhaps they are. I fetch my hammock, for I am tired after the day's work, and proceed to sling it between two convenient trees on the Indian path. While in the act of tying I hear a faint noise behind, and turning I discover a tall Indian standing in the middle of the path, not more than five feet from me. In a flash I size him up as a very respectable-looking Indian although different in physiognomy from the others I had seen at Iraruna. He is a strongly built fellow with a very disagreeable, almost ugly grin, emphasized by staring, penetrating eyes. This man is absolutely nude except for a jaguar tooth on a string tied around his neck. He carries a long big-game bow measuring fully seven feet in length, and four arrows, one of which is tipped with a steel blade. He looks at me, and at the canoe in the creek, and speaks in the widespread Tupi language.[1] I answer by letting him smoke a few draughts of

[1] Brinton states: "The general culture of the Tupis was superior to that of any other Brazilian tribes, but much inferior to that of the Incas." They had a wide range from the Amazon southwards before the Portuguese pressed them back to the Andes. A corruption of the Tupi is the *lingoa geral* of Brazil.

my pipe, which he does without any sign of animation. I beat my chest as I saw his tribesmen do, saying *Katú Kama-rāh*, which he answers, with the faintest attempt at a semi-ironical grin, showing a set of sharp-filed teeth, repeating in a low voice, *Katú Kama-rāh*.

There is not much encouragement in this, so I fetch an axe, a machete, and some wire nails from the knapsack in the canoe and give them to this diplomatic emissary of the Indian chief, whereupon he speaks again. I catch only two words, *Kapi-tāh piām*, meaning that he is now going to call the chief. He disappears as noiselessly as he came, and I sit up to rest in the hammock and to await developments. In such cases there is only one thing to do—that is, to take things philosophically and as easily as possible.

Half an hour elapses in absolute silence; I never even hear the rattling of leaves and twigs when our sour-looking friend returns with fifteen other savages headed by the chief. As if by magic they stand before me. I can not understand how it is done. When I refilled my pipe and lit it there was nobody—absolutely nobody,—and yet when I look up now to contemplate the tobacco clouds I puff meditatively into the air; there they stand, men, women, and children, in the pathway, all smiling and pleasant. I jump out and they raise a common cry that resounds in the forest, *Karí Katú Kama-rāh*, to which I cordially answer, re-

inforced by the two bucks below in the canoe. Everybody beats his or her chest and everybody, even the women, take half a dozen long puffs on my pipe. Friendship, undoubtedly, is established again.

I order Candido and Skelly to carry my baggage up the bank, on their shoulders, and the chief motions the troupe to march Indian file to the *maloca*. I untie my hammock, sling it over my shoulder, and walk uphill after them, through the most intricate piece of forest imaginable. The bushropes and *cipōs* are everywhere, and as I occasionally stumble my follower, a tall, friendly-looking fellow, laughs and points with his hand ahead shouting *Kóh* ("There"). We soon enter a piece of clearing or *roçada* planted with *maniwa* or farina plants. In places a regular system is adopted of planting in line, but mostly the tall woody plants are growing irregularly.

The first sign I see of any construction work is a farina-roasting hut with a large flat clay pan underneath, then two or three primitive shacks, and finally at the extreme end of the plantation the Indian *maloca* itself. Here my bucks put the baggage on the ground and I order them to leave me, return to the canoe, paddle downstream to the exploring vessel at Iraruna, and in a week return with food to see if I am still alive.

They shout *Kereketé* and are off. At last I am alone with the Indians, to study and live with

them at ease and under favourable circumstances, in the heart of their own country.

I am at once shown the best shack where I tie my hammock and arrange my baggage. The chief has occupied this heretofore, but with genuine courtesy he tenders it for my use.

The *maloca*, or village, demands a brief description. It is a collection of about twenty-six human dwellings of a very low order, some not even having a proper roof, built around a small area of bush-cleared forest. The first thing that strikes me upon entering this village is its absolutely primitive *tout-ensemble* devoid of any permanent structures of such solidity as are encountered in other parts of the Amazon valley. By this time it must be about four o'clock in the afternoon. I cannot be certain, as I had to leave the alarm clock on board the *Florence* and I sit in my hammock too tired to care, and with my back very painful from the fall I had in the first rapid. I have just been standing in the midst of the tribes-people, counting some forty in all including the children, and opened my Santa Claus knapsack to spread the gifts in front of the wondering gaze of everybody. The old chief receives first the five axe-heads and the remaining five machetes and gives them to certain men picked out of the group. A few nails to each man seem to cause delight, as they no doubt will shape these four- and five-inch iron spikes into arrow-heads. The women are given the cups,

which they immediately hide in the thatch of their respective huts. The knives also are eagerly accepted.

In front of me is a small shack, too narrow to accommodate a hammock, and about ten feet long. This appears to be a sort of arsenal and belongs to the chief. Here I find, carefully arranged, a quantity of long bows and about three dozen arrows of different descriptions. In the middle of the general clearing is a long trunk of the *emba-uba* tree, hollow, and suspended to a horizontal branch by means of thin but very tough bushrope.

Presently *Karí-Petro*, the young Indian with the pink neck, seizes two wooden mallets and goes over to the hollow trunk. The old man with the withered arm who saved me the other day, commences to chant and trot about in circles, while everybody else stands around silent. *Karí-Petro* now begins to beat the trunk, first with heavy blows at regular intervals, then quicker and fainter until the blows fade into a series of light taps. This is repeated half a dozen times and everybody scatters. The trunk is then taken from its horizontal position and stood on one end. When I ask the chief the meaning of this he points to the clouds and says the one word *Tupāh*. Two little black-and-white dogs come up to me licking my hands enthusiastically and they jump up in my hammock only to be called back by the chief.

Two splendid cocks jump up on a rafter and

crow lustily while four hens go scratching around the *maloca*.

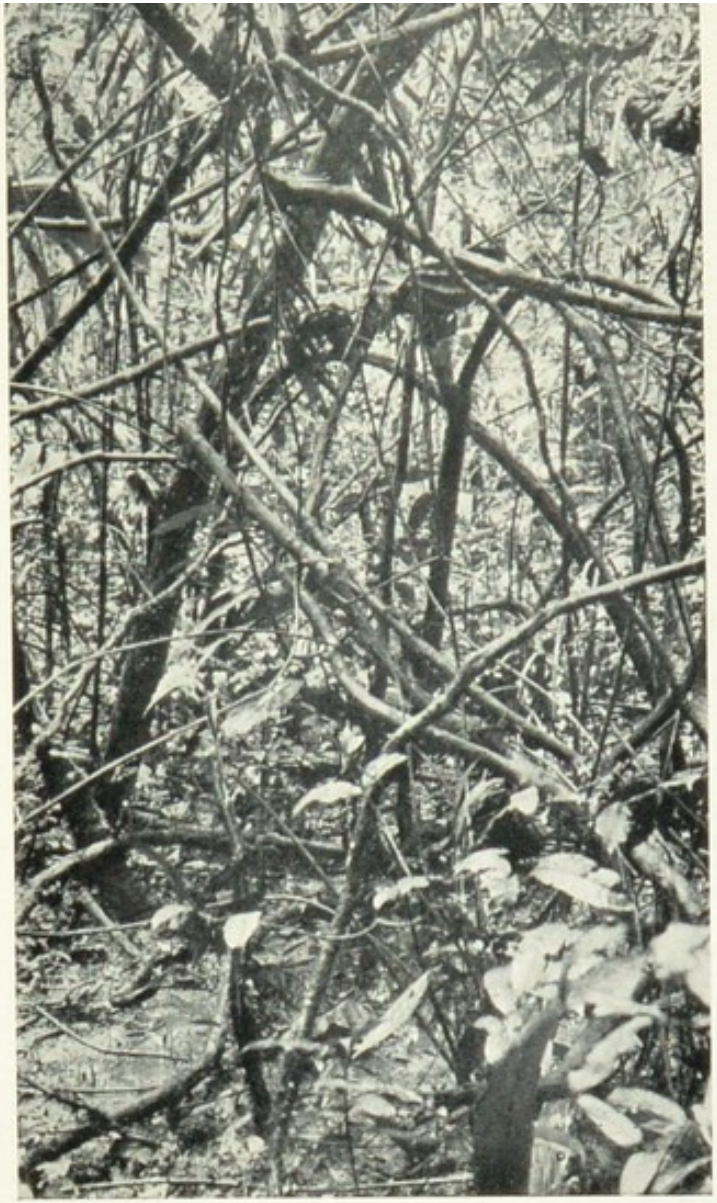
The sun is slowly setting when I make ready to spend my first night here. I swallow some biscuits and ask *Karí-Petro* to *paraná piám* (fetch water).

The Indians all flock around my hammock and talk to me, but, unfortunately, I do not understand more than a couple of standard words, and we therefore do not carry on a very spirited conversation. As darkness falls over the forest and creeps through the dense bush, they become quiet and talk only in whispers.

In the hut (or shelter, as it has no side walls) reserved for my use I have a companion, a man whom I am sure I shall later know and esteem as an intelligent savage and a good friend. His name is *Tuté*. His eyes radiate a light of intelligence and brightness remarkable to find among people who have always lived under the most primitive conditions—almost as beasts in the forest. His features seem to me strongly Hebraic; indeed, I cannot help but imagine him dressed as a civilized man with "store" clothes, a collar and tie, and a derby hat. In such a case he would pass, in my opinion, for a respectable Rabbi. Many times he repeats my greeting, *Karí Katú Kama-rāh*, and in the course of the night I catch a special title or designation under which I am to be identified in the future. It is *Kuyambīra*. Later I find that it means parent, relative. His hammock is



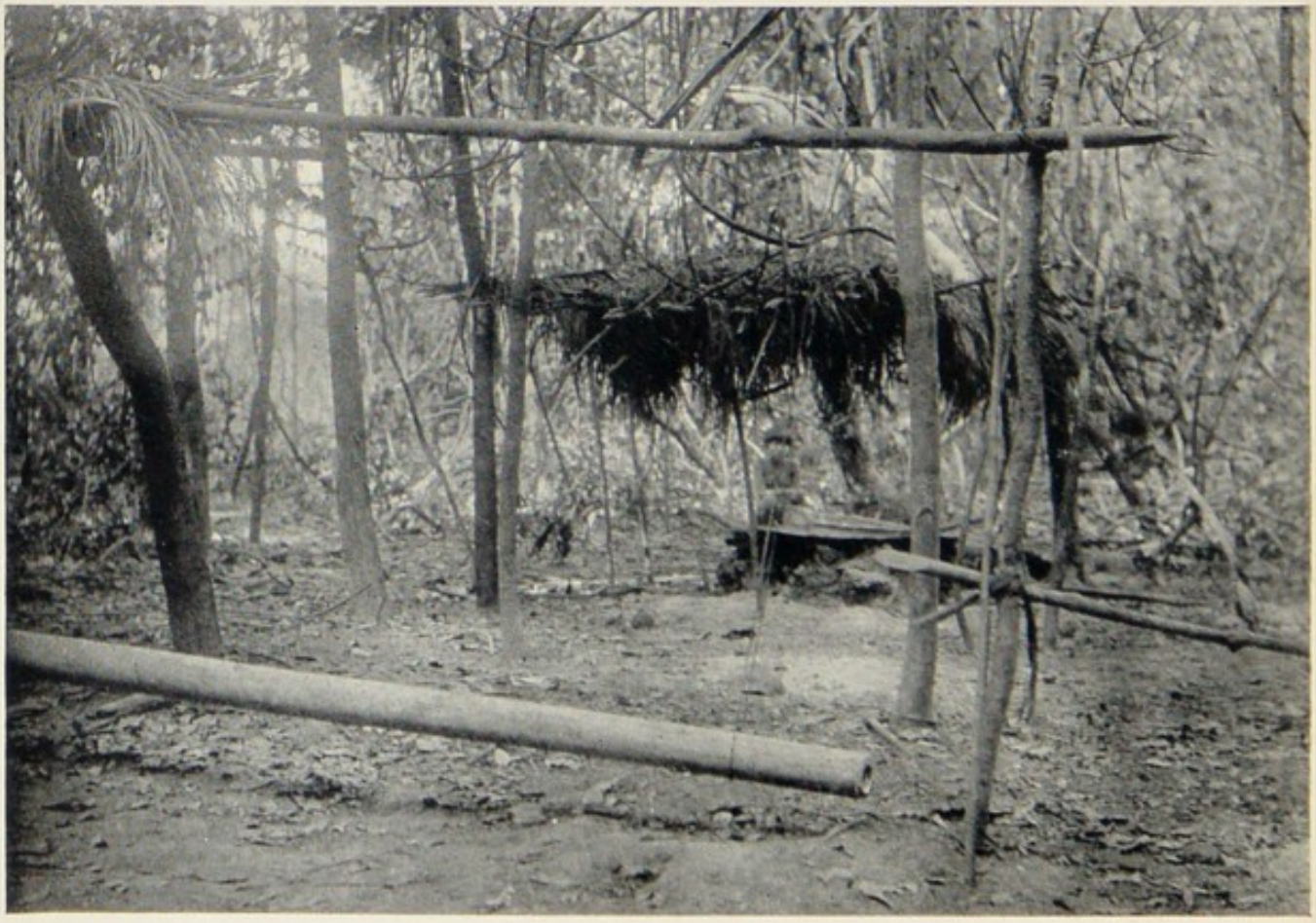
Posing for the camera
"Their only dress is the 'tanga'"



Cipoagem or bush-rope thicket



The quiet water above the Moju waterfalls



The ceremonial drum in the *maloca*
"In the middle is a long hollow trunk, suspended to a horizontal branch."—(Page 219)

strung almost parallel with mine. My baggage is at one end of the hammock. I almost fall asleep with my glasses on, and even with the heavy wading boots, for the night quickly grows cold.

The old chief sits alongside of my hammock, now and then stretching out his hand to extract the pipe from my mouth for his own comfort. Five other men sit or stand around talking to each other, no doubt, discussing me, so it is clear I do not lack company, but I am too tired to pay any more attention to anything and I simply fade away.

It may be midnight when I wake up, shivering with cold. The temperature is at 63° F., not very low but relatively low as compared with the daily average.

My clothing is heavy; a heavy winter woollen undershirt, a khaki shirt and trousers, a khaki coat, and a cloth around my neck prove insufficient to keep out the cold.

Almost every family has lighted a fire. The old chief and his numerous family, arranged in triangles composed of suspended hammocks between the trees not fifty feet away, have several fires going, one for each family triangle. My old Tuté is also building a fire between our hammocks, while he looks at me smiling and exlaims *Ta-tā* (Tupi for "fire"). The flames now and then scorch the fringe, but it keeps us warm and comfortable. I find in my knapsack a tin can of biscuit. Emptying this, two holes are punched in the edge with a

nail and two wires from Tuté's machete handle are fastened in these holes. Then the tin is filled with water to which is added a spoonful of coffee. Tuté holds the end of one wire in his hammock, while I hold the end of the other so that the tin is suspended between us over the fire. The water soon boils, condensed milk is poured in, and Tuté and I have a nice little coffee chat between ourselves, albeit we do not comprehend each other any too well.

All night the Indians (who sleep naked in their cotton hammocks) keep their fires going, and, as far as I can see, it is the mother of each household who attends to the firing. The others merely stretch their hands out to warm their fingers. It is, indeed a singular sight to see the great fire reflecting from the leaves and branches all around, and above, and the many human hands sticking out, apparently from the darkness to absorb the heat. Their fingers twitch grotesquely and are greatly magnified in the shadows.

Towards five in the morning the people drop off to sleep in spite of the cold which is then about 59°, and they wake up shortly before sunrise.

My night is miserable, partly due to the pain in my back, and partly to the alternate cold and heat keeping me awake and watchful to guard the hammock from catching fire.

At six the dawn shows through the forest and the tribe is on its feet. The chief followed by his wife,

an old crone, whose breast suffers from cancer, comes over to me holding in his hand a gourd containing a semi-liquid which he calls *cachirī*. I swallow this yellowish lumpy mass of bitter-sweet juice mostly because I am half dazed by sleep at the time; in fact I have forgotten all about being with the Indians when I awake from troubled dreams.

My sleeping companion, or rather waking companion, Tuté, soon brings me some green Brazil nuts (Indian name *katám*) which prove tasty. Hardly have I rubbed the sleep out of my eyes before all the men in the *maloca* come over to the hammock and clamour for *petéma* or tobacco. Were I among civilized beings I would feel sorely provoked to light my pipe and give it to all around for enjoyment almost before I myself am really awake, but discretion here is important so I submit.

At daybreak the women set to work, firing up with wood under the farina roaster, which is kept going all day. At least three women are constantly attending to this oven, manufacturing the principal and universal food of almost all the Amazon savages and half-domesticated Indians, the farina.

Under a thatched roof which is five and a half feet above the ground, a low oven is built of stones placed at intervals in a circle. Through the spaces the fire is fed. On top of these stones, the height

of which averages fourteen inches, is placed a flat pan with slightly turned up edges about three inches high and with a diameter of forty-eight inches. This pan is made of clay, rather poorly burned as it has cracked and been patched up in many places.

The old woman, the chief's wife, takes the *mandioca* roots and crushes them into a pulp in a trough made of the stalk-sheath or "boot-leg" of the mirity palm. Then one of the elderly women and a young girl sit down, each at the end of another trough made out of a hollow half-trunk of some tree. Across the edges of this trough the woman places a fibre sifter with a rather coarse mesh. When I ask her about the name of this sifter she answers not very intelligently, evidently not understanding the purpose of my question, but finally, after much cross examination and elimination of improbable words, she gives me a word that sounds like *Erū-pēna* (*ne*) the (*ne*) is hardly audible. Through this sifter the imperfectly crushed *mandioca* roots, called by the Indians *maniwa*, are pressed and the soft yellowish-white paste kneaded with the hands and knuckles and rolled into balls of a size, and then placed upon a platform to ferment.

At the moment of writing down these notes two fellows produce fire by friction of two sticks; making a nick in the end of one and inserting the end of the other in this nick, one man holds the

nicked stick tight to the ground while the other with the palms of his hands gives the vertical stick a downward rotating motion. After about a minute of this friction, smoke issues from the point of contact and shortly afterwards the hot dust is skilfully thrown down on tinder made of dry leaves on which are now placed little twigs and chips. In less than two minutes flames are shooting up. Watching this procedure, and in my turn trying to imitate the firemaking, I mislay my pencil —at least I cannot find it. Tuté, who is sitting alongside of me watching intently my writing and now and then saying *Mbā-ba* (*de*), "What is that?" bursts out into a very civilized sort of a laugh and timidly takes the pencil from behind my ear where, in my distraction, I had put it. Indeed, the savage man then had his joke on me.

By way of illustration I now take an American "parlour" match from a little match-safe and show him how I apparently can produce fire out of my shirt-sleeves. It causes great surprise among most of the tribes-people except Tuté. I shall not be surprised if some day he turns around and speaks Yiddish to me. Communal ownership reigns in this little kingdom.

The farina, or rather *mandioca*, paste is not yet edible, containing a portion of prussic acid, which has to be gotten rid of in a fibre press called *tipitȳ*. This universal *mandioca* press is indigenous with all Amazon Indians, and is very

ingenious. The civilized natives also use it. Upon stretching it presses out all moisture contained in the paste, through its reduction in diameter. The end of this press is looped and a long bar stuck into this loop. A heavy stone is often tied to the end of the bar, or if time allows the farina-maker sits on the bar until the juice is all out. The *tipitȳ* is generally braided, the broad, strong fibres of the *mirity* and *tucumān* palms being used for this purpose. The resulting dry paste is then crushed again, spread upon the hot pan, and kept in motion with a rake. When the farina is roasted to a nice yellow colour it is ready to eat and everybody takes what is needed for the day. It is either eaten on the spit, or wrapped in leaves and tied up to be carried on the hunt on river or in the forest. Sometimes the women crush a quantity of Brazil nuts and roast them together with the farina. This makes a really appetizing farina through the nutty flavour imparted by the famous nuts. The only farina that I can eat with satisfaction is this that is specially prepared by the Moju Indians.

The juice squeezed out of the *tipitȳ* is always thrown away to prevent the domestic animals from poisoning themselves.

CHAPTER XII

Discovering the Tribal Name

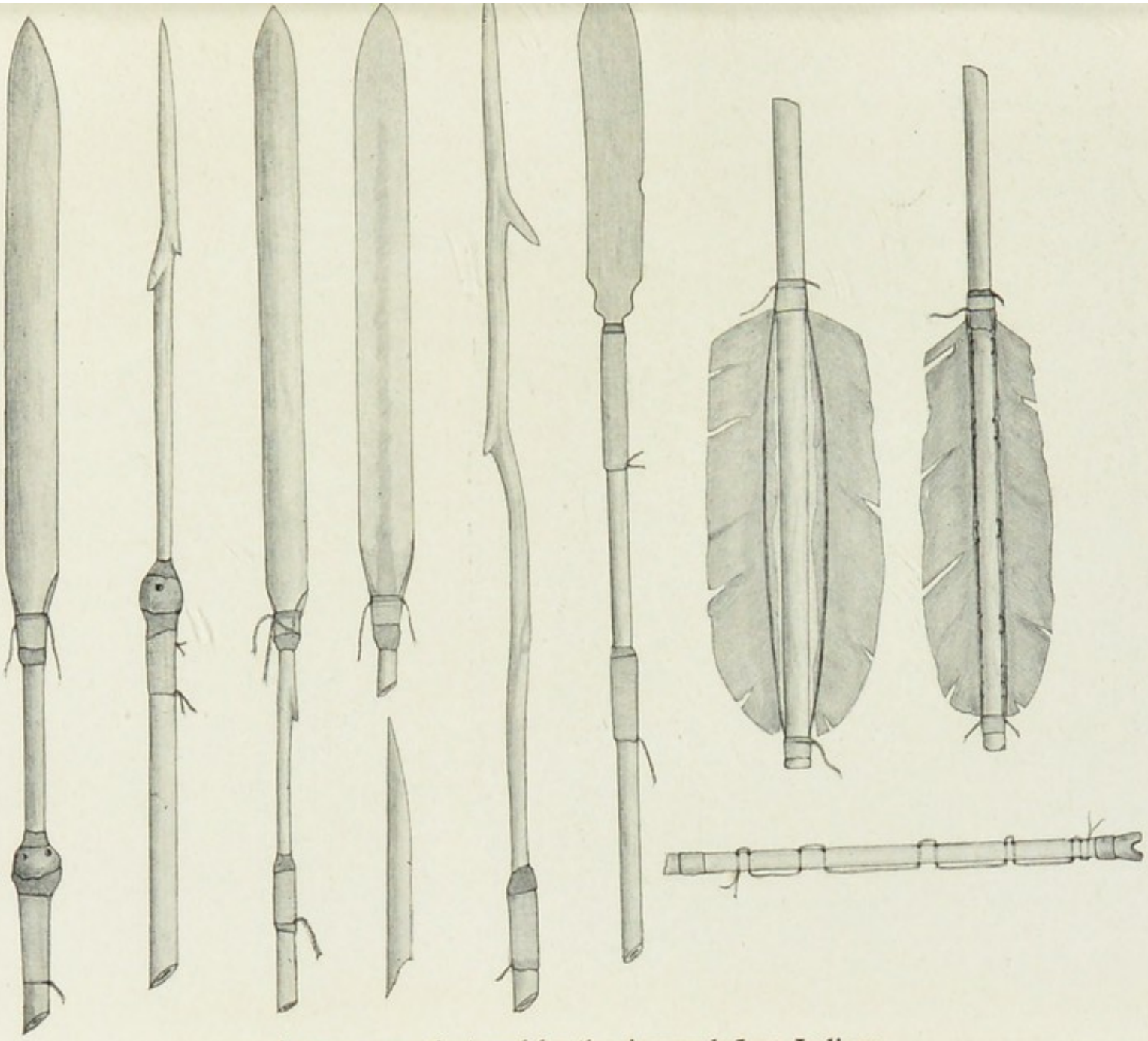
 OME of the young men armed with bows and arrows go for a hunt in the forest. The bows are ponderous affairs and require a strange skill and strength to manipulate. Tuté is cutting industriously away on a piece of bowwood, a young sapling about four inches in diameter, and eight feet in length informing me that he is about to make a new big-game bow for *tapīra—i. e.*, tapir.

The chief spends a good deal of the day alongside of my hammock. He is a nice old fellow, perfectly harmless, and is *tuchaua* by heritage of former glory rather than by any individuality or mental qualifications as a leader. He must be about sixty-five years of age judging from his old, withered, rheumatic frame and grey-black hair. His favourite position, when he is not busy, is on his haunches, a position in which he will remain for hours at a time without tiring, but he prefers to walk around supporting himself on a stick. He is a keen judge of good tools and shows me a German machete that had been given him last

year by the rubber-workers sent up to explore for rubber below the rapids, where some of his hunters had met them. These rubber-workers, the party to which Candido belonged, and later Skelly, are probably also responsible for the chickens I find here. Anyway the German machete was made of cheap steel for he pointed accusingly at the dull, broken edge of it and with glistening eyes caressed the American machete. He knew a good thing when he saw it.

Until last year the work of felling trees had been performed with *diorite* axes, shaped from the stones found in the rapids, but after the visit of the rubber workers the Indians acquired through their hunters a few steel axes of good make, and they were quite expert in handling them. The acquisition of one dozen new Collins axes, which represent the total of my gift, will push the work ahead with renewed energy.

The *diorite* axe is a clumsy tool and not very efficient in tree-felling or similar work where hard wood has to be cut, but time has never been a very important factor in the life of these Indians, I presume. The few stone axes I observe in possession of the chief are all of almost the same size and only one has a perfect handle. The average weight is two and a half to three pounds not counting the handle. In colour the *diorite* axe is a slate grey, an appearance which is accentuated by its smooth polished surface. In making these axe-



Arrows manufactured by the Ararandeñara Indians
(From a drawing by the author)



A primitive farina oven
"At daybreak the women set to work."—(Page 223)



The chief of the Ararandeūara Indians
"His favourite position is on his haunches."—(Page 227)

heads the Indians have undoubtedly selected quadrangular stones or pieces approaching a parallelopipedon in shape, and, after beating and roughing out with other stones in the customary manner of Indians, finally succeed by grinding in rounding the corners and producing a blunt cutting edge the planes of which meet at an angle of about 60°. The opposite end of the axe-head is well rounded, and about an inch and a half from the extremity a notch has been made on both of the narrow faces, extending less than half an inch into the stone. The work of shaping the axe-heads, of course, I did not witness, as it was probably some years ago that the last one was made.

To heft the axe they used a straight piece of bowwood, a wood which in strength, elasticity, and hardness excels our ash or hickory, and called by the Brazilians *pão d'arco*. One end is split, the two halves bent around the sides of the axe-head with the inner notch resting in the fork and then joined tightly over the upper part of the head, in the outer notch. Heavy fibres of *curauá* leaves are then wrapped around the split helve to prevent the lower end from splitting further and the upper end from opening. Next the fibre is wound around the axe-head and the helve so as to make a solid piece, and finally a black gum exuded by the bark of the *jutahy* tree is melted and rubbed between and over all the joints. In the

course of a few days this gum hardens and forms a moisture-proof solid mass.

The mounted axe when ready to use weighs about five pounds and has a length of twenty-four inches. The old hefted axe referred to was unwillingly lent me by the chief and I found it an extremely badly balanced tool. The head was too heavy in proportion to the short handle.

Only one hand is used in manipulating the *diorite* axe and with no apparent intention of chipping sections out of the point attacked at the base of the tree. Instead, the fibres are crushed and broken by the blunt edge. After a rough cavity has been made in the desired place, the "cutting" ceases and a fire is built in the cavity and allowed to burn for some time when the cutting commences again. Chopping and burning alternately, fells the tree.

The huts that constitute the *maloca* are all, as already remarked extremely primitive, the best one, of course, being that of the chief. One man, another un-Indian type portrayed later on in these pages, has a hut so utterly primitive that it can justly be called miserable; not many stages above an animal abode in construction and comfort. This "dwelling" consists merely of two hammocks strung between a tree and a pole in the ground, with one or two palm-leaves propped above them, totally insufficient as a shield against even a few drops of rain. His wife is the official weaver of

the tribe. It is she who on a loom weaves the *tangas* or loin-cloths (worn like a short kilt) of the women and girls, their only dress, and the really well made cotton hammocks for the men and women. Her little loom is stuck in the ground in the bush and there she sits many hours of the day doing the dressmaking for the ladies whose fashions, fortunately perhaps for them, never change.

When one day, I desire to make a sketch of the loom it has disappeared from its customary place, and although I try to make my desire understood to the weaver, making imaginary motions of weaving in the air, it is not forthcoming and I have to compile my observations from memory and the casual impression. The loom is a simple square frame made of four sticks about two feet long, tied together with fibre or ordinary bush-cord to form a square. The two vertical pieces are somewhat longer than the others so as to stick in the ground, holding the frame almost perpendicular; that is, it resembles the capital letter H with a bar at the top.

Around the plantation grows, in small quantities, the true cotton plant, the ripe pods being gathered in the months of July and August. After the young girls have picked out the seeds and cleaned the white filaments one seizes a spindle and commences to spin the roughly twisted cotton on it. Another girl sits close by with her lap full of picked

cotton which she pulls into convenient thickness to hand to the girl who is spinning. The spindle is about twelve inches long and consists merely of a pencil-thick stick pointed at one end and furnished with a rounded wooden disk about two inches from the point. With the palms of her hands the spinner gives the spindle a rotating motion, almost as in fire-making, and, utilizing the momentum given by the wooden whorl to twist the uneven cotton strands by the point of the shaft after her fingers deftly have distributed more evenly the strands, a yarn is gradually spun and afterwards rolled up in a neat ball. This is then used for weaving on the loom described.

When a *tanga* has been woven on the loom it is left some hours immersed in a large gourd containing the juice of the *urucú* plant, which colours it a reddish brown. How the hammocks were woven I cannot tell as none were manufactured during my stay.

At lunch I eat some grape-nuts (an American breakfast cereal) with condensed milk and water and some hardtack. Tuté brings me a gourd of freshly toasted *uī*. I taste it,—it tastes really quite tolerable on account of the addition of Brazil nuts.

In the early afternoon a score of hunters arrive headed by the man called Domingo, who, if anybody ever was, is a born leader. Something comes crashing through the bush without any prelimin-

ary warning. It is Domingo followed by eighteen Indians all well-armed. They come with long deer-like springs jumping easily, with their long limbs, over low bushes and impeding creepers and they run at full speed to the middle of the *maloca* where I sit on my haunches trying to learn to talk Tupi with the old chief. As they sight us they shout at the top of their voices *Karí Katú Kamarāh* and stop abruptly in front, beating their chests.

They instantly demand the pipe which I naturally let them have. A few minutes later four young Indians of a totally different type arrive carrying, tied to long branches, fourteen *jabotys* or forest turtles. These young Indians are thinner, and of a different complexion from the other Indians. Their faces are round and weak; their language is different too. They wear shirts but no trousers. Perhaps they are captives from some tribal raid farther up river.

The turtles are laid at my feet and I am made to understand that they belong to me. I thank the men and order the turtles put behind the hut. The new arrivals in their turn bother me constantly; they take off my glasses, my hat; smoke my pipe and pull at my clothing until I feel uncomfortable and go into the hut and completely undress. I appear again with no other covering but my hat and glasses and am received with approving shouts from the large group of men. From that moment I walk around in the daytime

like the rest of the Indians, excepting a minor detail.

Some of the hunters invite me to the creek to take a bath. The way leads down hill through dense forest, but a path has been made and walking is comparatively easy, although I now have to look out for all sorts of spines and thorns, not to mention insects, but we quickly arrive at the pretty sand-bottomed stream. We all splash in the clear water, laughing and playing like big children. The Indians take small pebbles up from the bottom and shout *itá*.

I realize now for the first time, how far more practical is the absence of impeding clothes for forest travelling, at least under present circumstances. After the bath, I actually return to the *maloca* refreshed and cool, while otherwise I would have been hot and uncomfortable even before being fully dressed.

When we get back we find the *maloca* quiet; the activities of the tribes-people have ceased for the day. Sipping gourds of *cachirī* they repose in their ridiculously short hammocks with their legs sticking out. The chief's wife is preparing a tremendous cigarette from some dried tobacco leaves (they have a small plantation of tobacco), covered with a thin lamina of *tauary* bark. This cigarette measures about one foot long and is a little less than half an inch thick when ready to smoke. Her husband lights it with a brand from

the fire and, after taking a few draughts, comes over to me and places the monster in my mouth. The tobacco is not bad, but the bark wrapper somewhat interferes with its flavour. Everybody else then has a pull or two at it.

Now the hollow trunk, which serves as a drum, is again beaten in accordance with some rule religiously observed, but which I am unable to explain.

Two youngsters go around practising with miniature bows-and-arrows and get properly licked by their mother for using the tribal chickens as targets. This was the first and only time I saw an Indian whip a child.

The sun now is setting; not a sound is heard in the *maloca* except some *japīm* birds chirping around their suspended nests, and a couple of *arāra* parrots which are roosting in the tall Brazil-nut tree at the end of the *maloca*. Otherwise all is silent. I am pleased to see for the first time a couple of these parrots at rest and "at home."

I find this is the best hour to record my observations of the day as only the old chief has enough patience to sit by my hammock to bother me. He watches intently the movements of the pencil over the paper and now and then he points at some word, looks at me grinning, and says something. I give him the pencil and my note-book. He seizes the pencil awkwardly and after some minutes returns it. He has tried to imitate handwriting

and feels proud (see page of note-book). Then he asks smilingly for the book again and draws some more, shows me the drawing, and ejaculates *Karí Katú Kuyambīra* (Good white relative). This is the figure marked "A" on the right of the illustration. The scrolls represent his idea of the surrounding forest. Old Tuté also joins in these attempts at writing longhand and his effort is presented on the same sheet.

Although patient I have not yet succeeded in entering into any intellectual understanding with these people. Only now does it begin to dawn upon my teachers that I am anxious to learn their language, and then a slow progress begins. Many times I have to repeat some word given to represent an object to get the true value, as often different persons give different names, because they do not really understand my question.

Let me quote two examples: when I point at a hammock to find the corresponding word in their language, I am told *mundeyūh*. This I put down as hammock, but when pointing at a loin-cloth the same word is given. Here is something radically wrong and only long investigation informs me that *mundeyūh* means cotton. Both hammock and loin-cloth are made of cotton. When pointing at the book the word *karí apōh* is given. This I erroneously put down as book or writing. Later I verify that it means "white man is making" (something).

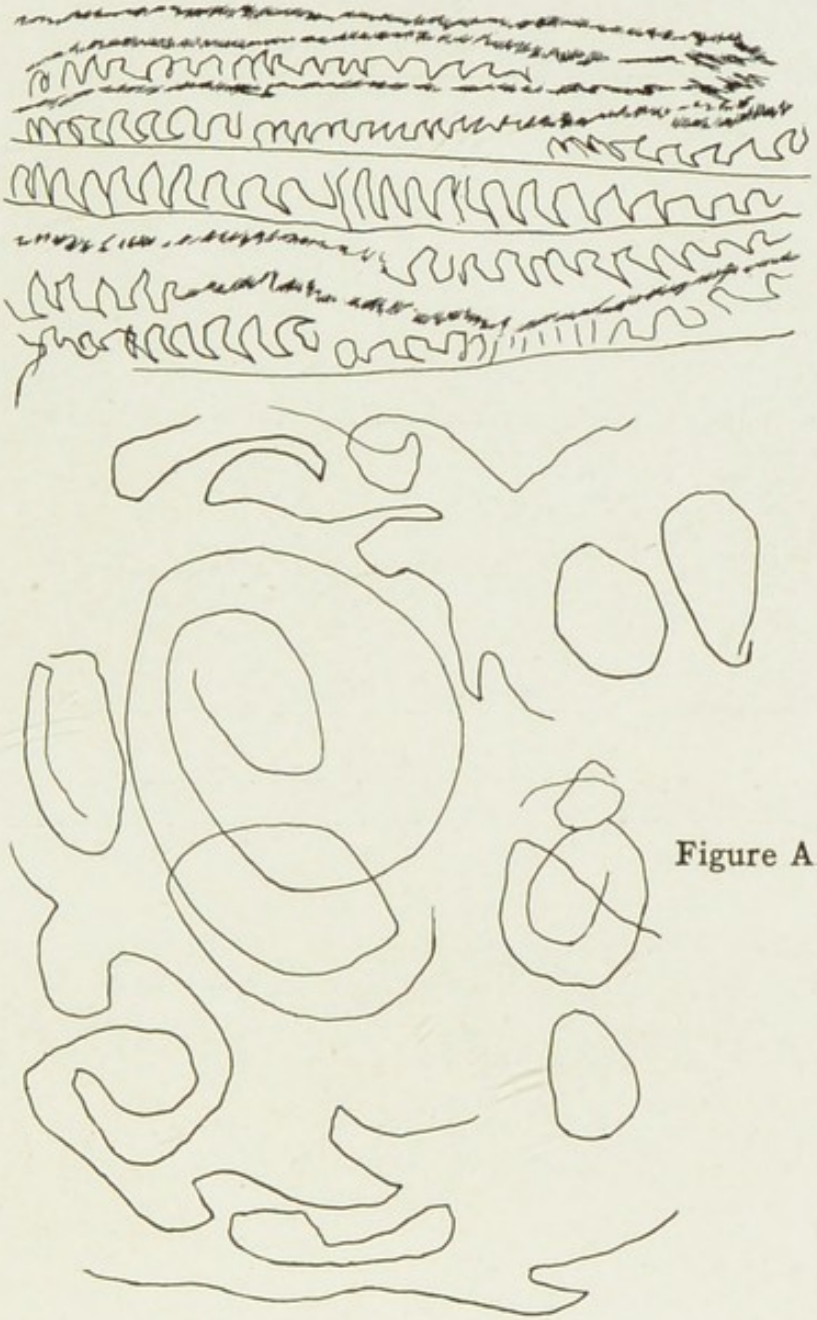


Figure A.

Indian attempts at drawing
"The scrolls represent his idea of the surrounding forest.
Figure A the author's portrait."—(Page 236)



The two savages, Tuté and Domingo
"In the photograph made on my last day with the Ararandeŭaras he stands alongside of Tuté."—(Page 239)



A "dwelling" in a corner of the *maloca*
"—this 'dwelling' is not many stages above an animal abode in comfort."—(Page 230)

The chief points at the sun and says distinctly *qūarahī akūh*. This I naturally put down as sun, until the next day I am told at the fireside, *tatá akūh*. Thereby I add the adjective *akūh* equal to warm or hot, *tatá* as fire, and *qūarahī* as sun.

At night, while boiling coffee in the tin with Tuté I learn the name of this strange tribe. Suddenly he looks at me, patting my arm, saying in his peculiar soft, pleasing manner, *Kuyambira Katú Kama-rāh Ararandeūara*. There can be no doubt that this means *Kuyambīra* is good friend of the Ararandeūaras. Immediately I wake the old chief and ask him with a sweeping gesture taking in the sleeping tribe, "Ararandeūaras," whereupon he answers *ehé*, "yes."

The night turns out to be as miserable as was the previous one. Tuté gets up at midnight when the temperature is low and starts a fresh blaze by fanning the embers and putting on more wood. I wonder how the Indians keep from catching cold, for with all the heavy clothing I put on for the night I feel cold and shivery. The fires are left burning low until, as I judge, midnight, when the stored up heat of the body has been totally radiated, then the fires are stirred up and the Indians apparently sleep no more except a few winks now and then. I think they do not get six hours' sleep out of the twenty-four. They wake me up pulling my sleeves and offering me *cachirī*, but this time I positively refuse to swallow it, putting my hands

on the pit of my stomach and rolling my eyes as if in great pain. They understand this pantomime and bother me no more with their terrible drink.

Patience is the pass-word for him who wants to study and get along well with Indians. Without it, they soon become suspicious, and at times aggressive and dangerous. One must treat them like big children and not consider them thieves because they are curious and pilfer. Here they have no idea of individual ownership as everything is commonly owned among them, except wives and children. These people who have been isolated in remote wilds for ages can only be expected to look eagerly at the new things the civilized man shows them. They want these things from a natural human instinct, not because they want to steal but because, like imprisoned birds, they fly out and ravenously consume anything they come to. The savage man wants to be shown everything, therefore let nobody take advantage of him and supply him with useless or bad things. This only too often takes place where white men come in contact with savages, and finally the savage is censured for rebelling when he discovers the imposition.

Domingo returns from a nocturnal hunt with six other young Indians. They killed a female tapir with two arrow-shots. His companions are carrying pieces on their shoulders as the entire carcass was too heavy to transport without division.

Domingo is a splendid specimen of a savage, fully six feet tall. His beard is very sparse, consisting barely of half a dozen hairs on his chin.

His face is narrow and rather clean cut, with brown-black restless eyes, set close to the base of a narrow, well-curved nose. His ears and lips are perforated, for what specific purpose I cannot say at present. His limbs are long and sinewy; his movements elastic and, like all these people, graceful. In the photograph made on my last day with the Ararandeūaras he stands alongside of Tuté, whose portrait is taken separately a few minutes later. In this photograph he shows a very intelligent smile, thus deviating a great deal from the traditional stoicism of the Indian. It is also very evident from studying the picture of the old chief and his two granddaughters taken on the same occasion, that mobility of features and expression are as much a matter of individuality as with civilized people.

I notice very few ornaments of any kind on either sex. The men go entirely nude and while I sojourn in the *maloca* they do not change this mode. They wear constantly a short cotton string tied around the præputium. Occasionally they will stick a single *mutum* or turkey feather in a narrow head-band, and this head-dress, with a a couple of cartridge shells or jaguar teeth on a string around their neck, is all they wear.

The second day of my presence, when I empty a

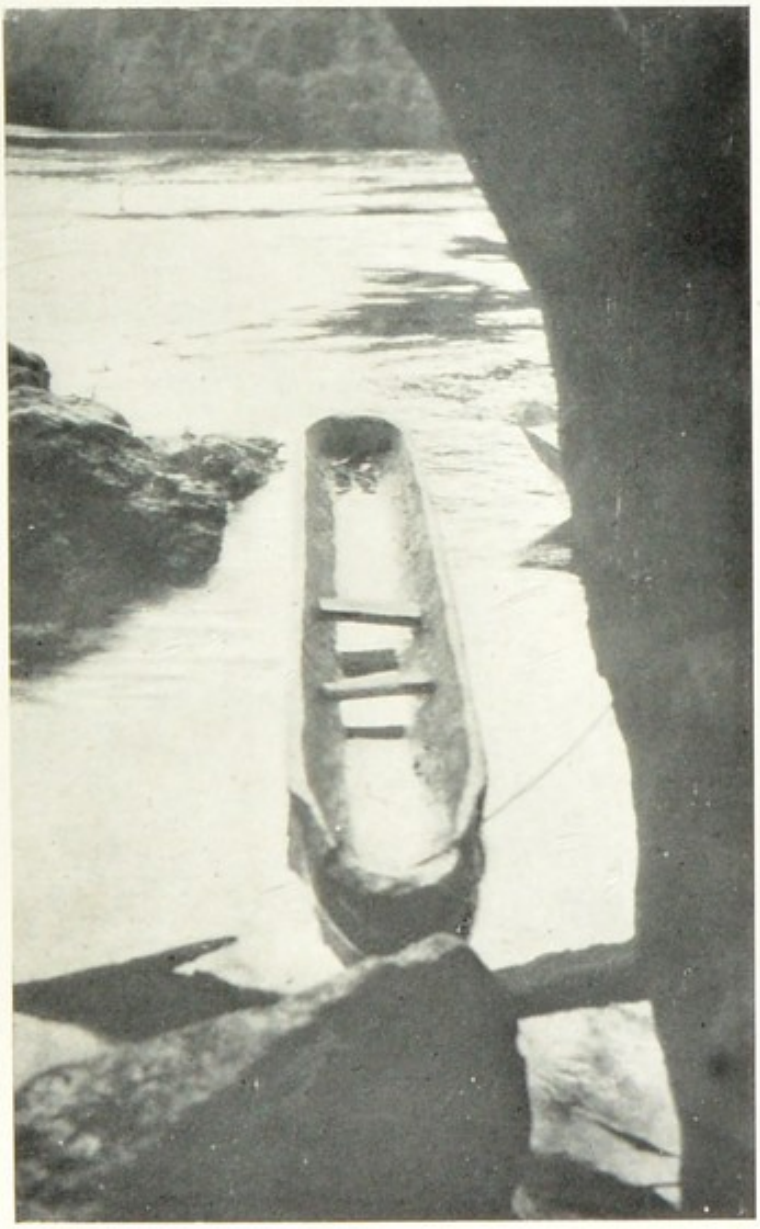
can of condensed milk, my old and particular friend adopts a new and strange fashion, more practical than decorative. The tin can is perforated and suspended on a wire, unravelled from somebody's machete, around his neck. Any little thing he can find as he walks around, he puts into this can, even farina when he takes a trip down to the creek. Another man, who never seems to pay much attention to me nor interfere with my peace, is of an unusually light complexion and of a rather characteristic appearance.

During the early afternoon I make an inspection of the plantation having Domingo and two other men as guides. We make a long detour in the forest and come to a large tree with buttresses. At the base of this tree is built a *jaboty* corral. Here the many forest turtles caught by these men on their excursions are kept imprisoned, forming a sort of live-stock reserve for a rainy day. I make a mental note of this tree so as to be able to return later with the camera.

The female population of this band is in the minority, and the monogamy which exists is therefore perhaps easily accounted for. The women and girls appear more stupid than the men; at least they make themselves very inconspicuous, except one maiden who day after day stands at a short distance from me leaning up against a tree, staring at me persistently; but when I return her glance she invariably moves behind the tree. It is



A domestic scene in the Ararandeũara village



An Indian cedar dug-out
"We find at the head of this rapid the small one-man dug-out."—(Page 260)



The old chief and his granddaughters
"——mobility of features and expression are as much a matter of individuality as with civilized people."—(Page 239)



A group of hunters
"—he stands still with a group of hunters; however he is armed with bow and arrows."—(Page 251)

possible that she is sent there by the chief, her grandfather.

About three in the afternoon, judging from the sun's position; I have just prepared and distributed to the men, women, and children a large potful of sweet rice mixed with condensed milk. I brought a bag of rice with me from Iraruna, and, as the only way in which I can myself eat some of this healthy cereal is to give everybody else some at the same time, I have prepared a goodly amount. First the old chief and his family come over to the fire with small gourds, in each of which I place two spoonfuls. They like it immensely and come back twice. In the meantime I have managed to fill myself pretty well and I can afford to give a generous second helping to the worthiest, especially the young children who eat nothing but farina all the year round.

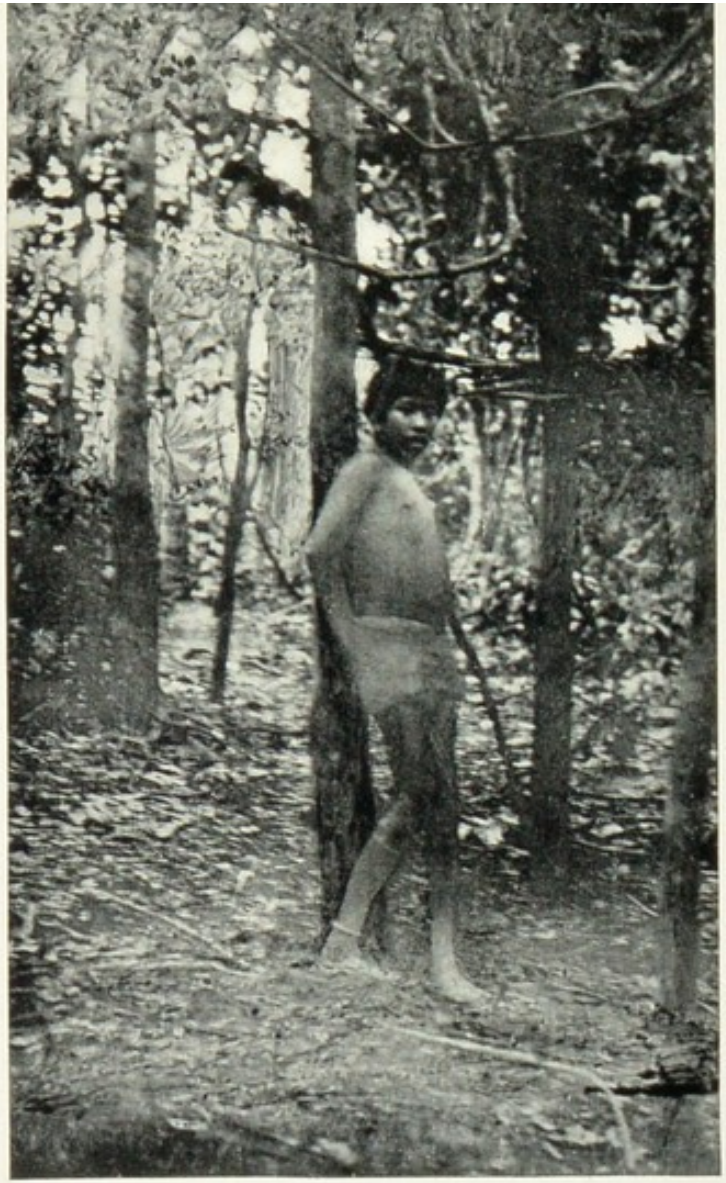
Karí Petro who has been forgotten hastens over with anticipation written boldly on his face, and presents, to everybody's great amusement and to my consternation, an empty giant turtle shell, which would hold enough to satisfy two entire tribes. With a swift kick I send this capacious vessel flying into the bush across the *maloca*, which further augments the general merriment. Then I have to laugh myself as I observe the fellow's stunned expression, showing that he, at least, lacked a sense of humour.

After this good feed I make a collection trip

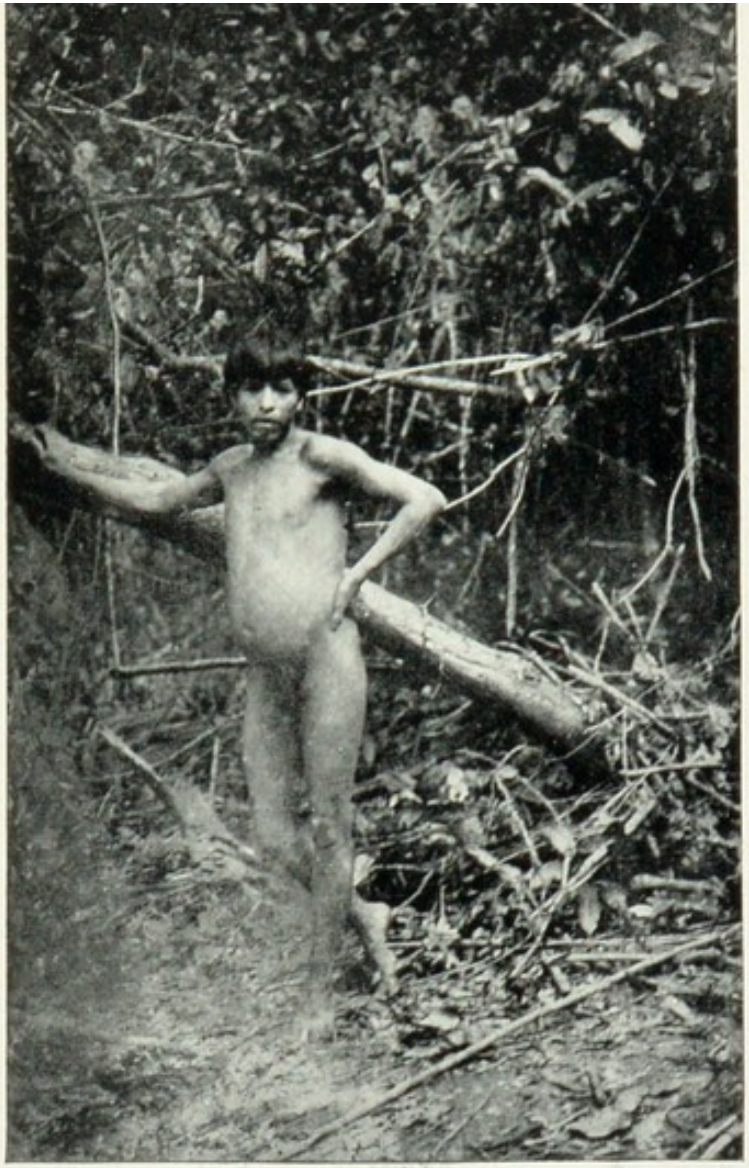
around the many huts, looking for objects of ethnological value. One man gives me a fine seven-foot bow with one arrow; another gives me two bows and four arrows; the chief gives me seven bows of different sizes and twenty-two arrows. The women give me their latest unused *tangas* or loin-cloths. The little girl who always is watching me presents me with three ear pendants of local manufacture. In this manner I go collecting and as everybody is willing to give me their best bows and arrows I soon have a large number rivalling the chief's own arsenal. A brown cotton hammock is added to the collection, as well as three sets of fire-sticks, and some giant cigarettes.

The rest of the afternoon is then spent in linguistic studies. These are now progressing much better than at first, as I finally succeed in making them understand that by repeating my question they are not pleasing me. The work of constructing a meaning becomes gradually easier as there are generally a few words familiar to me. By using these for elimination, in conjunction with other words which are self-suggesting, on account of the character of the conversation, I obtain a word or two to put down. With these I can then amplify the scope of our conversation a little until I form a modest vocabulary.

While writing these notes a sloth drops down in front of me from a branch above. It had ventured out on the fragile branch of an *emba-uba* tree to



Ararandeūara girl
" One maiden who, day after day, stands up against a tree staring at me."—
(Page 240)



One of the Indians
" One-man, another un-Indian type, portrayed later on in these pages."—(Page 230)



The coati or nose-bear

eat the fruit, when the limb broke. The sloth is quite helpless on the smooth worn ground and cannot do anything but squirm around. The next morning it is still in the *maloca* unmolested, but it finally drags itself to a tree at the border and finding itself once more in its proper element quickly mounts the trunk, using its three large claws, and disappears.

Night is falling again and I am resting in my hammock after a bath with the Indians in the creek, and getting fully dressed to face the discomforts of another night in this Indian camp. Tuté now undertakes to sing for my personal benefit. Unfortunately I am not able to remember the melody nor the words, but it is truly a sad and dreary song many times repeated *Kiri-kiri-kiri*, and so on indefinitely. A drizzling rain sets in. No sound is heard but some baby's cry from a hut on the outskirts of the *maloca*. The fire is already burning in the chief's department and Tuté is preparing ours. Thousands of fat crickets that have been hatched and reared beneath the palm roof of the hut are now leaving their happy home, descending by the rafters, or merely dropping down on my head, to continue their migration down my spine.

At last another dawn breaks through the forest gloom and I am aroused, from a night devoid of excitement and none too comfortable, by the old man with the withered arm,—he who saved the

situation so opportunely at Iraruna. He begs for a smoke. Under the circumstances I am fearfully grouchy, and I immediately order him down to the creek to fetch water for me, which he does without opposition; then upon his return I reward him with the smoke.

Tuté is up even before daybreak, working away with his machete on the sapling of bowwood, which by now has been reduced considerably in diameter and is beginning to take the shape of a giant bow. His patience and persistence are truly wonderful.

In the early morning I make a reconnaissance through the forest, going a considerable distance up the creek. Very unexpectedly I come across some thirty men, women, and children standing and sitting around a large tree trunk which lies on the ground and is being fashioned into a canoe. The men are cutting away at it with their axes, while at various points some are using fire as an excavator. The dugout is almost finished. The women carry their babies and at the same time hold large baskets of farina for the men to eat from when they please.

Long bush ropes are cut and fastened to the gunwale of this heavy craft which measures thirty-five feet in length and five feet in width. Rollers are cut from tree trunks, and the forest is being cleared in a direct line to the creek for an early launching. It will not be an easy task to transport

this *ygara* to the water as the road leads over two hills and through dense and complicated jungle. Followed, as always by a few Indians who never for a moment let me get out of sight, I go back to the *maloca* at noon to eat my scanty lunch, composed of roast turtle, grape-nuts, and condensed milk with water.

CHAPTER XIII

Success with the Camera

ONE of the young fellows, whose skill with the bow and arrows I have marvelled at on various occasions, walks past me with a small gourd, inside of which something is moving. He smiles at me and speaks some words, which, judging from his expression, must be of interest. I call him over to my hammock and ask him to show me the contents of his carefully covered gourd, whereupon he loosens the fibre that keeps a leaf snugly fitted over the aperture and raises the leaf a fraction of an inch. A large, black ant with enormous mandibles creeps out and flops to the ground in front of me. The gourd is full of them. The man ties the leaf firmly on again and, with a stick, crushes the insect which escaped. *Tucandeira* is the name of it, the largest of the ant species. I remember once while travelling on the Javary River, a tributary of the Upper Amazon, how one of these ants bit my leg. The pain almost drove me out of my senses for fully twenty-four hours, and the inflammation abated only the third day after the bite. When the Brazilians declare

that four *tucandeiras* will kill a man I believe it; while perhaps he will not die from actual poisoning, he might from the agony associated with such bites. It is certain that one bite causes a high fever which passes away only the next day. The poison of this ant is used by certain up-river Indians to mix with the other toxic ingredients of the well-known arrow poison, called *curare* (and woorali), a poison which can be swallowed without serious results but causes death if introduced under the skin.

What this fellow could want with such a formidable mass of these poisonous ants I cannot imagine, but in explanation he takes me over to the chief's department and shows me a braided fibre cylinder about twenty-four inches in length and about eight inches in diameter. Each end of this is closed with a cotton sleeve, the large end of which is carefully fastened with yarn to the inner edge of the cylinder, while the smaller end reaches some ten inches down inside the cylinder. The Indian pulls out the smaller end of one sleeve and I perceive that it is woven of the same material as that of the women's *tangas* and that it can be closed with a draw-string. He then opens this sleeve, pours the *tucandeira* ants into the cylinder, closes the sleeve again, and hangs the interesting apparatus up on a rafter.

When Tuté comes from the creek where he has been polishing the great new bow with sand, I ask for information. Tuté laughs and commences to

tell me a great number of things from which I finally extract the following facts. This cylindrical fibre muff is supposed to test the fitness of any man who intends to seek the hand of one of the young tribal maidens. The ants are put into the muff, a week or so before the day of the test, and left there without food, the sleeves preventing their escape. When the moment of the crucial test has arrived, the candidate for marriage, in order to show his particular ability to withstand successfully the trials which every Indian husband has to encounter, puts his hands into the muff and, with the sleeves tightly closed around his wrists, he has to endure for some time (how long I can not understand from the narrative as there is no definite statement as to the period) the terrible bites of the score of ants imprisoned and voracious with hunger. If he can stand the pain for the allotted time he is pronounced fit for marriage.

I wish I could have seen such a performance, not out of idle curiosity, of course, but to have witnessed all the ceremonials which no doubt preceded and followed it, but the briefness of my sojourn prevented.

While this conversation takes place I think again of picture taking. I judge this to be the psychological moment for taking photographs because many of the more critical Indians are away working on the large canoe. It is a risky act to bring forth again "the little black thing that

grows big and has an evil eye," but it is of vital importance for me to record my sojourn here on a photographic film; it has to be ventured.

I sit back on the hammock, peacefully smoking, to think out a plan, while the old chief and Tuté stand around talking. I decide to do it in this way:

Slowly I proceed to lift the kodak out of the bottom of the knapsack where it has been carefully concealed. Taking the back off I hold the open kodak in front of the chief's eyes so that he can see the empty bellows, at the same time saying *bahú*, meaning a box. He nods and touches it. As he and Tuté so far seem satisfied, I set the shutter and squeeze the bulb. The ticking sound of the shutter pleases the chief who laughs; in fact he imitates the sound by saying "Tick-tick." Tuté also says "Tick-tick." Then I set the shutter on a time exposure and let them look through the lens while it opens and shuts. This also pleases them. Next I let the shutter "tick" while pointing the still open camera at trees and other objects, but every time the shutter clicks I say loudly "Tick-tick" and everybody is happy. The chief even calls the kodak *marakáh* or plaything. Now I feel rather safe and venture to roll a film into the camera and set the shutter for business. I point it at the chief as he sits in the middle of the *maloca* and saying "Tick-tick," a couple of times, I finally press the bulb and he is "took." I gain confidence

seeing how well this *marakáh* is received and take many exposures. How these will turn out I cannot tell as there are still many trials and tribulations before I can develop them, but if they come out well I shall forever be reminded by them of the dangers and difficulties connected with this innocent and diplomatic snapshotting among the Ararandeūara Indians of the Moju. The photographs of the Ararandeūaras shown herewith are the ones taken on this occasion. Even the sloth is photographed to the great amusement of the men.

Shortly after noon those who have been working on the launching of the large canoe arrive with their families. I am obliged now to go through the same tedious process of showing everybody the empty *bahū* and everybody gazes into the eye, that looks like the ones the *Karí Katú Kama-rāh* has in front of his own eyes (my eye-glasses), and that shuts and opens, saying all the while "Tick-tick." Even the girls and women consent now to being tick-ticked, and they stand looking at me with doubt and incomprehension playing over their features, but they always manage to remain partly concealed behind trees and bush-ropes, so that in case the little devil hidden in the camera, and making the ticking noise with its eye, should escape, there would always be some available defence to ward it off.

Now I feel that the time has arrived to bring into action the large plate-camera, and it proves



Ararandeūara girls
"Even the girls consent now to being 'tick-ticked.'"—(Page 250)



In the *Maloca*
"—she lets herself be photographed, but her features show that she thinks it all nonsense."—(Page 251)



Jaboty corral

"At the base of this tree is built a *jaboty* corral."—(Page 240)

that there are no objections to this either as long as I say "Tick-tick" all the time. Even the disagreeable-looking fellow who received me so reservedly down by the creek the first day, now tolerates the use of the camera, and a little later he stands quite still as a victim with a group of other young hunters; however this time he is armed with bow and arrows. Another photograph of one of the younger women who attends to the farina-making is taken in the very beginning. Without resistance she lets herself be photographed, but her inflexible features show that she thinks it is all nonsense.

Only once do I come near another break in their confidence. It is when I walk down the middle of the *maloca* and focus the camera on the old chief and the man with the withered arm who are standing alongside one of the tribal prisoners referred to. They suddenly get up and rush towards me, but an assuring "Tick-tick" fortunately pacifies them in time. The exposing of numerous plates around the *maloca* also takes place without the least disturbance.

Encouraged by this success I unpack the moving-picture camera and set up the tripod in a central position. The winding of the crank does not seem to disturb the minds of the Ararandeūaras, who by now are pretty well accustomed to strange doings on my part, but the black boxes serving as film holders excite mistrust. I see the uselessness

of attempting to insert the film holders in the camera box, for the old, withered man stands close by and shakes his head and stamps his feet. I am thus forced to open a film box to show them its contents and expose one to light, thereby spoiling 160 feet of good, yes, invaluable negative film. But by pulling the strip of yellow ribbon out and giving a few yards to each member of the tribe, cinematographic good reputation is again established in *maloca* town. Some of the men even wrap themselves up in the film, shouting with delight. This enables me to load the camera and get everything in readiness. The innocent Indians stand in front while I commence to sing "Take me back to New York town," at the same time turning the crank. Shouting *marakáh* they flock around me, some looking into the lens, others listening to the rattling of the gears inside the box, but all the time the film is being impressed with pictures of the savage people in the forest stronghold and these little irregularities disturb me but little.

Suddenly rain comes; mosquitoes bite my neck and shoulders; *meruhims* bite my legs and feet; and a couple of ants creep up my back, but what does it matter, when the film is recording pictures which some day will be shown to appreciative white people far away from this primitive *maloca*, in that grand *maloca* where houses touch the sky, and where trains run higher than tree-tops and

make a rumbling noise that is stronger than the drum beating in honour of Tupáh.

The second roll of negative film refuses to turn on the pulley inside the camera and I have to put leaves and cotton around this pulley to obtain the proper gearing. By this time the novelty of the plaything for the Indians has worn off, and as no forest spirits have issued from the big eye, to destroy them, they take up their accustomed work around the *maloca*, letting me stand there singing "rag-time" alone.

But so much the better; it gives me plenty of opportunity to work the camera and take exposures without interruption. Eleven new Indians arrive at the *maloca* during this time. They are photographed too. Will these films ever reach a projection lantern? That is the question. It is a far cry from the head of the Moju to New York Bay.

After packing the cameras safely back in their cases, we all go down to the large canoe to pull it into water before nightfall. The path has been cut for it down to the creek. Fully sixty persons are present now. Women and children follow.

The Indians are strong and numerous enough to move a far bigger ship into the water than this, but they lack management and co-operative team work. They pull and tug, while some push, at the canoe which hardly budges an inch. The canoe literally speaking is being worried along.

When its movement has fairly started over the level, or down hill, all hands stop and rest to talk. I then take active part in the rolling, order them to place sufficient rollers under and ahead of the canoe keel, and all shouting together teach them to pull in unison at the given word. Then the canoe begins to move and with increased shouting and pulling it goes along well. Instead of letting it stop after running a few yards I command them to keep it moving until the rollers have to be renewed in front. Coming to the top of the hill we see that the road is good and clear for an avalanche descent, and we let her go! With great crashing and shouting we here gain by leaps and bounds and then the tedious tugging continues.

It is, indeed, remarkable to observe how the Indians, although powerful, are merely pulling with their arms and not attempting to let the lower body and legs contribute their energy to the effort. After a couple of hours of hard work we are halfway down to the creek and Domingo, who ordinarily is the general manager of the working forces, has understood, at least, partly, the secret of successful hauling, and by five o'clock, more or less, we are crashing through the underbrush on the banks of the *ygarapé*, giving the canoe its last energetic impulse and causing it to slide with great splashing into the waters of the swift-running creek.

All the men spring into the water and climb on

board the newly launched *ygāra* and joyfully splash and jump around it. Twenty-four men can be easily accommodated in the canoe, besides a considerable cargo.

By nightfall we are all again assembled in the *maloca*. The big fires are burning; *cachiri* is being drunk; a new potful of rice is cooked and consumed, the tree-trunk drum is beaten in honour of Tupáh, and the men put coloured cotton bands around their heads, wherein they stick turkey feathers. All wear little wooden sticks in their lower lips. The women wear garter-like cotton bands below their knees and on their ankles, while some of the youngest maidens insert ornaments made of the ivory nut in their ear lobes. They all dance around the fire singing *Kiri-kiri-kiri* and the men smoke their immense cigarettes and my pipe. I sit alongside of the chief in the centre of the festivities trying to look as grave as the rest of them. It is, indeed, a day of joy and feasting kept up till a late hour. Even the babies, and some little coatis, or nose-bears, are still awake and hop around the red fire.

At midnight everything is quiet once more and the drizzling rain that falls is an ill-substitute for the recent gaiety.

The next day I am presented with the splendid big-game bow that Tuté has so diligently been working on all these days. It measures almost eight feet. A cord made of *curauá* fibres is in-

geniously fastened into notches. The bow itself is well polished with sand and requires great strength, or perhaps a special trick, to bend. Tuté wastes two arrows to demonstrate its power. One remains in a tree branch some sixty feet, almost vertically, above our heads. He lies down on the ground guiding the arrow between his feet and with his hands pulls the cord back some four feet from its original position and lets go, at the same time kicking the bow away so as not to injure his feet from the recoil of the cord. The arrow with its hardwood head gives a loud thump and sticks in the branch which he undoubtedly was aiming at. The other arrow we find after an hour's search at the other end of the plantation. I confess my admiration for such remarkable skill. My vocabulary is now increasing considerably and conversation has become more intelligible than on the first days when it was restricted to a few conventional terms of the simplest kind.

Somebody comes to me with the surprising information that they have heard shots and that Candido must be returning. I believe something unusual must have happened, if this is the case, to cause the bucks to be ahead of the schedule time.

Half an hour later Skelly, Candido, and Fielo appear in the *maloca* accompanied by a dozen Indians. The bucks carry some food supplies and some more tools, and are, of course, well received.

Candido tells me that on account of the unusual lowering of the water of the river during the last two days, he fears that unless we depart at the very earliest moment we will be caught in a bad way down at the Itapeua rapid, necessitating no end of delay and trouble. It is therefore with regret that I see myself forced to break up my pleasant sojourn with the Ararandeūaras and discontinue the observations now so well under way. The bucks prepare the large pot of rice *pro bono publico* and all evening we have dancing, smoking, and powwowing.

A great animation takes place, I promise to visit the Indians again in some six or seven months and some pleasant hours are passed in more or less intelligent conversation before the midnight fires are lighted and everybody is asleep. During the night two scorpions flop down upon my hat (here I always sleep with my hat on), and in my excitement at destroying them before they can do any stinging, my eye-glasses are broken. Fortunately it is only one of the stems and it is easily repaired by a piece of silk cord from the medicine chest.

In the early morning we all get up and, this time fully dressed, I make my last round in the forest and visit the different families of the *maloca*. Every baby and child gets some little souvenir and a good-bye fondling. Every Indian gives me another bow and some arrows, and my bucks are sent with some of the tribesmen on board my small

scout canoe moored at the same old landing place at the creek, to get rid of the baggage for the departure procession through the forest.

Fifty-one forest turtles are put on board, besides all our other baggage, and it soon proves necessary to employ another craft as we are overloaded. The old chief willingly lends me a six-man canoe to be paddled by Candido and Fielo, loaded with the bows and arrows.

I stand now in the middle of the *maloca* surrounded by my savage friends saying my preliminary good-byes. To the entire tribe in their own language I repeat my promise, expressed necessarily in brief terms, that I shall return after six moons with tools, and seeds of all kinds for planting, and help them in their work.

Everybody comes to embrace me in their peculiar manner of beating their chests, and shouting *Kereketé Karí Katú Kama-rāh.*

The women and children stand around and soon the chief motions the tribe to take to the trail and we cross the *mandioca* plantation and soon reach the creek where the boys are ready with the two canoes, as stated, one belonging to Candido and the other, a temporary loan. The chief tells me that at the head of the first rapid is a small one-man canoe, made of cedar and brand-new, which I can take with me as a souvenir of this visit.

Constantly the Indians shout the general farewell *Kereketé.* As I wade out to the canoe where

Skelly awaits me with two paddles, one of which is a present from the Indians, I turn around and take a hurried snapshot of the shouting and waving Indians on the banks of the dark creek. Unfortunately, it proves afterwards that I did not expose long enough nor aim the camera straight, but the moment is one of confusion and extreme hurriedness. The two dogs bark as we shoot out into the rapid current, and the tribe as one man sets up a mighty roar that vibrates through the forest and causes the birds to stop their calling and the frogs their noise.

Karí Katú Kama-rāh—Katú Kuyambira—Katú Kama-rāh Ararandeūara—Kereketé—Kereketé—"Good white friend—Good relative of the Ararandeūaras—Good-bye—Good-bye."

As we shoot out into the current I give them three salutes from my pistol. As we swing around a bend I turn my head and see them all still on the banks shouting good-bye. Such is my departure from the Ararandeūara Indians. Their shouting is heard as far as the Moju River, then all grows silent. We now put full force on the paddling so as to reach my exploring vessel at her anchorage below the four rapids, as soon as possible.

We leave the long *estiraõ* and paddle into a herd of barking otters playing under the banks. The sun is burning hot and every once in a while we have to pour water over our heads and backs to alleviate the scorching of the skin. We come to

the "Rapid of the High Seas" and make fast carefully at a stone which marks the head of it. Here we stow all the baggage well in the bottom and middle of the canoe to withstand the ordeal which is to come.

I fill my pipe and the bucks roll their cigarettes and a general consultation is held while the waters begin their roaring descent a few feet away. We resolve to "shoot the shoots," taking a long chance on being tangled up between boulders, rather than spend many weary hours in laboriously letting the canoes down by line, following eddies and calm water close to the shore. We find at the head of this rapid the small one-man dugout which the chief referred to and had given me for a keep-sake, and we now shoved this clumsy little craft out into the main current, if such a thing is to be found, and giving it a good push watch its twisting course down the navigable channel and notice that it reaches the foot of the rapid without apparent damage. This gives us courage.

I sit in the bow of the scouting canoe while Skelly guides it from the stern. Candido and Fielo, in the larger cedar dugout, follow closely after. We enter the declivity and feel the violent pull of the rushing waters. We are soon in the midst of the boiling mass of foam and whirlpools. We dart unavoidably straight for a rock at the rate of twenty miles an hour. It may be a speed more or much less, it does not matter, for I close my



Zulu
"The mascot of the expeditions"



Resting during an inland exploration



Farewell to the Indians
"—the tribe as one man sets up a mighty roar, '*Kereketé.*'"—(Page 259)



Iraruna, the outpost of the Indians
"—we sight Iraruna and the good ship *Florence* proudly flying the Stars and Stripes."—(Page 263)

eyes involuntarily thinking that we all are going to pieces; but we turn almost at right angles to our course and, following the main body of water, rush past the rocks in safety. Still we drop and twist out and in between the boulders at a speed and with a violence only found on the so-called "scenic railways" of our American amusement parks.

How glorious it is to shoot a rapid when one feels that there is no absolute danger of being crushed as long as every muscle and nerve are alert! It is an exhilarating sport, to my mind equalled by none. Perhaps the sensations of flying are similar, but I cannot imagine that they are more exciting, than those of shooting a swift Amazonian rapid.

When we come to the foot of the rapid we turn around and encourage the two bucks who are busily occupied paddling and piloting the other canoe between the rocks so recently navigated by us. Our joy is exuberant over having conquered this rapid of a mile in length in less than five minutes, when it had taken us two and a half hours to ascend. We are now in the calm water at the head of the *travessão* of the rapid and without even looking around we take this innocent mill-race in a few seconds. The next rapid, which I called the Florence, is conquered in even shorter time than the "High Seas" and we have then before us a stretch of calm water in which to rest our arms and

fish a little. Candido has on board a *sirirīca* or double hook hidden by two red toucan or parrot feathers at the end of a short line on a rod. With this he describes arcs on the water, letting the hooks merely skim the surface lightly. The *tucunaré* lying in wait behind the stones close to the shore thinks that some insect is passing and makes a vicious lunge at it, and he is generally landed after some playing.

At the Yuaquara rapid we have to be careful about our selection of a channel and we let our experimental dugout go through ahead to show the safest way. Half-way down it gets stuck between two boulders and we are greatly puzzled as to what to do; its loss seems inevitable. It will be out of the question to free it, from our canoe, with our hands as we will pass the spot like a railway train. We are therefore resigned to never again seeing our quickly acquired and badly treated dugout, and we make ready to take the dip ourselves. Candido gets into the water with Fielo and, with our canoe between them, they guide us into a likely channel, then when we are all right Candido nods, gives me a friendly tap on the shoulder, and saying *Boa viajen* ("Good journey") lets go and off we rush.

Again we paddle and steer with brain and arm keyed to intense activity never for the fraction of a second losing the channel. Now we are lifted up over sunken boulders; now we scrape a rock;

now we pass the rockbound dugout struggling with the waters; now we have another hairbreadth escape, and then rush out into the calm below this, the third, rapid. The boys behind shout and we see that their little dugout is following closely, and it comes through safely. We all are jubilant over our success and we paddle on to the last of this series of rapids the Tracambeua. Here we have to wade, carefully working down the side as there is no channel, not even for the little dugout. After an hour's hard work we are at the foot.

We are now below all the *cachoeiras*, not counting the one far below, the Itapeua, and we are happy. We fire a few shots to give vent to our feelings, and to announce our arrival. In a short time we pass the sand-flat where we had our first meeting with the Ararandeuāra Indians, and a few turns lower down we sight Iraruna, and the good ship *Florence* proudly flying the Stars and Stripes. Shots from the *Florence* greet us and shots are fired in reply.

I climb on board, verify that everybody is safe and well, and moor the larger canoe we have come down in to the bank, where it is left and we are quickly under way in the *Florence*, after having accomplished successfully my visit to the now less mysterious Indians of the Upper Moju.

We are now rapidly going northwards down the Moju, towards Pará, and we arrive at night at the head of the Itapeua rapid, the place where I had

the fall on my back. We make fast ready to tackle this obstruction the first thing in the morning, having noticed that the water is about seven inches lower than when ascending.

At 5.45 sharp we go into the rapid with a will and a carefully planned programme, yet here we nearly lose our lives and our outfit. Only through the presence of mind of the three bucks, Candido, Skelly, and Curupira, is a disaster avoided. It happens in the following manner.

Our rope is secured at the base of a tree on the right-hand bank, just where the waters become swift and dangerous following the declivity. Hildebrando keeps watch in the scouting canoe, with one of the youngsters, with most definite and clear orders to loosen our rope when I fire a rifle shot as a signal that our craft is in the expected suitable position farther down the rapid, supported well by poles and ropes. The rifle-shot, which can be heard above the din of the waters, will direct him to follow with the rope, while we, holding the position with our poles, wait for him to fasten it to some solid object accessible by the small canoe abreast of our position. It is clear that during the moments of finding this suitable position in the midst of the raging waters and maintaining such an unstable location during the shifting of the sustaining rope, extreme alertness and accuracy are required from the man who is to make the change.

We are about fifteen feet from the shore, avoid-

ing the great swirl in the middle of the channel, and gradually and slowly we pay out rope by the inch so as to clear, at the same time, a large, dangerous boulder continually washed by the waves not thirty feet away.

Then happens the unforgivable! Hildebrando, guided y some inexplicable motive, or because of some momentary mental collapse, lets go the line completely from the tree before we are ready. Deprived of our only support before we have had time to secure the temporary position sought for, the boat gives a sudden jerk and bears rapidly down upon what seems certain destruction. An overhanging Javary palm on the shore side also threatens to overturn the vessel by striking the upper-works. If we avoid this disaster we shall pound upon the rocks with great force, which will mean a total wreck.

One man cries "Cable bust" (*cabo arrebentou*), and for an instant we all seem paralyzed. It takes some fraction of a second to realize the extent of our danger; then with a savage shout and curses the men handle our long poles so vigorously and skilfully that we barely scrape the paint off the sides of the boat as, with growing speed, we dash past the rocks.

Quick as an otter that leaps into the water after the trout, Skelly takes in the situation and, with the rope's end between his teeth he jumps into the maelstrom. He struggles hard, completely tum-

bled about by the force of the waters, while we rapidly bear down upon another rock which is now directly in our path. He reaches a tree-stump near the shore, takes a hitch around it, and hauling taut, the rope, by the tension, is brought sharply up into the air with a shrill vibrating sound, and after grazing the rock we slide into comparatively calm water. It was a narrow escape.

Hildebrando confesses that he thought I was firing the rifle as a signal for him to let go the rope.

One more manœuvre and we are free once for all from the *cachoeiras* of the Moju River. The last part of the rapid is then conquered without any more mishaps, through the judicious paying out of the rope, which Skelly so successfully hitched around a tree-stump, and guided by the long poles from the deck of the boat.

Like a shot we dart past the rocks and run the *travessão* farther down with facility, and we have now finally conquered all the rapids.

Two days later we arrive at the first human habitations and continue downstream to Curuçá, where we are informed that the steam launch *Rio Moju* had left the day before. Thus losing our chance to be towed to Pará, there is only one choice, that of paddling all the way down. In seven days, after paddling on an average twelve hours a day, we moor at two in the morning to a tree on an island called Benedicto in the mouth of the Guamá River. Due north-east we see the light

glare in the atmosphere above the city of Pará like a wide-spread fan. We await the outgoing tide, the *vasante*, and cross the Bay of Guajará.

Throughout the trip my health has been good and fever has been unknown to me, but now, that home is practically in sight, a reaction seizes me and a high fever sets in. My temperature rises to 104° within an hour's time, and I give myself a hypodermic injection of quinine, but too late. My head hammers and my blood pulses violently. As we make fast at Porto do Sal on the Pará water-front, the fever is strong, but what do I care? I am home again, surrounded by all that is good to me, and I have had an interesting trip. It is now October the 15th, 1913.

I send my official report concerning this journey to the Bureau of Indian Affairs, called Protecção ãos Indios, of the Brazilian Government, and subsequently report verbally to the chief of the above mentioned department, Coronel Candido Rondon, who at this time passed through Pará to join ex-President Roosevelt on an expedition planned through the State of Matto Grosso and down certain portions of the Rio da Duvida, or River of Doubt,[1] located in the region where he was building a telegraph line.

[1] At the suggestion of Dr. Müller, Brazilian Secretary of State for Foreign Affairs, the name Rio Theodoro, has since been given by the Brazilian Government to this Rio da Duvida, to commemorate Colonel Roosevelt's descent of it.

CHAPTER XIV

To Marajó and up the Arary River

THREE weeks after completing my Moju Indian expedition I made a short journey to Manaos, the capital of the State of Amazonas, on one of the Brazilian Lloyd boats. Manaos is located on the Amazon at the mouth of the Rio Negro, about nine hundred miles from Pará, and, next to Pará, is considered the most important rubber-exporting centre in Brazil. It is a modern city of some 50,000 inhabitants. So much has been already written by competent authors about this "city in the wilderness" that I can add nothing new. I return to Pará from this hot and uncomfortable place, where I fell sick with fever, and I am glad to be again near the somewhat cooler ocean breezes of the Lower Amazon. Nothing of particular interest happens during this journey, except, perhaps, an excursion to the famous orchid paradise, the Tarumān Mary River, an affluent of the Rio Negro. Here I saw many acres of forest literally covered with the highly prized orchids, the *Cateleya Superba* and *Eldorado*, often called by enthusiasts the queen of the Rio Negro.

Soon after my return to Pará I make a series of explorations through the heavy timber district of the Bragança railroad where I gather extensive collections of specimens of the choice hardwoods of these great forests.

Then I prepare for a second journey to the Marajó Island to investigate this remarkable region at the very mouth of the Amazon. I have already made one journey there during the wet season, but I desire to fuse my narrative of both trips into one description to avoid unnecessary and tedious repetition.

The narrative as it here appears, therefore, relates, in the main, the happenings of the second journey, referring, where it becomes necessary, to such distinctive observations as were made on the previous trip.

With my crew somewhat reduced now, consisting of Skelly, Hildebrando, and Fielo, on the exploring craft *Florence* I leave Pará at 11 P.M. with the outgoing tide in our favour. Our stores are replenished and we are equipped for a month's absence. Our tools are mainly composed of digging instruments, besides the usual photographic and medical outfit.

We paddle across the channel to Ilha das Onças, opposite Pará, where we make fast, as the tide has turned, rendering progress very slow and laborious. The long row of electric lights from the docks of Pará shine clearly through the intervening space

as we turn into our bunks for the night. At 5.30 in the morning we are under way again. We follow the wide channel between Arapirānga Island and the series of minor islands which extend from Ilha das Onças north-west towards the great and turbulent Bay of Marajó, and around noon we arrive at the island of Cutijuba, the last of the series which forms the archipelago between the mainland and the Bay of Marajó. As we approach the extreme end of this island a very strong current seizes us and we run ashore to avoid being carried out by the ebb tide. At noon we make fast outside the lighthouse of Cutijuba and examine the conditions for making a quick crossing to the island of Marajó the shore of which is barely visible northerly in the distance. The keeper of the lighthouse advises us to return to Pará, for he judges it extremely unsafe to cross the very wide main channel in such a small craft, especially propelled only by oars or paddles, but the lighthouse keeper forgets to reckon with an explorer's desire to push ahead in spite of obstacles. The main channel, really an arm of the sea sometimes called Rio Pará, is here about twelve miles wide. It is the outlet of the Tocantins River, and forms also through the numerous channels, called *furos* by the Brazilians and "narrows" by the English navigators, connecting behind or west of Marajó with the great trunk river, the eastern estuary branch of the Amazon River or Bocca Oriental. The western

(or northern) branch, which is not navigable for large steamers, is divided by many inundated islands into various dangerous passages (the two chief ones being known as the Northern and the Southern Channels), having on the left-hand bank the Brazilian Guyana and on the opposite shore the Marajó north coast.

White combers go chasing up the sea-like surface of the wide channel, raising a choppy sea with wind and tide struggling for supremacy. A strong breeze is blowing from the north-east; directly from the ocean. At four in the afternoon the wind turns north-west.

We are now anchored with a heavy stone drag some fifty feet out, and although we are fairly well sheltered we still feel a long swell beating in from the open channel some five hundred yards off. We make everything fast and turn in, waiting for the calm that usually falls over these waters at night. At midnight we turn out again and paddle into the great bay, steering due north-west by the compass, where we know that the mouth of the Arary River is located, on the Marajó coast. We are scarcely two hundred yards out when we are caught by some rather high seas and we resolve, after some heroic attempts, to return to sheltered waters and wait for more favourable weather conditions.

Finally at 5.30 the dawn helps us to put out into the open with renewed courage, while the

people ashore stand gaping at the sight of the little white-painted craft slowly wabbling towards imaginary destruction.

The sky is clear, and the sea calmer than during the night. A haze is hiding the Marajó shore from sight, and we soon find ourselves paddling in choppy water without a sight of land anywhere. For company we have a little fishing vessel cutting through the waters in the distance.

Everything on board is rattling loose; pots and pans float among salt and jerked beef; rifles lie among books and papers; but things have to rattle the best they can, as my attention is all given to safe navigation.

Every sea throws us out of our course, striking us at an angle, and I have to fasten ropes to the tiller post to absorb the shocks from the rudder. Like a drunken man we go wallowing through the waters, but somehow at 8 A.M. we find ourselves midway across. Land is now in sight. We are heading directly for the mouth of the Arary River, allowing for the drift due to the flood-tide. At 10.30 we approach an island called "Island of the Doves" (*dos pombos*), a small weather-beaten islet about half a mile outside the mouth proper of the Arary River.

The sea is breaking all around us but we paddle gaily on and, at high noon sharp, make fast outside a place called St. Anna. A deep-sea trawler has found its way to this forlorn place and I climb

on board to investigate. A big negro greets me and invites me to take a rest in his hammock. The tug, he says, belongs to a Dr. Miranda and has been laid up on account of financial difficulties. She was built in France, came across the ocean under her own power (kerosene), and has been doing deep-sea fishing off the Guyana coast.

We leave St. Anna shortly with the high tide and proceed up the Arary River and our boat making fine time we arrive, at sunset, at a place called Mutá, on the right bank, where we tie up for the night.

The Arary River vegetation is entirely different from anything I have so far noticed, due no doubt to its proximity to the Atlantic Ocean. The trees I see lining the banks are slender, branching trees, resembling somewhat the birch. In front of these *ciri-ūbas* stands a belt of mangrove trees. Perhaps no tree is so weird-looking as these swamp trees with their tangled roots. There is hardly any main trunk to them, as the roots rising far above the highest tide seem to join the branches without any special thickening of the stem. Nothing but slimy mud and ooze is to be seen anywhere; there is no place to moor your canoe and land.

After a frugal meal we turn in. The tide is running out and makes it impossible at this time to progress. Two sailing vessels lie alongside, with the up-river town of Cachoeira as their destination,

where cargoes of cattle for Pará's meat supply are to be taken on.

I throw out a number three fishhook tied to a string with a piece of meat as bait and right here obtain a good demonstration of the voracity of certain Amazonian fish. There seems to be no limit to a man's liberties when recounting fish stories, and no field on earth is so inviting as the waters of the Amazon, therefore I must be reserved and guarded in my expressions so as not to give rise to undue criticism, but I may say that hardly have I thrown the bait into the water, not seven feet from the boat, before a snapping and jerking announces that something is assuredly biting, and biting hard. When pulling a fish in, struggling and dancing, there invariably comes a moment when luck more than skill will determine if the fish is to be ours or is to return to its native home. If the pulling in is too strong, the fish often drops back into the river; if too careful, it will drop off just as it is being hauled over the gunwale. Anyhow at this time I actually get fourteen piranhas in ten minutes, counting twelve that escape as they are being pulled in.

The piranha is called by many travellers, a man-eating fish, and I fully believe that they will eat a man if he drops into the water where these extremely voracious fish abound. The jaw of the piranha shuts like a steel trap over anything it attacks, and before one really knows what has

happened the vicious fish is gone. Almost all Amazon by-rivers and lakes contain these much dreaded fish in great numbers.

The night is rainy and consequently pitch-dark even early in the morning when we turn out and prepare breakfast. At seven the tide turns and the *vasante* or emptying of the waters begins. Here I notice one of the strangest tidal phenomena I have so far observed on my trips on these tidal rivers of the Amazon Delta. The outgoing tide, or ebb, lasts from seven A. M. to five P. M. or ten hours of constant emptying. It seems quite contrary to the natural laws of high and low tide and I cannot arrive at any plausible solution. We stop for lunch at a lonely and poorly built house. The man is out in the forest while the woman is preparing his meal. This good woman is in need of coffee and sugar and I help her with a present of some. In return we receive a dozen eggs.

The Arary River is narrow here, not over one hundred feet wide, and the same profuse vegetation covers its shores. Now and then, as we ascend, a grove of bamboo breaks the monotony. In the late afternoon we see three old alligators, their nostrils and eyes just above the surface of the water.

The night again comes on dark, and we lose sight of the details of the banks, but it seems as if the forest is thinning considerably and in places is absent entirely, but the lack of light prevents me

from seeing what is behind. Towards 9 P.M. we discover lights, and sky-rockets ahead and hear bombs and the snorting of a distant brass band. We are heaving in sight of the village of Cachoeira governed by Dr. Miranda, formerly a student at Columbia University in New York. We seek a narrow channel leading to the town and go ashore. There is a festival on. The municipal band is merrily warbling along, some members a little behind time, others a little ahead, but it does not matter for they finally catch up with each other in the grand finale and the population is quite insensible to discords.

I send my card to the Mayor; a true explorer is always provided with visiting cards even in the darkest jungle, for one can never know whom one will meet in the most remote places.

This seems to be a flourishing town judging from the happy faces and the gay-coloured skirts parading round the little church, under the multicoloured banners. Young, pale Brazilians, no doubt connected with the administrative offices, sit or walk around escorting their dark complexioned ladies, who I judge from their glances, look upon such a bedraggled, khaki-dressed explorer as I am now as a contemptible creature, unfit even to venture within the borders of such a centre of social splendour and the élite. I, therefore, draw up in a dark corner of a shed where the more humble populace are finding solace, imbibing alco-

holic beverages and lukewarm beer at 2000 reis (2 milreis) a bottle. I enter this modest place of thirst followed closely by Skelly, who, on this conspicuous occasion, does not want to be of less imposing appearance than his equals and has quickly put on an old celluloid collar and an old coat, and twirls a cane which on less important occasions is used on board the boat as the official jerked-beef roasting spit.

In view of the general hilarity, and the inspiring strains from the over energetic brass band, I feel that now is the time to show the admiring crowd some style and I nonchalantly order a bottle of ginger ale for which I am charged sixty cents (American). By this time I am the centre of attraction, much against my desire. Skelly, who cannot let this glorious affair pass without "blowing" himself, orders a bottle of real beer and a large black cigar which he loudly enjoys in another corner.

Young negresses and *caboclos* snicker and giggle as we pass them, and after we have witnessed a couple of religious sky-rockets shoot towards the stars we retire on board the *Florence* to wait for morning.

Early in the morning I go to visit the Mayor at his house. I am cordially received by this educated and progressive Brazilian and am entertained in excellent English. He places a small scouting canoe or *montaría* at my disposal and he writes a

letter of introduction which I am to hand to his foreman on a cattle ranch called Tuyuyú on the Upper Arary River. After our coffee and bread I take a stroll around the village.

It is truly a prairie village, as I now for the first time observe. Behind, and all around, the forest is gone and instead I see only here and there, straggling, twisted trees scattered over a prairie said to extend some ninety miles, clear to the ocean. A refreshing breeze sweeps over the fields, creating a most homelike, swishing sound as it rushes through the grass. On the outskirts of this village a couple of horseback riders go galloping in the other direction. A windmill, rotating a little crookedly, but after all rotating, operates a pump and furnishes the progressive and well-to-do people of the town with water for household use. Down by the river front is a small house with a smoke-stack attached. Inside this is an electric dynamo supplying the few streets with light. It seems natural that if one is a mayor and has studied four years in the Columbia University engineering department, one must show something for it. This man is plainly furnishing the proofs, for the engine employed has been reconstructed from an old Pará mud-digging machine.

We buy some fifty loaves of bread and some tin cups for the commissary department of the expedition and take our leave although the outgoing tide is still running strong and dead against us. Just



The swampy prairie of the Marajó Island
(By courtesy of Dr. J. Huber, Pará)



A grove on the Marajó prairies
"The high-water mark of the wet season is shown by the cut-off foliage"



A scene from the Lower Arary River

above Cachoeira village the river narrows to about eighty feet, with low shrubbery and an occasional *parapará* tree close to the banks.

It creates a fresh and agreeable impression upon us all to be in the open and free again after the many dark canyon-like rivers which we have slowly paddled through on our several journeys. The bucks feel far happier and they sing and enjoy themselves as they have a chance to observe new points of interest.

The main variations, from anything I have seen before while on the Amazon, are the open, unobstructed prairies with little groves of trees and shrubbery sticking up like islands in a green sea. These "islands" are called in the local language *tesos* and represent the only places of refuge for cattle, when during the wet season almost the entire island is submerged to a depth of several feet. The general level of the land is barely a yard above the river surface, and as the total difference of altitude between the centre of the island and the ocean does not exceed many inches, it is easy to imagine that the inundation is a general and complete one.

The grass seen in the picture is a long grass called *cana-rana* and we shall shortly see the troubles that this grass causes us.

Towards noon I order the bucks to put me ashore while they continue the up-river paddle. The going soon becomes difficult for me, although the

prairies from a distance look dry and firm. Tall reeds, and a so-called wild cotton-plant, reach about as high as the head of a tall man and any free view thus becomes obstructed. It is in such vegetation that the various poisonous Marajó snakes thrive and reach a great development.

One of the first things that strikes me after reaching these open, half-dried prairies is the abundance of all sorts of wading fowls. Indeed, it is a true ornithologist's paradise not to be excelled in any other part of equatorial South America, the main river not excepted. It is from these vast swamps and fields that a large part of the great egret feather supply reaches the fashionable world. Thousands of these beautiful, snow-white marsh birds spot the landscape like snowdrifts among the various shades of green and sunburnt grass. The large *garça real* or royal egret walks with much dignity between the low vegetation on the water front. When I approach they lazily jump into the air on their tall, thin legs and fly away with slow, dipping motions.

Great flocks of equally pretty pink birds about the size of our herons rise into the air like a pink cloud. These are the scarlet ibises, which here are called *guará*. Sometimes a few stray among the egrets, where they evidently get along splendidly, wading around among the (so-called) *mururé* plants or water hyacinths looking for small fish, frogs, and shrimps.

He who once has seen these landscapes where the egrets and the pink *guarás* live their happy existence, will never morally sanction the egret commerce. In order to obtain the delicate feathers so much in favour with ladies, it is practically necessary to kill the birds. Many times the feathers are demolished by the shot and the bird is then thrown away.

He who has walked in these egret swamps and seen the little downy, helpless, starving egret chicks that are left when a mother is wantonly killed, cannot help but recall the same sad picture later when he sees the fashionable hats decorated with egret feathers. Fortunately the American Government has taken determined action to prevent the wanton slaughter and extinction of these and other birds.

Less decorative but more useful are the *marécas* or wild fowls of many varieties, known mainly to naturalists. Their habit of flying in a wedge-shaped flock, led by the oldest and most experienced guide, I also observed here. Many large and small wading birds run along the river bank and seem quite unafraid. Large, clumsy stork-like birds standing four to five feet in height, the *jaburú*, with a white and black plumage, I often surprise at some turn of the river. Almost every fifth tree on the water front has a rust-brown chicken hawk (*gavião*) uttering its insolent, daring cry as I pass.

Now I begin to sight some large alligators, but

not so many as I expected. These, I am told, become really numerous the higher we ascend the Arary River.

At 2 P.M. I stop at a small hut set amidst some trees about fifty yards from the shore. The hut is of the same dilapidated appearance that I observe everywhere throughout the Amazon valley. The ground here must be quite a few feet above the flood level as this hut is not built on stilts but is merely plastered with clay from the ground up.

A great many children, young men and girls, and older people greet me very cordially and I sit down to talk to these good *caboclos*. It appears that they have lived here all their lives and know the prairies to perfection. The old man informs me that he has now and then found some old pieces of pottery made by the *gentios* or Indians. He cannot quite explain the origin of this pottery on these plains, but I soon realize that he is referring to ceramics of a pre-historic type.

"How do these pieces of pottery look?" I ask.

"Oh, they are all broken up, although sometimes I have found whole vases and large basins with all sorts of figures on them. Some have faces of monkeys, tigers, alligators, turtles painted on them, others show the faces of people (*cara de gente*) with the features wrought out in the burnt clay."

"Have you got any here?" I promptly ask him.

"No, all those little saints (*santosinhos*) I gave to the children to play with, as they are no use to me, and they have been broken or lost. One large *ygaçába* which I found buried under the roots of a tree on one of the islands on the prairie, which had a lot of figures and designs, and I don't know what, painted on the inside and outside, I gave to my wife to put our salted *pirarucú* fish in, but one day a gentleman from Pará came to visit me and as he was so anxious to have it I gave it away."

I obtain fairly good information about the location of the places where such rare pottery can be found, and as all these were designated as being several days' journey up-river I thank the man for the tidings and we set off in a pouring rain.

CHAPTER XV

Ranches and Ranchers of Marajó

WE paddle till eleven that night, regardless of the action of high or low tide. In the early morning we are off again after the usual coffee, with fresh bread bought in Cachoeira. The day begins with showers and heavy winds, which at first are in our favour, but on making the next turn of the river become much against us.

We have not gone far when some excitement is caused by the abundance of alligators. The presence of these saurians tempts me to try on them the effect of a Luger automatic pistol, and for this purpose I go ashore and walk ahead of the boat. Continually I could discern about a dozen alligator heads on the surface of the water. Close to the margin there are always some younger alligators in motion, while the larger and more experienced ones seem to take life more leisurely.

I secure a seat behind a tree trunk close to the water and wait for one to appear. The canoe is still some two hundred yards downstream, being paddled slowly towards me. A large alligator,

only some thirty feet away, comes floating with the current. As I raise my hand to draw a bead on a point behind his ear, the wary alligator grunts and dips under without any apparent motion; he simply sinks to the bottom. A moment later a young "gator" passes with the speed of a canoe. This time I have my pistol raised and am about to pull trigger when the saurian imp beholds my face and he too dips into the muddy deep right above the place where the larger alligator disappeared.

The *Florence* now approaches and at the same moment a medium-sized alligator passes right under my nose. The pistol makes one report, which hurries the bucks along, and the alligator begins a battle for life. The bullet must have struck its diminutive brain, a very easy attainment as it was no more than fifteen feet away at the time. It wallows, and beats the water with its powerful tail, grunting and splashing blood. In a shorter time than it takes to reload a pistol magazine with cartridges, the water is boiling with shoals of the vicious scourge of these waters, the piranhas, which, attracted by the blood, try to attack the almost invulnerable alligator. It is a morbidly attractive sight, this battle of a mortally wounded alligator, the most cruel and least deserving of pity of all existing animals, and the school of perhaps thousands of the saw-toothed, equally voracious piranhas, the dread of the river people.

By this time Skelly has swung himself into the small canoe trailing behind the boat and is paddling with all his might to arrive on the scene before the alligator loses its buoyancy and sinks. Shortly its fight ceases and it floats belly upwards, the whitish square plates of bony armour reflecting the light, but at the instant Skelly arrives with his three-pronged steel harpoon, ready to strike, the body disappears in the muddy waters and, to our great disappointment, cannot be recovered. We poke thoroughly with sticks and harpoons in the mud but no traces can be found of the dead alligator. The picture shows this spot, while in the river farther back appear four alligator heads just even with the surface. In the extreme background to the right, the narrow belt of low forest growth is seen merging into the prairie.

Again I let the boat continue upstream without me, this time in order that I may explore farther inland, intending to cut across the fields to some turn of the river a few miles above. In front of me is the grass-grown prairie tolerably dry at this season. About a mile off is a fairly large *teso* or prairie island. This I intend to visit. Several miles eastward I see a herd of cattle, the first noticed so far, but as to the condition of the cattle the distance is too great to determine.

Half-way to the *teso* I come to a pool about the size of a large room. A hoglike animal rushes into the water when I approach. I know right away

that this is a *capybara*, a rodent weighing when fully grown about sixty to seventy pounds, and edible. This would mean fresh meat if I could secure it.

I stand stock-still to discover the whereabouts of the *capybara*. When my eyes become accustomed to the monotony of the greyish-yellow water I see the tip of the animal's nose sticking out. I draw a bead on the place when it moves, literally walking on the bottom with its entire body submerged, and when it comes out I hit it straight in the head and it drops on the opposite bank. Upon closer examination it proves to be an old male with a tough reddish-brown fur, and full of old sores and bites, no doubt caused by piranhas when it has been fording some creek. These sores looked so unappetizing on account of the animal life they harbour, that I give up the thought of cutting some good slices off to carry on board, and I abandon the capybara then and there. Some *urubús* are already circling high up in the air, having scented from way off a prospective meal.

Presently I reach the *teso*. The forest growth on it is just as dense and tangled as in a true jungle, with the possible exception that the bottom and *sousbois* is lighter. This *teso* is much wider than I expected and it takes me almost an hour to arrive at a clearing on the opposite side. In the centre of the *teso* is a slight elevation, possibly some six feet above the forest bottom. Suspecting that

this may be one of the mounds of the extinct Marajó Indians I commence to dig with machete and hands in several places, but at the depth of three feet nothing is encountered save old roots and branches.

Where the forest clears away I find that the *teso* is forming a "bay" so to speak, where in the wet season an ordinary canoe might easily be navigated. This bay is now covered with a harsh grass growing in large tufts. Across this bay a trail has been made by the mammals of the *teso* and the prairie, principally by the *capybaras* seeking the nearest way to a water hole. A narrow band, some seven or eight inches in width, has been drawn parallel with this trail, as if some long object has been pulled over the grass; in fact, the grass is still rising in places, suggesting that the long object has passed very recently. It was no doubt a *giboia* or land boa-constrictor.

There is something repulsive about this *teso* to me, why, I hardly can explain, but, at any rate, it is the first time that I hesitate about tramping through the bush. Along the edge of this forest I find later some skeletons and horns of cattle, hardly left there by anything but accident, as no cowman will kill his cattle and leave them to rot in the field.

Rain now begins to pour in torrents and I resolve to cut across the prairie in continuation of the direction I have chosen. I discover a house on

stilts high above the ground. Some cows with their calves are in a corral nearby, while several horses are tied to the posts of the house. I seek an entrance to the house, but find none. Through a hole in the wall heads are thrust out, bidding me go around the house, and there a ladder is lowered for me and I climb up with water dripping from hat, coat, and boots. Four *vaqueiros*, or cattle-herders, live here with their families. All seem to be sick and miserable, without life or energy in their thin, emaciated bodies. They look more like consumptive inmates of an insane asylum. They express their great surprise on seeing that inside my khaki coat my shirt is perfectly dry, and nothing could exceed their astonishment when I draw an American "parlour" match from its safe and strike fire for my pipe on the soles of a pair of riding boots hanging on the wall. This promptly brings a cup of coffee. I inquire about old pottery, but nobody has ever seen any. They inform me, however, that the river is still an hour's walk away at right angles to my course and that a small trail nearby will take me there.

I presently depart and take this trail. A herd of some two hundred head of cattle pass me half a mile distant. They look long-legged, lean, wild, and unapproachable. Then I discover a peculiar figure striding towards me across the fields,—a person dressed in a suit three times too large and long, wearing number ten shoes on number three

feet, and carrying a rifle almost equalling his own length. It is Skelly! He has come ashore to look me up, fearing that I had become lost. We follow a dried-up creek until we strike the Arary River and there we wait for the boat. It is 2 P.M. before we are on board again. I take an alcohol rub-down and change my clothing while the boys paddle on until 6 P.M. when we reach a large ranch, and stop there for the night.

The next morning after having breakfast I go up to the ranch house. Here I encounter two of the most phlegmatic individuals which it has ever been my luck to meet, and, considering that the two men are true Brazilians, the case becomes still more interesting if not wonderful.

It is six o'clock when I enter the house and am motioned by an elderly man there to rest in a hammock. As the man seems plunged in profound thought I do not venture to disturb him, but quietly recline as he directs, at the same time hoping that a slight attack of fever I have will pass over before I need to leave. A few minutes later another man enters and shakes hands with me, and he is invited by the first one to take a rest in another hammock.

"*Si, senhor,*" replies the newcomer as, lighting a cigarette, he accepts the invitation. "*E' verdade,*" answers the elderly ranch-owner with a most convincing nod. *E' verdade* means "'Tis true indeed."

I expect now that a lively conversation will follow this beginning, involving the results of the late fall round-up on this ranch embracing some twenty thousand head of cattle. But nothing further is said; so I conclude that the other man is equally lost in thought and I continue taking down notes in my diary. After a good while I hear one of the men clearing his throat preparatory to speaking, and as the silence has been unbroken for so long I look up with great expectancy to catch the golden words.

"*Si, senhor,*" is all he says, looking out through the window at a corral. "*E' verdade,*" answers the other after a pause of some ten or fifteen minutes. Evidently he has been pondering the meaning of the speaker's words. I hear nothing now for another long period and, feeling quite drowsy and uncomfortable, with the fever beating up my pulse to a high speed, I lie back and doze off. Suddenly I start up with a cold perspiration streaming down my face. The rancher has spoken very suddenly, saying "*Si, senhor.*" Assured that nothing serious has happened I lean back again, only to be aroused once more by the laconic answer "*E' verdade.*" It is now getting towards ten o'clock and I have heard nothing but two brief sentences which apparently constitute the whole conversation of these two Marajó philosophers: "Yes, sir" and "'Tis true indeed."

Around noon, when the sun is beating down

upon the great prairie outside the visitor rises and says: "'Tis true indeed; I am going now."

"Wait for the coffee, it is on the fire already," answers the placid ranch-owner.

"No, I have work to do to-day," responds the other.

"Good, then come a little earlier to-morrow so that we can have another conversation."

(This conversation in Portuguese is as follows: *E' verdade, agora vou embora—Espèra o café, ja' está no fogo—Não, tenho de fazer hoje—Pois, então venha a manhá mais çedo para nos conversar.*)

As my attack of fever is now passing I also say good-bye and walk away. Such a spirited conversation is really trying on the nerves!

After several more hours of paddling up the Arary we heave in sight of a large ranch house called Fazenda Arary (*fazenda* means "ranch," or "farm"). This was formerly the national cattle ranch but has been taken over by some members of the great Lobato family. The old building, originally built by monks, although now dilapidated, seems substantial enough with its solid stone and brick structure. A windmill driving a pump stands in front of the house.

As we pass this house our identity is mistaken. A man shouts, "How much are you selling it for to-day?" The "it" I soon learn refers to *cachassa* or unrefined rum of the rawest grade. Soliciting the sale of this on the rivers is prohibited by law.

"What are you talking about?" Skelly answers back, shouting with full force, "This is a scientific expedition." The word "scientific" is intended to cause both awe and respect at the same time, but we are still misunderstood, probably on account of the increasing distance, for the thirsty man on the beach, forming a funnel with his hands, shouts "How much is it? Mil five hundred." *Mil quinhento* or one thousand five hundred *reis* corresponds to forty-five cents American money, the price for one gallon.

As we do not answer this good commercial offer he returns to the house, no doubt uttering vehement language.

Several times we are thus misjudged; for instance, when we hoist our flag in commemoration of a national holiday, I am taken for a perambulating evangelist making a soul-saving expedition among the semi-aquatic cowboys. I would often catch the remark: "Là vae o santo" There goes the saint. Many times we pass canoes whose occupants think we are rum peddlers, and yet being in doubt, and fearing some revenue agent, they hold a hand out with the thumb pointing down wards, indicating a "secret" question.

But our craft has nothing disreputable about its looks. It is a clean-cut, white-painted boat with roof and cabin. The crew is always attending strictly to business, and business-like implements occupy their proper places on board. What it can

be that links our general make-up with either evangelism or rum peddlers is beyond my comprehension.

Shortly beyond this ranch the river navigation becomes difficult, even for our small vessel, and it certainly would be impossible for any larger craft, or for a launch. The entire river does not narrow to any great extent, but the navigable channel is reduced in places to a width of six or even five feet. It is the floating mass of *cana-rana* and *mururé* plants that causes all this trouble.

The *cana-rana* grass grows in large tufts and its roots never fasten in solid soil, but thrive in the water and often form bogs. The high waters tear large areas of such *cana-rana* tufts and float them down the rivers. They form veritable islands, which of course would not support any weight beyond that of a bird. The *mururé* plants also gather in large floating tufts, as the base of the leaf stem is inflated like a balloon and gives them buoyancy. Great areas of these floating islands come down the river from the headwaters and smaller affluents, and get caught here and there on snags or on projections near the shore. Therefore we find the sides of the river clogged up and only a narrow centre channel passable.

Occasionally a large *cana-rana* floe loosens and floats downstream until it gets caught. Then gradually the edges of this floe will become loosened by the current near the channel and small floes will

separate and drift downstream until the entire floe has either been further jammed up against the sides or else altogether disintegrated.

Sometimes we have to halt for such a disintegrating floe to pass us, losing hours in tedious waiting. To venture to navigate through such a mass of tangled vegetation would be foolish, a fact that we had occasion to verify.

Very few habitations are to be seen until we arrive at a ranch called *Tuyuyú* belonging to Mayor Miranda. Here we stop to obtain rest.

The ranch house is neither very good nor very bad. The *administrator*, as the foreman is styled here, is a young wide-awake Spaniard. The ranch, he says, handles about 18,000 head of cattle. Another on the opposite shore of the Arary River is much larger and stretches as far as the river Anajáz. That ranch belongs to an old woman, Leopoldina Lobato, who after her last round-up reported 65,000 head of cattle.

The *Tuyuyú* ranch spreads over some thirty-five square miles in area and extends to the shores of the Arary lake.

It is very costly to mark ranch limits here as each proprietor has to fence in his land with many miles of barbed-wire netting and fence posts. As there is no timber available on Marajó Island, the posts have to be brought in vessels from Pará, which adds greatly to the cost. As a rule, one man

or even two are employed permanently to make the rounds and keep the fences in good order.

From what I subsequently observed while travelling around Marajó, the *vaqueiro* or cowboy here is but a poor imitation of our breezy Western "bronco buster"; indeed almost a parody of a cattleman as understood by an American. If he is a *caboclo*, he is generally not so weakly and miserable as the white Brazilian cowboy. This latter person seldom sees a coin in his hands. He is thoroughly demoralized by his proprietor, who employs a system similar to the one which has done so much harm among the Amazonian rubber-workers.

His stature is typically Brazilian, with sloping shoulders and a greyish-yellow complexion, advertising a sick stomach and a white liver.

The Brazilian cowboy's skill as a cattleman is very rudimentary and restricted. I have seen some who have been in the business since the time of their birth, so to speak, who, inside of a small square corral could not lasso a horse, until another cowboy finally went up and caught the horse by the nostrils.

I witness, during my total stay of six weeks on the prairies of the Marajó, three round-ups which do not impress me as being well managed nor composed of skilled cow-punchers. Nobody is in command; everybody consequently is giving orders to everybody and nobody obeys; lariats made of cowhide are swung in true moving-picture

fashion, but they seem to lose all life and energy the moment they leave the thrower's hand. The horses employed seem far better than the men, and travel very swiftly over the swampy, root-entangled marshes and soft ground.

But how can a cowboy be a real cowboy when he is underfed and underpaid, if paid at all? There exists no definite arrangement between employer and employee, the latter entering the service too afraid to ask for his terms. In this manner he continues to the end of his days. Besides he has to attend to all sorts of duties, such as fishing, sheep-herding, and, in the western part of Marajó, cutting rubber. If there is anything a true cowboy detests, it is sheep-herding. The Brazilian cowboy, therefore, is a peculiar individual, semi-aquatic, dividing his time between the duties on board a canoe and in the saddle. Many times when horses are scarce, they use bulls or steers for riding animals, saddling them precisely like an ordinary horse, and it is surprising to watch these bull-riders cover ground. Through any kind of semi-solid slush, through the highest kind of wild cotton fields, these heavy animals plough along at a good rate. Altogether cattle seem to serve the purpose better than horses as they also reduce the actual loss considerably in case of snake-bites. The *jararáca* and *surucucú* snakes are very frequent on the prairies, specially after the waters commence to recede, when it is almost impossible

to walk a mile without seeing some sort of poisonous reptile sneak away through the *cana-rana* grass. There are also many rattlesnakes on the prairies, according to the people, who call them *cascavēl*, but I never had the opportunity to observe any.

Generally speaking, this part of the island—that is, the central portion—is very rich in reptilian life, and there is hardly an inhabitant who cannot tell you of some *sucurujú* (monster water boa-constrictor) hidden in some particular grove of *aninga* plants. On the *mondongos* farther north some veritable monsters have been encountered, but as the people are very much afraid of touching a snake even after it is dead there is not much hope of obtaining a good-sized skin, unless one goes to look for it oneself. As always I am on the keen look-out for large snakes, bearing in mind my friends in the States, and should I ever see one, no matter what the size or what the time of the day, there is no telling how the encounter will terminate.

This *administrator* invites me out on the field to round-up a young bull. After an hour's ride we come upon a herd browsing under shady trees in the middle of the *teso*—a prairie "island." The bull is cut out of the herd and after much ado is finally killed and carved up for use during my expedition.

An old white-haired *caboclo* informs me that

on a small islet called Pacoval, situated in the lake that feeds the Arary River, there exists a great deal of broken pottery which he supposes was made many years ago by Indians who then inhabited the Marajó Island. This information is corroborated by the *administrator*, who often goes to give orders to an old fisherman who inhabits that remarkable island.

With our fresh meat on board we continue our way upstream and during the afternoon we make but poor progress on account of floating-grass islands composed of the *cana-rana* and *mururé*.

Then a heavy rain and thunderstorm set in. The storm sweeps over the open prairies with unimpeded force and further interferes with our progress as the low tree growth of the banks affords but little shelter. The river now broadens considerably, forming lagoons on either side, which apparently never dry up. A large tree grows in the middle of the particular lagoon depicted in the illustration.

In the afternoon I make a long detour over the prairies to get some game for supper and manage to kill two *capybaras*. The fields are yet half soggy in spite of the hot sun during the months of the dry season. The recent and frequent rains have softened the top-soil and walking is difficult. Small groves of wide-spreading trees spot the immense prairies in front of us, and under the deep shades of the foliage we generally find some

mammals reposing. *Capybaras* and deer here sleep together in common harmony, and now and then a paca with its three horizontal stripes on a reddish-brown fur is seen scurrying across the fields when we approach. Following a creek we come to its headwaters, and here the only sign of a large amount of water in the wet season is the wide river-bed, devoid of vegetation but bordered by a narrow belt of low trees.

Hildebrando follows me as I go exploring in the dry river-bed. Here and there I find small pools with lukewarm water and in some of these there are dead fish which have been trapped when the water receded. We come to a larger pool and perceiving a movement under the water's surface I indifferently venture the opinion to Hildebrando that there might be a *jacaré tingá* (species of alligator) at the bottom.

"*Vamos vér*" ("Let us see"), laconically says the buck, and jabbing his foot into the ooze, stirs it around to find out. With a jerk and a jump he draws his foot out of the pool; blood trickles from half a dozen scratches, while a violent commotion in the small pool indicates that something there has been disturbed.

"*Tém*" ("There is"), is all he says and we walk away, after the proof had been furnished and my inquiry answered.

Late at night we pass the mouth of a river called Anajáz-Miry. Some of the river people have told



A Marajó cowboy
"The *vaqueíro* or cowboy here is but a poor imitation of our breezy Western 'bronco buster.'"—(Page 296)



A dried-up river bed on the Marajó prairies
"Following a creek we come to its headwaters."—(Page 300)



A scene from the Upper Arary River
"Dreary wastes of unreclaimable land on both sides."—(Page 301)



A cowboy's hut on the Marajó
"—we stop at a weather-beaten hut on stilts."—(Page 302)

me that some days' paddling up this affluent there is a mound, some fifteen metres in height, containing a great quantity of pottery of ancient origin. From the mouth of this river and to the sources of the Arary River we find about a dozen ranch houses. As we can find no shore line on this part of the river, the lowlands being inundated on both sides, we tie up to the trunk of a tree at midnight. Before turning in the bucks climb up the tree to catch some roosting birds. I let them climb, thinking that they will catch nothing but a nest of fire-ants or Marajó wasps, but here I get a surprise. They literally pluck the sleeping birds off the branches and put half a dozen little songsters into an empty farina basket. The natives are very fond of *cherimbabos* (pets of any kind) and as they always treat them with great care I have no objections to my men having them. In fact, the twittering of a pet bird on board will add a tone of cheerfulness.

I have astonishing luck fishing with a hook baited with old pieces of jerked beef. As usual the fish caught are piranhas. One of these beasts took a strong hold on my boot with its semicircular jaws and only let go after being kicked off.

At five next morning we start again and pass long *estirãos* of low half-inundated fields, with dreary wastes of unreclaimable land on both sides. Shortly before noon we run in sight of a

series of huts constituting the settlement called Genipapo. Here we stop at a weather-beaten hut on stilts to have a conversation with its owner. He is an old negro who has been living here for many years. He supplies me with much valuable information about the vicinity. He says the head of the Arary River is but a short distance from here and that Lake Arary will be visible at the next turn of the river, and on this lake I will find an old fisherman, called Ludovico, who lives on the mysterious island where much Indian pottery is to be found. Eager to arrive at our destination we depart, after having left some sugar and coffee with this man's wife. At noon we note a considerable narrowing of the river and a consequent increased force of the current. On the left-hand bank a low bush grows on top of an uneven surface of reddish blocks of what looks like solidified clay. The opposite shore is low, hardly three inches above the surface of the river, and extends into a large field. In the middle of this field is a small crescent-shaped elevation around which cattle are browsing on the low, burned grass, and directly in front of us we behold a large expanse of water agitated by strong winds.

We have reached the source of the river—Lake Arary.

As we make fast at the very outlet of the lake, the wind blows east-south-east, causing the yellow, dirty water of the lake to churn into an

ugly, choppy sea. We soon discover the reason for such troubled water when sounding the depth, which in places is as little as three feet with occasional holes of six feet.

We make ready to cross the lake, which appears to be about four miles wide. The first question which confronts us is finding a channel that may lead us through the deeper waters, so that we may reach the opposite shore. We can now distinguish a small island very close to the other side in a north-east direction, and I know it is Pacoval Island. I can see a large tree in the centre of this island and with this landmark constantly in view we make our first attempt at crossing.

Just as we pole our way in search of a channel a swarm of black wasps comes out, in face of the strong wind blowing from the north-east, and settles on clothes, tackle, and baggage. These large and powerfully built wasps (*cáuas*) become angry as we try to fight them off, and they begin to buzz around us to sting. Our navigation at the moment is very difficult, the heavy wind and the twisting seas requiring all our strength to prevent drifting ashore on the lee side. Finally the wasps get the better of us and we are compelled to run to land.

The situation is disagreeable and irritating. I had to use strong and forcible language to persuade the boys to renew the fight on wind and tide in spite of the wasps and at length we get the

boat some fifty yards from shore where the insects abandon us and fly back. We struggle for an hour without making any headway at all and then drive four poles into the soft mud bottom and lash our boat to them.

As the wind does not abate I resolve to cross the lake in the small scouting canoe drawing only some six inches of water. Fielo stays on board the *Florence* as guardian of the boat, while Hildebrando and Skelly, armed with two poles and paddles, set out with me to fight the way over. Being so near the goal of my journey I cannot wait longer to land on the island.

It proves a much more protracted and desperate journey than we expect.

The farther out we get, the higher rise the waves with the increasing wind. The lake must be of considerable length, running due north and south, because neither extremity is visible. I learn afterwards that the lake is thirty-two miles long.

Indeed, it is a long, hard struggle, the wind and sea directly in our faces. When we progress two yards with a mighty effort on the poles, the waves, combined with the stickiness of the bottom, cause us to lose the momentum of the canoe and we recede several feet till we can gather force again. At first the waves come irregularly, giving us occasional "smooth spells," but as we approach the middle of the lake they hit us with equal force

every yard of the way. Many times we are on the verge of giving up to return to the *Florence*, but there is in every man a desire to go ahead in preference to going back and it is simply due to this natural tendency that we continue our troublesome voyage.

Slowly Pacoval Island with its landmark, the large *taperebá* tree, looms closer, only to again appear as far off as ever when our arms grow tired and our lungs give out. At last I have to give up paddling in order to let Skelly and Hildebrando, who are more accustomed to this work, fight the waves, while I give all my time to bailing out, for we are shipping much water. Skelly grows greyish-green and very serious of countenance. He howls with anger and cuts the water with his paddle like a maniac. Hildebrando tries to smile and pulls and pushes with the long pole.

It takes but a few minutes to describe this five and a half hours' battle we make against the angry Arary lake, but it was a serious matter. Exhausted we at last run ashore, on the pottery-strewn beach of Pacoval Island, and are welcomed by a tall, grey-haired *caboclo*. As we enter his house the sun is setting.

I order the two bucks to cross the lake again, to have their supper on board our exploring vessel, and wait for a calm to bring the *Florence* to the island. Although darkness is falling they express no fear. The wind has commenced to abate, and

being in their favour, they may expect to cross safely in less than an hour. The lanterns on board the *Florence* are already shining across the water so the course will be easy to follow.

CHAPTER XVI

An Archæological Mine

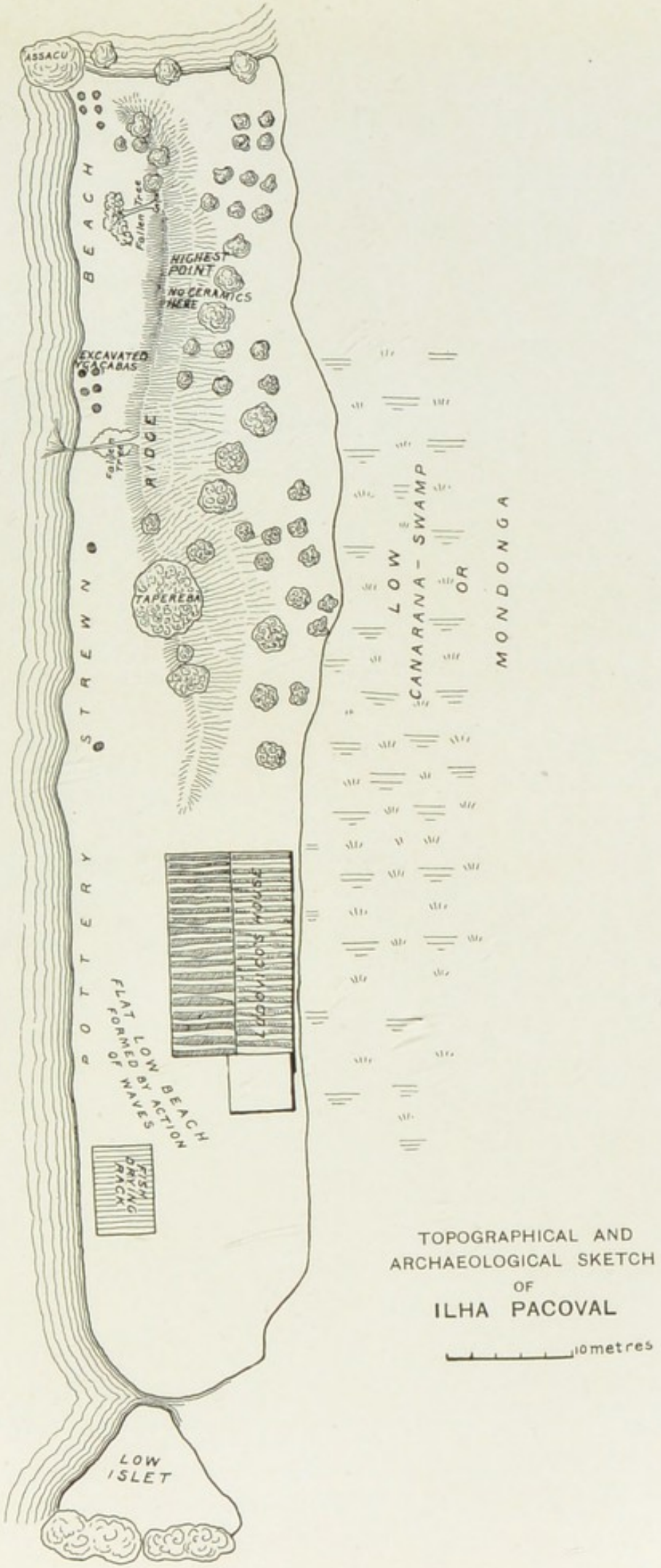
UP to the house I go immediately and greet the numerous family of this worthy old *caboclo* who is destined to be of great assistance to me, and I stop with him for the night, which, without a mosquito net, I pass most miserably. Before sunrise I am up to talk with the several sturdy sons of Ludovico, who are about to cross the bay in a sail-boat to pilot the *Florence* over to a haven on our side.

Imagine my inexpressible joy when, in the light of the rising sun, I discover the treasure that spreads before my eyes. The ground is littered from north to south, from east to west, with fragments of ancient pottery of rare design and workmanship! Ancient pottery is under the house, under the grass, on the beach, between the roots of the trees; indeed ancient pottery is everywhere!

As before remarked, I have reached the small island of Pacoval, a mere speck on the surface of Lake Arary. The first Europeans to visit this island were the early Portuguese settlers who in

the sixteenth century took possession of the Province of Pará. After exploring up the Arary River they found this place covered with bananas, and named it from this circumstance, the word meaning a banana grove. The general form of the island is that of a narrow parallelogram with rounded corners. In the wet season the total dimensions do not exceed one hundred yards long by ten yards wide, but now, at the maximum of the dry season, the area is more than trebled. The northern section is higher than the southern, reaching, at a certain point, a height of four yards above the present water level. At the extreme of the wet season, when the greater part of Pacoval is submerged and the hut of Ludovico is but a few inches above the water, this highest point forms a narrow ridge just beyond reach of the choppy waves of the lake. This ridge slopes off to either end until it melts into the low level on which Ludovico's hut is constructed.

Three sides of Pacoval are bounded by the waters of the lake, while the third or eastern shore, the one closest to the mainland, merges into a swamp or so-called *mondongo*. I must give a brief description of these *mondongos* as they are important in the topography of Marajó Island. A *mondongo* is neither land, nor water, nor prairie, nor bush. It is simply a thick layer of semi-solidified mud upon which *cana-rana* grass and other plants have formed a blanket. A four-



TOPOGRAPHICAL AND
ARCHAEOLOGICAL SKETCH
OF
ILHA PACOVAL

10 metres



A view of the Pacoval Island
"At the highest point of the island stands a tall *tapereba* tree."—(Page 310)



Picking up pre-historic pottery on the Pacoval Island
"The beach is a foot deep with fragments which crunch under my feet."—(Page 313)

footed animal can neither walk nor swim there. Even an alligator cannot move easily, while the only warm-blooded animal that does not seem to get lost is the *capybara*. When I venture with my weight upon one of these vegetable crusts I feel immediately the yielding of the half-hardened blanket and I realize the absolute impossibility for any human being to travel over such treacherous ground. Many *jararacás* live on them, and, fortunately for man and beast, they prefer to stay there. Alligators and boa constrictors, or *sucurujús*, live under this layer or crust in the many yards of soft indescribable mud which really constitute a bottomless swamp. Enormous *mondongos* stretch from Arary Lake northward to the ocean. One ill-famed *mondongo* belonging to the estate of a Pará Congressman measures about thirty-five miles in length and thirty miles in width. Nothing useful can thrive on such land. Stout of heart, indeed, must be the man who, in the wet season, even paddles across these desolate wastes in a canoe, and few attempt it. There are therefore hundreds of square miles that probably never have been explored, and probably never will be.

Farther inland, limiting this *mondongo*, is the mouth of a creek called Ygarapé das Almas (Creek of the Souls). On either side of this I see a belt of trees extending far into the interior.

Strictly speaking, the vegetation of Pacoval Island is of the useful order, consisting of fruit trees

of which, as before remarked, the banana trees are in the majority. At the highest point of the island stands a tall *taperebá* tree; the one which guided our course across the lake. Alongside of this is an old, fallen *mucajá* palm with its crown in the water, rotted away many years ago.

When some scientists, in 1871, came to this island they found a much more luxuriant vegetation, as is evident from sketches to be seen in the archives of the Museum at Rio de Janeiro. Now the growth on the island is scant, and thinned out, as the waves from the lake continually undermine and wash the banks away. A large *assacú* tree thrives on the northern extremity, and its strong roots have helped much to protect that exposed point from being cut away entirely. Behind this tree grow a few *cajú* and *calabassa* trees (*cuyèra*), as well as some five orange trees, undoubtedly descendants of former generations. One of these, an old and very stout orange tree, has recently fallen into the water, its base having been undermined by the waves. On the lower and level portion of this Pacoval Island, on a foundation of clay and broken pre-historic pottery, stands the house of old Ludovico.

The soil throughout is a black, rich clay resembling the kind that is found at the bottom of the holes or ponds on the prairies. In places there is an outcropping of sand. Throughout the island the earth is mixed with pottery fragments from the

size of minute particles to pieces weighing as much as twenty-five pounds.

I set to work, after first consulting old Ludovico, who tells me about the excavations of some scientists who visited this region some scores of years ago. During the coming days and weeks I profit much from his experience and his excellent common-sense. He was born on the other side of the lake and has acquired a local knowledge of the whole surrounding region that is equalled by none. When he grew to manhood he took up *pirarucú* fishing, and finding Pacoval Island both handy and uninhabited he settled here, built his hut, and brought a *vaqueiro's* daughter to share with him the storms of life and nature on this wind-swept little island. He has never paid much attention to the antiquities which, upon his arrival he found strewn along the shore; in fact he considers them more of a nuisance than anything else, as the fragments often cut the feet of his youngsters when romping on the beach. Now and then he has picked up some entire vase, or jar, which was welcomed by his steadily increasing family as a receptacle for fish, farina, or anything at all. The finest jugs and tall vessels, some richly sculptured and painted, he used for water-coolers.

During the months when the waters fall very low there appears in the middle of the lake, some two miles to the northward, a flat clay-and-sand bank, some fifty feet only in circumference. Here

is to be found a great deal of pottery similar to that of Pacoval. Ludovico tells me he often goes there to replenish his stock of water-jugs when the old ones are broken. Many jars, however, which cannot serve his purpose, being, as he expresses himself, "too fancifully decorated," he leaves to the mercy of wind and wave. Sometimes other fishermen come and pick up such jars. He tells me that this bank has not yet appeared above the level of the lake this season.[1]

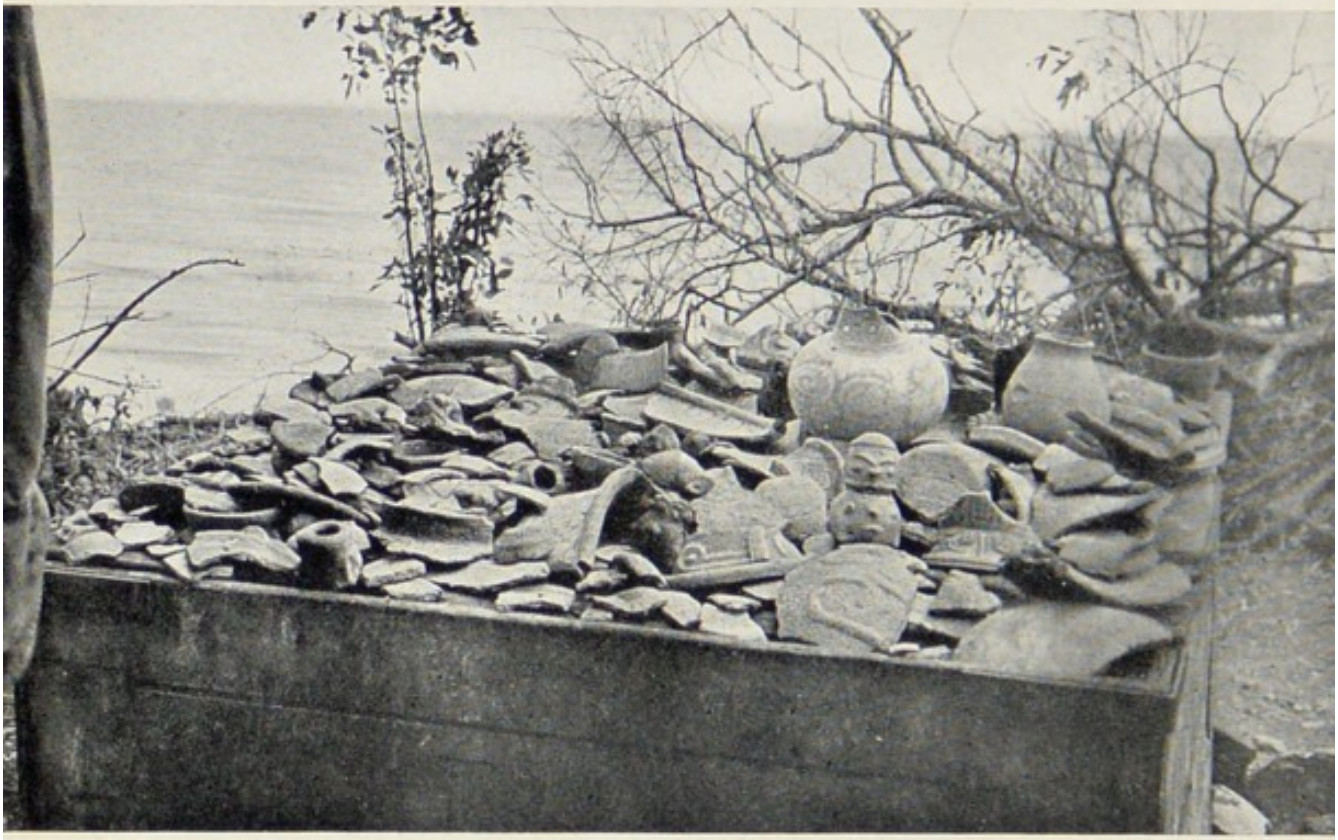
Great alligators always abound around Pacoval Island, especially when the waters are high; they even take up a temporary residence underneath the floor of the house. At the present time they have retired farther out into the lake and around the edges of the *mondongo* where they can be heard at night uttering their peculiar grunts. Schools of piranhas swim around in calm weather and are ever ready, with their saw-teeth, to attack any living thing that may come within their reach.

These unpleasant and at times irritating inhabitants of the waters of Arary Lake have to be reckoned with when working in the water itself, but fortunately there is no serious aggression from

[1] One is reminded by this of the archæological debris discovered along the coast of Ecuador by Professor Marshall H. Saville of the Heye Museum, where pottery, human bones, and gold ornaments, all mixed together, occur in abundance, in a stratum at sea-level, evidently only now being elevated above the water. At Lake Arary, however, a subsidence, instead of an elevation, seems to be going on.



A large bowl excavated on Pacoval. 1/3 size
From a drawing made by the author



The first day's find
" The specimens are placed on top of a large wooden case for later sorting out."—
(Page 314)



A part of Ludovico's family

any of them during my prolonged, partial immersion in the lake after specimens of pottery. I order one of my helpers, while I dig, to stand behind with a thin stick to keep the water agitated around me, so as to scare the enemy away. Dressed in heavy underwear and tough khaki clothing, with heavy wading boots, hobnailed and re-inforced, I feel safe, although uncomfortably wet.

The first day's find will remain forever vividly impressed on my memory. I cannot take up space with any minute description of the objects which I excavated during my stay, nor do I wish to clog the text with archæological observations. These I will collect in a special volume on my return from the Amazon country.

Old Ludovico leads me down to the beach, and here begin my finds without any trouble of excavating. The beach is a foot deep with fragments which crunch under my feet! Hundreds of little clay figures of red, black, and grey colours lie scattered around. Some are of human heads with more or less contorted features; others are animal figures of the most grotesque appearance. There are pieces of large and small vases and jars broken off in the course of ages of existence, first in the ground, then possibly uprooted by the trees, and washed and tumbled around by the waves of the lake when the waves run far up on the island during the wet season.

Snake-like ornaments with monstrous heads

border the edges of many vases; modelled figures like gargogles project from singular vessels whose use one can hardly surmise.

All these fragments and innumerable odd whole figures which are more or less injured by the "tooth of time" I gather in old farina wicker-baskets, and when these are filled to the brim the boys carry them up to the house, where they are placed on top of a large wooden case for later sorting out and examination.

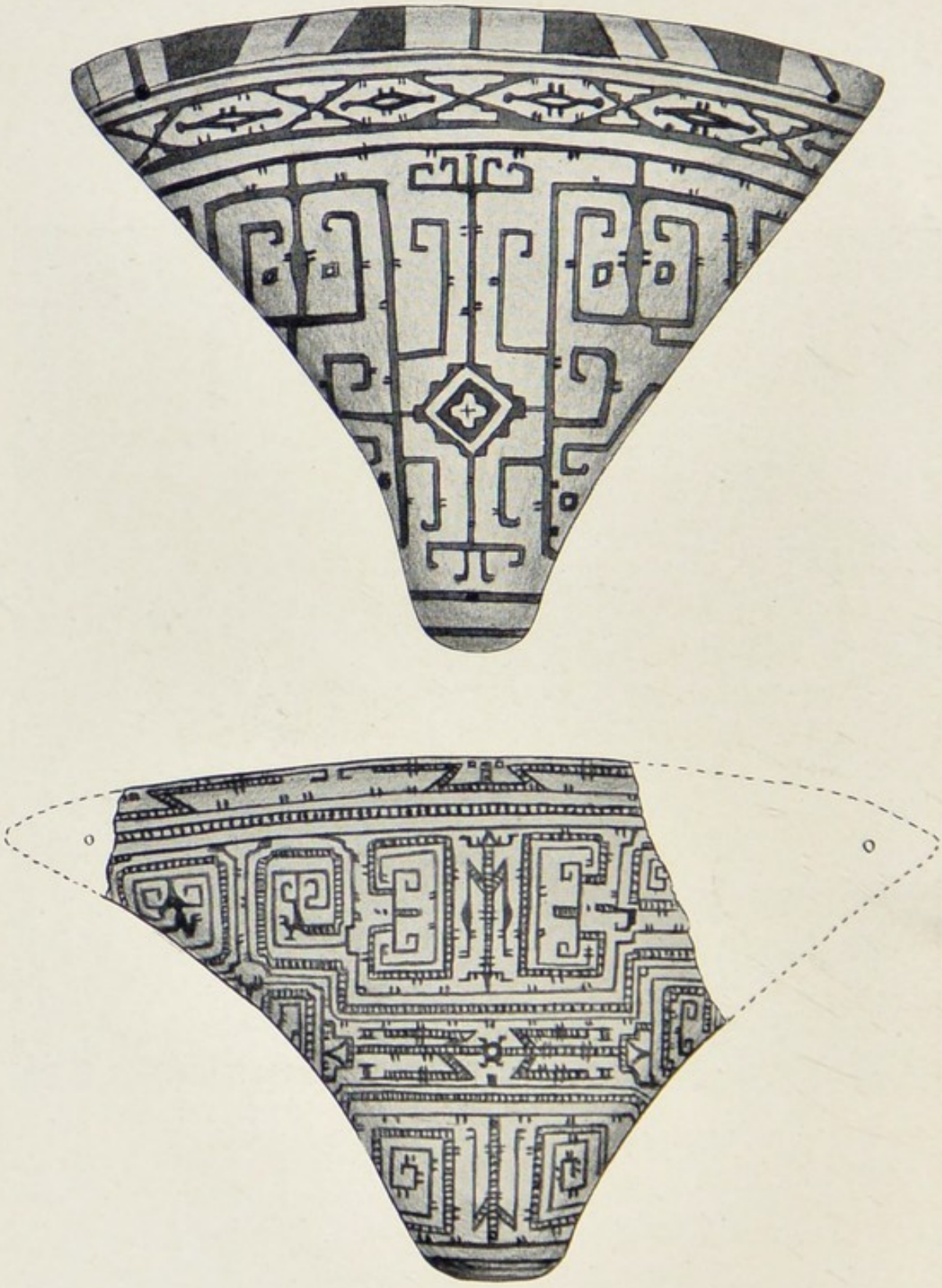
Carefully we rake over the surface of the whole island allowing no piece showing the slightest value to escape our farina baskets. By this time the boys of Ludovico return with my exploring craft, the *Florence*, and this is anchored some thirty yards out in the lake in water just deep enough to prevent it from cutting on the pottery-covered bottom.

All the boys now spread out in a long line, each with a farina basket, and thus begins a wholesale collecting of antiquities, whose value forever remains a mystery to these *caboclos*, who never will understand how a grown-up man can go to the expense and trouble of hunting for broken *cacos*, made, at that, by the *gentios*, or Indians, so long ago.

For several days the surface raking continues, covering every square foot of the island, till I believe no piece of interest is left. We soon observe that some large urns called *ygaçābas* were



A jar found in the water of Lake Arary



Tangas. ½ size
Reproduced from drawings by the author

sunk into the ground, forming a straight line following the littoral. I counted twelve in all. The first of these was broken upon reaching a depth of two feet. It crumbled into minute fragments when fully exposed. The mouth of the second jar was plainly visible amidst many broken pieces on the surface of the beach. This we attacked judiciously with picks and shovels, working with a certain system of cutting and shovelling, leaving a layer of a few inches to remove with our hands. The result of this cautious work of many hours is a pyriform funeral urn of almost three feet in height. Upon placing this on the beach I remove a quantity of earth and greyish ashes from the interior, with the result that I find some human bones, all broken in pieces, and underneath these a most peculiar object of rare beauty and skill of workmanship.[1]

It is a perfect specimen of the original primitive "fig-leaf" for women. This object, called a *tanga* in the Tupi language, is a thin, triangular well-burnt clay plate six inches wide, with a convexity to fit the curvature of the lower part of the female abdomen. The outer surface is beautifully painted with symmetrical lines and curves of extreme delicacy in polychrome, covered with a thin layer of what appears to be enamel, and giving it a fine polish which has withstood centuries of

[1] The dead of the Tupi were buried in large urns generally in special places.

exposure. The reverse is of a white colour without any decoration but equally well enamelled. At the extremity of each corner is a fine hole made while the clay was still wet, intended, no doubt, for attaching a thin cord by which to tie the *tanga* around the waist and to secure its close fit through another line from beneath to the waist-cord behind. In the course of the following days I discover hundreds of these *tangas*, mostly in fragments, and I note that not two are alike in design and but few in size. Many are found to be of a deep red colour without any sort of decoration and probably served the women of a lower caste. One *tanga*, indeed, unfortunately with broken corners, shows a delicacy of workmanship and a symmetrical intricacy of decoration which suggests that it might have been worn by a woman of the highest rank, as no other *tanga*, no matter how elaborate in design, comes anywhere near it.

Working our way around the old fallen *mucajá* palm we make some very rich finds. Whole vases covered with what appears to be symbolic figures of a complicated pattern, bordered by stripes of red and brown painted bands, surprise us and cause my sincerest admiration for the permanency of the colours which appear now as fresh as if painted but yesterday.

I find also small platters with labyrinthic designs painted and incised to suit the contemporaneous artist's fancy. Large and small idol heads,

many of which are broken, lie around, some partly covered by earth and dirt. Close to the palm trunk I institute a series of excavations, and during many days we find here some rare objects of pre-historic art, such as a large richly painted and incised idol which probably has served as the funeral urn, *ygaçāba*, of some prominent female child.

In the photograph can be seen the great quantity of pottery which is still covering the beach.

No wonder I retire the first day with the satisfaction of having done good work, for I have unearthed no less than 580 specimens.

I go into the hut where my hammock has been swung between the rafters, and eat a frugal meal of fresh game-fish caught by one of Ludovico's sons, and finish with some rice and condensed milk, while the whole family stand around watching every movement of the strange man who has come far to collect old broken pottery. Then follows a couple of hours of conversation with Ludovico and his grown-up sons.

The old man, especially, possesses a knowledge and common-sense worthy of respect. We discuss the old pottery and the mysterious people who made it in times gone by, and many a wise word and opinion are spoken by this old man who has spent all his life here, and whose father and grandfather lived around this lake when it was only a small expanse of water.

They tell me of many places in the neighbour-

hood which contain much pottery similar to that which covers, or rather constitutes, this island. There are some places, far up the "Creek of the Souls" on a piece of prairie land, where outcroppings of pottery occur. Many *tesos* or prairie-islands are pointed out also as containing mounds of these extinct Indians of the Amazon lowlands.

During this conversation music comes wildly and sadly from Skelly's guitar. This is the kind of life my bucks like. Plenty of easy work during the day, lots of *pirarucú* with farina and music at night, while the wind rushes through the trees outside. They do not mind anything that is alive; they are impervious to bites of mosquitoes and things.

But I can not help noticing a tendency among them to shirk real hard excavation on the island. They walk around with greenish faces when put to unearth some *ygaçābas* containing human bones. Indeed, it is a superstition in their minds, that although these bones are centuries old and hardly recognizable as human bones, yet it is a sin to meddle with them; perhaps it is a fear of being haunted by the dead Indians. I often wish that some of these departed Indians would haunt me a little so that I could form an idea of their appearance.

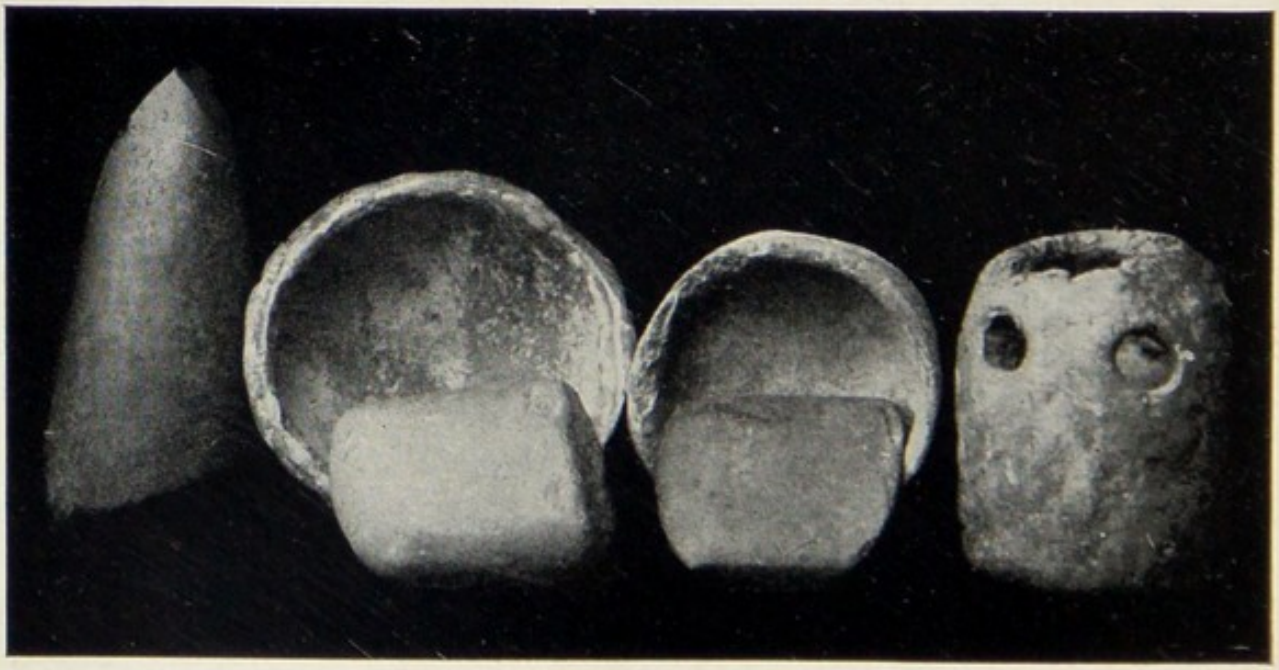
The furniture in the main room of old Ludovico's house is of Spartan frugality and simplicity. An old table occupies one end towards a palm-leaf



Pacoval Island during the wet season



Idol-heads which served as handles of large jars
¼ size



Stone implements and crude clay objects
¼ size

wall. Three wooden boxes serve as chairs for visitors. On the rafters hang suspended the clothes of the sons. Fishing tackle occupies another corner of the room. Amongst this I observe a set of fishing harpoons for the *pirarucú* and large steel hooks for the *pescada* fish. An old wooden cylinder, the ends of which are covered with deerskin, is also suspended from one corner. It is a tomtom which they use on days of joy and feasting.

At night the mosquitoes come in swarms from the *mondongos* behind the island, and then there is nothing else to do but seek refuge under the mosquito net, and sleep.

Ludovico's women folks all sleep in one large room without windows in the middle of the house. They are all good-natured *caboclas* whom I learn to respect and esteem very much. On the following day when I invite them out in front of the house to be photographed they willingly accept, after spending an hour or so in donning their very best clothes. Then they line up stiffly with the most serious expressions as if they were facing a court-martial and were to be condemned to be shot at sunrise. It is unfortunate that the photograph cannot reproduce the multi-coloured dresses of the women whose green, pink, and yellow polka-dot print-cloth shone brightly in the sun. Where the many babies come from I cannot surmise as there are no husbands in evidence for miles around.

The following morning I continue a thorough raking of the beach and enlarge my collection by several hundreds of the most varied assortment of idols, pots and jars, fragments of *tangas* and large *ygaçābas*. Two young Ludovico boys are kept busy carrying loaded baskets to the large wooden box in front of the house.

In the afternoon we begin our search in the waters of the lake and I am surprised at the continued good luck. The waters are as full of specimens as the beach, showing how the action of the waves during the many years has washed the pottery from its subterranean resting-places and gradually swept it out from the island, or else that the island is sinking. Here we find platters of the most delicate design and whole *tangas* all of which still preserve a remarkable freshness of colour with but little decrease of brilliancy of the surface. In places, of course, the action of the waves has rounded the more prominent corners and projections such as the noses of idols.

Now and then some alligator head pops up nearby, but a piece of pottery thrown in its direction causes the wary reptile to dive to the bottom. The piranhas do not bother us very much as long as we keep the water in motion, as before noted.

A couple of tame egrets wade among the pottery fragments on the shore fishing for shrimps. Some newly caught wild boars (peccaries) lie under the house. They look very sick, probably from wounds

inflicted, and are fed and nursed by the old man with leaves of the floating *mururé* plants. I have to move them out of the way as I discover a very pretty *tanga* under one of them.

That night I do not get much sleep because of the burning sensation on my arms, due to the constant exposure. The skin is fairly scorched and is now peeling. In a few days a new skin appears, soon assuming its wonted pale colour. I state this here to point out a personal peculiarity which I cannot account for. Though exposed for years to the strong light-rays of the equatorial sun, the pigment of my skin has undergone no change at all, remaining the same colour now as in the beginning.

The following days we continue the exploration of every inch of the island and the surrounding waters; we dig practically into every piece of ground. The collection of each day is first roughly classified on the wooden box, then recorded and put on board the *Florence* in special boxes brought along for just this purpose. In the course of a week I have some 3000 specimens, all told.

As we go on with the work the pottery grows scarcer and sometimes we have to search for hours to find a single specimen. Under the tall *taperebâ* tree we dig as far as we can without weakening the structure of the tree. We even go into the *mondongo* but there find nothing at all.

Theories have been advanced to the effect that

the mound was built during a long period of time so that distinct layers of deposits have been observed, but of this I saw no evidence. The earth from the surface down to a depth of six feet seems to be uniformly mixed throughout with pottery and clay so that I could judge nothing.

During the last days of my excavations I found a quantity of stone axes and various diorite implements. This tells us that the extinct Indians must have been in constant trade with other Amazonian tribes in whose regions the stone is to be found. To my knowledge no diorite is found within a radius of some three hundred miles from Marajó, the nearest being around the rapids of the Tocantins River. But there is nothing strange about this; the North American Indians, as well as other South American aborigines, are known to have carried on extensive trading operations.

CHAPTER XVII

An Alligator Hunt, Speculations, and a Rough Run to Pará

I RESOLVE to take a Sunday off and rest from the hard work of the week. The bucks have become a little sullen seeing so many remnants of their forefathers (?) that they need some amusement to pull them into proper working trim again, and I decide on an excursion with them.

Consequently I arm myself with camera and films, also a moving-picture camera. I take along my Luger pistol and the old Mauser carbine with some fifty rounds of steel-nosed cartridges. Skelly pilots while Hildebrando and Fielo paddle. We soon reach the mouth of the "Creek of the Souls" and ascend this narrow stream bordered by low twisting trees.

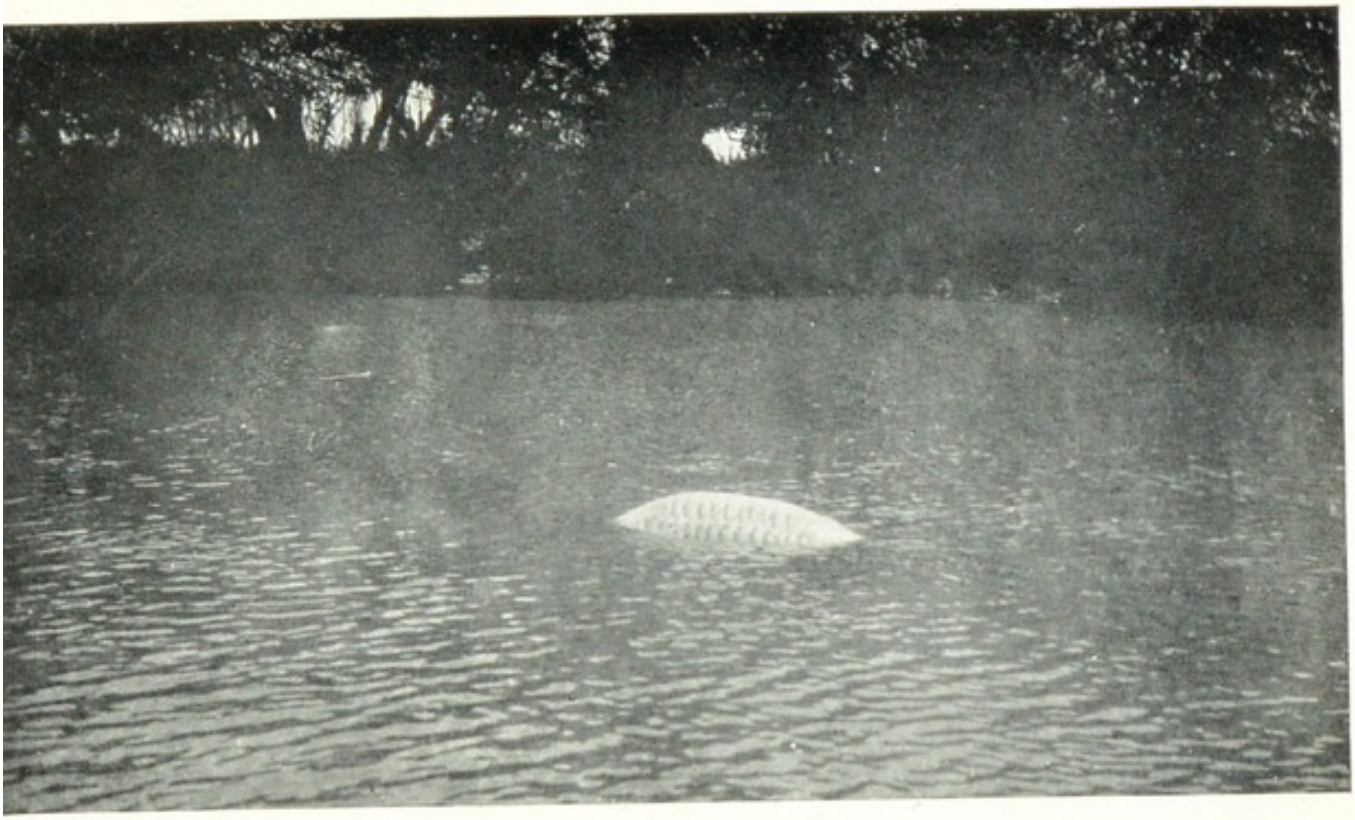
As soon as we enter this creek we notice a peculiar movement in the water as if heavy buck-shot are being dropped from a great height. It proves to be thousands of *taïnha* fish jumping for pleasure, or else snapping for air, as there are no signs

of close flying insects above the water. Frequently some fish of the same species jump high out of the water like a gamey trout. Several times they fall into our canoe, but Skelly tells me they are very bony fish and we throw them overboard again.

After paddling an hour we come to some alligators at the bend of the river where a lot of *cana-rana* grass has accumulated. I learn now how difficult it is to recognize their presence amidst this grass on account of their absolute stillness. Skelly draws a bead on one and fires. A tremendous splash follows. Hildebrando poises the harpoon in the bow of the canoe and throws it at a moment when the alligator turns its belly upwards, but the sharp steel point merely glances off, and the alligator disappears. We arrive at another bend with steep banks on one side and a gentle slope on the other. Here we stop to watch for alligators and we get many good shots but the reptiles quickly sink out of sight.

A little farther up the river we find a suitable place to plant the cameras and there we prepare for the kill.

First we have to fell a couple of trees to obtain a good view allowing for a free swing of the panoramic table of the moving-picture camera. We do not have to wait long for the first alligators to appear. In fact, they are here all the time in the mud at the bottom, coming to the surface occasionally to breathe and enjoy the sun. Opposite us is a



The alligator giving up its fight
"When the alligator is mortally wounded it floats for a few moments with its belly upwards."—(Page 325)



The alligator is finally quieted
"It measures exactly fourteen feet from nostrils to tip of tail."—(Page 327)



An alligator hunt

"Here I see one of the greatest pieces of recklessness I ever witnessed."—(Page 326)

"pocket" of the river overgrown with grasses, where we can see the reptiles slowly moving about.

I get a good shot at a big fellow floating right towards us. The bullet strikes it in the head but not by any means killing it. It wallows and raves in the muddy waters. The bucks get into the canoe just as the alligator turns belly upwards, which is a sign of giving up the fight, and he is harpooned.

Immediately another large alligator comes up and I take careful aim with the Luger and give him two bullets in the head about an inch behind the ear opening. The bucks now get very busy. They throw the second harpoon secured to a slender American line at the lower end of the shaft. The alligator, however, is still very much alive and he rushes into deep water under the steep bank with the harpoon in his neck. The line is now fastened to the canoe while the bucks hold on for dear life, shouting with joy and excitement. The 'gator comes to the surface bleeding profusely and gets another bullet in the head. The beast shoots straight across the stream at a great speed, the small canoe following with dangerous swervings. As the alligator darts among the weeds Hildebrando, who always has been fond of radical methods, grabs a pickaxe from the bottom of the canoe, and rams it into the neck of the wounded saurian. This gives an added impulse to the alligator's movements, probably more than the bucks

expect, for it charges upstream at some twenty miles an hour, only to turn abruptly, causing the canoe to collide with it before they are able to stop, but nothing happens. As the beast now seems to be quiet they paddle quickly to the shore, run the canoe on land, and hurriedly take a turn of the line around a handy tree trunk. Another harpoon is shot into the body so as not to strain the single line too hard. The pickaxe, besides, is still imbedded in the animal's neck, and we have no desire to loose it.

They now make one valiant effort to pull the reptile ashore, and here I see one of the greatest pieces of recklessness I ever witnessed. The boys seize the frenzied alligator, which is still alive, by the tail and pull with all their might. The tail gives a powerful swing and the boys are sent flying amidst the grass, while the alligator scurries to the water. Laughingly they pull in again and at last succeed in getting their victim on dry land.

All this time I have been vigorously turning the crank of the moving-picture camera in quite a correct manner when, suddenly, one of those ominous clicks announces that something has gone wrong inside the box. I discover that the film has curled up on the intake gear and the entire film is ruined. I am thoroughly disgusted with my constant bad luck with this machine on all important occasions. After hundreds of miles of hard paddling and hard work with this ponderous

outfit, it always fails, and all the work is done in vain.

Leaving the camera where it is, I hurry over to the scene of the conflict. The boys are still being worried by the alligator, which now has lost a full foot of its tail in the battle against men armed with axe and machete.

It is at last entirely vanquished and the pick-axe is held ready for any emergency. A pole also is placed between its teeth. The alligator is then dispatched with a bullet through the spinal cord and laid out. It measures exactly fourteen feet from nostrils to tip of tail. The bucks immediately set to work skinning it, cutting with axes a belt around the belly and back.

Then we go farther up the creek and in the course of the next three hours kill nine large ones. Having harpooned them and secured them to trees we return to send Hildebrando and Fielo to skin them.

As we paddle downstream we feel our canoe suddenly raised from its position in the water and pressed sideways. The cause of this is a large alligator which evidently intended to come to the surface at precisely the moment when we arrive above it, thereby shoving us, rather unexpectedly, out of the water. We feel a little uneasy at the moment, but after a few violent swishings of its tail it is evidently satisfied and leaves us alone.

Generally speaking most alligators are harmless unless you absolutely come in their way, or happen

to be very close when they open their formidable jaws; otherwise there is nothing special to fear from these vicious-looking animals. Statements about their ferocity are often exaggerated. Even the *jacaré assú* (Tupi for large alligator) is far too cowardly for assault, attacking only animals by ambush. It is true that they cause much damage among the Marajó cattle specially in the wet season, and it is equally certain that the greater percentage of the calves born during the wet season will be killed and swallowed by alligators, because most of the births take place while the cow stands in water.

In the wet season the alligators scatter over the inundated prairies in great numbers in pursuit of such easy food, and are generally found along the *tesos*, or islands, where they lurk around the edges where the numerous cattle come to drink. When the waters recede and the prairies commence to dry up, hundreds, yes, thousands, of alligators get caught on the prairies, not finding a creek or similar exit quickly enough to get them into deep water again. This happens in the months of November and December. It is a signal for many of the provident ranch-owners to arm an expedition of cowboys to undertake a *matança* or killing.

Unfortunately I do not have an opportunity to witness one of these killings, but I receive reports of many trustworthy ranchers who are undertaking killings while I am doing excavation work around

Lake Arary. Alligators, when caught by the dry season, will invariably congregate in great numbers in some half-dry pool in the middle of a great field, often miles away from the river. Here they will lie close together, one on top of the other, forming monstrous heaps. Colonel Pombo, a prominent ranch-owner and Pará politician, reports having, with ten men, killed in a single pool 1016 in two days. It certainly takes less courage and skill than it does rifles and ammunition.

I consider, because of the facts stated, that our modest killing of alligators undertaken this particular Sunday in the "Creek of the Souls" is a deed of usefulness. Certainly there exists no animal so viciously greedy, so devilish-looking, and so undeserving of sympathy as this Marajó reptile, the *jacaré assú* (*Caïman niger*).

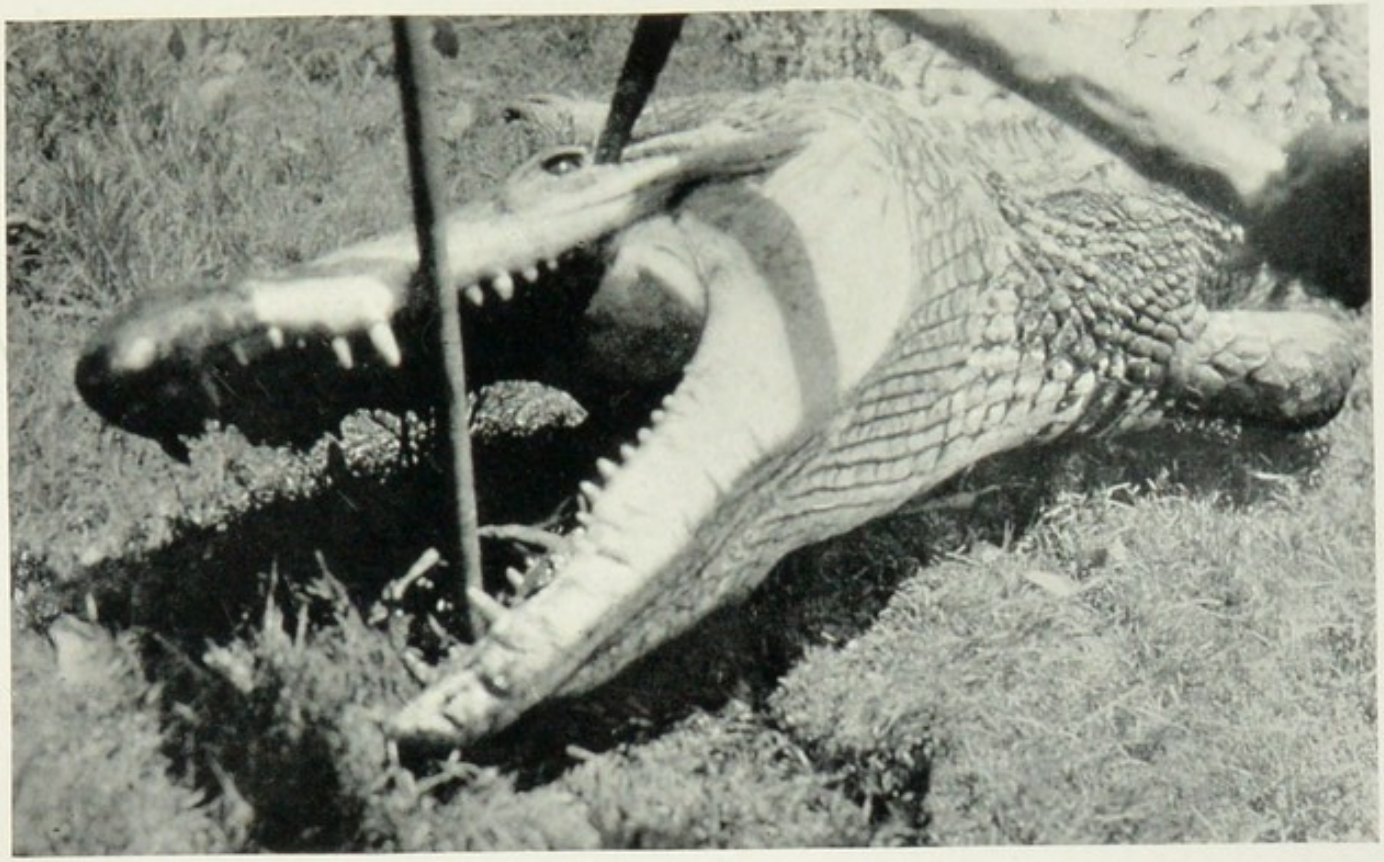
During the following days and weeks we see our dead alligators floating downstream and around Lake Arary, bloated up like huge barrels, with flocks of *urubú* scavengers sitting patiently, waiting for the day to come when the armour-plate scales of the saurian will loosen up and allow picking.

At three in the afternoon I suddenly feel an attack of fever come over me, and I order Skelly to paddle at full speed down to the *Florence*, which is riding at anchor in front of Pacoval Island. The two bucks remain to skin some of the dead alligators.

As we paddle downstream a cloud of perhaps hundreds of scarlet ibises (*guarás*) fly up and settle in the top of a large tree. In the flock some are observed of a whitish-grey colour. These, Skelly says, are the young ones. In spite of my fever, which is making me feel very miserable, I have to crawl up on the bank and sneak behind a tree to get a close look at this immense mass of birds. The whole flock seems to be talking mutually, as every beak is chattering like castanets. An old battle-scarred *guará* sits in the topmost branch, trimming his feathers with his long, slightly curved beak. As I accidentally make a noise by stepping on a twig, the old chief gives a hoarse little cry and like the surging of the *pororóca* tidal wave the flock lifts into the air.

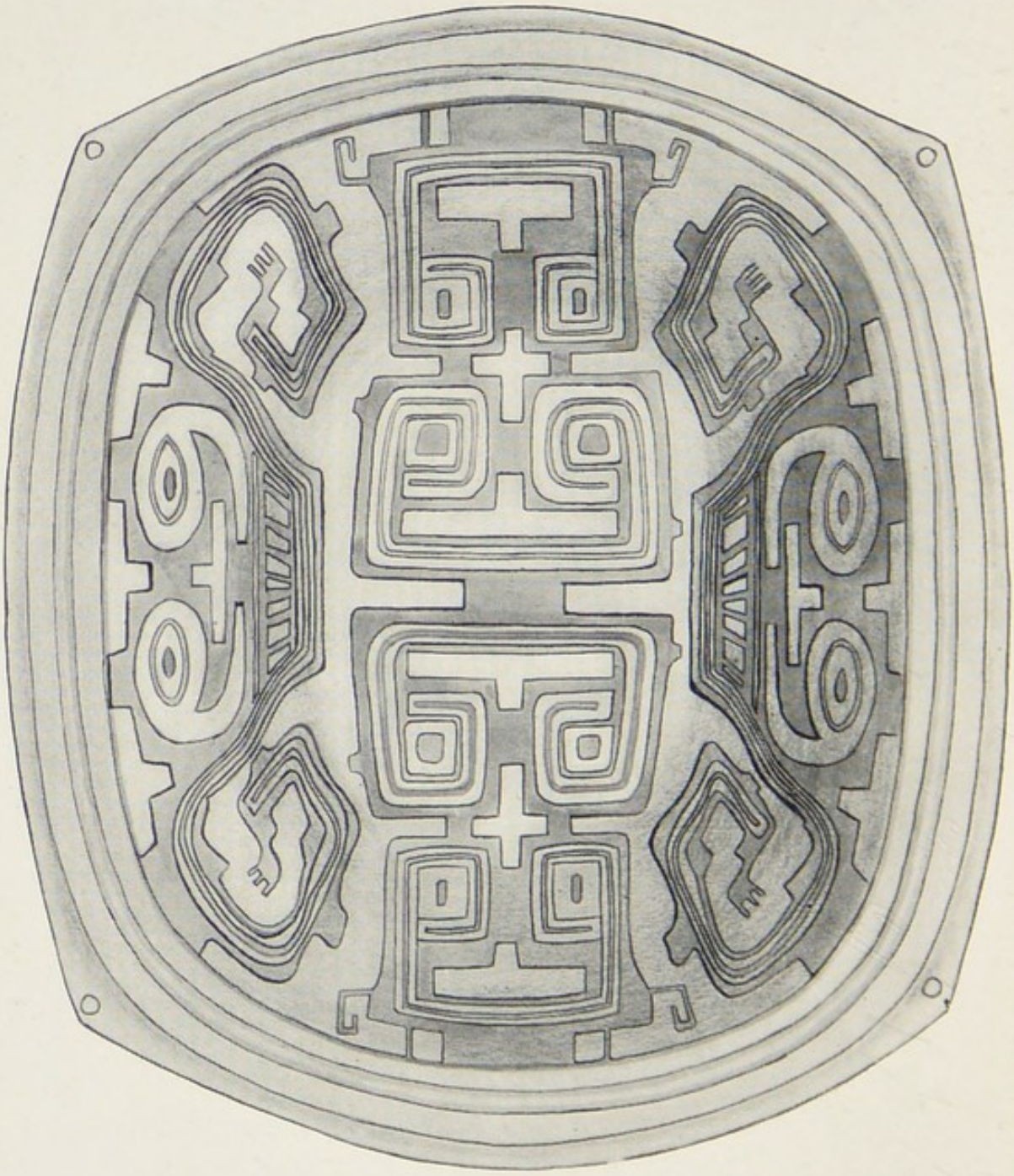
Arrived at the boat I give myself an injection of quinine and drop on the deck of the little cabin for a long fever-ridden sleep. After that day I always sleep on board, where the constant north-west breeze that blows over the lake at night can refresh me, instead of in the mosquito-filled rooms of old Ludovico.

The next day I feel well again, but for safety's sake I take some fifteen grains of quinine for breakfast. We leave early on an excavating expedition to a point some six miles from Ludovico's in a due easterly direction. Here we spend two whole days, returning with a canoe full of pottery, some of which is in fragments. The mound we visited is



Submitting to superior powers

"The alligator is at last entirely vanquished and the pickaxe is held ready for any emergency."—(Page 327)



A basin excavated on Pacoval. 1/3 size
From a drawing made by the author

elevated hardly two feet above the level of the surrounding country, in the middle of a difficult piece of prairie, soggy and overrun with an uneven, coarse growth of wild cotton plants. Old Ludovico indicated this spot as being likely to contain a great deal of pottery, particularly as no excavations have ever been undertaken there. I find there pottery of a totally different character from that near Ludovico's. The clay from which this was made seems to be lighter in colour and weaker, or else the burning was not so thorough as the other. All the vessels I find are of a different shape too, and one large bowl, which we unfortunately break by accidentally putting the point of the pickaxe through the bottom, is a strange piece of work full of fine details.

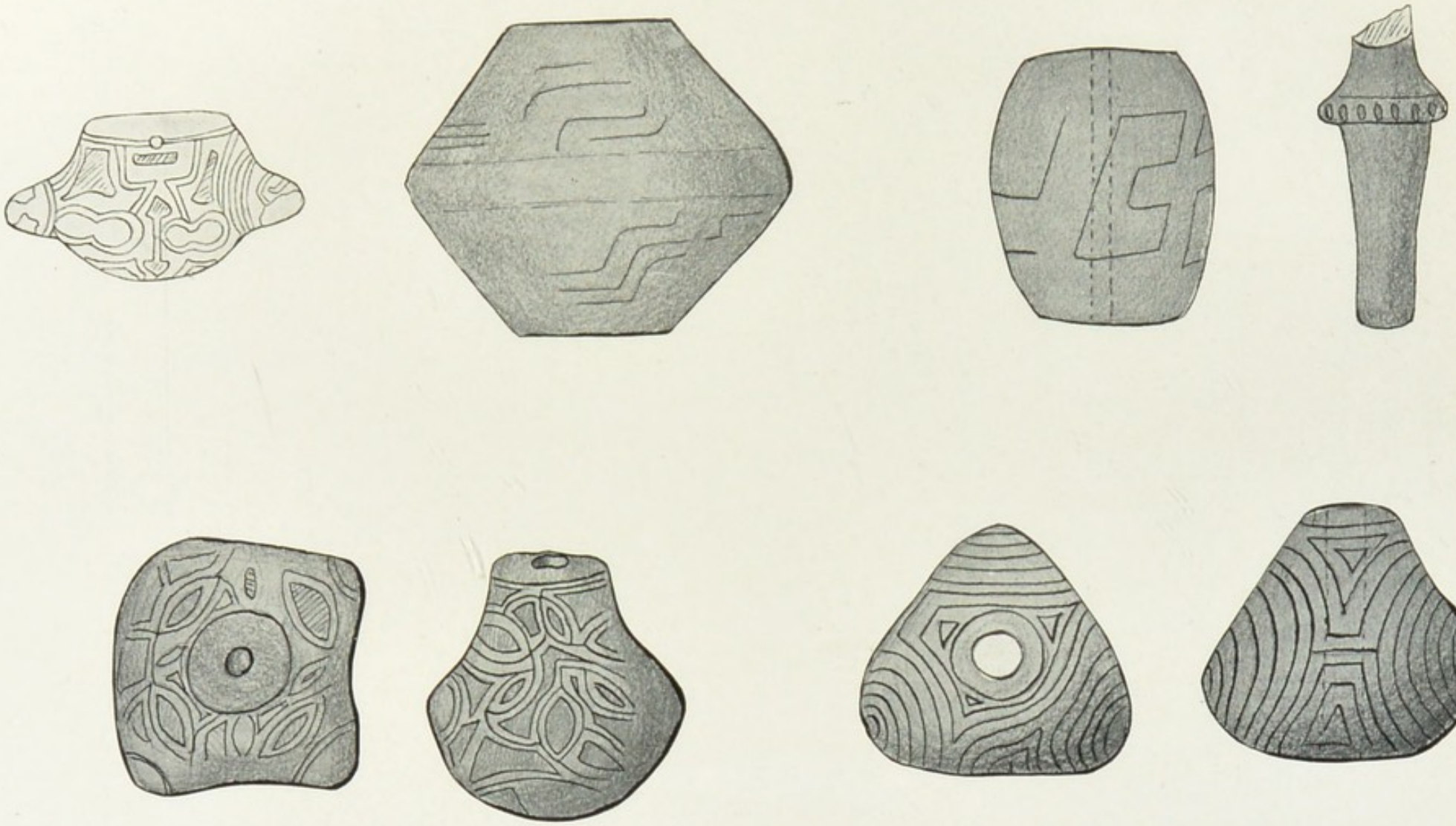
On all our inland journeys we have to watch out for one constant source of annoyance—a vicious black wasp. It is difficult to find a single tree on these prairies that does not contain one or more cone-shaped wasp nests. On the slightest provocation the wasps will leave the nest in a body and attack the innocent bystander and cause such a measure of bodily despair that the only remedy seems to be a rapid plunge into the water, were it not for the numerous voracious denizens of the Marajó rivers and creeks waiting there. On one occasion when I am firing a shot at some fifty yards' distance from a lonely tree I am bitten by two stray wasps on the neck. The pain is intense

on the first day and even three days later a red swelling is visible.

Christmas is only four days off when I resolve to return to Pará as our exploring vessel will not hold any more pottery. Our draught has been increased by six inches, which causes me additional worry for the channel across the lake will scarcely allow this increase.

I prepare for departure and make arrangements for the future with old Ludovico. With his wife, whose good-will I have won long ago by giving her kerosene, farina, sugar, salt, and coffee, I leave some merchandise, and to the old man I present a trade shotgun with ammunition, besides a pickaxe, an axe, six steel harpoons, and some hundreds of fishhooks for the *pirarucú*. At the moment of our departure the mother sends all her little tots out to me, each one carrying an apron-ful of little idols, *tangas*, jars, and little plates which have been used as playthings among the youngsters. My total collection now amounts to 4888 specimens.

We set a primitive sail so that the fair wind may help us across the lake while the boys paddle, and we arrive about forty-five minutes later at our destination, the outlet of the lake, and go ashore to make some excavations on a crescent-shaped elevation I observed on our way out. We dig some thirty holes but find nothing whatever of value except a very crudely made fragment of a *tanga*.



Various terra-cotta objects found in a funeral urn excavated on the Pacoval Island
From a drawing by the author

Now we say good-bye to our good friends, the Ludovico boys, who so faithfully have helped us, and we start towards Pará, going down the Arary River at a pretty good rate. At sunset we reach a small hut where we find it convenient to stop for the night. By a strange coincidence this place belongs to old Ludovico's father, a withered old *caboclo* of some ninety years. I spend some hours with him talking about the extinct Indians and their pottery. He brings out a basketful of things he has gathered such as *tangas*, and idols and my collection is enlarged with a score of fine specimens.

After a while an old negro comes riding up on a well-saddled bull. This old fellow has a powerful, shrill voice and about the ugliest face I have ever seen on any human being. He has just returned from the prairies where he went to get something for supper. This he has in the form of a fine young and live alligator, about four feet in length. The reptile, a *jacaré tinga* (*Caïman sclerops*), is securely fastened to the pommel of his saddle and I admire its tameness now that its mouth has been well tied up. It allows me to examine its sides and even its tail without the slightest objection or even movement. The negro states that some hours ago he killed a boa constrictor amongst a clump of *aninga* bushes. The snake he asserts measures ten metres in length. He even offers for fifteen *milreis* to go and get it for me. It is with a sad heart that I decline this offer, but the funds of my expedition

are reduced to several cans of condensed milk, some coffee, farina, and a few dozen fishhooks. These he will not accept even if I could spare them. He has been in the capital, Pará, often enough to appreciate the value of money, so I have to let the bargain go.[1]

Three days later I arrive at Cachoeira where I have a talk with the mayor and witness the festivities of the population. The band is still playing behind time, the beer bottles are still popping, the *caboclos* are still marching around the little square by the church, when at ten that night we cast off and proceed down the Lower Arary River, making good time and leaving this little town of constant festivals behind.

Christmas Eve we are in sight of the wide mouth of the river. We can see the heavy sea from the open bay right in front of us, and we feel the swell beating under our boat and rushing amongst the roots of the mangrove bushes.

The wind blows in from the bay so stiffly that progress is impossible even though we paddle with the outgoing tide. We manage to crawl over to the opposite shore, the right-hand bank, to a small settlement called Aracuçāua. Here I spend my last resources to acquire the wherewithal for a

[1] In April, 1914, Ludovico visited me at Pará and brought me some pottery. It was the first time he was ever in a city. He told me then that his father died from a fever brought on by the bite of a *tucandeira* ant.

suitable Christmas supper. I barter with the merchant, giving him powder and shot, two kilos of coffee, and twenty-four fishhooks for a goose and a dozen eggs. With these we retire to our boat and Skelly commences preparations for the feast.

The bucks do not quite understand the meaning of "Christmas," although their *Natal* corresponds with the word. They sleep or doze on top of the pottery boxes quite indifferent to any sentiment, or they help Skelly stir the frying goose. Some *caboclos* paddle alongside and come on board.

I try to imbue myself with the proper Christmas spirit but the immediate surroundings are not conducive to such sentiments, except perhaps the loud frying of the Christmas fowl and the appetizing odours that waft gently in my direction. I sit on top of the upper deck and look over the stormy waters that we are bound to cross.

Then breaks forth a long monotonous melody; a weary, melancholy note from Skelly's throat accompanied by the guitar. He is in the Christmas mood, too, and, quite unconsciously, gives us the song of *The Lonely Star and the Mother of the Moon*, a sad song of the great Amazon River.

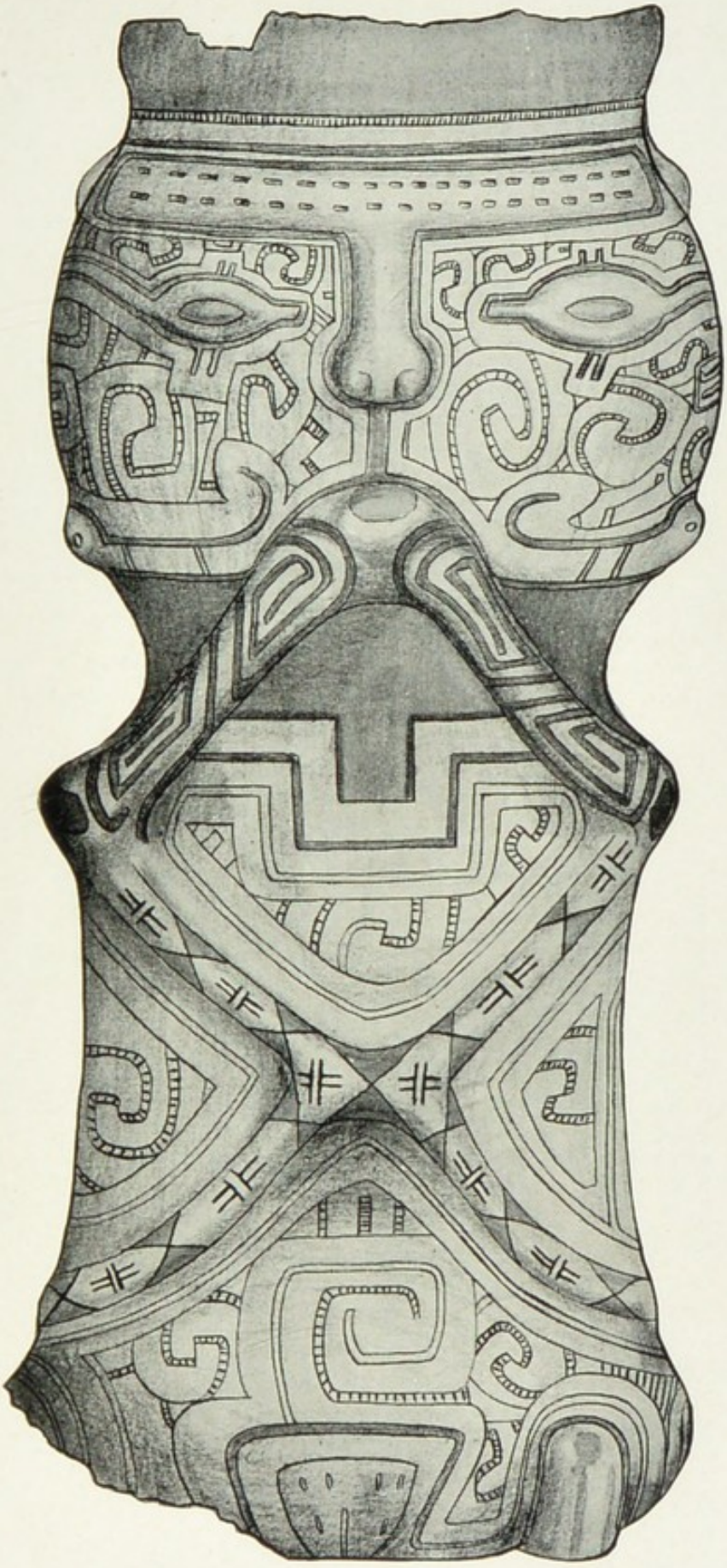
Our Christmas supper is composed of four fried eggs, some rice porridge, and the fried goose. Everybody eats and is quite happy. The importance of the occasion is still further emphasized by the distribution to each man of a cigar.

The storm is blowing up considerably and I find it of no avail to raise our anchor until the sea and wind become more favourable, so we stay where we are.

My thoughts review previous Christmas Eves under widely different circumstances and then, resigning myself to the inevitable, I find my mind occupied with meditations over the excavations I have just made.

How many problems present themselves when one tries to form an idea of the origin of the Marajó Indians, the ceramic artists of this part of South America. Where did they come from, and where did they go? When did they arrive in the Amazon Delta, and when and how did they disappear? Were they a part of the extensive Tupi stock who made good pottery; were they Arawaks or Caribs or what? One thing is certain: no man as yet is competent to make definite statements on these points. There is no historic knowledge of the people who lived so long ago on Marajó Island.[1] It is probable that Marajó Island is undergoing a physical change. Old inhabitants like Ludovico and his father relate how forest formerly grew where to-day a wide expanse of water forms a lake, how in their childhood they played on mounds, then never reached by the waters of the annual flood, and now covered. Apparently Marajó

[1] Some authorities hold that they were of the **Tupi** stock, but, while this is possible, there is at present no proof of it.



A funeral urn. ⅓ size. Excavated on Pacoval Island
From a drawing by the author



Broken idols of red burnt clay and richly incised
½ size



Marakáh
Rattling idol, yellow polished surface with red painted lines
½ size

Island was formerly higher above the level of the ocean, and we may logically conclude that the general topography of this region has undergone, is undergoing, some great but gradual change. Up to the present date this large island, occupying the greater portion of the two hundred miles between the extreme north channel of the Amazon and the Pará River, or so-called Eastern mouth, has never been surveyed, and no accurate maps of it exist. Certain sections in the southern part of the island have been examined by civil engineers to solve the question of drainage. It is generally believed by Brazilian engineers that if the numerous rivers and creeks which empty into the channel which some navigators call Pará River and others the southern (or eastern) arm of the Amazon, were deepened considerably, a free and unobstructed flow of water would result, thereby draining the extensive prairies and campos, when in the wet season they become inundated and cause continual loss to property owners on the island. Other authorities think that the island is sinking, at least the central and eastern portion. There are authentic proofs that the flood-water in the months of May and June reaches higher to-day than it did fifty or a hundred years ago. Unlike most delta islands, Marajó has a substratum of rock, and the sinking of these strata would naturally lower the whole island.

If we narrow our horizon of observation to the

ancient inhabitants of the Arary region, many confusing problems crowd themselves upon us. I have to acknowledge an inability to answer even the most simple of these questions. What was Pacoval Island in those old days? Was it a mortuary where the defunct members of the tribe were deposited in funeral urns as was done by the Tupis, or was it a sort of central factory for all the pottery which was being distributed over the island of Marajo and beyond? At any rate the pottery was apparently manufactured on the island of Pacoval as two furnaces testify, although they are greatly decayed by wave and wind. These furnaces, from what was still to be seen of them, indicate that at least some of the pottery, probably the more delicate articles, was burned in closed ovens, in contradistinction to other Indian pottery which was and is burned in the open air. I found also red colouring matter and vessels containing enamelling compounds in the proximity of the ruins of the furnaces.

Did Pacoval perhaps represent a central *maloca*, or fortification, against the invasion of hostile Carib tribes, traces of whom were still found in the neighbourhood at the time of the early Portuguese settlers, who called them Nhengahybas or Carahybas? Is Pacoval Island perhaps a mound constructed by the hands of the ancient Indians? The earth which constitutes Pacoval is of a description not found around this locality, but several miles away

on the prairies. Marajó is absolutely flat; where there are any elevations at all, pottery is invariably found there.

Where did these Indians go after leaving Marajó Island? There are traces of similar pottery found on the Amazon River near Manaos, the so-called Mirakanguēras, some 850 miles from Lake Arary; also there are great deposits and rock engravings on the Tapajoz and Xingú rivers some four hundred miles distant. Some caves yield pottery in the forest hills of Brazilian Guyana, only some eighty or one hundred miles from Arary River on the continent itself, and finally I have found similar pottery on the Upper Moju River, some three hundred miles from this location, all indicating a wide range for the original pottery people of Marajó Island.

On Christmas Day we lift anchor at four in the morning although there is no decrease in the force of the wind and sea. We struggle against all the odds offered by the elements and after eight hours' hard work arrive at the place called Santa Anna at the mouth of the Arary River. We have scarcely made a quarter of a mile an hour.

I climb on board the trawling tug *Camurins* and discuss with the captain the possibility of making the crossing in our boat. This seems now quite out of the question as the wind is growing stronger every hour and a veritable tempest is raging outside. As night approaches the seas

become dangerous for our vessel and we run her ashore among the reeds where we find shelter. The storm rages all night. The next morning the wind is still strong and the sky overcast. The barometer is low.

I am informed that the trawler is to proceed the following day to Pará and that we will be allowed to make fast our boat and tow behind. I decide to do this. All day I loaf around the forest and water-front in pleasant conversation with the good *caboclos* who live here. I am invited by the wife of Senator Miranda, the brother of the Mayor of Cachoeira, who lives in a cottage here, to take supper with them, but as I feel the unsuitability of my ragged khaki clothes for social life I courteously decline by card and have supper with my crew on the left-over bones of the Christmas goose.

At six o'clock the next evening, December 27, 1913, the crew and engineers of the trawler go on board their vessel and make ready for the dangerous crossing, and we do likewise on ours. During the day we have stowed all our cargo on the deck of the tug and have tied ropes around the cases filled with pottery to steady them. Nothing is left on the exploring craft except Skelly and Hildebrando who are to steer, and to watch the two fresh ropes which have been securely fastened from the boat to the towing beam of the trawler.

The two 80-horse-power combustion engines are set going full speed ahead and we stand out into

the wide Marajó Bay, passing the Island of the Doves.

Never shall I forget these three hours. It seems to me that every second of the 180 minutes is a battle between life and death, if not for those on board the trawler, at least for the two men on the *Florence*. It was the kind of a fight that might break a boat, and the breaking would mean the loss of human lives.

Hardly have we stuck our bow outside little Dove Island when the seas come over us. At first the trawler, built for deep-sea work with a draft of fourteen feet, rolls but moderately, but as soon as the course is set for the lighthouse of Cutijuba, the last island of the Pará Archipelago, we get the seas almost broadside with the combined force of an incoming tide, the incoming waves from the ocean, and the heavy storm.

The cables towing my boat are strained to their utmost capacity. For a moment the captain leaves the bridge and runs aft to look at the insanely tossing canoe, with its single lantern, straining behind, buffeted by waves whose force is augmented by the sixteen-knot speed developed by the powerful engines of the trawler. All he utters is "*Ah,—meu Deus*!" ("Oh,—my God!"). I ask him if we can stop to save the two boys on board, but at that instant a heavy wave breaks over the iron bow of the trawler, which is built very high, and the yellow-greenish seas wash the baggage and

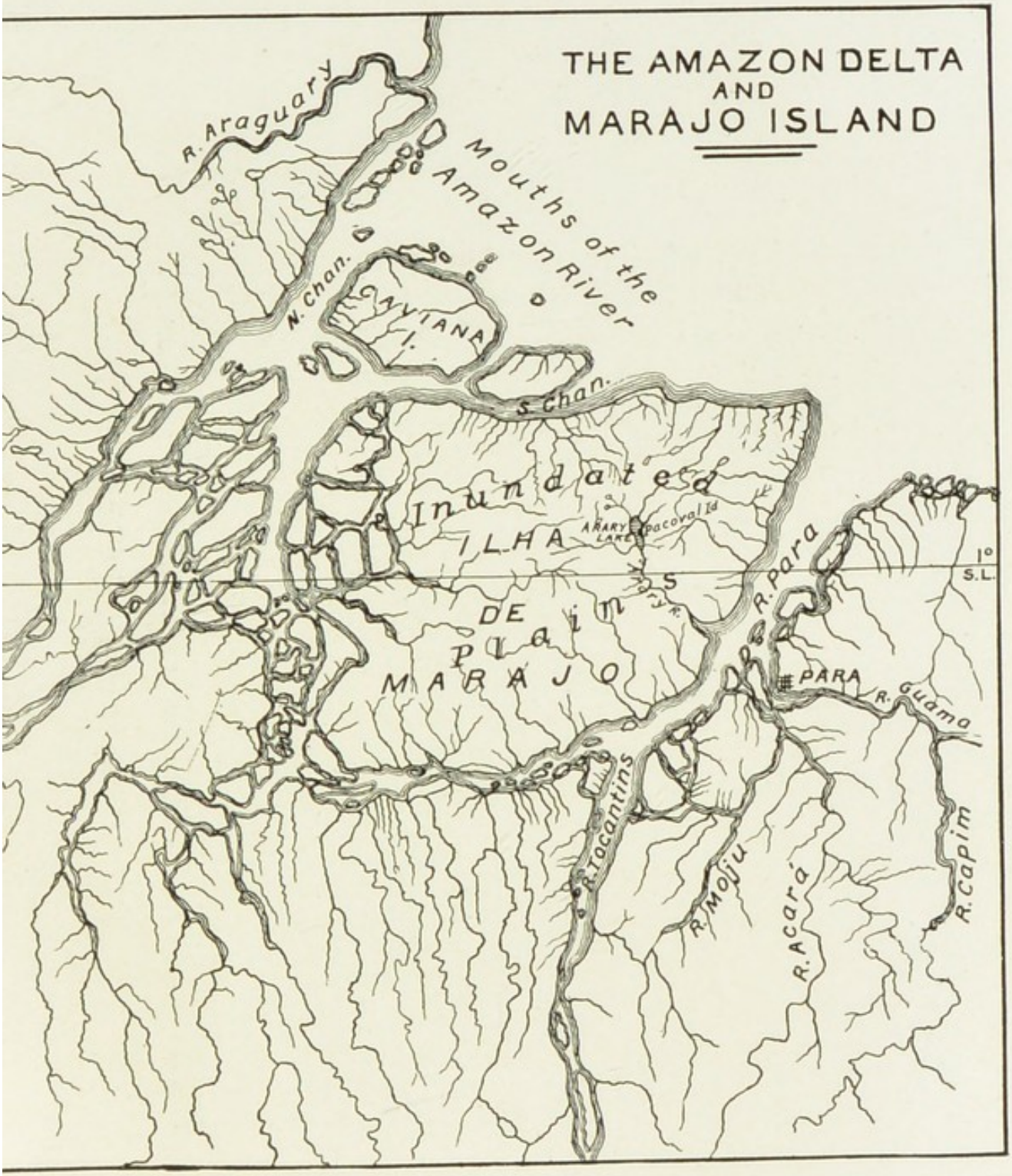
cases from their position amidships and carry them against the iron rail.

"No," says the captain, "we can call ourselves lucky if we get through ourselves; things will have to go the best they can,—we must trust in God."

Then we hammer into the main channel, called by the Pará mariners the *quebra pote*—the pot-breaker. The year which is now approaching its end has seen two wrecks just about where we are at the present moment. Both wrecks occurred in the early morning caused by waves filling the engine room and sinking the ship. Many smaller *gaiolas* or stern-wheelers have here turned turtle.

We are in the middle of it. The *caboclos* who serve as deck-hands and the few passengers who have been permitted to profit by the passage of the trawler, have flung themselves face downwards in the cabin, now and then uttering groans. I sit by the tow line looking at the plunging boat behind. Now she is down, then comes a sea about fifteen feet high, judging by comparison with the tug, running at a speed of sixteen miles an hour. Like a flash the *Florence* is flung to the crest, making the lines sing a loud *Twan-ng*.

It is the roughest, most violent journey that it has been my bad luck to take, and one of the closest shaves. I count every moment a moment gained. The Cutijuba lighthouse becomes visible and, just as I begin to hope that we are over the worst, another sea washes the trawler from end to end,


THE AMAZON DELTA
AND
MARAJO ISLAND
R. Araguary
Mouths of the
Amazon River
N. chan.
MARAJO
I.
s. chan.
Inundated
ILHA
DE
MARAJO
Planes
ARARY
LAKE
Pacoval Id
R. Para
1°
S.L.
PARA
R. Guama
R. Tocantins
R. Moju
R. Acará
R. Capim



Writing manuscript in the wilderness

sending trunks and cases crashing against the cable winches. The life-boat is crushed and the wreckage flung across the deck; the steel plate, serving as a sort of apron on the captain's bridge, is caved in by the force of the water which is sent spluttering and boiling on top of the explosion chambers of the engines.

It is as if a small toy waggon were being dragged behind an automobile at breakneck speed over a rough country, everything depending upon the strength of the rope and its resistance against the sudden shocks.

After three nerve-racking hours suddenly, as if by some magic stroke, we run into absolutely smooth water. We have entered the Archipelago of Pará, leaving the turbulent waters of the estuary a few cable lengths behind.

The boys lie exhausted on the bottom of the *Florence*. One of her lanterns has been knocked to pieces; the other is still burning. The upper deck has been loosened, and the bilge is full of water shipped during the crossing. The alarm clock has been so shaken that the main spring is broken. The tiller is gone and everything looks sadly dilapidated, including the bucks who are green in the face, excepting Hildebrando who tries to smile.

Now we see the lights of Pará; the engines stop; we run alongside the wharf feeling that we have made a marvellous journey.

CHAPTER XVIII

Conditions and Prospects

THE object of this section of the book is chiefly to tell the truth about this part of Brazil—the States of Pará and Amazonas, comprising what is called Amazonia.

It is not in my mind to criticize the life, customs, and general conditions of a people who evidently are struggling hard towards order and progress in keeping with their national maxim *Ordem e Progresso*, but merely to state the facts as they appear to an outside observer. At the same time I may venture to give some advice. It is true advice is cheap, but it may prove helpful to some who want to know this great Amazon country, whether tourist, investor, or investigator, although there are large zones not included in my personal experience.

And my descriptions may vary in many instances from those generally given out about Brazil, but I have not ventured to write till I knew the ground and I am ready to substantiate every statement I make.

So many factors determine a country's adaptability for settlement and development by Europeans that only by taking each one in its turn and analyzing it can a sound conclusion be reached, and I have attempted to look at things through the eyes of an impartial, cosmopolitan observer, comparing what I saw with corresponding conditions of other countries.

Of course no truthful picture can be had of a people seen only while going at tourist speed through their cities and along their rivers and only observing the advertised points of interest and progress. Let it be understood from the outset that the Brazilian nation is beginning to rank among the world's powers and demands consideration as one of the foremost nations of civilization and therefore it must be judged from that standpoint.

Let it also be settled, for the purpose of this book, that by the term "Brazilians" I refer always only to North Brazilians or, to be even more specific, to the civilized people of Amazonia—Pará and Amazonas.

Here to the Amazon valley it was that I first came in 1910, and it is here that I have spent most of my time in study and observation .

COST OF LIVING

The cost of living in the two cities, Pará and Manaos, the chief towns of the region, is high, as

in all cities placed on the border of a wilderness where trade in natural wild products has prevented the development of agriculture. From actual experience I have compiled statistics and ascertained that the ratio is as four to one on the cost of living compared with New York, for instance.

Let us suppose that we live in New York with an income say of $150 a month. This permits us to go neatly dressed; our household does not lack in healthy, plain food, and our dwelling is modest but modern. Give the same man the same income in Pará or Manaos (Pará especially claims a well-regulated modern, domestic development) and his family will be in absolute need, unless its standard of life be considerably lowered and most of the comforts of life renounced. In order to live in Pará with the same amount of comfort as is possible on the $150 in New York, the head of the family must earn at least $500 a month American money. The cost of living can therefore practically be placed as three and a half to four times that of the United States.

The root of this evil, for an evil it certainly is, lies in two things: lack of agriculture, and exorbitant duties on all imported goods; internal revenue taxes are other, but less important, factors.

This leads to the subject of the protective tariff. This term is a farce, a true absurdity, for Brazil has no industry that needs protection. The customs duties become merely an important source of

federal revenue, supporting to a great extent the Treasury of the Government, which seeks in this manner to make up for the absence of internal revenues that for numerous reasons have not yet been established.

A country of many and remunerative industries naturally wants to protect and encourage them, to keep similar foreign products out, so that internal competition can flourish and stimulate trade in all its branches and benefit labour. This has always been the well-meant policies of progressive nations and their governments, and prosperity and a well-regulated production, with reasonable cost of living, has invariably resulted. No country's tariffs are unassailable, in fact our own are still open for improvement, but as a whole they have been wisely adjusted, considering that our industries are numerous and cover many industrial ramifications; it remains to be seen what recent reductions will accomplish.

But what excuse has the Brazilian Government for placing a high tariff on machinery and tools, when, at least in the greater portion of the country, not a piece of iron or tin, nor a piece of brass, is produced and worked, all being imported from abroad. When I say "the greater portion of the country" I mean that in the State of São Pãolo there are a few machine-shops which, however, use imported metals. There does not exist north of Rio de Janeiro, throughout all the immense terri-

tory up to French Guiana and westwards to the Andes, an iron screw or a wire nail that has not been imported, overloaded with duty, consumers' taxes, state, federal and municipal taxes, dozens of middlemen's profits, etc., until the nail is costly enough to be worth in its home country a gross of its kind.

Machinery, the real instrument of progress and activity, is taxed and retaxed until its cost is doubled and trebled, and it takes twice or thrice as long a time to earn a profit. There is no encouragement to better, or even to begin, the most primitive industries, as the initial cost is so high that the active capital is nearly absorbed before operations can commence. Only those who are compelled by necessity to employ machinery do so, and then only after great sacrifices. I have seen a narrow-gauge railway, 1000 yards long, on ties of local timber which cost the proprietor $6000 American money. In almost any other country it could have been laid for one-tenth the amount.

But I have strayed from the question of cost of living, although the track alluded to was calculated to overcome certain difficulties in the transportation of food products and therefore, in one sense, has an indirect bearing upon the subject.

Suppose that we find ourselves in need of food supplies in Pará and begin our search for provisions in the prominent wholesale and retail stores. Lining the shelves we see thousands of tins con-

taining preserved foods. We have been through the market looking for a good cut of beef, mutton, veal, or pork and have utterly failed, finding nothing but badly cut, half-tainted meat unfit for a civilized stomach. Therefore we turn towards tinned meats, forced to take a chance of eating equally poor stuff, but feeling that on short notice meat cannot be given up altogether. Highly seasoned French game comprises the majority of the tinned contents. Quantities of German *schnitzels*, *würste*, and *kräuter*, blue-painted tins of English Oxford sausages, and a few "corned beefs" complete the choice. Not many American goods are to be found, notwithstanding their superiority in many respects. Buying a few tins we find that the prices range from seventy-five cents to a dollar and a half per tin. Each bears an internal revenue stamp, a consumer's tax with denominations from thirty to one hundred *reis* equal to 1 to 3 cents in American money.

Chocolate, originally exported from Pará as cacao beans, at five hundred to six hundred *reis* a kilo, that is seven to eight cents a pound, is imported after the process of preparation abroad, and sells here for one dollar a pound, an increase in price of about twelve hundred per cent., simply because nobody has the initiative or the knowledge to buy machinery and prepare the home product properly. There is a slight argument, however, in favour of a high tariff on chocolate as there is an

attempt at making chocolate in Brazil, but only an attempt.

Condensed milk costs thirty cents, or one *milreis* a can as against ten cents in the States, while liquid canned milk sells at a few cents less, but still eight times higher than the value abroad for fresh milk. Marajó Island, close by, grazes about three-quarters of a million head of cattle, but it does not produce a gallon of milk per day, nor enough meat for Pará consumption. Insufficient and inadequate means of transportation are the main causes for this state of affairs. Eggs retail at from six to nine cents a piece.

It is evident, therefore, that a gentleman of modest habits, wishing the same breakfast he eats in his own country, has to expend about $1.50. Still he will miss fresh butter. North Brazil has never seen fresh appetizing butter. The substance which once was butter when packed down in tins in far-off Denmark, arrives liquid and rancid. If we persist in such great extravagance as eating oatmeal, we have to add a considerable portion of a dollar to the cost of our breakfast. The breakfast food known in the States as "grape-nuts," a product which, on numerous occasions, formed my only subsistence on long and difficult journeys in out-of-the-way places, attains a price on the Pará market which justly can be called "dizzy." It was sold at the time of my leaving New York at fifteen cents a package. In the city of Pará the

same tin, containing little more than half the amount, costs $1.20, of which sixty cents is duty, the rest is divided between dock charges, consumer's tax, dispatch (meaning illegal graft), and profit of dealer.

In vegetables we are restricted to canned peas at from sixty cents to $1.20 a tin. Upon the arrival of transatlantic steamers there are such things as potatoes, onions, carrots, beets, and cabbages for sale in several large stores. But it is not everybody who can afford to pay three cents for each sprouting onion specimen, nor to buy potatoes at eighteen cents per pound ($10.80 the bushel). The modest but useful cabbage occupies truly an undreamed of place of honour and distinction—almost awe-inspiring. Its average price is $1.50 for medium-sized heads. The cheapest and smallest for which in the United States we are accustomed to pay perhaps five cents, cost one dollar, or three *milreis*.

We never found any consumer's tax stamp on these vegetables, nor on the imported dried peas. This is not consistent, for every cigar has a stamp glued around its waist, and stamps are found on every bottle of liquid, every piece of soap, every tooth-brush. Coffee we can buy for twenty cents a pound, a price far too high when we consider that Brazil is the most important coffee-producing country. Rice is seventeen cents a pound; a third or fourth quality badly hulled, much broken and discoloured. As we go out of the store, a very up-

to-date store to look at, our eyes fall on some bacon, newly arrived. With sentiments full of anticipation we inquire the price. We are told that it is five *milreis* or $1.50 a kilo, which they consider cheap as compared with other stores. We argue a while and we finally get it for $1.20.

Think of the rations of the American or English soldier and mariner, every man entitled to a goodly amount of bacon, butter, flour, meat, salt, and sugar! In Brazil, such generous rations would cost about $10.00 per man a day.

Next we visit a clothing store. A man's ordinary, ready-made sack suit costs about $60; a poorer quality can be had for $40. Men's hose average $1 a pair for a fifteen-cent kind, while women's silk stockings cost about six or seven times the New York price—that is, $6 a pair.

The fashions are typically French; even to shoes with ridiculous-pointed tips. American-made shoes begin to gain favour, but they still sell at prices restricting their popularity to the wealthy classes. One is charged $7 for the standard grade of men's shoes and $8 for women's. Chemists and druggists follow the high prices. Thus we find ordinary talcum powder selling at sixty cents for a ten-cent can, and $7 to $10 for Parisian perfumes. Soaps, even the ordinary washing and toilet soaps, are so expensive that I am tempted to believe that the great majority of the people must either starve or go unwashed. In fact, few people, except

Anglo-Saxons, do scrub themselves with soap in this part of the world. A man with say eight children would surely have to renounce food if his family were to use soap, for the greater part of his salary would be consumed in purchasing that article. A shower bath is the customary form of bathing. Soap is placed carefully on the wash-stand but only to be used on special occasions, yet the Amazon valley is rich in vegetable oils which would be available for soap manufacture, and some day the factories will be established.

Venturing into a bookshop to buy stationery we are charged sixty cents for twenty-five second-grade envelopes. We find no first grade.

It will probably be a century or two before this country begins to manufacture its own steel pens, but just the same the "protective tariff" insists upon its glutton's share of the price, doing its best, or worst, to paralyze and discourage the people. The merchants are generally satisfied with a low net profit in order to do business at all; we find that grocers' profits average ten per cent.

We need furniture. We expect that a country so rich in hard woods and cabinet timber must manufacture at least some furniture for local use, but such is not the case. One firm makes a small quantity of fine furniture, but more as a matter of curiosity than for any commercial reason. Most of the furniture used comes from Germany. A simple pine rocking-chair of the pattern that is

sold on the instalment plan along Third Avenue, New York, for about $3, uncomfortable in the extreme, and merely a rocking-chair because its base is curved and can oscillate, costs $16. In a few months the humidity loosens the glue, the white ants and other boring insects, called *paunilha*, attack it and some day the chair collapses. Bedsteads, the few that are used in this land of "suspended" repose in hammocks, are mostly of German make, rickety, and of the usual poor quality of most imported German articles, costing nevertheless enough to buy a good brass one abroad. Linen, looking-glasses, and similar articles of modern requirements are proportionately dear, and all are "made in Germany."

There is, however, a class of Brazilians who can afford to buy really good things for their homes: china, bric-a-brac, bevelled crystal mirrors, and chandeliers, imported from France.

Hardware dealers also have a tough fight against the high tariff; if it were not because of low prices, on certain goods like machetes, axes, and sewing-machines, these articles of supreme necessity here on the Amazon would be unattainable by most of the people. Fortunately the far-seeing American manufacturers of these goods have lowered the export prices considerably and we can therefore actually buy an American-made machete cheaper in Pará than in New York. Due to keen competition between two well-known American sewing-

machine concerns, prices have enabled almost every home to possess a good machine. German machines are no longer sold in Pará. Even in the bush, in the remotest settlements in the wilderness, months of journey from any large settlement, I have found sewing-machines proudly occupying the place of honour in the household in the humble thatched hut. A care is bestowed upon these machines that must make the local babies envious. I have often seen a *seringueiro* immigrating from his old abode to another, and perhaps less unhealthy region, with no other baggage than a rifle, a richly-coloured tin-trunk, *bahú*, and a sewing-machine piled up in his small rickety canoe. I have seen a settler clear the forest to make room for a little open-air hut, but his sewing-machine would be set amidst the underbrush and protected before the posts and rafters of the hut were put up. In the swamps of the Marajó I saw the sad picture of a burned hut, and in the centre of the overgrown floor stood the rusty skeleton of a sewing-machine already entwined by creepers. The owner had either left suddenly or died with his entire family.

The dusky maiden's heart is instantly won without a struggle if a sewing-machine is carried into the hut and placed at her pigeon feet instead of bonbons and flowers. But, beware! a sewing-machine presented means a marriage contract sealed!

Ordinary wire netting costs from $1.00 to $1.50 per yard according to fineness of mesh. A small package of copper tacks costs $1.20. All household goods follow these exorbitant prices. The cheapest three-cent drinking glass, coarsely cast, costs 500 *reis* or about fifteen cents. An ordinary platter commanding a New York price of about fifteen to twenty cents is sold at 8000 *reis*, that is 8 *milreis*, equivalent to $2.50. Bargain counters offer the poorest quality of crockery, the kind that is used by circus jugglers at home for quick, efficient, and wholesale smashing, at an increase of 600 to 700 per cent. on actual value.

Recently a fishing enterprise failed in Pará, because the management and current expenses exceeded all reason. They sent for a few tons of deep-sea trawling nets for use in connection with a powerful deep-sea tug in the Amazon Delta. They soon found that the duty on such nets, probably the most ridiculous tax that the Federal Government has ever invented, was 10,000 *reis* (10 *milreis*) a kilo, or about $1.50 a pound. Therefore each one of the nets cost, in duty alone, over one thousand dollars, American money.

The Pará importers' intercourse with the custom-house is not pleasant. It involves an amount of red tape equalled in few countries. The question of graft enters in every withdrawal of goods from the docks. From personal experience I can quote only Russia and Portuguese East Africa as rivalling

Brazil in cumbersome customs circumlocution, although Russia's tariff is lower than the Brazilian.

American manufacturers, no matter how confident and enthusiastic they may be about the openings which may present themselves in Brazil for their goods, after having studied the other equally important factors, should not neglect to reckon with the high tariff before going deeper into the business.

CHAPTER XIX

Food, Health, and Sanitation

THE Brazilians are decidedly a sickly race. The almost universally poor state of the average Brazilian's bodily and mental health is caused by the three factors next to be discussed: climate, alimentation, and moral régime.

Equatorial Brazil extends from the upper Amazon River, where the ill-famed Javary River joins the Solimoes or Amazon main stream, to its mouth, from the plains of the Guyanas to the limits of Bolivia. For the greater part it is one vast zone of periodically inundated forest and permanent *ygapō* swamps. In the summer, or dry period, extending over the same months as in the North, there is an average daily temperature of 89° Fahrenheit throughout the Amazon valley, with slightly higher degrees of heat the farther we go away from the Atlantic Ocean. The humidity is great, but still the air is tolerable to the human system. In the wet season, commencing in December and lasting well into the early summer months, the temperature remains fairly constant,

but the humidity rises until it touches the point of complete saturation. Then begin the human sufferings. There is no human being who can constantly inhale hot, vapour-laden air and remain perfectly well, no matter how acclimated he is, if he does not adapt his regimen to the circumstances.

In spite of all attempts of deceived travellers to boost up the salubrity of the Amazon in general and Pará in particular; in spite of noted authors' efforts to establish that the climate is mild and healthful, I must say, and I am backed up by cold, irrefutable facts, that the Amazon valley is decidedly unhealthy, and Pará forms in no way an exception.

According to the official statistics, consumption, and other disorders of the respiratory organs, first of all reach a mortality percentage far higher than in any other country for this flagellant disease. A close second place is occupied by malarial fever, or *impaludismo*, with its allied liver, kidney, and spleen derangements. A rival for second place in mortality is gastric derangements, while small-pox and numerous other ailments follow along in close succession.

While I am writing, the monthly statistics of mortality of the city of Pará reach me in the *Folha do Norte*. As it may interest medical readers and others interested in these matters, I have copied the statistics below:

Malaria	45	deaths
Small-pox	12	"
Diphtheria	4	"
Leprosy	2	"
Beri-Beri	4	"
Dysentery	3	"
Ankylostomiasis	1	death
Tuberculosis	35	deaths
Cancer	7	"
Softening of the Brain	9	"
Heart Disease	12	"
Bronchitis	8	"
Enteritis	52	"
With others totalling	258	deaths

The only disease not yet on record is that caused by overwork, and it is not likely that it will ever strike any civilized Brazilian. This probably accounts for the well-known fact that there are no cases of sunstroke recorded in this torrid zone.

Due to really laudable efforts of the sanitary authorities in Pará, this progressive city can boast of the eradication of yellow fever, although now and then a case pops up in the towns of the interior. This is not due to the lack of the yellow-fever-breeding mosquito *Stygomia*, but because there are no fever patients to bite and thus transfer the disease. Ordinary malaria is not over-frequent in Pará, but is continuously carried within the city limits by the river people travelling in and out.

However, the "mosquito brigade" is working daily in the houses and backyards of the city pouring oil in all water receptacles and thus efficiently destroying the breeding places of the *Anophiles* mosquito. The keen detective eyes of the "mosquito" men speak well for the official who directs this important service and for the Government which, in spite of the severe economic crisis, does not abandon this service, as it has abandoned other useful institutions.

But lung troubles cannot be eradicated by the intervention of a handful of lynx-eyed men. It takes a more radical and intelligent campaign to change things for the better; it takes the full comprehension and co-operation of the people, rich and poor. It is the great omnipresent humidity that gradually weakens the lungs and, in conjunction with unsanitary conditions and poor alimentation, makes possible and fertile the field for the tuberculosis bacilli. Almost everybody has a cold on the lungs. The houses are wrongly constructed in spite of centuries of colonization and experience, and the mouldy atmosphere is all-pervading. Humidity is in the walls; in the floor and furniture; even in the bedding (where bedding is used). And clothing never dries; it absorbs a great deal of water which is retained unless dried out over a fire. Books and paper become covered with fungi; tools are attacked by a pernicious and unpreventable rust, defying oil and white lead.

I hear in the still hours of the Amazonian night, dry racking coughing issuing from neighbouring houses in the city, as I have heard it in the small villages, and in the lonely rubber-workers' huts far out in the forest a couple of hundred miles away from the services of a doctor.

The great heat of the day deceives the people, and when night comes with its false coolness, false because it is the dampness that chills and not really a lowering of temperature to any extent, they lie uncovered, or perhaps with only a thin sheet to insufficiently protect the back and chest. Year after year follows in this manner, until some day tuberculosis develops, brought on by some other sickness which has favoured the ingress of the malevolent microbes. It might have been a slight attack of malaria, or gastric trouble, or a prolonged march in the forest with wet clothing, and sleeping nights in wet hammocks.

If the house-owner would spend less on exterior decorations, such as fancy stucco scrolls and plaster angels, spend less on multi-coloured mosaic tiles and outer walls of enamelled brick, and install in the basement of his dwelling a modest hot-air furnace, then he would not only have hot water to wash himself in, but the heat at night would permeate the walls and floors and dry them and eliminate the chill of dampness and its consequences. The walls then would not be covered with green fungus and moss, which no deceiving

whitewash can perfectly hide, and the outer housewalls would stop crying their long, green-black, streaky tears from the roof to the ground.

What city improvements have been undertaken have been and are being done by the English, showing plainly the Anglo-Saxon's superiority, initiative, and indispensability in the remote inhospitable corners of the earth.

The heat and humidity combined have another effect upon man. They decrease his mental capacity and undoubtedly depauperize his whole system. While the keen bracing air of our Northern climate has developed man to a high degree, the North Brazilians are impeded by nature in their mental and physical evolution. As to the latter assertion, it is not meant to imply that a torrid zone is incompatible with a strong physique, but that a high physical development there has much to contend with. It is true that the Brazilian actually suffers little in his climate as compared with the Anglo-Saxon, for he is acclimated through some generations, yet I have seen many Anglo-Saxons who preserved perfect health even after living on the Amazon for a period of years. This is because of their adaptability.

The great nervousness of the average Brazilian is further increased by his constitutional embarrassments, such as the above mentioned liver complaints. These physical troubles are not good foundations for a cool business head nor for pro-

found scientific thinking. Nature in the tropics is against man. Who can sit down and concentrate his thoughts on a subject to advantage when pestered by noxious insects in a hot, damp atmosphere. It is greatly to be admired that men like Wallace and Bates (particularly the latter, who spent eleven years on the Upper Amazon) have been able to produce such classic, priceless works of science on the subject.

The superficial study of the traveller-tourist is quite an easy thing as he seldom remains many months or even weeks in a place. From the cool, marble-topped tables of the Hotel Grande or Hotel da Paz in Pará, where busy waiters pour out tall glasses of cool amber-coloured beer, many a traveller has made his Amazonian observations. His heated brow soothed by electric oscillating fans, his mind inspired by the product of the excellent Pará brewery, watching the loaded trolley cars go by (and with his steamer ticket in his vest pocket), he cannot fail to praise the Pará climate, its ocean breezes, its progressiveness, and its bustling activity! But, let him see Easter, Thanksgiving Day, and New Year go by a couple of times; let him be occupied with his daily studies in the bush and on the river; let him live the everyday life among the people, and the veil of deception will drop from his eyes, and he will realize the truth of many things, even to the source of the delicious breeze.

The question of alimentation is of as much importance and has as much bearing upon the health and wealth of people as the climate. The first is at the disposal of man; the second of nature. The question of alimentation in the Amazon valley is still quite unsolved and will probably remain so for many decades to come, unless some very radical change takes place.

The food of the Brazilian, as I have observed through years of intimate personal inspection, is partially unfit as food and is wholly inadequate. In making this statement I judge from an American point of view.

Before one can understand the problem of alimentation he must comprehend what is meant by Brazilian food. It is hard to describe just exactly what the Brazilians eat as so many things are mixed indiscriminately together that no characteristic taste remains. Contrary to our custom and to the laws of nature, but in accord with usage in torrid climates, the hottest and strongest spices are added to most of their foods, oils are employed for frying and in such abundance that all food seems to have been soaked in the liquid, absorbing its own weight of rancid oil.

The Brazilian's breakfast consists of a demitasse of strong black coffee and perhaps a piece of bread. In the interior where no bread is made, a little farina is perhaps indulged in. Nothing further is eaten until *almoço* at noon, except three

or four similar cups of coffee during office hours. Lunch then consists of a soup composed of the following ingredients: plenty of water, a green leaf chopped fine (a leaf remotely related to cabbage), a few aromatic leaves (*folha de cheiro*), and some garlic. This is presented in the guise of soup. Their second dish, in ninety-nine out of one hundred cases, is a *pirão* which consists of the water in which fish or meat has been boiled, mixed thoroughly with farina till it becomes a kind of batter. The *pièce de resistance* is the *cozida* and it is made from bones well boiled. One or two "English potatoes" are stewed with a chunk of *macaxeira* (the fleshy tubers of the cassawa plant) and an inch or two of Portuguese sausage are thrown in to impart bouquet. These sausages are knotty and perspiring and not very appetizing to look at; in fact there is something "hardened," almost "vicious," in their appearance.

In order to vary the menu a little, beef is cut in strips and hung out in the sun to dry. A servant or two, or some handy youngsters, are set to watch the meat while drying on the fence, or on the clothes line, to prevent the scavengers, the filthy *urubús*, from flying away with it. The dried meat is then boiled up the next day with a little garlic, salt, and pepper, grilled on the fire, and, at the moment of serving to the many anticipating, eager mouths, rubbed over with lemon juice and a raw onion.

Truly we must marvel at the courage and complete disregard of gastronomic sensations possessed by the worthy citizens who can relish this.

For supper I find on the well-to-do Brazilian's table beef soaked in vinegar and garlic, cut in strips, and fried in oil. As a side dish rice appears, slightly boiled; that is, rice which has remained in hot water long enough to soften up a little. It is then smeared over with Portuguese tomato paste which comes in tins. Its taste is dubious.

Farina (Portuguese *farinha*), the fibrous starch grains obtained from the roots of the poisonous *maniwa* plant, the *mandioca*, is a never-failing Brazilian food. It makes its appearance as the favourite side dish, in great abundance, at the table of the most aristocratic people, served on delicate porcelain plates, as well as in the hut of the *caboclo* in the interior in a *cuya* (gourd) or in the hollow palm of the savage forest-dweller's hand in place of a dish. Unattainable to me is the skill with which this petrified "sawdust" is flung into hungry mouths at quite a respectable distance, and incomprehensible is the love for this absolutely tasteless food that bloats the children's stomachs and defies the ravages of time, heat, and humidity. But then there are so many things here that remain unfathomable to my mind. And yet I have met Americans, or at least one good,

healthy "Way-down-Easter" who with frank, unblushing countenance confessed that he had eaten farina and liked it! It made me think of the wonderful adaptability of the human constitution and how local circumstances can alter a man and his tastes.

Farina is a practical food, however, as far as portability is concerned. It is carried loose in the pocket, or by the *seringueiro* on his marches through the forest in a small bag, often coated with rubber. Whenever he is hungry our man will scoop out a small quantity and holding it in the palm of the left hand he will add a portion of water to it, all the while stirring it with the index finger of the right hand. He then will drink this, the *chibé*, with unmistakable gusto.

By many Brazilian fruits are praised, in books and otherwise, and here again it becomes a matter of taste, and not patriotism, which cannot be discussed. There are bananas and pineapples, but no systematic plantation of these excellent fruits has yet been undertaken on the Amazon. Although the soil and climate are ideal for the successful growing of bananas, and although there are immense areas lying idle and unclaimed, this valuable fruit is more expensive in Pará than it is in New York, on account of difficulty of transportation and the general indolence and indifference of the people.

In recent times a banana plantation has been

started in the vicinity of Pará, but indications are not favourable for a successful enterprise.

It appears that the bananas and pineapples growing in Florida, Porto Rico, Hawaii, and the West Indies reach a much higher grade of development, simply because the growers know how to cultivate them. The Pará fruit is generally grown in a haphazard fashion. The young shoots are put anywhere in the ground and the fruit plucked when ripe. No attempts at soil selecting, fertilizing, pruning, or general cultivation are made. Often a plantation is started in June. Things begin to grow well towards the end of the year, then in April and May the annual inundation sweeps the whole business away. The planter forgot to investigate his territory, as to whether it became an inland sea during the wet season or not.

The numerous other fruits are all insipid in taste, without the flavour that comes from careful cultivation. Fruits simply grow wild. The oranges are stringy and partly tasteless and can never compare with the Florida and California product. Apples and pears, the kings and queens of all fruits, cannot, of course, grow in this climate as the average temperature is too high and no rest is given the tree in this perpetual summer. Grapes wither and atrophy and cease bearing altogether. In return for these we have here *abiú*, a yellow fruit with a sour-sweet mushy meat generally full of maggots. *Abacate* or alligator pear, a food-fruit to

be eaten with salt and pepper, making a delicious salad, here never reaches the size nor flavour of its West Indian brother. *Cupuassú* is a large, brown, perfume-scented fruit whose pulp is mixed with tapioca and made into jelly. Mango, a famous fruit, attains the size of a large apple, but has the shape of a bean, is refreshing and common. In March the street-urchins collect them by the hundreds off the shady *mangueiras* of the Pará avenues and side streets, much to the annoyance of the pedestrians who wear derby or straw hats. This fruit requires skill in eating and also some patience to extract the long, threadlike fibres that lodge themselves between the teeth.

The numerous palm fruits such as *assai*, *pataoá*, *bacaba*, *pupunha*, are really better fitted for monkeys than for men. *Assaí* is a boon to the poor, although it is held greatly in esteem by all classes; and it must be said that it fills the hungry stomach wonderfully, especially when farina is liberally added. These palm fruits are all prepared as a food-drink in one identical manner—by grating them on a sifter and adding water to the pulp. A Frenchman would describe the taste of all these palm "refrescos" as *fade*. Considering everything one must conclude that equatorial Brazil is poor in fruit when compared with temperate countries.

As to eggs and milk, a negligible quantity is produced and consumed and considered a luxury. If I recall rightly a quart of the best milk sells in

New York for eight to ten cents. Pará milk is thirty cents a quart. The cattle are of poor quality, due to the constant persecutions of insects and reptiles on the inundated plains of the Marajó Island as well as to the poor pasturage. Among the some hundred species of grass there is scarcely a single kind exactly suitable for cattle feed. Apthous fever and other infectious diseases are almost constantly reducing the originally large cattle herds. When in the summer the water from the Amazon River and its affluents flows over the edges of the island and covers the prairies to a depth of several feet, practically all the calves thrown during this state of things perish through drowning. Alligators pursue the cattle. There is no grass during these dreadful months for the cattle, and should one venture too far from the *teso*, to eat of the *canarana* grass floating around, it is at once attacked by the piranha fish. It is rare to find a Marajó cow without the udder mutilated from such bites.

In Pará, when the morning milk vendors drive their cows around the streets to fill orders fresh from the cow, if a servant is seen issuing forth for a bottle of milk, and the house is that of a Brazilian, it is safe to conclude that somebody inside is sick. If the same servant is seen carrying eggs at the same time, then indeed there is little hope for the patient's recovery! Only on feast and holiday occasions are eggs used, and then in great quantities; otherwise the eggs are hatched. The chickens

are generally consumed by invalids. When the patient recovers, nourished by healthy food and broths in this manner, he quickly lapses into the constitutional state of dyspepsia and chronic indigestion by taking up his regimen of jerked beef and farina and the conglomeration of unsavory dishes already referred to.

There is still much left unsaid about Brazilian food and alimentation, more than I here feel warranted to say. Let it suffice, however, to remark, that there are no Brazilian cooks who would rank even with a third-class cook abroad. As to the matter of taste for this or that dish or preparation, there is only one answer: *De gustibus non est disputandum.*

It is of course a somewhat delicate affair to attribute, at least in part, the Brazilian constitutional nervousness and physical inferiority to self-indulgence, but such a statement is really the essence of the truth. Venereal diseases are prevalent, especially among the middle and higher classes. The majority of medical attendance is given to the treatment of such maladies and their derivatives. The walls of residences and business houses are beplastered with huge signs advertising this and that elixir whose curative properties are claimed to be infallible, showing most realistic and not always artistic pictures. Even venerable old church walls are not exempt from these highly illustrative posters.

The rate of mortality among infants is very great in all these regions, and the conclusion is imperative that this is due in a large measure to the shortcomings of the parents. The growing generation is not a strong and healthy one—it is not given a fair chance.

CHAPTER XX

The People

IT may not be strictly in accordance with standard rules to classify a people in the following manner, but nevertheless, it is illustrative and often very practical to say that there are two classes of North Brazilians, broadly speaking: those who wear shoes and those who don't. The latter-named class is by far the better as to physique. The class which wears shoes, the *haut monde*, the commercial and official citizens, are mostly Portuguese descendants more or less remote. Classified in accordance with accepted rules, we have in North Brazil and the Amazon valley the following race mixtures:

Caboclo: the offspring of the Indian and the white. The latter may be Portuguese, Swede, Dutch, or anything. *Mulatto:* the offspring of white and black. *Cafuzo:* cross between Indian and Negro. *Mestitso* or *Mameluco:* any mixture. The last corresponds with what we call half- and quarter-breeds.

The young Brazilian as I see him strolling leisurely along the mango-shaded avenues, daintily

flicking the cigarette ashes, is a perfect gentleman from the top of his derby to the tip of his elegant patent-leather, spatted boots. His trousers are creased to razor sharpness, his collar and tie are faultless and the tie of a rainbow hue. His slender fingers are generally adorned with rings beset with jewels. Often in the hot hours of the day he jauntily extracts a pretty little fan from his side pocket and with movements that would cause envy among the smartest of the New York tango dancers he makes little zephyrs caress his face. His moustache is his pride and it is twirled dexterously upon all due occasions when it is deemed desirable to produce an effect of elegant manhood—particularly when a young lady is about to pass.

In manner he is typically French—or at least he wishes to be. Paris fashions and ways are his ideal of human attainments, and therefore we see more men hanging in or about perfumery stores than at the more plebeian public refreshment places. The best Parisian perfumes are used and the delicate fragrance of lilac and heliotrope greet you upon entering many an office or place of business. On voyages the men literally douse their hair with essence of *fleur d'amour* and similar suggestive brands.

His gait is generally quick and of a certain neatness: especially in rainy weather when he wishes to avoid mud puddles. In manner he is

extremely courteous and formal, in keeping with his Parisian ideas, but the courtesy is not always so genuine as the traveller is led to believe. When the ice of first acquaintance is broken, all the negative virtues manifest themselves; but this is far from being an exception in any other people.

Physically speaking, the Brazilians are of inferior stature, hollow-chested with slender limbs, small number three feet and sloping shoulders. Those who do not wear shoes are, as a rule, larger men, thick-set, and far more hardy—that is, the *caboclos* and other mixtures.

The women, the society figures as well as those of the middle rank, are all of the uniform, traditional Spanish type, familiar from frequent descriptions. Their haughtiness and pride are acknowledged by all travellers and form a barrier that no one can hope to surmount unless he be of their own race or set. About the age of sixteen they are often really pretty, but they commence early to fade, and at twenty they not only are fully developed, but show unmistakable signs of premature aging, long before our Northern women have attained their finest development. It is like a beautiful, exotic flower maturing early and dying soon; even before our Northern flower has commenced to unfold. Their natural complexion is that peculiar pale colour so fashionable among Parisiennes who obtain it by additional layers of enamel and powder. When a little Indian or

mulatto blood flows in their veins the complexion retains a tinge of faint brown, often very becoming.

Ladies very seldom walk out in the daytime, girls never, but they spend the better part of it looking out through the windows. When a young lady goes for a walk she is invariably chaperoned by an old servant or some elderly, female relative. Their only pleasure seems to be piano-playing. They never take part in outdoor sports of any kind, no doubt on account of the humid heat of the day.

In dress they are now fully up-to-date. Parisian fashions are in vogue, and French dressmakers make a good living in Pará and Manaos. It is not many years ago that such essential apparel as hats, shoes, and stockings were unknown even among society ladies; but now it is different.

My well worn khaki suit and helmet would never quite suit the fastidious Paranese, who, it would seem, judge a man from the cut of the clothes he is wearing. On many occasions, in the beginning of my stay in Pará, when passing through the streets dressed in khaki, but without any unnecessary paraphernalia adorning my person, I was unpleasantly admired by the high-collared youths dressed in derbys and black suits. Such remarks as "*Olha Inglez*" ("Look at the Englishman") would always reach my ear in passing. On one occasion I was refused entrance to a trolley car because as I learned from the car conductor I

lacked a neck-tie. Another day I triumphed: I had provided myself with a tie and pulling this out of my pocket, when entrance was again refused me, I looked questioningly at the conductor, who with a grave, dignified smile admitted me and I was given a seat among black-silk-dressed ladies and perfumed gentlemen. But I soon submitted to the inevitable and when in town wore a regulation suit.

PLEASURES AND DIVERSIONS

I am mentioning pleasures before work, because they are selected in the same order of preference by the people. There are few or no amusements in this part of the world, as compared with cities of similar size abroad. It is not due to the lack of money with which to erect suitable places of public entertainment, but rather to a matter of preference and ethical standards. During the 1909 and 1910 rubber boom, when money was gushing in and out, no new forms of amusement were introduced, simply a greater expansion of the old standard ones.

We can statistically divide the forms of amusement, as practised here, in two classes—the moral and the immoral. The former, as far as Pará is concerned, is limited to two restaurants or hotels on Largo da Polvora, where most foreigners put up and where a few up-to-the-minute movies or

cinemas are clustered around. Here the choice "400" are to be seen flocking at night, their chairs on the wide sidewalk, beside marble-topped tables, enjoying cool drinks and feeling happy *à la Paris*. Soft music strains are wafted out among the mango trees, over the long row of taxi-cabs, over to the Teatro da Paz standing there in majestic and gloomy desolation.

The soft music comes from the double orchestra of the movies. I say double, because there is one outside in the vestibule to keep the waiting crowd soothed, and one inside to keep the audience soothed and forgetful of the temperature. When one stops the other commences. The films exhibited are mostly French and Danish.

The toilettes are, no doubt, elegant, and ladies as well as gentlemen move around with grace and real metropolitan elegance on the two blocks of dazzling light; or else they hire taxi-cabs and whizz up Nazareth Avenue some six or seven blocks, turn around, because they cannot whizz any farther, and come right back again.

Then there are, close by, several institutions of a gayer and less restricted quality, where according to the advertisements the celebrated Parisian star So-and-So is giving elegant, exuberant, glorious, scintillating, etc., etc., performances for the distinguished public. One of these places is called Moulin Rouge and ranks in glory and activity with the now extinct Sans Souci on lower Third Avenue

in New York, frequented by a clientele of similar tendencies—however, with the "rough-house" element left out.

As in all corners of the earth where natural resources of easy access and exploitation have suddenly drawn together many people from many regions a great influx of demi-monde follows. In Manaos, for instance, the number of disorderly houses in proportion to family residences was, according to the police records, a formidable majority. Since the rubber business declined, the proportion has fallen. Pará is by no means as bad, still the proportion is great as compared to other cities of similar population, and the police manage to keep the activities of these places within certain limits of decency. The *botequins* or public saloons look very innocent and do not contain, as far as it appears on the surface, any great quantity of intoxicants, but nevertheless many a man has succumbed to the effective *cachassa*.

The formal and informal amusements or diversions offered the residents of this city and its sister city Manaos are therefore reduced to moving pictures, beer drinking, and disorderly houses.

There are some clubs such as the "Sport Club," where the select can go and bowl and play, or those who are less strenuously inclined may read papers and reviews. Some very swell functions occasionally take place there.

The Amazon country has always struck me as

being a joyless, sordid sort of a place for pleasure seekers to go to. The climate, the endless dark forests and expanses of water, the heavy, oppressive silence which pervades all, even the streets of the cities after nightfall, have a depressing effect upon the mind. It is sufficient to behold the nervous, drawn features of the people on the river to know that joy is not there. No merry little children play on the beach or romp in front of the houses; they are mostly all busy coughing pitifully inside.

At times I myself feel the dreary gloominess; the sense of "spleen" come over me, and I long for a good healthy laugh among sound people whose minds are clean because their humour is strong and healthy.

It has taken many months of intimate life among Brazilians to prove to me that I was wrong when, in the preface to my first book *In the Amazon Jungle*, I made the statement that it would be hard to find a more hospitable and generous people than the Brazilians. I said this because the people I then lived with were really good-hearted and gave me the best on their table and the best hammock in the hut, but that was 2400 miles away from Pará, far up the Javary and Itecoahy rivers on the Peruvian-Brazilian frontier, where the lonely rubber-workers are always glad to see any human being.

I have always found the *caboclos* and river-people very agreeable to live with; in fact, the good

memories I carry with me from Brazil, the *saudades*, are always connected with these simple and kind people, who mean so well. My horizon has expanded as I have come in contact with some few thousand Brazilians of all sorts and conditions since the days of the great rubber boom. It has been my fortune to have the undivided attention of the Chief of the Brazilian Nation and the various members of his Cabinet for a time, and I was daily in contact with certain high officials of the administrative departments in Rio for a period of many months. The reception on all these occasions was extremely polite and *comme il faut*. On the Amazon I came in contact with the various State chiefs and high officials and I found the same standard of courtesy in all, and perhaps sincere cordiality in one.

But the bureaucracy, together with "the 400" and the upper-middle classes, forms a barrier that opposes itself against trespassing by outsiders upon their social plane. They want to be let alone. Now and then some stranger, particularly an Englishman, cutting off social bonds with his home, settles here for life, marries a Brazilian lady, and lives happily ever after.

Tourists write descriptions of Brazilian voyages, exuberant exaggerations of hospitality enjoyed, all no doubt to some extent true, but I still maintain that only in the bush, among the *caboclos* and river-people, do real hospitality and generosity exist.

CHAPTER XXI

Prospects of Amazonia

AMAZONIA—that is, the States of Pará and Amazonas, or in other words practically the whole Amazon valley—has reached a stage of lamentable retrogression and universal poverty equalled by few countries at the present day. Particularly does the State of Amazonas, with its capital Manaos, present a sad picture of departed prosperity and actual economic misery. *Rubber is what has done all the harm.* Like some stimulating medicine which hurts when abused, rubber has stimulated a great world industry and enriched State and Federal Governments, and individuals, but now, when the Orient has entered competitively into the rubber market, the good has indirectly turned to evil and left the people with large abused rubber estates, whose operation hardly pays for the labour involved, and with no other means of subsistence.

The feverish days of the 1909–10 period are over; rubber has dropped from $3.00 to 75 cents a pound and is still going down, with the prospect in the near future of the entire extinction of the

industry in the Amazon region. The momentary jump in prices caused by the European war will be without effect as soon as ocean traffic is re-established.

It will be the happiest, luckiest thing that can happen to Amazonia—in fact, the only thing that will prevent a complete relapse into total abandonment and barbarism, when the Orient with its enormous rubber plantations captures the rubber market, because then Amazonia will be forced to wake up and prevent its people from starving to death; indeed this awakening is already beginning. Amazonia is learning its greatest lesson—that is, that it will have to work to cultivate its rich soil now that the mine of "black gold"—rubber—is rapidly disappearing.

The money accruing from rubber was earned too rapidly and too easily. It is as if the Divine Judgment regretted Its misused generosity and is now holding man responsible and accountable for the damage.

At present the State of Amazonas cannot show a single agricultural plantation, I feel tempted to say not a single acre under cultivation, but this would not literally be true, as there are perhaps a dozen acres here and there in the 418 million acres (418,246,750 acres) of virgin forest, exclusive of the *mandioca* plantations of some Indian tribes in the far interior, which, strictly speaking, are under cultivation. The State of Pará is better

off than Amazonas, for its people seem to be more active and intelligent, its affairs better governed, its business greater; though perhaps this advance should be attributed to its geographical position on the sea and the advantages accruing from it.

The natural resources of the Amazon valley are well-known in a general way here and abroad; the wonderful riches hidden in the forests, the fertility of the soil, the mineral treasures, etc., amaze us. But if you are anxious to know what has been done about all these riches and super-abundance you will find only travellers' tales about beautiful orchids; prevalence of creeping, noxious things; monkeys' chatter and gay parrots; new unexplored rivers; rubber-workers' tales of woe; but nothing of real, practical value.

The world has recently been considerably enriched in knowledge about these wonderful regions. The expedition of Colonel Roosevelt was important; the Andean trip of Captain Besly will result in moving-picture cash receipts; the University of Pennsylvania expedition to the Rio Branco section will bring anthropological news to the scientific world; but none of these opens the treasure chest of the confused Amazonian people.

Brazilian poets have sung about the idyllic rivers (never having felt the bites of the various insects), and have manipulated dexterously and in accordance with academic rules the landscape descriptions, the forest views, the gigantic trees,

vines, and creepers, Victoria regias, etc. They have described the life of the Amazonians until no self-respecting rubber-worker would recognize it.

But no pick or shovel has been applied to the soil, although thousands of dozens have been bought by State and Federal agricultural departments; nobody was found who would dirty his hands with a spade, nor even who knew which end to apply to the ground. Those who needed the tools and knew how to use them never received anything but catalogues. All the rich cotton, tobacco, rice, and corn plantations flourishing in the time of the explorers of the last century, Wallace, Bates and Waterton, Herndon and Gibbons, along the shores of the great river and its equally great affluents, were abandoned in the feverish rubber-rush. The people are now taking their medicine, to their great discomfort.

Some day after many years of hardship and hard teaching, after realizing their fundamental mistakes, the people will be roused and begin rational development of agriculture and will grow happy and permanently prosperous. But it will require the foreigner to teach, manage, and organize.

There have been attempts at colonization in various parts of the State of Pará, but all to no avail. As regarding agricultural enterprises during the last fifty years nothing has succeeded. Rubber

absorbed all interest and energy. Everything was rubber; it seemed that even money bounced away like rubber pellets, but without stretching. The people's minds and foresight did not stretch in proportion either, thinking only of rubber, and thus cutting off all the bridges and retreats of economic safety.

The same thing has happened with foreign capital. I have seen plantations rapidly grow up from time to time and fail as quickly. It was not because capital was lacking, in fact too much of it was carried from Wall Street to be expended foolishly without local knowledge. The Pará people rejoiced when they heard that capital was coming to the land, $3000, $5000, and $10,000 were spent here and there, literally thrown away, but when it came to employing it for actual running expenses and the acquisition of necessary tools and machinery there was nothing left. I have seen a harvest of close to 10,000 sacks of rice rotting away—a total loss. This rice was grown on a plantation financed by New York capitalists, men who would be expected to know about organization and good management, but the rice was allowed to rot simply because the necessary machinery and outfit for husking, polishing, and preparing the grain were not forthcoming, all the capital, or at least some 80 per cent. having been absorbed in misguided operations and dishonest transactions.

This plantation stands now as a monumental disgrace; a model for those who want to learn what not to do. The actual management in the field was not lacking in efficiency. The administrative director, one of the most able practical agriculturists in all Brazil, a Swiss, a man whose honesty is actually an obstacle to him, with unique foresight, understood the elementary necessities for successful plantation in Amazonian regions, but his every step was frustrated. There now stands this enterprise, that cost more than the actual figures can convey to the mind, rapidly overgrown by weeds and bush, with the cheerless activity of a cemetery about it.

Let us come to an understanding about the primary requisites for establishing any settlement in the Amazon region. Let it first be understood that the Amazon country is totally different from any other country, including Africa and Asia. The natives do not know or comprehend their own country; nor do all foreigners. I do not claim to myself, but I do claim to recognize faults that have been committed, and by realizing faults and mistakes, the road towards the truth is attained.

Nature's elements always conspire to counteract man's labours. He has only two elements in his favour in the Amazonian country: water and soil. They are there ready to be utilized. From the moment the immigrant pioneer settles he has to fight hard against nature, surrounded on all

sides by opposing elements, and he succumbs invariably to the vicissitudes of the climate, abandoning all in disgust or else is content to barely vegetate without progress. The forest has to be cut down and the bush cleared and burned foot by foot, and the clearing continually kept up.

Here lies the first pitfall in which many attempts go down and remain down. The bush is not kept under; it encroaches visibly day after day, is soon transformed into *capueira* or second growth, and in a few months the once cleared space is unrecognizable. The settler who thus finds his plantation overgrown becomes confused and eventually gives up.

Most tropical agriculturists seem to ignore the question of cattle. On a large plantation there are (or at least ought to be) many hands at work. They must eat, but they have no meat and no vegetables, because of the lack of cattle-raising and cereal cultivation on any commensurate scale. The recognized North Brazilian food is jerked beef and farina, which are imported at enormous freight rates. This food is of poor alimentary value and is expensive. The men are always half hungry and fall sick, not even paying attention to the continuous infectious bites of mosquitoes at night. They grow morose and indifferent, take to drinking *cachassa* and are done for. With a sickly, badly fed crew no man can accomplish anything.

Fresh meat seems desirable for the upkeep of bodily strength and cattle are acknowledged the staple source of meat supply. Land products have also to be transported from the field to the point of shipping. Cattle are therefore indispensable where men are working and living.

Unfortunately there is no suitable grass for grazing in the Amazon valley, for the very simple reason that all the grass in this enormous zone is non-perennial. The grasses that are perennial are not eaten by the cattle and consequently not to be considered. It must strike the reader, whether he be a layman or a scientist, as a most remarkable fact that the whole of the Amazon basin does not contain a single species of good, nourishing cattle grass, but it is nevertheless a fact established beyond doubt. My learned friend, Dr. Goeldi, who has spent some twenty years in agronomic-economic research work in Brazil, has introduced from Australia a *paspalum* grass, not only soft and nourishing to the cattle, but perennial. That a grass is non-perennial means that the plant dies spontaneously at the end of the season. This again means that the seeds must be resown in order to propagate the species. This resowing is prevented by the cattle eating the grass before its florescence. Next year the pasture has transformed itself into young bush. The prairies on Marajó Island are all non-perennial except some worthless perennial grasses. Therefore the cattle are a

poor under-nourished, disease-infested lot. The *paspalum*, with which the worthy Doctor has experimented on a large scale, generates in the proportion of 450 to 1. The mother plant after the second year's growth has spontaneously given 202,500 shoots, each one reproducing indefinitely. Furthermore the closely interlaced roots form an impenetrable blanket, too dense to encourage plants or trees to shoot up from buried stems or roots and too thick for seeds to germinate when deposited from the air. It is remarkable that the question of a proper grass for cattle escaped the attention of so many investigators and experts, and it is also remarkable that nobody realized the fact that cattle need nutritious food. If the settlers had planted such grass years ago, with the aid of the Federal Government or without, the Amazon valley would now have cattle herds at least enough to serve for local consumption. At present, jerked beef, the only beef avilable, has to come all the way from the Argentine or the southernmost States of Brazil. The planned undertakings to establish *salgadeiros* or packing-houses on the Marajó and on the Madeira River seem doomed to fail beforehand, because salt is unavailable and grass for the cattle lacking.

The planting of grass on a large scale would benefit the region in question, as it would feed the cattle, keep the land cleared from brush, and eliminate the breeding places for mosquitoes, and

it would also produce a well ventilated area around the human dwellings.

The first planter or exploiter of natural resources, whether these be timber, oils, fibres, or minerals, who remembers to begin his work with grass planting, will avoid the sure-to-come failure that has heretofore marked similar steps in the history of the Amazon valley and its colonization.

We see therefore a great country like this, playing a losing game and doing nothing to prevent it, simply crying over spilt milk, and complaining. They are losing because everything is misrepresented, voluntarily and otherwise. Everybody is misled, from the members of the Congress to the representatives in the foreign countries. It is such erroneous information scattered abroad by travellers throughout the civilized world, that leads to the investment of foreign capital and subsequently to the loss of that capital, simply because a wrong understanding exists about the real conditions.

There is a great opportunity on the Amazon for the judicious employment of large capital and the returns will be great and permanent, provided such enterprises are managed by men who have demonstrated for a long period their practical value in the field. It is not advisable to put an office manager to direct work of clearing virgin forest, but it is continually being done. A college

boy is as useless to direct plantation work as a shoemaker. The former may be the better mentally equipped; but the learning and breaking in are too expensive and take too long a time.

CHAPTER XXII

What is Government Doing for the Country?

THERE exists in the State of Pará two agricultural departments, one sustained at great cost by the Federal Government, the other maintained as a sort of ornament by the State Government. It has been made possible for me through close connection with the above-mentioned departments to state with certainty that absolutely nothing agriculturally useful is being done for the State. I have diligently searched to find as much as one deed of usefulness, one practical act that has been beneficial to the State and its agricultural class, or even one man who has been honestly and professionally benefited. I must again ask the question: How can a shoemaker teach chemistry?

Both departments are being governed by gentlemen, who, no doubt, would make an impression in any social affair, whether it be a banquet, or a five-o'clock tea, but their practical agricultural knowledge is embryonic. Their office hours begin at 10 and end at 11 A.M. when they go to their

respective homes after having discussed politics and allied subjects of non-agronomic importance. At 2 P.M. they reappear to spend a couple of hours in ponderous meditations, keeping a staff of useless men busy doing nothing at all. Now and then a showing has to be made to satisfy headquarters, and somebody is set to work translating some French article on, for instance, "Pathological Changes in the Hind Legs of the Chinese Potato Beetle," or some subject of similar revolutionizing importance and bearing on the rational development of the Amazon. Banquets and meetings are given and brilliant orators are falling over each other in eloquent laudations. They do not exactly know whom and what to praise, but, nevertheless, somebody is praised in these love feasts, champagne is consumed, and everybody goes home happy and proud. Agriculture has its advantages and its triumphs.

In the meantime, the settler who wants information about what seeds to plant, or what to do in such and such a case of crop raising, gets a polite "hang-fire" response culminating in the most fitting of all Brazilian patriotic mottoes—*amanhá*. *Amanhá*, literally speaking, means "to-morrow," but practically speaking it means any time beginning with to-morrow and ending in some remote period when the Halley comet is to reappear or the Amazon freeze over.

I feel impelled here to say a few words about the

notorious "Defeza da Borracha" or Rubber Promoting Committee which later, that is a few months ago, had to be discharged after spending in one year about two million dollars of the federal treasury's money. The commission was created in 1912, having in view the rational solution of the economic crisis which commenced to face the Brazilian rubber world ever since the great boom in 1909–10. Congress voted a very liberal sum in a laudable effort to aid the northern States, Para and Amazonas, which more than any others have helped to fill the vaults of the national treasury. With the drop in rubber prices, the export taxes and all the parasitical appendices too numerous to mention again mounted up so that rubber became a product subject to all sorts of abuses without any prospect of bettering the outlook.

The "Defeza da Borracha," which strictly speaking means "Rubber Defence," was then created to investigate and, with the direct backing of the Federal Government, improve the conditions of the rubber-workers, create agricultural centres, pastures for cattle raising, lowering of freight rates, erection of hospitals for rubber-workers, etc. The plan and the project that this commission had before itself was a grand one and would have been carried to a successful finish had the staff been composed of both scientists and practical men. The ever present question of high

cost of living, the difficulty of transportation, the elimination of rapids in rubber-yielding rivers, the avarice of traders, the lowering of taxes; all these constituents of the crisis could have been partially solved or at least improved upon with the capital at hand.

The positions of chief engineers, surveyors, agricultural engineers, economists, foresters, etc., in the ordinary course of a well administered government are filled by capable men of high reputation, not only on account of their technical qualifications but also because of their practical experience and their sense of honour. Unfortunately for Brazil, it was not so in the appointments by this commission. A lot of inferior individuals were recruited from political hangers-on. To quote some notorious examples: one clerk in the office of the taxi-cab inspector, a cook in a hostelry, a bootblack from the same house, and a plumber of Amazonian pattern, were selected to hold positions demanding ability of the highest order. They drew monthly salaries of from $500 to $1500, American money. In Manaos there reigned throughout the year 1913 an absolutely reckless disregard of decency and of respect for the government, which paid well and which intended well. Instead of going into the field, month after month was wasted in Pará and especially in Manaos, where the investigators revelled in orgies that still remain a by-word among the local sports and

good-fellows. Friends and relatives of the central superintendent operated the crudest methods of graft, involving tens of thousands of dollars; transactions so foul and coarse that even our rawest city grafter and confidence man would have recoiled with professional disgust. It is not necessary to give here the actual cases but they are on record; let me merely repeat that the result was a negative one. All sorts of technical vagabondry took place during that year.

Hundreds of inventors "invented" rubber-tapping and smoking instruments to obtain subsidies from the Government to make easy money. If the central administration of Brazil had been firm, and of a truly progressive character, there could be no doubt about the issue, but the facts described, coupled with the most obvious lack of conscientious men to fill places in the administrative machinery, point certainly towards a sorry end. It is to be hoped that things will alter for the better with the new President, Senhor W. Braz, who is soon to take charge of governmental affairs.

Labour questions in the north of Brazil are still unsolved and problematical under the present administration. Sincere governors have tried to found colonies for the agricultural development of the rich and fertile soil, but the disease germ of graft, and, even barring this, the inefficiency combined with the unpractical, detrimental bureaucracy of the intermediate and inferior

officials, have always spoiled the honest attempts of civilization and progress. Internal political friction and revolutions, with the occasional expulsion of some governor or mayor, have not helped to establish the prosperity of the two States. Foreign loans were negotiated and the total revenue of the States was absorbed to pay off the interest, leaving for many months no funds with which to pay municipal and State employees.

The Brazilian Administration, Federal and State, is saturated with the spirit of disobedience; the citizen as a subject of the Union is disobedient to himself and everybody. This lack of discipline is possibly racial, or perhaps a manifestation of independence, or perhaps created by the omnipresent confusion, which on the surface is not very apparent, but which really distorts the inner working of the administration. This is consistent with the fact that most of the public employees in the various departments are entirely unfit for the well-paid offices they hold; they are in truth "licensed parasites" responsible for many good deeds unperformed and for many more errors that have caused great loss. Confusion, lack of discipline, go hand in hand until nobody knows whether they are "coming or going."

Soldiers and sailors are months and years behind in their pay. They receive poor treatment and naturally disobey and sometimes revolt as in the Rio squadron, 1910. Soldiers and police clash

on general principles; mayors' houses are burned and sacked; sailors march in a body and shoot up the treasury, etc.

The Federal Government does nothing to help the two Amazonian States which more than any others have contributed to the national wealth. New taxes are imposed and new burdens are continually laid upon this long-suffering, over-patient people. In return for this support it does nothing,—not even endorsing a foreign loan that might have benefited the State.

The red tape of the post-office can be understood from the following incident. He who sends away for anything to be shipped by parcel post will learn to drink the cup of disgust to its dregs. The package will arrive at the post-office, where he is officially requested to appear. As he stands there looking into the eyes of the pompous official he feels his courage sinking into his shoes. With an accusing eye, the official confronts him with the package and he is forced to admit that it is his; guilt is written all over his face. The wrapper is torn off and the contents dumped out while four officials stand around with inquisitorial frowns. Each seizes an article and examines it and disappears for about ten minutes while the victim stands there trying to fathom his fate. He is now seeing the Brazilian petty official at his best, in performance of his great duties.

In this case it happens to be a package contain-

ing quinine pills and bandages. First the bottle is examined and, having a glass stopper which refuses to come out, the officials try to pry it loose with a screw driver; result, a broken bottle. Then the pills are taken out, counted, and weighed; probably also chemically tested, judging from the time it consumes. All the while the whole office staff is busy taking notes and writing in ledgers about the pills, while the *despachante* is scratching his head.

I am this victim and I meekly venture to remark that the quinine is to cure sick Brazilians. This settles the verdict. I have to pay 24,000 *reis* duty or about $8 for some eighty cents' worth of pills. On another occasion there arrived a loose leaf catalogue sent by some American wood-working manufacturer. It sounds incredible, but practically each leaf was examined and weighed.

The federal troops are all brave soldiers, not at all averse to bright colours, the smell of powder, and activity. Now and then they have a little skirmish with the police, a few get laid up and it is all forgotten. The navy yard maintains a good school of apprentices, and has some workshops, a little antiquated but still efficient enough to keep the two gunboats outside in Guajará Bay afloat. The chief engineer is an intelligent, able Brazilian who speaks perfect English, learned while studying engineering abroad.

The municipality sustains a large corps of fire-

men who are housed in a well-equipped fire-house. As fires fortunately are not over-frequent in Pará they have time on their hands and devote this to the gentlest of the arts—music. Every day one can hear the strains of a fiery brass-band sift through the barred windows, while somebody is playing the hose in the yard on some less deserving object. In case of fire, the brass instruments are carefully laid back in their cases, and, if within office hours, *horas de despacho*, the engines are pulled out and overhauled. Everybody then proceeds in due time, and well dressed in uniform number seven, to the scene of the conflagration. There are about ten different uniforms in this service. Each day the number of the uniform to be worn is advertised in the papers. There might also be a different uniform for the different fires! At the scene of the fire an investigation is started to ascertain what can be done under the circumstances, and by this time the building is level with the ground. Every two or three days the firemen's band plays in various parts of the city to please the people.

The State railroad, the *Bragança*, another glorious example of Brazilian enterprise, has but recently been completed and is run at a great economic loss. I am not prepared to state the extent of the annual loss, but I feel confident that it is as large as possible. The idea of building the railroad was hatched in 1870, the first yard of rails

was laid in 1883. The work then progressed a mile or so a year until in November, 1908, the road, 229 kilometres long, was finished. This narrow-gauge road had cost $15,000 per kilometre. The telegraphic service in this vast region is controlled by several companies. The Western Union connects with the outer world. Besides this there is a National Telegraph run by the Government which transmits messages along the coast at a very reasonable rate. But the service is slow; most frequently it pays to send a letter, or even send a messenger. A wireless telegraph is at last working successfully between Pará and Manaos after many trials and tribulations. The history of a well-known New York capitalist's attempt to establish this service would fill several chapters. The Government is working on a telegraph line to connect the interior of the State of Matto Grosso with the stations on the Madeira River.

This work is in charge of Colonel Candido Mariano Rondon, who is actual chief of the Department of Indian Affairs. Over this route, constructed mainly by the aid of the Nhambiquára Indian tribe, ex-President Roosevelt recently travelled, accompanied by Rondon himself. Rondon is one of the Brazilian high officials who has really done something worthy of note. His integrity and value are indisputable. Still a young man, full of nerve and virile force, and not blasé, he shows that Indian blood mixed with white creates splendid men.

BUSINESS AND INDUSTRIES

When Bismarck said, "Brazil is a wonderful country; everybody orders, nobody obeys, and all is well," he was not altogether accurate, for all is not well. The Brazilian is decidedly not a business man (I refer here, as always, to the north Brazilian, expressing no opinion about the middle and southern Brazilians). He lacks what we foreigners consider the most essential constituents of a business head. Foreign training therefore is imperative for fostering his embryonic notions of commerce.

There are roughly speaking two kinds of trading: the elementary and antiquated, as distinguished from the modern and progressive commerce. It would not be strictly truthful to say that Brazilian methods belong to the latter category. The crudest form of business known to mankind is that of bartering fruits, animals, skins, and weapons as actually used among savage people. The trading between civilized and Indians is not very far above this, requiring but rudimentary bookkeeping and often no other salesmanship than "bush persuasion." This form of business on a very great scale is still going on throughout the interior, where the *aviadores*, or perambulating merchants, deal with the *caboclos* and rubber-workers, and these again with the more or less domesticated Indians, and these again with their more savage brothers in the remote forest strongholds.

The actual, modern, rubber exporters of Pará and Manaos pursue, of course modern methods, following the examples of the foreign houses, but unless there be a foreign element in their business, the "soul" of business is not genuinely progressive and remains a pseudo-business bound to decay sooner or later. Nothing but the high rubber prices kept these merchants going; they could not help selling and were kept afloat through the mere buoyancy and force of the business current.

First of all the Brazilian lacks punctuality and reliability; next he lacks ability to organize and concentrate; again he has an absolute indifference to progress and expansion, and more remotely a certain distrust of foreigners. These are the main obstacles the Brazilians have to conquer before they can expect to compete with the world as men of business.

The commercial history of North Brazil can point to no great enterprise organized by Brazilians without the help of foreigners. The organization of a business here is either done very crudely, or else it is clogged with ponderous and superfluous details that entirely overshadow the main issue.

RESUMÉ OF RESOURCES EXCLUDING RUBBER

There presents itself for the truly competent and honest investor a large field for exploitation. Of agricultural industries there is perhaps none of

a more promising future than the raising of bananas on a large scale. The soil and climate are admirably suited to this fruit, and vast regions are available for planting. The accessibility to market must also be considered good as the rivers, particularly those of the delta system, are navigable for ocean steamers for great distances. It is obvious, however, that suitable steamers should be employed adapted to the greater distance of this field from the market than are the present Central American and West Indian plantations, from which the chief supply is now derived.

The *castanha* or Brazil-nut industry is also capable of enormous expansion. Only one-tenth of the actual yield is now gathered in the usual slipshod manner. The fine oil extracted from second- and third-grade nuts, suitable for the most delicate soaps, would counterbalance the possible drop in the market should a large amount of first-class nuts appear at times, as the result of a systematic development, although the demand would undoubtedly largely increase with lowering of price.

The extraction of *andiroba* oil would fully warrant the installation of a plant in Pará not only for local consumption, but the cakes made from the pulp from which the oil has been eliminated would serve as cattle food. The lubricating quality of this oil does not seem to be as well-known as it deserves to be, due to the general inertia, and the unwillingness of the Brazilians to experiment on a

practical scale. The *andiroba* or crabwood tree grows in commercial quantities throughout the regions of the Lower Amazon, and as each tree yields as much as two barrels a week during the maturity of the fruit, it is evident that there is no scarcity of the raw product.

The oil and stearin containing *ucu-uba* nuts are also little known as yet, although a few merchants are beginning to export them to Germany. The *ucu-uba* trees are as abundant as the crabwood tree and thrive in the great *ygapō* regions of the delta. Each tree will yield about two barrels of nuts a week during the season of maturity. There is at present a small factory utilizing the nuts for soap manufacture, but the consumption is probably not one thousandth of the natural supply.

Vegetable ivory nuts grow in great quantities on the middle and upper reaches of the southern affluents. From Ecuador, Peru, and Colombia large quantities of this ivory nut, the *jarina*, are exported to America and Europe, although there exist throughout the Amazon valley far greater areas covered with the palms which produce it. The "imitation" ivory nut, the mirity palm nut, grows in enormous quantities all around Pará and the islands, but no one is profiting by their extreme accessibility.

Cacao, which at present grows wild in many parts of the valley, is also cultivated and in spite of the great carelessness which the Braziliians

bestow upon this valuable product, the bean of the Lower Amazon has a very good flavour comparing favourably with that of other regions. Rational planting, and proper care and experience, would result in a well-paying enterprise.

Tobacco as a product for national consumption and export would do very well, as the fragrance of the Bragança and Acará tobaccos is of a high grade. At present tobacco is planted in small patches by settlers, and, on the Acara River by semi-civilized Indians, and the trade can never be expected to grow to any proportions under such conditions. As the soil seems particularly suited for the raising of a large, full leaf, the returns are quick and well paid, when the plants are sown in April or May, yielding the fully ripe leaf in October or earlier. Sometimes *saūba* ants destroy the young plants and the native being helpless against any such misfortune loses his entire crop.

Coffee plantations were formerly frequent along the shores of the Amazon River and its affluent the Madeira, but it seems doubtful whether this industry could be profitably carried on here when the southern States are now producing coffee in such quantities.

The *urucū*, or *anotta*, plant was formerly extensively cultivated in the islands of the delta, but has totally disappeared. This dyestuff should still meet with great demand in many industries where a harmless and permanent scarlet colour

is desirable. It also produces yellow and brown tints. Several dyestuffs are obtained from various species of wood.

Cattle raising will never succeed until a suitable grass is planted on the many open fields, *campos*, in certain parts of Amazonia.

Fibres are not planted anywhere and the few good ones that exist are still unrecognized by the natives.

The timber and fine hardwood industry offers to the industrial investor a great field for profitable exploitation, as splendid, and yet unknown, timber grows in incalculable quantities throughout the Amazon valley. I treat this industry and its practical aspects in the following chapter. I fully believe that a large portion of the world's future timber supply is bound to come from the Amazon basin.

CHAPTER XXIII

Amazonian Timbers

IMAGINE using hundreds of cords of mahogany and rosewood as fuel for steam-boilers on the little steam launches plying on the Amazonian by-rivers. This is what daily happens in this region where the only means of transportation is by water.

The abundance of cedar, greenheart, mahogany, and similar precious cabinet woods, and the lack of appreciation of their value, accounts for such a wasteful practice.

Consider the economic loss, when a certain wood rivalling the Circassian walnut in beauty and quality furnishes the supports for hundreds of shacks, and piles for innumerable landing stages in the Amazonian waterways. Think of the rubber-worker who, needing a plank, fells a fine tree and cuts and hews at it for days and weeks until the trunk has been reduced to the desired thickness. This loss of time, energy, and material typifies the general working methods of this country.

Woods superior to teak and similar costly

timber abound in these enormous stretches of virgin forest in unknown quantities, only an infinitesimal fraction of which is locally used by the natives for such simple construction purposes and manufacture of implements as they may need.

The Amazon valley is one vast forest region, interspersed with rivers and creeks. The greater percentage of this virgin tract is timber land, growing fine hardwoods and timber of all descriptions in practically inexhaustible quantities. The entire region, as far as the timber resources are concerned, and for that matter almost all the other natural resources, except the rubber, *is absolutely untouched and undeveloped.*

It seems a parody that the country exceeding all other countries in quantity and quality of timber is actually forced to import from America such timber as pine for local construction in the cities, and this wood, in spite of the high tariff, is employed extensively. The timber of the two Amazonian States would warrant a large export trade.

But so slack is the personal initiative and the technical and practical efficiency of the people that the forest, which encroaches upon their very doors, lies untouched and ignored. These forests with a good crew and expert management would yield enough timber to supply not only Brazil and make the importation of pine unnecessary, but the entire world for centuries to come.

The fact is that the Amazonian timber is to a great extent unknown to lumber people abroad, and, of course, to the Brazilians themselves. The rubber industry must receive its part of the blame, for it helped paralyze all other industries of the great valley.

When the Madeira Mamoré railroad was constructed, some attempts were made to furnish the ties from the local woods, but this well intended plan failed because nobody was found who could guarantee the supply of the required quantity. Instead Australian *jarrah* wood ties were imported, and this railroad in the middle of the Amazonian wilderness runs on ties of foreign wood instead of ties made from the superior wood bordering the line.

It is true that some attempts have been made by foreign lumber firms to commence operations, but the typical unwillingness which Americans have demonstrated in adapting themselves to Brazilian conditions and requirements have frustrated such attempts. While the practical extraction of the timber takes place on very similar lines as in America, yet the many climatic differences and local circumstances, combined, perhaps, with the sending down of foremen and managers who were not fitted for such work in a torrid zone, and with native help whose language and requirements are not at first understood, and, further, with impatient home administration unacquainted with the conditions under which the work has to

be done, and with the all too frequent misrepresentation of things and affairs, have made such attempts a series of failures; and failures they will always be till the old *modus operandi* has been entirely altered.

With the war raging in Europe and the colonies of the belligerents involved, the output of timber is temporarily paralyzed, offering a most opportune chance for the American timber people to enter into this field and carry the work into a successful and permanent channel, through the adoption of the proper working methods.

In order to establish a successful timber industry and trade between this part of Brazil and the United States, old and erroneous impressions must be overcome and new and modified plans adopted. First of all it must be known what kinds of woods grow in the Amazonian forests, what their physical characteristics and adaptabilities for the many modern utilities may be. Second, it must be known in what quantity the commercial woods are available per areal unit in the forest regions as this has a direct bearing upon the question of extraction from the forest. Bringing it into the market, as well as the work in the forest, requires a solution of the question of labour. The transportation from the Amazon to the States, and finally the placing on market of these woods, conclude the questions which, collectively, have not yet been solved through lack of initiative and energy.

The variety of woods that are adapted to modern requirements is great, and while a complete study and analysis of these would entail probably a life-time, so confusing is the array of woods found in these forests, I will here give some of the most important ones, with the names given them by the native population—*i. e.*, practical connoisseurs of the species. The scientific names of those which have been botanically classified are given in the index for identification. It has been impossible for me to compile the list in accordance with the quality of the wood from a physical standpoint, as these factors have yet to be determined more fully. Of the arborescent plants growing in the Amazon valley, of which I have observed about twenty-five hundred species, some fifty are of a very high grade, placing them in the class of fine hardwoods, while many others, although of inferior quality, are superior to many of the extensively used American woods, such as, maple, whitewood, hemlock, spruce, etc.

Acapú
Acapú-rana
Acaricuára
Ajurú
Amapá
Ananȳ
Anauerá
Andirōba
Angelīm
Angico
Araparȳ
Araracānga
Arára tucupȳ
Assacú
Bacāba
Bacurȳ

Biribá
Caimbé
Cajuēiro
Cajuúna
Camboatá
Canella
Carapanaūba
Caraūba
Caripé
Castanha
Copahȳba
Coração de negro
Cravo
Cujumarȳ
Cumarū
Cupiūba
Cutitiribá
Cedro
Embira
Frei Jorge
Guajará
Ipé
Itaūba
Jacarandá
Jacareūba
Jarāna
Jutahy
Louro
Macacaūba
Macucú
Marachimbé
Marupaūba
Massarandūba
Matamatá
Morototo
Muiracoatiāra
Muirapinīma
Muirapirānga
Muirapixūna
Muirapucū
Muiratinga
Muiraūba
Murupīta
Mururé
Mututȳ
Pacapéua
Pão amarello
Pão arára
Pão d'arco
Pão mulatto
Pão róxo
Pão santo
Pão violeta
Parajūba
Parapará
Piquiá
Quarūba
Sapucaya
Sapupīra
Sucupīra

Sucuūba
Tachȳ
Tamacoaré
Tamanqueira
Taquarȳ
Tarumān
Tatajūba
Tauarȳ
Uchirāna
Uchȳ
Ucuūba
Umarȳ
Umirȳ
Visgueiro

[*For classified scientific list see p. 457.*]

Few of these woods have English names, because they are unknown to English-speaking timber people.

On my excursions I discovered the highly prized greenheart (*Nectandra Rodiæi*) of the laurel family and verified that this was ignored by the natives. The Colombian mahogany, the *cariniana pyriformis*, also grows in large quantities and its existence is equally ignored.

The greatest obstacle to a quick extraction of any certain variety is the variegated composition of the Amazonian forest. While in our Northern woods the number of species in any given district is comparatively small, the same is intensely varied here. A typical New York State forest which has not been cut contains scarcely half a dozen commercial woods in great quantity, such as hemlock, spruce, beech, birch, maple, pine, and perhaps some chestnut. A typical Amazonian forest is composed of more than fifty varieties on any given areal unit. Only here and there, on

rivers located hundreds of miles apart have I met with forests, or rather groves, of homogeneous composition. The *massaranduba* or cowwood generally grows scattered in the proportion of three to the acre, while in certain places in the Bragança region and on the Tapajoz River it forms forests with some hundred thousand specimens closely bunched together. This fact makes a quick extraction possible, while in the ordinary Amazonian forest the forester has to go a considerable distance to find a sufficient quantity of the same species in order to fill a large order. In most cases this fact, coupled with the difficulty of working in the complicated jungle of the Amazon, discourages the lumberman and, if his force is not one of great local knowledge and keyed up to its highest efficiency, he will abandon his land and go out of business. This has happened too many times to be merely a theory.

By examining a great number of timber tracts and various sections chosen at random, I have invariably found that on one acre can be counted, on an average, fifteen good varieties of fine hardwood. The following is a type which, at least, on the Lower Amazon can be considered a typical one: three *massarandubas*, two *acapús*, two Spanish cedars, one satinwood, one ironwood, one Amazon teak, besides a number of secondary trees suitable for anything except the finest cabinet work.

After having located his timber tract along some

river the lumberman must bring a dozen teams of oxen from Pará. The only practical method of logging from the interior of the forest to the saw-mill, or to any convenient spot on the river-front, is by means of oxen. These animals are easily obtained in Pará and they possess great strength and resistance in this torrid climate and the hard usage to which they are exposed in the jungle. The next step is locating a central point on the river-front whence the logging roads can radiate into the forest. Here suitable dwellings must be erected for the crew and all the bush cleared in the immediate vicinity to make this headquarters a clean and healthy place. Sanitation and drainage will clear the spot from mosquitoes to a great extent. Then the cleared space must be planted with grass (*paspalum*) which will give pasturage for the cattle and keep the encroaching second growth down. Bananas and *mandioca* should be planted around the dwellings so as to have a permanent vegetable supply at all times.

In the meantime the timber cruiser has done his surveying and blazed the different trails for immediate cutting. While some men recommend cutting the timber by contract I firmly believe that if the foresters are divided in gangs of "swampers" and "fallers," "skidders" and "boom rats," under the immediate and constant supervision of white foremen, a greater amount of work will be done,

as no Amazonian native or West Indian negro will work at the required speed without constant and rigorous supervision. A certain working plan must of course have been adopted from the beginning as to what kind of timber to be cut. Supposing that a general stock of all the useful hardwoods and cabinet woods is made up, the foreman directs the felling of such trees, co-operating with some experienced *caboclo* whose knowledge of the species is indispensable. After hauling the logs, cut in sizes to suit the demand, to the saw-mill on the water-front, these are sorted out by the expert, according to species, and stored for seasoning on skidways. If the logs are to be shipped in the unsawn state they are lashed together and floated down to Pará.

There is hardly any timber tract on the Amazon which is not adjacent to some navigable river or large creek; at least there are good timber lands located near rivers, which are navigable for ocean steamers at all times of the year, enough to last for a century's constant extraction. The question of transportation does not offer the insurmountable difficulties so generally believed in, both locally and abroad; if anything it is easier on the Amazon than in most places in America.

When floating a raft to the market, it is necessary to superpose layers of Spanish cedar ("cigar-box wood") on the heavier hardwoods, in order to produce a good buoyancy of the raft. Two

bucks can float this raft down by keeping in mid-river and standing watch, until the regions of the tidal waters is reached—that is, in the lower river sections where the flood and ebb set in. Then the raft has to be tied up during the flood, to proceed again with the ebb. A small canoe tied to the raft will serve in which to return to the camp. From experience I have found that a raft handled in this manner will cover one hundred miles in five and a half days.

The question of transport through the forest is more difficult and involves far more expense and expert knowledge. While a track of narrow gauge is economic in places where the soil is high and dry, it becomes less feasible in tracts where the ground is soft and soggy during the greater part of the year. Then it becomes necessary to construct a "pole road" over which the logs can be hauled on low trucks running on concave wheels fitting over a continuous track of thin logs, which have parallel ties as a foundation.

Or else, where economy is of primary importance, the logs can be hauled by the oxen over a road made firm by logs placed in the same manner as the above mentioned but without the truck on the pole-track—a "corduroy" road in fact. A tractor on two high wheels and with the logs suspended underneath in chains is actually used in a lumber camp not far from Pará.

The question of transportation to the United

States is also difficult. The present high freight rates on the steamers of the Booth Company, a British concern, are prohibitive for any but the highest-priced woods. Twelve cents per cubic foot, or about five dollars per ton weight, is a charge which will make it less profitable to ship the ordinary timber, as there is none which, with such an addition to the cost, would prove worth exporting. Let us hope that the European war will have a stimulating effect upon the prompt establishment of an American merchant fleet plying in South American waters.

Our American trade with Brazil is still of a negligible quantity, because of the American merchant's unwillingness to adapt himself and his methods to South American requirements. Practically all of the imports in Brazil are derived from England, Germany, and France, whose merchants have penetrated into the remotest corners of the Amazon River, and there do a good business. We may "capture" this trade promptly and permanently by following the example of the methods by which other nations have succeeded: making goods to suit the foreigner, and not trying to compel him to buy goods made for Americans.

But, in all dealings with Latin-American people, the optimistic businessman should not forget that a true, although unrecognized, Brazilian motto is, or ought to be, *amanha e paciencia*—"to-morrow and patience."

CHAPTER XXIV

Notes on Amazonian Folk-Lore

THE Indian believes that not only animals have a soul but also inanimate objects such as plants and trees and even stones. "The red man" says Dr. Eastman (*Ohiyesa*), divided mind into two parts—the spiritual mind and the physical mind.[1]

It is a little difficult for us who, to some extent, understand the laws of chemistry and physics to realize and sympathize with the animistic ideas of the savage or rather the man of the forest. For us his myths and legends are often absurd, but for him the real explication of nature and its many phenomena. Let us try and explain how the Indian arrives at the belief in the "Evil Spirit" of the forest, the *Curupira* as it is known throughout the forest regions of the Lower Amazon.

When the Indian who believes in the animation of nature which surrounds him, travels in the forest he does not find himself in isolation as does the civilized man who is placed under the same

[1] *The Soul of the Indian*, by Charles Alexander Eastman, Boston, 1911.

circumstances; on the contrary, all about him has life and expresses life to his conception and mind. The trees are regarding him and even watch his steps and his actions. The *arāra* parrots (hyacinth macaw), whose sudden shriek surprises and momentarily stuns him; the sudden rushing sound of the *cutīa* as it skips through the underbrush; the tapir as it is aroused from its lair under some accumulation of dry branches and crunches past him into the thicket; the jaguar whose tracks he discovers on the wide glittering sandflat at the river-front; the capybara whose deep-spreading tracks he finds in the soft mud under the fan-shaped shadows of the mirity palm on the edge of the *ygarapé;*—all these to him betoken a SOUL, a soul with which he can speak and communicate in his simple language.

The Indian continues on his way deeper and deeper in the jungle, following the tracks of some animal; he soon enters a part of the forest with which he is but poorly acquainted, and becomes doubtful and for the time being loses himself.

At this moment the sun may be covered with clouds and his chief means of orientation therefore eliminated. He looks in all directions for a road or path with which he may be acquainted. He walks around and around, becomes confused, and finally feels a sort of vertigo or dizziness.

A dizziness like this is not to be understood as a physiological phenomenon but rather as a mental,

momentary aberration which can only be realized by those who have found themselves at their wits' ends in these immense forests of the Amazon.

It appears to the Indian that he is "beside himself"; he feels strange exterior influences of an almost overwhelming character, foreign to men who are only used to a civilized life and whose path is far away from the wilderness. It appears to him now that an invisible and almost irresistible force is trying to attract him, and to lead him deeper and deeper into the forest, perhaps there to perish. He feels the sense of fear; he argues with himself: "The forest wants to destroy me, to kill me, and to absorb me."

But after hours and hours of wandering he finds his way again to his hut; he has found that he is master of his faculties once more and he becomes happy in mind. When he arrives at his hut he says: "I was hunting, the forest wanted to kill me, and got me almost into its power, but I escaped and I have returned safely." In this manner originated the idea of the evil spirit of the forest in the minds of the forest people. What is more natural? In the course of time such ideas took the form of dreams and thoughts and so to speak began to materialize, taking form of an old *tapuyo* or Indian.

As the imagination of the Indian does not conceive of many complicated ramifications, it centred upon the human form, and as men as well as

women were persecuted by this evil spirit of the forest it is natural that this spirit involved both sexes.

To gather mythological data is not easy, as one must be intimately acquainted with the language and the psychology of the Indian who still may be found to have a store of legends in his memory. It is not to every stranger that he will tell the legends, and never will he do so if solicited. Only by remaining for a long time in the company of an Indian and gaining his confidence and friendship can he be expected to learn from his mouth the tales that reveal his beliefs and fears. Around the camp-fire at night, when the talk turns to past experiences on the hunt in the forest, when everybody's mind is inclined to merriment, then may be heard some of the following legends, with variations here and there, but in the main they remain in their original form, whether heard in the regions of the Moju River near Pará or the frontier of Peru 2040 miles distant. On the rivers coming from the north and emptying in the Amazon, such as Rio Negro, other legends exist as Indians of other stocks inhabit those regions.

THE CURUPIRA

As a mysterious spirit the *Curupira* is vested with strange powers. He is always met with, in the superstition of the people, under various forms

and with ever changing moods and aspects. We find him now fantastic, forbidding, and even cruel; now comical, awkward, or bold. He is often depicted as a faithful friend; often as a compassionate companion, and in some cases even soft-hearted. Many times he is easy to fool. In spite of all the bad things said about the *Curupira*, he appears to be of a grateful temperament to those that help him, but revengeful when opposed. The deep, resonant sound that one hears from the forest; the old trees that fall, the noise of the woodpecker picking worms from the trees, all the many mysterious sounds that nobody can satisfactorily account for,—all these sounds, the natives say, are due to the *Curupira*. The *caboclos* believe, when they hear these noises, that a *Curupira* with his axe made of giant turtle-shells is walking in the forest and striking the large, flat buttresses of the trees, or, as they are called in the Tupi language, *sapopemas*, to see if they are sound and can resist still for some time the storms. On the Upper Amazon they say that he beats the buttresses of the trees with his heels, while farther down the Amazon, in the Tapajoz region, they say that he strikes with some other part. Furthermore it is believed that it is the *Curupira* who is responsible for the abundance or scarcity of game; it is the *Curupira*, that mysterious spirit of the forest, who reveals to man the secrets of the forest, the virtues of medicinal plants; it is he who shows man

how to utilize the products of the forest to advantage or disadvantage, according to his humour,—this latter, when he is aggravated by the odour of burning flesh or fur from some hunter's camp-fire.

According to the locality, he assumes various forms and aspects, which, however, never vary beyond a certain limit. Often it is a female *Curupira* who talks to the men. In some places the people believe that there are both sexes; or it might be, they say, the *Curupira* who has married an old and ugly Indian woman. Of course, she must be old and ugly to help him with all his vicious deeds. The *Curupira* often has children, according to the locality. In the regions of Teffé, and Fonte Boa on the Solimoes, as the Amazon River is called within the State of Amazonas, the saying goes that the female *Curupira* has only one eyebrow in the middle of her forehead and that her breasts are placed underneath her arms. They also say that the *Curupira* lives with his wife in hollow tree-trunks. One of the chief characteristics of this interesting South American spirit is that its feet are placed backwards; which must give the *Curupira* the appearance of coming when he is really going.

The mythology of the *Curupira* forms to the archæologists a valuable guide to recognize which tribes belong to the great Tupi family or Tupi linguistic stock, speaking the *lingua geral* or general language, whether they be the southern Guaranis

or the northern Tupis, who themselves claim that they talk the *abanhenga* (pronounced aba-nyenga) or "man's talk." This language is still spoken amongst many tribes south of the Amazon River itself, while on the northern affluents we find entirely different stocks of language, such as the Carib and Arawak.

On the Tapajoz the *Curupira* has only one eye, according to the belief of the *caboclos*, and this is placed in the middle of the forehead; he has blue teeth and has large ears. In many localities on the Lower Amazon he is said to be without an anus. My companion on many journeys in the State of Pará, a *caboclo* from the region of Ygarapé Miry, an unusually intelligent and bright buck and of great physical strength, fully believed that it was unsafe to walk in the forest away from civilized habitations after nightfall as the *Curupira* was looking for stray wanderers, and that this spirit would influence the person to such an extent that he would be lost. If a person disappears for any length of time from the settlements, people shake their heads and say, "It is the *Curupira*." My *caboclo*, however, claimed that there was a remedy for everything, and that even the *Curupira* could be fooled if one knew how; it was only necessary to make a wreath of any kind of leaves and place it on top of the head and the *Curupira* would become powerless as far as the wreathed person was concerned. The lost person would then soon regain

all his faculties; his mind would clear and he would find his way home, free from all dangers lurking behind the old, dead trees. In certain localities the wreath of leaves must be made of a certain plant belonging to the family of *Leguminosæ*, and of an aromatic flavour. It is also generally believed that by making three small crosses tied together with *cipōs* and sticking them into the ground in the form of a triangle, one can at once throw off the spell of confusion and dizziness and find his way home with ease.[1]

I will here give a few stories which may be of interest. They claim no originality as they were in part collected by Dr. Barbosa Rodrigues of Brazil, whose son, a distinguished naturalist, conferred upon me the great and exceptional favour of letting me peruse his father's documents, now unobtainable in print. These legends were all collected during journeys in various parts of the Amazon and were taken down stenographically and later worked out in their present form. They will give through their simplicity ample material for further study and comparison with data which may come in later on. Let us begin with the legends of the *jaboty*, or land turtle. Although

[1] Such evil spirits are existent in the legends of all Indian tribes and even amongst European people. The Bretons, for example, have a similar fear of the Korigans who dance about the Druid stones in the night, but they also could be tricked if one knew the charm, showing how when the mind creates a bogie it also creates its destroyer or at least its nullifier.

this animal is slow and very deliberate in movement and with the small brain development of all cold-blooded animals, it represents to the natives of the Amazon what the fox does in the legends of the European people, or the coyote to our Western Indians. It is peculiar that this inoffensive and modest animal should be considered by the Indians as revengeful, endowed with astuteness and activity and mental alertness combined with a great deal of dry humour. It is indeed an Amazonian Irishman, always ready for a fight, or at least a discussion loaded with sarcastic remarks. Here is a story relating how the *jaboty* beat a deer in a race.

FIRST "JABOTY" LEGEND

A *jaboty* once met a deer in the forest and asked him: "Oh, Deer, what are you doing?" The deer answered, "I am looking for something to eat, and you, Jaboty, where are you going?"—"I am also going for a walk and am looking for water to drink."—"When do you expect to arrive at a place where you can drink water?" "Why do you ask this question, Deer?" asked the *jaboty*.—"Why, because your legs are so short."—"Just the same, Deer, I can run faster than you can although my legs are shorter than yours." "Let us put up a bet," said the deer. "All right," answered the *jaboty*, when shall we run?"—"To-morrow morning very early." The *jaboty* accepted and they parted.

The *jaboty* then called all his friends and relatives together. "Come, my friends," he said, "let us go and kill a deer." "How are we going to kill a deer?" asked the *jabotys* in chorus. "I put up a bet with the deer," answered the *jaboty*; "we must see who can run the faster, the deer or I; now, I am going to fool the deer; all you my friends go and scatter yourselves in the forest by the edge of the clearing, without remaining very far from one another. There you keep yourselves hidden under the bush without making any noise, each one in his place. Then, when we begin the race the deer is going to run out on the clearing (*campo*) while I remain here quietly on the spot. Now, when the deer is calling me to see where I am, any of you that happen to be ahead of the deer must shout, 'Here I am,' but be very careful that you don't answer if the deer is ahead of you."

The next morning, very early, the *jaboty* went out to meet the deer. The deer said, "Come on, let us run now." "Wait a minute," said the *jaboty*, "I am going to run in the forest." The deer asked in surprise, "How is it that you with such short legs are going to run in the forest?" The *jaboty* insisted that he could not run on the *campo* (clearing) because he was accustomed to run in the forest where he was brought up. At last the deer accepted the proposition and the *jaboty* entered the forest saying, "I am going to make a noise like a jaguar so you can know that I am ready."

When the *jaboty* had arrived at its place it gave the signal agreed upon. The deer started slowly, laughing and thinking to himself that it was not worth while running. The *jaboty* also remained where it was, laughing. Having walked a short distance the deer stopped and shouted "Eh, *Jāuty*" ("Hello, Jaboty"). Who can describe the surprise of the deer when he heard the *jaboty* shouting from the bush ahead of him, *Eh, Suassú* ("Hello, Deer"). "Well, I declare," exclaimed the deer, "that *jaboty* knows how to run" and quickening its steps slightly he proceeded some little distance and shouted again, but the voice of the next *jaboty* was still ahead of him. A trifle displeased the deer sprang forward and quickly ran some distance that surely would place it way ahead of the *jaboty*. Then it stopped and called. Again the answer greeted the deer from the margin of the forest way ahead of it. Then the deer became frightened and ran at top speed for a while till judging that he had run enough he stopped to shout, but still the answer came from ahead. Hearing this the deer became desperate and rushing through the forest called the *jaboty* without stopping; still the answer came back from ahead. Finally the deer doubled its efforts but with the same result until at last it became exhausted and beside itself with humiliation and shame and ran headforemost into a tree trunk and dropped dead. The patter of the hoofs of the deer having ceased

the *jabotys* listened. No sound was heard. They crawled to the spot in front of the tree and there found the deer prostrate. Then the *jabotys* rejoiced in their victory.

SECOND "JABOTY" LEGEND

How the Jaboty Fooled a Man.

A *jaboty* was dancing in a hole in the ground when it was discovered by a man who picked it up. The man carried the *jaboty* to his house, put it in a box, and went out again. Pretty soon the *jaboty* began to sing. The man's children listened and the *jaboty* stopped. The children asked the *jaboty* to continue and received the answer, "If you like to hear me sing you will enjoy far better to see me dance." Therefore the children put it in the middle of the floor where it danced much to their satisfaction.

After a little while the *jaboty* begged to be excused and saw an opportunity to escape. The children, frightened at knowing that they would be scolded when their father returned, found a round stone which they painted like a *jaboty* and placed it in the box. Soon the man returned and being hungry decided to stew the *jaboty*. He took the painted stone and by throwing it into the pot broke the bottom and extinguished the fire.

In the meantime the *jaboty* had hidden under a tree having at the base two openings. When the

man looked into one hole the *jaboty* went to the other hole, and when the man quickly went there to catch the turtle the clever animal ran quickly to the first, until the man tired of the search and went away.

THIRD "JABOTY" LEGEND

How the Jaboty Killed Two Jaguars

One day a *jaboty* entertained itself by climbing up on top of a high hill and, pulling its head and feet inside its shell, let itself roll down the hill, where it would land at the bottom without any harm. Now it happened that a jaguar passed by and, observing the doings of the *jaboty* asked, "What are you doing, Jaboty?" "Oh, I am enjoying myself," answered the *jaboty*. "Let me see how you enjoy yourself," said the jaguar. Then the *jaboty* crept up to the top of the hill and came down as before. The jaguar became delighted with this performance and said, "I am also going to enjoy myself," "All right," answered the *jaboty*, "come up here on top of the hill and let yourself roll down as I did." The jaguar tried to imitate the *jaboty*, but at the base of the hill he bumped his head into a tree and was instantly killed.

Later there appeared another jaguar to whom the *jaboty* volunteered the information that he was going to enjoy himself. The *jaboty* went over to a

tree and said "Open," and the tree obeyed. Then the *jaboty*, entering the tree trunk, said "Close," and the tree closed, imprisoning the *jaboty*. Then he ordered the tree to open itself again and he stepped out proudly. The jaguar standing near by said, "Jaboty, I am also going to enjoy myself as you did." The *jaboty* therefore said, "Open, tree"; the trunk opened as before and the jaguar entered. Then the jaguar asked that the tree be closed and was obeyed. When the jaguar was imprisoned by the tree the *jaboty* cried, "Tree, close up forever!" In this manner the *jaboty* killed two jaguars on the same day.

FOURTH "JABOTY" LEGEND

How the Jaboty Caused a Fight between the Tapir and the Whale.

In the direct translation made by the *caboclo* from Santarém who related this, we find that he used the word *pirá-assú* (Tupi for large fish). This cannot be the porpoise because this cetacean is called *pirá-yauāra* or jaguar-fish. It does not seem likely that it was a real whale as they do not enter fresh water. In 1910, while I was travelling on the Upper Amazon, a dozen miles or so from Tabatinga on the Peruvian frontier, I came to a small town in Peru called Caballo Cocha, where I observed, in the lake situated behind the town, a large fishlike animal of proportions never at-

tained by dolphins. What animal this could have been I do not know, but the Indians seem to know it well enough under the name *pirá-assú*, and have constructed legends about it. As the *caboclo* translated it as *baleia* I have taken the liberty for briefness' sake to use the term whale.

One day a *jaboty* went to the river to drink. The whale saw it and said, "What are you doing, Jaboty?" "I am drinking because I am thirsty," answered the turtle. Then the whale began to laugh at the short legs of the turtle, but it retorted, "I may have short legs, but just the same I am stronger than you are and can pull you out of the water." Still making fun of the turtle the whale asked, "How are you going to do it?" "Easily enough," answered the *jaboty*, "you wait till I go in the forest and find a long *cipō* (bush-rope)," and with these words he left the whale.

Walking around in the forest the *jaboty* met a tapir, who asked what the turtle was doing with the *cipō*, whereupon the *jaboty* answered: "I am going to pull you out into the water, and what is more, I am going to kill you; but that does not matter at present,—let us experiment and see who is the stronger one of us two." Then the *jaboty* tied one end of a long and very strong *cipō* around the body of the tapir. "Now," said the *jaboty*, "wait till I go down to the water-front and when I shake my end of the *cipō* you run with all your might into the forest." Then the *jaboty* carried

the other end to the water-front where he tied it around the tail of the whale.

Having done this the *jaboty* said to the whale, "I am now going into the forest and when I shake the *cipō* pull with all your might because I am going to pull you up on shore." The *jaboty* then went into the forest half way between the whale and the tapir, shook the rope, and awaited the result. In the beginning the whale swam vigorously and almost tore the tapir down to the water-front, but the tapir resisted with all his strength, and getting a good foothold almost had the whale lifted out of the water up on the sand flat. Then the whale made another effort. In this manner they kept pulling each other, each one thinking that he was pulling the *jaboty* at the end of the *cipō*. Finally they both dropped completely exhausted.

The *jaboty* first went down to the river to see the whale, "'Tis true, Jaboty, that you are both brave and strong, I am very tired." The *jaboty* untied the whale, who disappeared in the deep, and then went up to the tapir, prostrate on the ground, and loosened the *cipō*. The tapir said: "'Tis true indeed, Jaboty, you are both brave and strong."

FIFTH "JABOTY" LEGEND

How the Jaboty Killed a Jaguar and Made a Flute of its Bones.

A *guarība* (howling monkey) had climbed an *inajá* palm and was eating its fruits when there

appeared on the ground below a *jaboty* which discovered the *guarība* eating its favourite fruit. "What are you doing up there, Guarība?" asked the *jaboty*. "Eating *inajá* fruit," answered the monkey. "Show me one," insisted the turtle, but the monkey answered that the *jaboty* had better come up if he wanted anything to eat. "But I cannot climb," said the *jaboty*, so the *guarība* came down and lifted him up and placed him on a large cluster of *inajá* nuts and, saying that he had to go away for a moment but would return in a short while and help the *jaboty* down, again disappeared. The *jaboty* ate until he could hold no more and then waited for the monkey to return as he would not risk a fall to the ground. In the afternoon a jaguar came under the tree and looking up discovered the *jaboty*. "*Eh, Jautī,*" said the jaguar, "what are you doing up there?" "I am eating *inajá* nuts," answered the *jaboty*. "Throw me one," begged the jaguar. The *jaboty* picked a fruit and threw it down to the jaguar, which then exclaimed, "Why don't you come down?" The *jaboty* answered that he would do it but was afraid of being killed in the fall. The jaguar wishing to make a meal of the turtle called out that it would catch the turtle if it jumped. The *jaboty* jumped but, as the jaguar had not calculated the distance, the turtle fell on the jaguar's head and killed it. Then the *jaboty*, safe and sound, retired to a hollow tree-trunk. A month after-

wards it took a walk to have a look at the remains of the jaguar and found nothing but the skeleton. Picking up a bone and shaping it into a flute on which it played a merry tune, the *jaboty* sang *Yauareté kuanguèra sereny-my* (Tupi for "The jaguar's bone is my flute").

Now it happened that another jaguar heard this song, and determining to investigate the cause ran after the *jaboty* which hurried into a safe hiding place, "*Eh, Jautī*," said the jaguar, "did I not hear you sing *Jauareté kuanguèra sereny-my*"? "No," answered the *jaboty*, "I have been singing *Suassú kuanguèra sereny-my* ("The bone of the deer is my whistle"). But as soon as the *jaboty* had found another safe hiding place it changed its song again and sang as before *Yauareté kuanguèra sereny-my*. The jaguar hearing this returned to the hole and said, "Jaboty, for that I am going to devour you now," and the jaguar sat down in front of the hiding place to wait for the turtle to come out. But the turtle escaped through another hole and in this manner fooled the jaguar. A *guarība* sitting in a tree, and noticing the jaguar at the hole, asked, "What are you doing?" "I am waiting for the *jaboty* to appear so that I can eat him," replied the jaguar. The monkey laughed and said, "You are stupid, the *jaboty* is gone, he only appears when it rains." Thus the *jaboty* fooled the jaguar.

SIXTH "JABOTY" LEGEND

How the Jaboty Got Revenge on the Tapir

A tapir encountered a *jaboty* in the *ygapō* (swamp), and stepping on it, buried it so deep in the mud that it took two years before the turtle could get out. When he finally succeeded in liberating himself, he said, "Now I am going to get revenge," and went out in search of the tapir. Soon he found some excrement of the tapir, all covered with grass, and asked the spirit of the excrement, "*Eh*, Teputī, where is your master?" The *teputī* replied: "He left me a long time ago; all I know is that when he went away he took this direction,—follow it." The *jaboty* followed the given direction and after some time found another heap of the same material and made the same question as before and received the answer: "My master left me here about a year ago; follow this track and you are bound to find him."

The *jaboty* continued his journey and soon found another heap which answered upon being asked, "My master cannot be very far away, if you walk fast you will catch him in the morning." The next day the *jaboty* found another heap the spirit of which said: "My master has just left me here; I hear him breaking the branches in the bush yonder,—follow him." The *jaboty* followed and soon found the tapir fast asleep. Then he dug his

sharp jaws in the thigh of the sleeping tapir which upon awaking became thoroughly frightened and rushed madly into the bush. Not being able to shake off the *jaboty* the tapir soon became exhausted from his long run and dropped dead.

A month later the *jaboty* returned to the spot and, finding the skeleton, broke off a couple of bones to show to his friends as a proof of his victory.

SEVENTH "JABOTY" LEGEND

How the Jaboty Fooled the Jaguar

A *jaboty* and a spider (the bird-eating Mygale) had formed a sort of company and lived together in the same house. The *jaboty*, having killed a tapir, was busy dividing the meat with the spider, when a jaguar appeared, "What are you doing, *Jaboty* and *Aranha?*" asked the jaguar. "I killed a tapir and now we are preparing the meat," replied the *jaboty*. "I am going to help you," said the jaguar, and immediately began to devour the meat, to the great displeasure of the two companions. Soon the *jaboty* said that he was thirsty and would go to look for water. The turtle walked a short distance, moistened his nose a little, and returned to the meal. "Where did you find water?" asked the jaguar; "I am also thirsty." "Go in this direction," said the *jaboty*, pointing his

finger"; the water is right underneath the sun, keep going straight until you reach it."

The jaguar walked all day until nightfall but found no water, and when it returned disappointed, the turtle and the spider had finished the meat, abandoned the house, and left nothing but bones for the jaguar.

The *caboclo* believes that the *jaboty* has virtues even after death. He believes, for instance, that having a *jaboty* for a pet in the house overcomes all kinds of domestic trouble. He also believes that after having eaten a *jaboty*, a great storm will come, if the shell when thrown away falls bottom up. They say that, if they use the upper shell of the *jaboty* as a pot or cooking vessel, water will never boil in it, no matter how great a fire is underneath. A wick dipped in the blood of the *jaboty* and placed in any gourd with oil and lighted will give the person concerned a very high acuteness of hearing. Many similar superstitions are connected with the *jaboty*.

OTHER MYTHS

Throughout the Amazon, the *oiāra*, or water-spirit, is believed in by the river people. The children are brought up with warnings not to get too close to the water, because a beautiful woman with golden hair, an irresistible voice, and charming eyes will fascinate them, as well as their fathers

and brothers, causing them to throw themselves into the depths.

There is scarcely a river section, creek, or lake which cannot boast of such a spirit, a "mother of the waters" (*mãe d'agua*), and in certain localities it takes the shape of a giant *sucurujú* or anaconda; but generally this spirit corresponds with the characteristics of the mermaids of European people, the Scandinavian *haf-frú*, the Finnish *Waiinnamoinnen*, etc.

In the Moju section, the *oiāra* and the dolphin are identical, being feared by the men only, who think it a woman who, with her feet placed backward, leads the men to destruction in the river.

The wealth of the Amazonian folk-lore is great and offers much material for study and comparison. The *caboclos* of the northern affluents, especially those living near the mouths of the Yamundá and Trombetas rivers, where the strange multiform amulets of the so-called Amazon stone were found (and are still found), have no end of legends, which all have a more or less remote bearing upon the mythical female tribe that dwelt around the lake Jaçy-uaruá, (the Mirror of the Moon).

This is what an old *caboclo* told: "The old people were telling that, many years ago, the women on a certain day at new moon fasted and afterwards made a great feast with dances and then went to the lake. When the lake became like a mirror, reflecting the moon, they all dived into the water

for the *muyrakytás* (the Amazon stones), to obtain some from the spirit of the lake. The spirit of the lake gave them *muyrakytás* of all shapes, such as frogs, reptiles, axes, round ones and of various colours, mostly greenish. When these were in the water they were soft and when they were brought up they became hard."

In the Yamundá Tupi dialect this short legend was rendered in the following manner, from which it has been translated:

Tuyué etá o nheeng, kochiŷma, paá, yaué ipyrongaua kunhã etá, paá, yepé akayá popé yaçy iporongãpe, aetá o iukuaku, ariré etá o monhang poracé uassú, poracé riré aetá o çõ ypaua semeéua rupi o maan yacy ypaua popé uaruá yaué katú, ariré aetá o pãin katú o pure ypaua popé o yapumi aetá o çõ yururá muyrakytá cy çupé aé muyrakytá. Aé muyrakytá cy o meeng aetá çupé o pãin mahi uaã amõ kururu, yané amõ yaué amõ i apoan, i parauá. Nhaan maá itá o ikõ ramé y popé i membeká rãin o cema ramé okara keté itá rama uana o pytá.


SKETCH MAP OF
NORTHEASTERN BRAZIL
DOTTED AREA SHOWS REGION
EXPLORED BY THE AUTHOR
APPROXIMATE SCALES
0 50 100 200 300 400 MILES
0 100 200 300 400 500 600 KILOMETRES
GUIANA
BRAZILIAN
GUIANA
Mouths of the
River Amazon
Ilha de
Marajo
PARA
EQUATOR
OBIDOS
MANAOS
R. Amazon
CAMETA
MOCAJUBA
BAIAO
ALCOBACA
R. Tocantinos
R. Xingu
R. Tapajos
LUIZ DO MARANHÃO
PARNAHYBA
R. Parnahyba
R. Araguaya
R. Tocantins
R. S. Francisco
PERNAMBUCO
BAHIA
BRAZIL
60
55
LONGITUDE WEST 500F GREENWICH
45
40

APPENDIX

Vocabulary of the Ararandeūaras of the Moju River

These words were collected during my sojourn at the *maloca* of these Indians, whom I visited in 1913. The dialect is that of Tupi with occasional deviation from this linguistic stock. A Tupi vocabulary which I carried with me on this journey proved of no value, mainly because of the pronunciation, of which no reliable guide was indicated. I have therefore preceded the vocabulary collected by the aid of the Indian Tute, referred to in these pages, and who did not understand one word Portuguese, by a brief key to the correct sound of the letters which vary from the English.

I have not attempted to present data which claim ethnological value, as the grammatical structure and the elements of the language were outside of my scope. The following material, however, will enable the traveller in the remote parts of the Lower Amazon, where no Portuguese is understood, to enter at once into a closer and practical relation with the aborigines. Had I, for instance, been familiar with but the one sentence, *Ehé akuán putāre né nyeng*, meaning "I want to learn your language," much time and work could have been saved.

Every letter should be pronounced, with the following modifications:

a	as in "large"
e	as in "end"
i	as "ee"
o	as in "soldier"
u	as "oo"
ȳ	as in "yard"

As the vowels in the Tupi language undergo changes of pronunciation depending upon their position in the word, I have accented these in order to make them easily understood:

á	short, staccato, as in "chat"
ā	drawling, almost guttural, as in Utah, Omaha
é	short, as in the French "cherché"
ō	short, but open as in "fog"
ȳ	peculiar sibilant "ee" sound

When n terminates a word it is supposed to give the last syllable a nasal twang. A letter placed in parentheses ( ) indicates that it is scarcely audible.

VOCABULARY

Human Anatomy

Tongue	*(h)apekûn*
mouth	*(h)eyurâ*
lip	*(h)erambé*
tooth	*(h)erén*
nose	*(h)etsîn*
eye	*(h)erehân*
ear	*(h)enamby*
ear lobe	*do.*

forehead	*(h)eruân*
head	*(h)anké*
hair	*(h)ân*
beard	*(h)yamutân*
eyebrows	*(h)erupehân*
eyelashes	*(h)erepepŷ*
human skin	*(h)epirêh*
cheek	*(h)eratupé*
chin	*(h)eradiwéh*
shoulder	*(h)eyatiapéh*
arm	*(h)ediwâh*
elbow	*(h)ediwâh renangéh*
hand	*(h)epô*
palm	*do.*
finger	*(h)epûn*
toe	*(h)epuhân*
nail	*(h)epuapéh*
thumb	*(h)epuhûn*
little finger	*(h)epunhŷ*
thigh	*(h)eû*
calf	*(h)eretamakén*
knee	*(h)erenapahén*
foot	*(h)epéh*
sole	*(h)epepetáhn*
body	*(h)eputyâhn*
dead body, cadaver	*umanúh*
neck	*(h)arepekéhn*
throat	*(h)eâhn*
chest	*(h)eyarukéhn*
breast of women	*(h)ekéhn*
belly	*(h)erauhéh*
navel	*(h)epuruhûhn*
side, loins	*(h)eikéh*
back	*(h)ekupéh*
seat	*(h)erewy*
membrum virile	*(h)erankûh*
membrum mulierum	*(h)nekutyéh*
bones	*(h)ekingwéh*
blood	*(h)ewŷ*

pulse	*(h)eŷhn*
flesh	*(h)erapuéh*
tendons, muscles	*(h)erayûh*
heart	*(h)eyim(b)éh*
brain	*(h)yakarahéh*
fat	*(h)ikiráhn*
liver	*(h)ipyâhn*
kidney	*(h)ipurikytymbéh*
spleen	*(h)eyarukéhn heraháh*
stomach	*(h)erihipéh*
intestines	*(h)erambaypuŷ*
perspiration	*(h)epiriáhn*
tears	*(h)erakuary*
urine	*ukurú*
excrement	*abutý*

Sickness

sickness	*mehmún*
fever	*(h)erakû* (compound word *akû* = warm, hot)
dysentery, diarrhea	*a(hrý)*
wound	*(h)eperéh*
scar	*uka-áhn*
breath	*aputeûh*
rapid breathing from exhaustion	*(h)ekeremáhn*
pus	*mariteh* (means really "dirty")
catarrh	*(h)eyuahý*
headache	*(h)rakenahy* or *(hʳ)akenahý*

Animal Anatomy

tail of mammal	*(h)auáh*
reptile, bird	*do.*
tail of fish	*do.*
skin	*(h)erapuhámpiêh*
feathers, plumes	*(h)ewéh*

fins of fish	*ipepôh*
claws of jaguar	*(h)ipuapéh*
beak	*ithŷm*

Elements

water	*paranáh*
fire	*tatá*
river	*paranáh*
creek	*ypiháh*
lake	*ypáh*
river-front	*(h)em(b)ehŷ*
estirao	*ipukû*
cachoeira	*itariapú*
travessao	*imemb(u)ŷ*
island	*(h)apuẏpuûhn*
terra firma	*tipuẏemuhéh*
varzea	*tiuhûh*
ygapō	*yapôh*
ashes	*tanimbúh*
wood for fire	*yânkon*
sky	*ihwáhn*
cloud	*iuapará*
warm, hot	*akû*
cold	*(h)eruŷ*
landing place on river	*payapáh*
rain	*amuŷ*
wind	*uitúh*
storm	*uitúh hûh*
thunderstorm	*tupâhn*
sun	*quarahŷ*
moon	*jahŷ*
stars	*jahŷtatâhn*
air	*uerâhn*
sunrise	*quarahŷ unyâhn*
sunset	*quarahŷpitôhn* or *quarahŷpuitôhn*
early morning	*puyayêh*
day	*âhn*

afternoon	*câh-rûh*
evening or night	*puitôhn*
shade or shadow	*iruhâhn*
midday	*ha-ayé*
midnight	*pitomûhn*
one day	*tzipéhŷhn*
to-morrow	*kamaytôhn*
after to-morrow	*kuama kamaytôhn*
yesterday	*ahôtáhn,*
one year	*tsipehŷn kuarahŷ*
one month	*tsipehŷn jahŷ*
time	*imâhn*
long time	*imâhn paténh*
short time	*imâhn catû*
full moon	*jahŷ uruahnhû*
new moon	*jahŷ ahûh*
summer, or dry season	*kuarahŷ rupŷ*
winter, or wet season	*amâhn rupŷ*
ground, soil, earth	*iwuŷ*
savannah, or campo, field	*capŷm*
forest	*ca-âhn*
leaf	*ca-âhn*
tree	*euiráh* / *hoôwéh*
branch, twig	*háhn kîhn*
sous-bois, undergrowth	*iwuŷ katîm*
sand	*iwuytŷ*
road, path	*péh*
hill, mountain	*iwuatéh*
stone	*itâhn*
iron	*itahyîh*
gold	*temitaréh*
silver	*do.*
gravel	*oire*
steep bank	*iwuŷ kuâhn*

House, Village, etc.

house	*tapúy* or *óca*
village	*erekuân* or *malóca*

small hut to sleep in	*tapuŷ têh*
entrance to village or to house	*tapuŷbéh*
uprights or main supporters	*yapureták*
roof itself	*yarukán*
walls of house	*tapuy parî*
capueira	*kôh-pêh*
hammock	*yahŷ* (?)
pantaloons	*tsirûh*
woman's loin-cloth	*tanga*
string for tying membrum virile	*era kuymahâhn*
decorative string around neck	*keyâhn*
calabash or cuya	*cuŷ*
knife	*paratî*
mandioca press	*tupetŷ*
flat mandioca sifter	*irupêh*
fire sticks	*tata(h)ŷ*
fibre container to carry farina	*yiyipêh*
basket of Assaí leaves for carrying farina	*manakuhâ*
large canoe	*ingara* or *inyâhn* or *ˆwāra*
small canoe	*inyâhteihn*
paddle	*iabu cuytâhn*
trough for making cachirî	*iuwranekuî*
spindle for making cotton thread	*ymahnuâhn*
pot for cooking	*yaâhn*
large pan for roasting farina	*yapehêhn*
stick for exerting the tipity pressure	*ehamŷhn*
log drum for religious ceremonies	*iuarŷ*
mortar	*amuyrâhn*
plunger for same	*amuâhn*

Man, Family

man	*kum(b)e êh* or *apuyáh*
woman	*kunyâhn*
male child	*kurumî* or *kunumî*
female child	*kunyîmukû*
young man	*auáh uhnyâh*
young woman	*kunyiîm bukû*
brother	*(h)erenêh*
sister	*(h)ereuî*
uncle	*(h)etutêh*
aunt	*(h)erekyíraŷ*
grandfather	*(h)eramûhm*
grandmother	*murihâhn*
grandchildren	*(h)erememuynôhn*
wife	*(h)erepahamunyâhn*
husband	*(h)erekuâhn*
daughter	*(h)eraŷ*
son	*(h)erayî*
friend	*camarâh*
enemy	*uyukâhn*
White man	*Cariwa* or *Karī*
Black man	*Tapanyûh*
caboclo	*auŷhn*
chief	*capitân*
nation, people	*awuauitêh* (this means a stranger to them; an unknown nation)
people	*ŷmbīra*

Numerals

one	*tipé (in)*
two	*mukûn*
three	*muapéh*
four	*(h)yerutchîhm*
five	*yenepûhyuruayeréh* (?)
six and above indicated by fingers	

Miscellaneous

medicine man	(failed to identify)
medicine	do.
tobacco	*petéma*
paper for cigarettes	*petererû* (the bark of the *tawaray* tree)
picture	*taignâhn*
to draw	*epinîh* (?)
Yurupary or evil Spirit	*anyî* or *Curupira*
game	*mérôh* or *marakáh*
monkey	*kaî*
shoot	*éh apî*
bow	*iránpâhn*
arrow	*mererê*
arrowpoint	*tâhnkuâh*
cord	*iranpahîhm*
fish	*pirâhn* or *pīra*
bird	*aránkuâhn*
snake	*bôh* or *boi*
sucurujú	*Urucuyû*
jararáca	*muyhûh*
alligator	*yakarêh*
chameleon	*camareáh*
howling monkey or guariba	(?)
caiarára monkey	*caihruatŷ*
bat	*andirâh*
jaguar	*jawuâh*
dog	*jauāra*
sloth	*aŷ*

Various Sentences

I am hungry	*(h)ahmbuya (h)éh*
I am not hungry	*anîh (h)ahmbuya (h)éh*
You are sick	*(h)émba éah (h)ŷ*
The woman is sick	*kunyâh (h)émba-éah-(h)ŷ*
Are you sick?	*Endeh zerâh (h)émba-éah-(h)ŷ*

What is the matter with you	*Báah derekôh*
To have	*arekôh*
Nothing	*Anîh báah*
Where are you going?	*Bíh pendé (h)oh*
I am going for a walk in the forest	*Ahôh a-atáh caap(éh)*
Have you got any bananas?	*arekôh pacôn*
No, we only have farina	*Anîh arekôh uîh*
How many are you here?	*Bo ŷ(hl) ŷmbira*
We are many	*Hetâh ŷmbíra*
We are few	*anîh hetáh* (many)
Do you want to go with me	*Apotáre hahóh heir(ú)hm*
We do not want to go	*Anîhahôh apotáre*
Why?	*mairá(h)me*
Let us go now	*Yahôh uá(h)n*
Wait a while	*ehé a(h)rá(h)m*
Go ahead	*Yahôh tenon(h)dé(h)*
I am very tired	*(h)émbara a(h)reté(h)*
When do you return?	*mana(h)méh redieuéh*
I am going away to my country	*Ehé(h) ahôh putáre (h)eretámo koté(h)* (in the direction)
White Man, I am going away from here to my house	*Buitô o (h) remé(h) yeahô(h)* (go) *deuî(h) Cariwa heróca(p)é(h)* (my house)
The bird sits on top of the house	*euiráh uŷata(h)n apekô(h)* (bird above sits) *yna ocípupá(p)* (on house)
Let us enter the house	*Yahô(h) yah* (Enter) *itché(h) herócŷpé(h)*
Do not be afraid of my people	*tamé(h) ekŷheyé(h)* (have fear) *(h)ŷmbīretá(h).*

Have you got a canoe?	*Erekôh tchiráh igára* ("g" like the soft Danish "g")
The canoe is in port	*igára eméh igarupá(h)*
The paddle is missing	*Uatára* (lack) *yapoko(h)-ita(h)n*
The woman is angry	*Kunyá(h)n ipuya(h)ia oikó(h) (is)*
What is that?	*kô tam ba(h)éh*
This is mine, you must not touch it	*kôh yeyáre anía(h) potáre* (this mine not will) *ya(h)uky* (touch)
This afternoon it is going to rain	*Yehíh amánaokŷre potáre* (to-day rain drip will) *karú karaméh* (afternoon)
Yesterday we went fishing	*koaháh yapindá(h) itéka*
The man is killing the spotted jaguar	*kum(b)e (éh) ayuká(h) yauára peném a*
To-morrow we shall shoot tapir	*kunyéh ahôh ayuká(h) tapīra*
I want to smoke	*ayohé(h) petema* (I like)
I have no tobacco	*anîh ikôh petema* (has not)
I will not go	*anîh ahôh putáre*
I do not understand	*ani akuân*
Do you understand?	*akuân tschiráh?*
I want to learn your language	*Ehé akuán putare ne nyeng*
You speak too quickly	*Endé nyeng apuŷ a(h)i-hâre*
Are you married?	*Endé chiráh mendahâre?*

I am married	*Ché mendahâre*
The snake bit the man	*boi otiôh apuyáh*
This tree is very high	*euiráh euatéh*
This flower is pretty	*(h)epotere katū*
This girl is prettier than that one	*kunyáh-mukú ikatú(h)uh* (girl better) *amu(h)uhŷ* (other)
ugly	*aya-eté*
Give me a hammock	*me-éh petém kihán ihé*
When are you ready to go?	*Manâ(h) me ta-án ahôh*
My mother has the fever	*(h)amai-ba(h)eahŷ*
I will cure her sickness	*Ché ahôh apu(h) ayuh*
You must work	*Ende ahoh pura (o)hikŷ*
One day I went into the forest	*petém âra ohôh caá-p(h)*
Far from the river-front	*pepeté(h) (h)erembé éu*
I arrived at a large tree	*Ché ahŷke euiráh ahú-reéh*
There I sat down on the ground	*aâpe anyé núh aerupé(h)*
Soon I heard a noise	*aâpe ahendú(h) teapú(h)*
And turned around	*yapuihaká(h)*
There behind a fallen tree I saw an Indian	*aâpe tâki kuaŷ koteh euiráh yaitekemaá(h) aretchá(h) petém tapuŷ(h)*
Armed with bow and arrows	*uŷ(h) irûn uirá(h) para*
I was not afraid	*ani akŷ hŷ-ié(h)*
When he came over to greet me	*mana(h)mé ohôh nyepurú (h) ihupé(h)*
After this we were always good friends	*Aye(h)u(h) puyta(h) (i)* (since remains) *katū heirum* (good with me)

Botanical Names Identifying the Species of Timbers Given in the List on pp. 414–416.

The species which are described in detail in the text have been classified in the Index.

Acaricuàra. (*Minquartia guyanensis.*)
Ajurú. (*Chrysobalanus Icaco.*)
Amapá. (*Hancornia Amapá.*)
Ananȳ. (*Symphonia globulifera.*)
Anauerá. (*Licania macrophylla.*)
Angelīm. Tree belonging to the family of *Leguminosæ.* Species unidentified.
Angico. (*Cassia fastuosa.*)
Aracānga, species and family unidentified. A beautifully colored cabinet-timber.
Araparȳ. (*Macrolobium acaciæfolium.*)
Arára tucupȳ. (*Parkia oppositifolia*). Wood contains tannin.

Bacurȳ. (*Platonia insignis.*)
Biribá. (*Rollinia orthopetala.*)

Caimbé. (*Curatella Americana.*)
Cajueiro. (*Anacardium.*[1]) Fruit tree. (*A. giganteum.*)
Camboatá. (*Trichilia excelsa.*)
Canella. Tree belonging to the family of *Melastomaceæ.* Wood highly flavoured.

[1] Species not yet identified.

Carapanaūba. (*Swartzia.*[1])
Caraūba. (*Jacarandá copaia.*)
Caripé. (*Licania utilis.*)
Coraçaõ de negro. (*Machærium.*[1]) Tree belonging to the family of *Dalbergiaceæ.*
Cravo. (*Dicypellium caryophyllatum.*) Flowers are known as cloves. Wood and bark highly spicy.
Cujumarȳ. (*Aydendron Cujumary.*)
Cumarū. (*Dipteryx odorata.*) Tree yielding the flavoured Tonka-bean.
Cutitiribá. (*Lucuma vivicoa.*)

Embira. (*Sterculia pruriens.*) Also yielding a strong flexible fibre.

Frei Jorge. (*Cordia Goeldiana.*) Excellent timber resembling Teak structurally.

Guajará. (*Chrysophyllum excelsum.*)

Ipé. Unclassified.

Jacarandá. (*Dalbergia Spruceana.*) Cabinet timber called Rosewood abroad.
Jacareūba. (*Calophyllum Braziliensis.*)
Jarāna. (*Chytroma Jarana.*) Excellent timber.
Jutahy. (*Hymenæa.*[1]) Yields gum.

Louro. Tree belonging to *Lauraceæ.* Good timber.

Macacaūba. (*Platymiscium paraënse.*) Cabinet timber.
Macucú. (*Licania heteromorpha.*)

[1] Species not yet identified.

Marachimbé. (*Emmotum fagifolium*). Peculiarly adapted for shingle manufacturing.
Matamatá. (*Eschweilera matamata.*) Excellent timber.
Muiracoatiara. (*Centrolobium paraënse.*) Beautiful cabinet-wood.
Muirapinima. (*Brosimum guyanensis.*) Snake or letter-wood, a precious cabinet-wood.
Muirapiranga. (*Brosimum paraënse.*) A fine, deeply stained cabinet-wood.
Murupita. (*Sapium lanceolatum.*)
Muiratinga. (*Olmedia calophylla.*)
Muirapixūna. Species unclassified. A dark, well-grained cabinet-wood.
Mururé-tree. (*Brosimum acutifolium.*) Medicinal properties.
Mututȳ. (*Pterocarpus Amazonicus.*)

Pacapéua. (*Swartzia racemosa.*)
Pão amarello. (*Euxylophora paraënsis.*) Satinwood.
Pão arára. (*Aspidospermum.*[1])
Pão mulatto. (*Catycophyllum Spruceanum.*) A fine cabinet timber.
Pão róxo. (*Peltogyne paraënse.*) A fine, dense purple-colored wood. Same as *pão violeta.*
Parajūba. (*Dialium divaricatum.*)

Quarūba. (*Vochysia Grandis.*)

Sapucaya. (*Lecythis usitata.*)
Sapupīra. (*Bowdichia virgilioides.*) An excellent timber.

[1] Species not yet identified.

Sucupīra. Claimed by some to be the same timber as Sapupīra.

Sucuūba. (*Plumiera sucuuba.*)

Tachy. (*Sclerolobium Goeldianum.*) An excellent, resisting timber.

Tamacoaré. (*Caraipa paraënse.*)

Tamanqueira. (*Fagara Guyanensis.*)

Tannin. Contained in the bark of Mangue, in the wood of *Arāra tucupȳ* 414, and in the leaves of the Embaūba.

Taquarȳ. (*Mahea taquary.*)

Tarumān. (*Vitex.*[1]) Inferior timber.

Tatajūba. (*Bagassa Guyanensis.*) A fine timber.

Uchȳ and Uchirāna. (*Saccoglottes.*[1])

Umarȳ. (*Poraqueiba sericea.*)

Visgueiro. (*Parkia pendula.*)

[1] Species not yet identified.


MAP
OF THE
STATE
OF
PARÁ
DRAWN TO ACCOMPANY
"THE LOWER AMAZON"
BY
ALGOT LANGE
KILOMETRES
GUYANA
FRANCEZA
GUYANA
HOLLANDEZA
GUYANA
INGLEZA
OCEANO
ATLANTICO
EQUATOR
Rio Oyapok
C.d'Orange
CASSIPORE
Ponta Grande
CONANI
Ilha de Maracá
C.Pase de Norte
INDIOS
TARIMPINS
INDIOS
TUCARYS
Serra do Parú
Campos
Geraes
Rio Jamundá
Rio Trombetas
Rio Amazonas
Rio Xingu
Rio Tapajos
Rio Araguary
Rio Jary
Rio Paru
Rio Jary
Ilha Caviana
Ilha Mexiana
MACAPÁ
MAZAGÃO
Ilhas dos Porcos
Ilha Grande de Gurupá
GURUPÁ
CHAVES
SOURE
BRAGANÇA
MARAJÓ
BREVES
PORTO DE MOZ
ÓBIDOS
ALMEIRIM
MONTE ALEGRE
SANTAREM
PARINTINS
CAMETÁ
BELLEM (PARA)
INDIOS MAUÉS
INDIOS MUNDURUCUS
INDIOS TAPUIA-ERETÉ
INDIOS ARÁRAS
INDIOS TAPAIUNAS
INDIOS CARAJAS MIRYS
INDIOS CARAJAS POCUS
INDIOS CARAMBÚS
INDIOS CURUPITÉS
INDIOS ANAMBÉS
INDIOS TECUNHAPEBAS
INDIOS TURINAMBÁS
INDIOS TAKAIUNAS
INDIOS TURYUÁRAS
INDIOS TEMBÉS
INDIOS TYMBIRAS
INDIOS MIRANHIS
INDIOS ACARÁ MIRYS
INDIOS JACUNDÁS
INDIOS AMANAJÁS
TERRENOS POUCO EXPLORADOS
ESTADO DE MATTO GROSSO
ESTADO DE GOYAZ
ESTADO DO MARANHÃO
AMAZONAS
Serra dos Gradahús
Serra do Roncador
Rio Tocantins

INDEX

With brief explanatory remarks.

Abacate. *Persea gratissima*, bot. Alligator pear, 369

Abiú. *Lucuma caimito*, bot. Yellow fruit, 369

Acapú. *Vouacapoua americana*, bot. Timber of excellent quality. Called Amazon wood, 88, 191

Acapu-rana Tree. *Campsiandra bifolium*, bot. For canoe-making, 119

Acarí. *Chætomus spec.* Game fish covered with horny plates, 140, 149

Alcobaça. Small town situated on left bank of Tocantins, below the rapids, 123

Alligator, searching for, 300; hunting, 325

Alvarenga. Word of Portuguese origin. Heavy lighter with flat bottom, 7

Amanhá. Portuguese word for "to-morrow," 63

Andiroba. *Carapa guyanensis*, bot. Called by some "crabwood." Its wood excels mahogany, 11, 74, 82, 88, 406

Aninga or Anhinga. *Montrichardia arborescens*, bot. Common aquatic plant. Its long fibres probably of commercial use. Contains potash, 9, 10, 31, 55, 82, 298

Arára. The hyacinth macaw, 128, 235

Arary River. Principal river on Marajó Island. Connects the lake of the same name with the Marajó Bay or Rio Pará, 273

Arawak Indian, 336

Archæology of Lower Amazon, 307, 339

Assacú. *Hura Braziliensis*, bot. Large tree giving a caustic sap, 75

Assaí or Assahy. *Euterpe oleracea*, bot. Characteristic Amazonian palm of wide application in the native domestic science, 16, 17, 18, 31, 55, 61, 65, 71

Aviador. A type of merchant and trader familiar on the Amazonian waterways, 4, 404

Bacaba Palm. *Œnocarpus distichus*, bot. Edible fruit of which is made a drink, 370

Bahú. Word in the Tupi language meaning "box." Modernized it means trunk or travelling bag, 169, 279

Balde. Portuguese word. Receptacle in which the rubber-milk is carried from the forest, 51, 56, 57

Bamboo. *Guadua machrostachys*, bot. Called by natives *taboca de lontra* or otter-bamboo, 11

Banana, plantation of, 96. *See* Natural Resources
Barracca. Word from the Portuguese meaning house or hut of better construction than the ordinary native dwellings. Barracão, large house, 20, 21, 88
Batelão. Large, clumsy freight canoe, 7, 77
Bijou Chic. Native cereal, 51
Boa Constrictor, encounter with, 66; track of, 288; loss of, 333
Boião. Funnel above which the rubber-milk is coagulated, 59
Bow-wood. *Tecoma conspicua*, bot. Tall tree, with a strong, elastic wood. Called by the natives *pão d'arco*, as it is used principally in the manufacture of bows, 229
Bragança Railroad, construction of, 402
Brazil Nut. *See* Castanha
Burity. *See* Mirity
Business and Industries, 404

Caboclo. Cabocla, fem. Tupi word, offspring between Indian and white or negro, 42, 43, 52, 67, 71, 77, 116, 153
Caboclo's Wages, 95
Cacao. *Theobroma spec.*, bot., 407
Cacao Shelling, 110
Cachassa. Unrefined alcohol made from sugar-cane, 81, 104, 292
Cachimbo. Tobacco pipe. Derived from the Tupi language, 58
Cachirí. Indigenous drink made from fermented mandioca roots, 223, 234, 255
Cachoeira. Portuguese word meaning "rapid"; water-fall is called *pancada*, really meaning "shock." In places the term *salto* is used, 127, 188, 189, 210, 211.
Cachoeirista, one who travels over the cachoeiras, 210
Cacos. Term used by the Brazilians to designate any kind of broken pottery, whether new or old, 314
Cafuzo. Cross between Indian and negro, 374
Cairary. Affluent of the Moju River. Also village on the left-hand bank of Moju, 157
Cametá Rubber. *See* Sernamby Rubber
Cana-rana. *Panicum spectabile*, bot. Long, tough grass growing throughout Lower Amazon. Obstruction to navigation, 279, 294, 299
Capoeira. Second growth or abandoned settlement, 115
Capybara. *Hydrochœrus capibara*. The largest representative of the rodent family in South America, 287, 300, 309
Castanha Tree. *Bertholletia excelsa*, bot. Brazil-nut tree, 100, 111
Cause of failure in fruit raising, 369
Cedar Tree. *Cedrela spec.*, bot. Many species exist by the name of *cedro*. The most important is the Red Spanish cedar or cigar-box wood, 191, 193
Celebration among aborigines, 255
Chibéh. Farina mixed with cold water, 50, 51, 115
Cigana. *Opistocomus hoazin*. Large, brown-colored bird feeding near water-front, 173

Cigarette. Type of cigarette used among the aborigines, 234
Cipó. Word derived from the Tupi language, meaning bush-rope, hence any aërial root or climber. Most of these belong to the families of Bignonias, 35, 48, 50, 52, 132, 217, 429, 436
Ciriúba. *Avicennia nitida.* Tree growing near brackish water, 68
Coati. *Nasua socialis.* Nose-bear. A common pet among the natives, 241
Colhereiro. *Platalea ajaja.* Spoon-bill, 101
Copahyba Tree. *Copaifera guyanensis*, bot. Large, useful tree. Medicinal properties, 131
Cost of Living, 345
Cow-tree. *See* Massaranduba. *Mimosups amazonica.* Tall tree giving a fine hard wood, 133
Cupim. Species of white ant, 36
Cupuassú. *Theobroma grandiflorum*, bot. Large, scented fruit, 370
Curare Poison. Blow-gun poison, also called Wourahli, 247
Curauá Fibre. Obtainable from the leaf of a Bromelia, 50, 255
Curimatá Fish. *Anodus spec.* Game fish, 107
Curupira. Mythical spirit of the forest, 422, 425 to 429
Custom Duties, 356
Cutĩa. *Dasyprocta Aguti.* Common forest rodent, 142
Cuya. Gourd or calabash, 61

Defeza da Borracha. Activities of this commission, 396
Defumador. Portuguese word. Shack where rubber is smoked, 58, 73
Dress of the aborigines, 239

Embaúba. *Cecropia spec.*, bot. Probably the most commonly seen tree in Amazon Basin, 11, 55, 139
Estirão. Word derived from Portuguese, meaning a long, straight stretch of river-front, 19, 20, 180, 185, 186, 213
Estrada. Portuguese word, meaning pathway leading past a certain number of rubber trees, generally, 150–200. Also road in general, 46, 51, 52, 55, 57, 73

Farinha or Farina. A substitute for bread universally used and prepared from the poisonous roots of the mandioca plant (also called *maniwa*), 5, 57, 191; manufacture of, 223
Fields for foreign exploitation, 405
Folk-lore, 422
Food, everyday food of the Brazilian, 365
Food, Health, and Sanitation, 356
Foreign Goods, 348
Fruits. Names and qualities of Amazonian fruit, 369
Furniture, cost and quality of, 354
Furo. Portuguese word meaning narrow stream connecting two points of the same river; a cut-off or short-cut, often disappearing in the dry season, 87

Garça. *Ardea egretta.* The white egret, 101, 280

Gavião. *Harpuia destructor.* Hawk, 281
Gentio. Portuguese term used by the Brazilians to designate Indian or aborigine, 282
Gifts suitable for Indians, 208
Ginger Plant. Growing wild throughout Lower Amazon, 96
Grass and Pastures. Necessity of giving more attention to cultivation of proper grass, 390
Guajará Bay. Also called Guajará River in Pará; is not properly speaking a river, but an expanse of water in front of the city of Pará formed by the confluence of the rivers Moju, Acará, Capim, and Guamá. 4, 68
Guamá. Black-water River, discharging in the Guajará Bay in front of the city of Pará. Its upper reaches are inhabited by Indians and imperfectly explored, 2
Guará. Scarlet ibis. Abundant on the Marajó Island, 280, 330
Guarība. Mycetes ursinus. The common red howling monkey, 15

Ilha das Onças, or Jaguar Island. A long, swampy island in front of the city of Pará, 2, 64, 269
Inajá Palm. *Maximiliana regia*, bot. Common and useful palm tree, 437
Ita-úba. *Lauracea*, bot. Stone-wood. A practically indestructible timber, 152

Jaboty. *Testudo tabulata.* Forest turtle common throughout Amazon Basin, 52, 107, 191, 233, 240; Jaboty legends, 429–442
Jacami. *Psophia obscura.* A wild and beautiful fowl, 130
Jacaré. *See* Alligator
Jacuba. Native cereal, 51
Japīm or weaver bird, 83, 211, 235
Jarāna. *Chytroma Jarana*, bot. Hardwood, resembling ing white oak, 152
Jararāca Snake. *Cophias atrox.* Poisonous snake common in the lowlands, 56, 69, 74, 297
Jarina. *Phytelephas macrocarpa*, bot. Vegetable ivory, 407
Javary Palm. *Astrocaryum jauary*, bot. Stately palm found throughout Amazon Basin. Origin of name probably derived from Tupi word, jauāra, meaning tiger or jaguar, 33, 34, 52, 106, 167

Machadinha. Small axe with which the rubber-tree is gashed to give flow to the sap, 51, 56, 70
Maloca. Tupi word meaning war-house; commonly used to designate village of aborigines, 190, 199, 205, 206, 209, 217, 253; construction of Maloca, 218, 230
Mameluco. Half or quarter-breed, 374
Mamo-rana. *Pachira aquatica.* An aquatic tree, 36, 39, 105
Mandioca Plant. Also called Maniwa by the natives. *Manihot utilissimus*, bot. Farina is made from the poisonous root of this indigenous plant, 71, 217

Mango. Common edible fruit, 370
Mangrove. *See* Mangue
Mangue. *Rhizopora mangle.* The mangrove tree, 68, 105
Maniwa. *See* Mandioca
Marajó. A large, level, and periodically inundated island in the middle of the Amazon Delta. Extensive cattle ranches and numerous pre-historic mounds, 10, 45, 68; journey to Marajó, 268; topography of, 337
Marēca. Wild duck, 101, 281
Marriage-test among aborigines, 247
Marupá. *Simaruba amara,* bot. Paradise-wood. A tree of characteristic growth. Clear, white wood. Medicinal properties, 18
Massaranduba. *See* Cow-tree
Massarīca. *Calidris arenaria.* Small wading bird, 101
Medical Outfit. Compact and useful skit furnished by Borroughs and Wellcome. Usefulness of, 150, 155
Meruhim. Minute insect causing irritation of the skin, 103
Milreis. Brazilian monetary unit, equal to 30–33 cents American. One Milreis (1$000), or one thousand reis, is the most widely distributed paper coin in Brazil. 1000 Milreis is called a conto, 13
Mirity. *Mauritia flexuosa,* bot. Common and useful palm, 9, 16, 17, 20, 61, 82, 130, 226
Moju River. Discharges in the Guajará Bay, 78, 152
Mondongo. Expression used exclusively on the Marajó, meaning large bog or swamp, 298, 308
Montarīa. Small, light canoe for swift travelling, 7, 8, 15, 39, 91
Moquīm. *Trombidium spec.* A microscopic insect of a red color. Its bite gives rise to a prolonged inflammation, 112
Mosquitoes, 97
Mosquito-squad, activities of, 361
Mulatto, offspring of white and black, 374
Munguba Tree. *Bombax munguba,* bot. Soft, pulpy wood. Fruit capsules give silky fibres, 88
Murumurū Palm. *Astrocaryum murumuru,* 72, 106, 191
Mururé Plant. *Eichhornia azurea,* bot. Water hyacinth. Forms large, floating islands obstructive to navigation, 280, 294, 299

Natural Resources, excluding rubber, 405
Nocturnal Sounds, 170

Oiāra. Character in the Amazonian folk-lore, 442

Pajé. Medicine man, 205
Paraná. Tupi word meaning water or river. Used locally to designate the channel between two or more islands, 87
Parapará Tree. *Cordia tetandra,* bot. Soft, pulpy wood, 279
Pataoá. *Œnocarpus balana,* bot. Palm tree, edible fruit, 370
Patrão. Portuguese word meaning proprietor, "boss," 91

Pedral. Accumulation of rocks in river-bed, 126
People, the, 374
Periquit. Small green parrot, 8, 15, 111
Piranha. *Serraselmus piraya.* Voracious fish, 56, 103; piranhas attacking alligator, 285
Pirarucú Fish. *Primodontos gigas.* Largest fish of Amazon Basin, 103, 131
Pitiú. Large fresh-water turtle, 112, 114
Piúm. *Simulium spec.* Minute bee inflicting small painful hemorrhagic wound on the skin, 97, 103
Pleasures and Diversions, 378
Pororóca. Bore or tidal wave appearing in certain rivers of the Amazon Delta, 29, 38, 39, 40, 41, 42, 43, 84
Povoado. Portuguese word meaning inhabited region or settlement, 173, 184
Praya. Sand-flat or beach. Portuguese word, 98, 111, 186, 192
Prospects of Amazonia, 383

Regatão. Large canoe fitted with mainsail and jib, 152
Requisites for establishing any settlement on the Amazon, 388
River of Doubt, 267
Roça. *See* Roçada
Roçada. Word from the Portuguese, meaning area under cultivation, plantation, 19, 24, 191, 217
Rubber. Collecting and smoking of, 47 to 60; rubber industry failing, 383; rubber prices fluctuating, 383
Rubber-milk. Sap or latex exuding from the bark of the rubber tree, 53; daily yield of, 73
Rubber-pelle. Ball or pellet of smoked rubber, also called rubber-ham. The form in which crude rubber is usually smoked by the native, 58
Rubber Plantation, 83; Moju rubber plantation, 22
Rubber Tree. *See* Seringueira
Rubber Worker. *See* Seringueiro

São João, celebration of, 142
Saúba Ant. *Atta cephalotes.* A very destructive species of ant, 35
Scarlet Ibis. *See* Guará
Seringueira. *Hevea Braziliensis,* bot. The wild rubber-tree, 12, 47–52
Seringueiro, 48, 56, 60, 91
Sernamby Rubber. Inferior grade of rubber, spontaneously coagulated on the trees, 81, 85, 89
Shooting rapids, 261
Skill of shooting with arrows among aborigines, 256
Soundings. Made on the Tocantins, 125
Sting-ray. Portuguese araya. Barbed bone of, 102
Stone-axe. Diorite axes are still employed by certain aborigines, 228
Sucurujú. *Eunectes murinus.* Water boa constrictor. Discovering a lair of sucurujús, 134, 298, 309
Sumauma Tree. *Ceiba pentandra.* Cotton-tree, 88
Surucucú Snake. *Lachesis mutus.* Poisonous snake. Common throughout Amazon Valley, 52, 69, 71, 132, 297

Tanga. Tupi word meaning covering used by women only, whether this be a

Tanga—*Continued*
cotton loin-cloth or filibeg as found among the present-day aborigines, or the prehistoric terra-cotta ornament, 197, 232, 242; prehistoric tanga, 315
Tapajoz. Large river with headwaters in the State of Matto Grosso and discharging in the main river. The town Santarem is situated at its mouth. Much obstructed by rapids. Fairly well explored, 30
Taperebá. *Spondias lutea*, bot. Tree giving edible fruit, 18, 305, 310, 321
Tapir. Portuguese anta. Tupi tapira. *Tapirus americanus*. The largest South American mammal, 107
Tauary Tree. *Couratari tauary*, bot. Tall tree. Its bark is used by natives for various purposes, 234
Terra Cahida. Steep river bank subject to permanent erosion, 99, 176
Terzada. Portuguese for machete or bush-knife, 49
Teso. Term used on the Marajó Island only to designate the isolated groves or "islands" found scattered throughout the Marajó prairies, 279, 288, 325
Timbers and precious woods, 410
Tipity. Fibre press used by natives to extract the juices from the mandioca roots, 225, 226
Tobacco, 408; Tobacco raising, 95
Tocantins. Extensive river with sources in the State of Goyaz. Discharges near Pará. An unsalubrious river coursing through a region mainly inhabited by Indian tribes. Imperfectly explored, 7, 12, 77, 78, 84
Tolda. Typical canoe thatch, 94
Tracachá Turtle. *Podocnemis unufilis*. Large water turtle, 109
Travessão. Portuguese word meaning "crossing," small rapid or mill-race, 188, 192, 193, 210, 211
Trombetas. River running south-east from unknown point in the watershed of Tumac-humac on the frontier of the Guyanas and Brazil. Little-known river course, 30
Tucandeira Ant. *Cryptocerys stratus* (by some, *Ponera grandis*). Large, poisonous ant, 246
Tuchaua. Tupi word meaning chief or master, 227
Tucumá Palm. *Astrocaryum vulgare*, bot., 226
Tucunaré. Highly esteemed game-fish resembling trout, 127
Tupáh. Tupi word meaning God; also thunder, 219, 253, 255
Tupi. The main linguistic stock of the Amazon Basin. The Tupi language with its many dialects is still spoken among the aborigines in many regions, 12

Ubá. Tupi word meaning dugout, 199
Ubussú. *Manicaria saccifera*, bot. Palm tree, the nuts of which give oils for soaps, etc, 8, 49
Ucuúba. *Virola sebifera* bot. Tree growing in low-

Ucuúba—*Continued*
lands. Useful fruit and precious wood, 18, 34, 407
Urubū. *Cathartes spec.* The filth scavenger of the tropics, called turkey-buzzard elsewhere, 3, 329; name of a settlement on Tocantins, 130
Urucú Plant. *Bixa orellana*, bot. From its seeds a scarlet juice is obtained, 81, 196, 232, 408
Urucury Palm. *Attalea excelsa*, bot. Palm tree giving fruits used in the manufacture of crude rubber, 59, 67

Vaqueiro. Brazilian cowboy, 289, 296
Varzem. Plural Varzens. Portuguese word meaning periodically indundated forest tract, 38, 65, 81
Vasante. Word of Portuguese origin, ebb tide, 7, 275
Vocabulary of the Tupi dialect spoken by the Araran-deuara Indians, 445

Weaving among the aborigines, 231

Ygaçaba. Tupi word. Funeral urn of pre-historic origin, 283, 317
Ygapō. Term derived from the Tupi language, meaning forest permanently inundated, 31, 32, 33, 34, 35, 36, 38, 39, 56, 81, 131, 134
Ygarapé. Term derived from the Tupi language, meaning literally canoe-path, here creek, 7, 12, 30, 55, 64, 67, 71, 72, 75
Ygarapé Miry. Name of village on river of same name, 7, 12, 77–80

A Selection from the Catalogue of

G. P. PUTNAM'S SONS



Complete Catalogue sent
on application

"Notable among works of exploration and discovery."—The Outlook.

In the Amazon Jungle

Adventures in a Remote Part of the Upper Amazon River, Including a Sojourn among the Cannibal Indians

By Algot Lange

With an Introduction by
Frederick S. Dellenbaugh

"A more remarkable narrative of strange experiences and perilous adventures would be hard to find among the books of many years. . . . . His training as a student of natural history and botany has stood him in good stead, for while his remarkable book is in no sense a learned disquisition, its narrative is made more valuable by the scientific basis of its observation of wild life and plants. This feature is a fortunate aid to its entire credibility, for here are stories which might be regarded as were those of Marco Polo."—*Springfield Republican.*

"A description more wonderful than the work of Paul du Chaillu, and holds the reader as intensely as the stirring narrative of Stanley's adventures in Africa."
San Francisco Chronicle.

8°. With 86 Illustrations from Original Photographs by the Author. $2.50 net.
(By mail, $2.75)

G. P. Putnam's Sons
New York **London**

Trails and Tramps in Alaska and Newfoundland

By **William S. Thomas**

Author of "Hunting Big Game with Gun and Kodak"

12°. With 150 Illustrations. $2.50 net
By mail, $2.75

The author gives an account not only of trips along the coast and into the interior of Alaska and Newfoundland, but of excursions to, and nature studies in, many other little-visited parts of the American continent. There are many interesting photographs of scenic wonders and animal life remote from civilization, observed under peculiar circumstances and at opportune moments. There are accounts of bear and wild-sheep hunting, raccoon hunting and rabbit hunting with ferrets; but equally interesting are the accounts of the game that the author bagged with his camera and the description of the habits and the life of animals and of aborigines whom the author ran across in remote parts. Camp yarns and adventure season the pages of this interesting volume of nature studies.

G. P. Putnam's Sons

New York **London**

Mountaineering and Exploration in the Selkirks

A Record of Pioneer Work among the Canadian Alps, 1908–1912

By Howard Palmer

Corresponding Member of the Geographical Society of Philadelphia, Fellow of the Royal Geographical Society

With 219 Illustrations and 2 New Maps. $5.00

A contribution to the description and history of a region that has been sadly neglected. The author is the first to have surveyed and photographed a large territory of the Selkirks, covering about 600 square miles in the northerly part. His superb photographs, some taken from the top of the loftiest peaks, are a great addition to this important and fascinating work.

G. P. Putnam's Sons

New York London

Java and Her Neighbours

A Traveller's Notes on Java, Celebes, the Moluccas, and Sumatra

By **Arthur S. Walcott**

8°. With 78 Illustrations and a Map. 350 pages. $2.50 net

A most illuminating and entertaining account of travel among and within the Dutch-Malay islands. This volume should be of great service to travellers, in view of the practical hints it offers and the added pleasure received from a knowledge of the history of places visited,—and to the stay-at-home traveller through the many excellent and unusual photographs and the delightfully intimate text.

G. P. Putnam's Sons

New York **London**