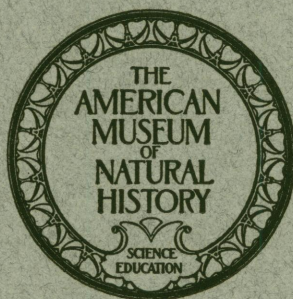


GAZETTEER AND MAPS SHOWING
STATIONS VISITED BY EMIL
KAEMPFER IN EASTERN
BRAZIL AND PARAGUAY

BY ELSIE M. B. NAUMBURG

BULLETIN
OF
THE AMERICAN MUSEUM OF
NATURAL HISTORY

VOLUME LXVIII, 1935
ARTICLE VI



NEW YORK
September 27, 1935

**Article VI.—GAZETTEER AND MAPS SHOWING COLLECTING
STATIONS VISITED BY EMIL KAEMPFER IN
EASTERN BRAZIL AND PARAGUAY.**

BY ELSIE M. B. NAUMBURG

PLATES VI TO XXVII; 2 MAPS

In working out the bird collection of Emil Kaempfer, it was found impossible to do accurate scientific work without a detailed knowledge of the geography of the localities at which the specimens were collected. Consequently, it was decided to make maps and to compile a gazetteer of these localities.

The accompanying maps have been made at the American Geographical Society by Mr. William Briesemeister, under the direction of the writer, and as a great many of the collecting stations have never before appeared on any authentic maps, the work has required a great deal of intensive study and original research.

Mr. Kaempfer's "sketch" maps of the different areas and also the *Carte Internationale du Monde*¹ were most useful, likewise various maps of the American Geographical Society, though a report on a considerable part of the region traversed by Mr. Kaempfer has not yet been published by them.

All information about the localities has been taken from the labels on the specimens collected, and from Mr. Kaempfer's correspondence with the writer during the years 1926 to 1931.

A few localities from which no specimens were collected are given on the maps and in the gazetteer. In the latter they are preceded by an asterisk. These, however, were mentioned in Mr. Kaempfer's correspondence and serve to orient some of the more obscure places. From all other localities, there are good series of bird skins amounting in the entire collection to about 10,000 specimens. These are still regarded as a special collection known as the Kaempfer Collection. Eventually, when the research on them has been completed, they will become a part of the general South American Collection of The American Museum of Natural History.

In many cases Mr. Kaempfer has given the altitude of the collecting stations in feet, and it was deemed inadvisable to translate them

¹ Club de Engenharia do Rio de Janeiro, September, 1922.

into meters because of the unavoidable inaccuracies attendant upon such conversion. Wherever possible we have given further information in meters.

The photographs are largely those taken by Mr. Kaempfer but include a number taken by my dear friend Othmar Reiser, of the Vienna Museum, during his expedition to Piauhý and Bahia in 1903,¹ and sent to me some years ago. I am greatly indebted to him for this valuable addition to the present paper.

I also wish to express my sincere thanks to the Geographical Society for its many courtesies, and to Mr. Briesemeister for his great care in making the maps.

For additional details of Mr. Kaempfer's trip, see the writer's paper on Eastern Brazil.² The manuscript on the birds of Eastern Brazil is still incomplete.

MARANHÃO

ANIL (Ilha de São Luiz).—Alt. sea level; February 17, 22–28, 1926.

An inland hamlet one half hour from the town of São Luiz de Maranhão.

*ARAÇA.—Alt. 65 meters.

AS MANGUERAS³ (Flores⁴).—Alt. 50 meters; May 8–19, 1926.

BALSAS, RIO DAS.⁵—August 9, 10, 1926.

BARRÃO DO GRAJAHÚ.—Alt. 83 meters; July 8, 1926.

BENEDICTO LEITE.—Alt. 407 ft.; July 14, August 5, 6, 12, 13, 1926.

Opposite Urussuhý on the left bank of the Rio Parnahyba.

*BREJO.—Alt. 80 meters.

*BURITY Novo.—Alt. 100 meters.

CAMPOS DOS PERIZES (Rosario).—Alt. 13 meters; March 14, 15, 1926.

*CAXIAS.—Alt. 58 meters; April 19, 1926.

CODÓ.—Alt. 58 meters; April 26–27, 1926.

ESTIVA (Ilha de São Luiz).—Alt. sea level; February 28, March 10–13–16, 1926.

Situated at the south end of the island of São Luiz de Maranhão.

The vegetation at this point is as in other parts of the island (see São Luiz de Maranhão). On the continental side there are

¹ 1924. *Denkschriften der Akademie der Wissenschaften in Wien, Math.-Naturwiss. Kl.*, 76 Band, *Vögel von Othmar Reiser*.

² 'Remarks on Kaempfer's collections in Eastern Brazil,' by Elsie M. B. Naumburg, 1928. *The Auk*, XLV, No. 1, January, p. 60.

³ Not located.

⁴ On map.

⁵ No altitudes are given for rivers.

large areas of campo country, but the heavy rains and inundated rivers made collecting difficult and in some places impossible.

FLORES.—Alt. 50 meters; May 20–24, September 30, and October 1, 2, 3, 1926.

On the Rio Parnahyba. (See As Mangueiras.)

FRECHEIRAS.—Alt. 350 ft.; November 20, 21, 1926.

*GRAJAHU, RIO.

*GURUPY, RIO.

Forms boundary between Para and Maranhão.

ILHA BOM FIM¹ (Ilha de São Luiz).—Alt. sea level; February 12, 15, 16, 1926.

An island near São Luiz on the other side of the bay.

ILHA COEIRA¹ (Parnahyba Delta).²—Alt. sea level; November 7–8, 1926.

ILHA DE SÃO LUIZ (See São Luiz).

ILHA ITAUNA^{1,3} (Ilha de São Luiz).²—Alt. sea level; February 10, 12, 1926.

ITAPARI¹ (Ilha de São Luiz).²—Alt. sea level; February 1, 4, 5, 1926.

Near São José de Riba Mar on east shore.

ITAPECURÚ, RIO (See Rosario).

KELRU¹ (Rosario).—Alt. 13 meters; March 19–24, 29, 31, 1926.

LIMPESA.^{2,4}—Alt. 94 meters; July 11, 1926.

On the Rio Parnahyba.

MANGA.—Alt. 86 meters; July 10, 1926.

On the Rio Parnahyba, 40 kilometers from Floriano, Piauhý.

*MEARIM, RIO.

*MIRITIBA.—Alt. 40 meters.

NOVA YORK.—Alt. 104 meters; August 26, 1926.

In the rainy season the wonderful campos, where many birds are found, are under water for miles and miles. Many towns, as for example Nova York, have temporarily disappeared under the waters of Rio Parnahyba (Pl. VI).

PARNAHYBA DELTA AND RIO.—June, July, and August, 1926 (Pl. VII, figs. 1 and 2).

PASTOS BONS (Serra do Valentim).—Alt. 500 ft.; June 27, August 3–?, 1926.

¹ Not located.

² On map.

³ Itauna=Tauá (possibly). Isla Tauá Mirim or Isla Tauá Redonda.

⁴ A farm.

The collector started from here on horseback, through the Serra do Valentim to Urussuhy in Piauhy. Pastos Bons is a poor name for the region as it is stony and dry without any forest. Even the chapada, according to Mr. Kaempfer, seems dryer than in other regions.

RIACHÃO.—Alt. 354 meters; July 16, 17, 19, 20, 21, 23, and August 1, 1926.

*RICARTES.—Alt. 150 meters.¹

ROSARIO.—Alt. 13 meters; April 16, 17, 1926.

On the Rio Itapecurú.

SANTA FILOMENA² (Rosario).—Alt. 13 meters; March 27–29, 31, April 1, 2, 1926.

A farm on the Rio Itapecurú.³

SÃO JOÃO DOS PATOS.—Alt. 700 ft.; July 26–August 8, 1926.

This is a very dry region. Streams and lagôas have water only during the rainy season and only a short time. There is no real forest and the hilly chapada country is situated in the Serra do Valentim (Pl. VIII).

SÃO JOSÉ DE RIBA MAR (Ilha de São Luiz).—Alt. sea level; January 25–31, and February 4, 15, 1926.

A hamlet on the east shore.

SÃO JOSÉ DOS MATTOES.—Alt. 150 meters; June 27, 1926.

SÃO LUIZ (Ilha de).—Alt. sea level; February 4, 15, 16, March 11, 1926.

The whole island, without virgin forest, is generally flat and crossed by small streams and brooks.

“Capuera,” the beginning of a new forest, causes a dense vegetation with but few high trees. As the capuera grows higher and some trees show an increased growth, the forest is then called “capuero.”⁴ In the interior of the island there are large flat areas where salt is made by evaporating the sea water which inundates the country during a period of high tide. The characteristic trees of the island are the mango and the babassu palm.⁵

SÃO LUIZ DE MARANHÃO.—Alt. sea level; January ?, 1926.

SERRA DO VALENTIM (See Pastos Bons).

TABOCAS.—Alt. 700 feet; July 22, 25–28, 31, August 12, 1926.

¹ On the collector's sketch map.

² Not located.

³ On map.

⁴ *on*=a syllable in Portuguese which, added to a word, means bigger or stronger.

⁵ *Attalea funifera*, widely distributed along rivers and in swampy land.

A fine humid valley with several large lagôas and many fruit trees.

Near São João dos Patos.

VILLA NOVA.¹—Alt. (?) meters; June 19, 1926.

On the Rio Parnahyba.

PIAUHY

*AMARANTE.—Alt. 73 meters.

On the left shore of the Rio Parnahyba (Pl. IX).

*ARARAS.²—Alt. 68 meters.

On the right bank of Rio Parnahyba.

BELLO HORIZONTE.³—Alt. 68 meters; June 21–26, 28, 30, 1926.

On the Piauhy shore of the Rio Parnahyba; a region of wide open chapada country without any real forests (Pl. X, figs. 1 and 2).

BOM FIM.—Alt. 124 meters; August 1–20, 1926.

On the Rio Parnahyba.

CAMPO MAIOR.—Alt. 125 meters; June 21–26, 28, 30, 1926.

CATHARINA.—Alt. 50 meters; June 5, 1926.

A small hamlet one hour's walk from Therezina on the Rio Poty.

CORRENTE.—Alt. 1500 ft.; May 28–31, June 1–4, 6, 7, 9, 23, 24, 25, 27–30, and July 1, 2, 6, 1927.

Situated in the valley of the Rio Corrente, a region of chapada country with dense underbrush and very little high forest.

CORRENTE, RIO (See Corrente).

EXTREMA.—Alt. 30 meters; August 24, 1926.

On the Rio Longa.

FLORIANO.—Alt. 400 ft.; July 8, 1926.

On the Piauhy shore of the Rio Parnahyba. Dry open country without forest but with a slightly hilly chapada. The altitude was taken above the Parnahyba level.

GILBÚES (District of San Antonio de Gilbúes).—Alt. 1300 ft.; July 6–11, 13, 1927.

GURGUEIA, RIO.—June 29, 1927.

An affluent of the Rio Parnahyba.

LONGA, RIO (See Extrema).

OS MORROS¹ (Parnahyba Delta,⁴ Os Morros Delta¹).—Alt. sea level; October 9, 18–21, 1926.

¹ Not located.

² Araça on left bank of Rio Parnahyba in Maranhão and on map.

³ Not located; 90 kilometers up from Therezina which puts it near Amarante, which is on the map.

⁴ On map.

PARNAGUÁ.—Alt. over 1300 ft.; June 14–20, 26, 1927.

On Lagôa Parnaguá¹ (no forest) (Pl. XI, fig. 1).

*PARNAHYBA CITY.—Alt. sea level.

*PARNAHYBA, RIO.

PATOS² (cattle ranch).—Alt. 1300 ft.; July 13, 15, 16, 17, 18, 19, 1927.

A long day's ride north from Gilbúes.

A hilly and rocky country with many creeks and rivers which have no water in the dry season. The collector made a trip of 314 kilometers from Parnaguá via San Antonio de Gilbúes to Santa Philomena.¹ Part of this trip was along the dried up bed of the Rio Fundu³ after passing over the Serra de Saco.³ The region around San Antonio de Gilbúes is campo country while near Santa Philomena the country is charming and fertile. As soon as the region is elevated, it becomes dry and stony.

PINDAHYBA.—Alt. 1300 ft.; July 9, 11, 1927. A region of chapada forests and swamps with Burity palms; four hours' ride, southeast from Gilbúes (Pl. XI, fig. 2).

*PORTO DO VEADOS.—Alt. 90 meters.

*PORTO SEGURO.—Alt. 96 meters.

POTY, RIO (See Santa Catharina).

RETIRO.—Alt. 35 meters; August 21, 22, 1926.

On the Rio Longa.¹

SANTA MARIA (See Urussuhy).

*SANTA PHILOMENA.—Alt. 220 meters.

*SERRA DE SACO.⁴

*SERRA DE URUSSUHY.

*TABOCAS.

THEREZINA.—Alt. 50 meters; April 28–30, May 1–6, 23, 25, 26, 1926; June 1–6, 16, 1926; September 26, 1926.

This region is dry, slightly hilly, and crossed by many small streams. There are large areas of chapada with but little underbrush. Cacti and other spiny plants are common. Down the Rio Parnahyba, through about sixty-four rapids, one reaches Therezina. A boat, from Therezina to the mouth of the Rio Parnahyba, takes about forty-seven days (1840 kilometers). Due to the lowness of the water the boats often run on sand banks.

TUCUMS⁴ (near Extrema).—Alt. 30 meters; August 25, 1926.

¹ On map.

² Patos on map near Gilbúes.

³ Not on map because not located.

⁴ Not located.

*UNIAO.—Alt. 43 meters.

URUSSUHY.—Alt. 124 meters; July 16, August 6–8, 11–13, 15, 16, 1926.

On the Rio Parnahyba (Santa Maria,¹ August 11, 1926) (Pl. XII, figs. 1 and 2).

*URUSSUHY-ASSÚ, Rio.

VEADOS (Floriano).—Alt. 84 meters; July 5–8, August 29, September 1, 2, 1926.

A “trading point” on the Piauhy shore of the Rio Parnahyba.

CEARÁ

*BEBERIBE.—Alt. sea level.

*FORTALEZA.—Alt. sea level.

*IGUATÚ.—Alt. 215 meters.

JOAZEIRO.—Alt. 1100–1800 ft.; December 17–19, 1926 (Pl. XIII).

LAVRAS.—Alt. 800 ft.; December 13, 14, 1926.

QUIXADA.—Alt. 650 ft.; December 10–12, 1926.

SÃO PEDRO DO CARIRY.—Alt. 2400 ft.; December 18, 1926.

SERRA DA IBIAPABA (See Viçosa).

Forms boundary between Piauhy and Ceará in northern part.

VIÇOSA.—Alt. 2500 ft.; October 27–31, November 1–5, 1926.

In the Serra da Ibiapaba (Pl. XIV).

PERNAMBUCO

AGUA PRETA.—Alt. 90 meters; March 6, 1927.

BELLO JARDIM.—Alt. 1800 ft.; February 25, 26, 1927.

BREJO.—Alt. 2500 ft.; February 9, 11–13, 1927.

A country of fine old trees, and the hills covered with coffee plantations.

GARANHUNS.—Alt. 3000 ft.; February 4, 5, 7, 1927.

A country of fine old forests, and the hills covered with coffee plantations (Pl. XV).

PALMARES.—Alt. 600 ft.; March 6–8, 1927.

A fine moist forest, which belongs to the coastal region.

*PAU D'ALHO.—Alt. 69 meters.

PETROLINA.—Alt. 372 meters; March 30, 1927.

On the Rio São Francisco.

RECIFE DO PERNAMBUCO.—Alt. sea level; January 17–22–26, 31, 1927.

The collector says there is a great difference in the vegetation in states of northern and southern Pernambuco.

¹ On map.

RIO BRANCO (town).—Alt. 665 meters; February 21–25, 1927.

A region of low forest, cacti, and many spiny plants. The principal source of revenue is cotton. The hills form part of the mountains that are found in the interior of Pernambuco (Pl. XVI, figs. 1, 2).

BAHIA

*ALAGOINHAS.—Alt. 158 meters.

*ANDARAHY.—Alt. 440 meters.

BAIXÃO.—Alt. 1300 ft.; September 20, 1927.

Situated in the midst of a high “fresh” forest with but little underbrush.

BARRA DO RIO GRANDE.—Alt. 1400 ft.; April 13–16–18–23, 1927.

At junction of Rio Grande and Rio São Francisco.

Caatinga or light forest country. Collecting was done on the north shore of the Rio Grande and the Rio São Francisco (Pl. XVII, figs. 1 and 2).

*BARRA DOS RIO DAS CONTAS.—Alt. sea level.

*BELMONTE.—Alt. sea level.

BOA NOVA.¹—Alt. 800 meters; May 31, June 1, 3, 4, 5, 1927 (Pl. XVIII, figs. 1 and 2).

*BOA VISTA ON THE RIO PARDO.—Alt. 50 meters.

*BOM JESUS DA LAPA.—Alt. 447 meters.

*CACHOEIRA, RIO.

CAJAZEIRAS.²—Alt. 1000 ft.; June 12, 14, 18, 20, 21, 25, 1928.

On the Grungogy River.

*CARINHANA.—Alt. 440 meters.

CONTAS, RIO DAS (See Jequié).

GIGUY.—Alt. 2000 ft.; October 13–17, 31, 1927.

GRANDE, RIO.—April 13–23, 1927.

GRUNGOGY, RIO (See Cajazeiras).

*ILHÉOS.—Alt. sea level.

IRACEMA.—Alt. 2300 ft.; October 6–9, 1927.

In the caatinga region (see Tambury).

*ITABERABA.—Alt. 334 meters.

*ITAPICURÚ, RIO.

ITUASSÚ.—Alt. 2600 ft.; July 3–6, 1928.

JAGUAQUARA.—Alt. 2500 ft.; September 1, 2, 5, 7, 1927.

¹ Not located, but according to date near Santa Rita do Rio Preto. Another Boa Nova (alt. 800 meters) has been placed on the Rio Grungogy.

² Approximately located from dates and information on label.

Situated in a valley surrounded by hills. The forests are medium in height, but very dense with much underbrush and many lianas.

JEQUITÉ.—Alt. 180 meters; September 10, 11, 13–14, 1927.

A very dry region in the midst of the caatinga forest (Pl. XIX, figs. 1 and 2). On the Rio das Contas.

*JEQUITINHONHA, Rio.

JOAZEIRO.—Alt. 1000 ft.; March 25–27, 29–31, 1927.

A tract of country comprised of underbrush and open campo covered with grass. The Rio São Francisco is very wide at this point with marshy areas along both shores (Pl. XX, figs. 1 and 2).

LAMARÃO.—Alt. 490 meters.¹

*MACACO SECCO.—Alt. 480 meters.

*MARACAS.—Alt. 1000 meters.

MORRO DO CHAPEÓ.—Alt. 3600 ft.; April 25–27, and May 1–15, 1928.

A high plateau, slightly hilly, forming a rolling plain.

A great many small streams across country forming small swamps. To the west and to the north the caatinga is about 50–60 kilometers off. Nearby there are large areas of high forest. In view of the diameter of the high plateau the caatinga starts where the mountains are low. The plateau is covered by a kind of low forest consisting of low bushes and trees called “Geraës” in Portuguese. Geraës are most common in Minas Geraës and the state takes its name from this type of vegetation. Only at lower points of the country, where water is plentiful and a certain accumulation of humus is possible, thickets of higher trees are found. These thickets are called “Capão” in Portuguese. Bare rock is seen everywhere and forms the surface of the ground over large areas. Here the soil apparently forms only a thin layer over the underlying rock which makes it impossible to produce a higher growth than the Geraës described above. Black soil was seen only in the swampy areas and sand was plentiful, making walking difficult. Grassland is scarce.

The winter and rainy seasons last from April to September, the temperature going down to 6° centigrade.

When Mr. Kaempfer arrived, the last days of April, the temperature was very low, and winter was just starting. With the heavy cold rains and fog, bird life diminished steadily in species and number of specimens, and those taken were near the capão.

¹ On collector's sketch map.

A number of young and molting birds were taken (Pl. XXI, figs. 1 and 2).

*MUNDO NOVA.—Alt. 526 meters.

OROBÓ.—Alt. 1500–1800 ft.¹; October 24–28, 1927 (Pl. XXII).

*PARAGUASSÚ, RIO.

*PARDO, RIO (See Boa Vista).

*QUEIMADAS (on the Rio São Francisco).—Alt. 370 meters.

REMANSO.—Alt. 1300 ft.; April 3–8, 1927.

This region is very humid. The Rio São Francisco is very wide at this point and contains many islands.

A large area of the country was inundated. On an island lagôa a few miles from the town, the collector found storks and spoonbills. Ducks too were seen in very large numbers. There is no forest but stretches of country are covered by the caatinga, a low, spiny growth (Pl. XXIII).

*RIO DO PEIXE (town).—Alt. 280 meters.

On river of same name.²

SANTA RITA DO RIO PRETO.—Alt. 1600 ft.; May 3–19, August 2–14, 1927.

This was a fine collecting station. A great many parrots, water-birds, storks, and woodpeckers were taken. Also six fine specimens of *Megaxenops paranaguae* Reiser, discovered by Othmar Reiser more than twenty-five years ago.

*SÃO FRANCISCO, RIO.

*SÃO FRANCISCO (town).

*SÃO SALVADOR.—Alt. sea level.

*SENTO SÉ SOLIDADE.—Alt. 370 meters (Pl. XXIV).

*SERRA DA ESTREITA.—Alt. about “200 meters” above Rio São Francisco.

Mr. Kaempfer was on the Rio Grande and afterwards up the Rio Preto to Santa Rita. “The trip to Santa Rita took all of two weeks.”

SERRA DE SINCORA (See Sincora).

SERRA DO OROBÓ.³—Alt. 700 meters.

SERRA GRUNGOGY.²

SINCORA.—Alt. 1500 ft.; October 10–12, 1927.

In the caatinga region (see Tambury).

¹ On map 385 meters. On the Rio Sara Cura, not on map.

² On map.

³ On map 950 meters.

TAMBURY.—Alt. 1100 ft.; October 3–5, 19–22, 1927.

In the caatinga region. A low, thorny forest, many cacti, wild pineapple, dwarf palms, “plenty of snakes,” and “terribly” dry.

MINAS GERAËS

*ALTO DAS TAIPAS.

A ridge connecting the heights of *Ouro Preto with those of *Barbacena.

AS MACICIRAS.¹—Alt. 1840 meters; August 25, 1929.

BANDEIRA PEAK (main trail).—Alt. 9025 ft.; July 31–August 1 and 29, 1929.

Seen from the Minas Geraës side, the peak emerges several hundred yards from its base and is hidden behind other peaks of the same height. On clear days a beautiful view is obtainable over the Minas Geraës and Espirito Santo Mountains. In view of the lack of forest the entire avifauna of the region has changed, the artificial campo causing the birds to look for a forested area.

*BARBACENA (town) (See Alto das Taipas).—Alt. 1120 meters.

*BELLO HORIZONTE.—Alt. 783 meters.

CACHOEIRA² DA FUMAÇA (Campos do São Domingos).—Alt. 6000 ft.; September 4–5, 1929.

On the main trail to Bandeira Peak. Falls are formed by the drop in the Rio São Domingos. This marks the end of the virgin forest on the main trail and farther up small patches of forest (capão) are found.

CAMPOS DO CAPARÓ (See Campos do São Domingos).

CAMPOS DO SÃO DOMINGOS (See Casa Queimada).—Alt. 5800 ft.³; August 10, 12, 14, 16, 17, 19, 22, 23, 25, and September 5, 1929.

These areas above the forest zone are covered with a low growth of forest.⁴ The region is irrigated in the north by the Rio Caparaó system and in the south by the Rio São Domingos and its affluents. For this reason there is the Campos do Caparaó, and Campos do São Domingos. The bushes found on these campos are a kind of *Ilicaceae* called “congonha” in Portuguese, the dried leaves making an excellent tea. Another relatively common plant is a member of the *Gramineae* called “bengala” in Portuguese. Two species of this plant are found: “*Chusquea pinifolia*” and “*Chusquea*

¹ See Casa das Maciciras.

² Falls.

³ This is the average altitude of the campo region.

⁴ Capão (Portuguese) = patch of forest.

baculifera." They furnish excellent food for cattle. The campos have been burnt regularly by the settlers living in the valleys. The fire often reaches a small patch of forest, and at this rate the last "capão" (small patch of forest) will soon disappear from the campo.

At places where fire destroyed the trees and left them standing, a luxurious growth of bamboos and varieties of vines was found. CAPARAÓ, RIO DO.—Alt. 3000–3500 ft.¹; July 22–31, August 3–4, and September 2, 6–10, 1929.

CASA DAS MACICIRAS.—Alt. 5800 ft.; August 16, 1929.

On the main trail to the Bandeira Peak.

Situated in the valley of the Rio São Domingos. Some of the low scrubby campo growth starts at this point. The house was in ruins surrounded by apple trees.

CASA QUEIMADA (Campos do São Domingos).—Alt. 7200 ft.; August 1, 15, 23, 29, 30, 31, and September 1, 2, 1930.

Situated in a wide valley consisting of patches of forest, swamp land crossed by small streams and with bushes and other low vegetation. Behind this valley to the north is the trail leading to the Bandeira Peak.

Forest and brush are seen to this point but not after ascending the Serra do Caparaó.

*DIAMANTINA.—Alt. 1260 meters.

DOCE, RIO (See Resplendor).

FAZENDA BÔA ESPERANÇA.—Alt. 3000–3800 ft.; August 5–8, 1929.

Near the river and valley of the Caparaó on the border of Minas Geraës. The immediate surroundings are open artificial campo. Farther away on the slopes of the mountains some original forest and second growth are seen, also some swamp land.

FAZENDINHA (SERRA DO CAPARAÓ; foothills).—Alt. 3500–5500 ft.; July 30, August 1, and September 5, 8, 11, 13, 17, 19, 1929.

A trail winds up the mountain from Fazenda Bôa Esperança. This is already on the trail to the Bandeira Peak. The country has been devastated by forest fires, and the cutting down of the trees.

On the steep mountain slopes the forest is inaccessible. Fazendinha is the last human habitation before reaching the higher parts of the Serra do Caparaó. Higher up there are a few mud houses used occasionally by hunters. There was no rain and the season was well chosen for collecting on the Minas Geraës side of the Serra

¹ Altitude given here denotes where collecting was done.

do Caparaó. The dryness of the air at an altitude of 6000 feet was excessive. In August and September the temperature was often below zero but with the first rays of the sun, the temperature was agreeable, and quite hot by noon. In cool places ice could be seen until 11 A. M. Up to Casa Queimada, forest and brush were plentiful, and from then on, climbing up the Serras, hardly any vegetation was to be seen, with only bare rocks visible the nearer one approached to the peaks.

FAZENDINHA EMERICK¹ (Rio do Camparaó).—Alt. 3500–5500 ft.; September 13–16, 1929.

GRUTA DA PEDRA MENINA.—Alt. 6000 ft.; August 20, 21, 23, 26, 1929.

A large deep valley partly explored. The collector saw fine virgin forest in this region, greatly destroyed by fire.

*JOSÉ PEDRO, RIO.

Forms part of the boundary between Minas Geraës and Espirito Santo.

LAJÃO, CAMPOS DO SÃO DOMINGOS.—Alt. 7000 ft.; September 4, 1929.

Campo region between Varzea das Congonhas and Casa Queimada.

MANHUASSÚ, RIO (See São Benedicto).

*MINAS NOVAS.—Alt. 922 meters.

MUCURY, RIO.

Forms part of boundary between Minas Geraës and Esperito Santo.

*PARACATÚ.—Alt. 600 meters.

PICO DO CRYSTAL.—Alt. 8800 ft.; August 29, 1929.

*PRETO, RIO.

Forms part of boundary between Minas Geraës and Esperito Santo.

RESPLENDOR (Rio Doce).—Alt. 92 meters; January 9–13, 1929.

SANTA BARBARA DO CAPARAÓ.—Alt. 3000 ft.; September 24–30 and October 2–6, 1929.

A small hamlet and station of the Leopoldina Railway. From Rio Janeiro to Caparaó the country has been entirely devastated, all trees having been cut down. It now appears like a natural campo region. In the higher altitudes of the Serra do Caparaó region the destruction of the forests has not been so great, for the steep mountain slopes have been more inaccessible. These forests have been destroyed partly by fire as well as by cutting, and after

¹ Fazenda Filippe Emerick.—Alt. 900 meters on map.

two harvests of corn they are abandoned and the giant bracken,¹ with its big leaves, starts growing, preventing (due to the shadow it casts) a new growth of trees. An old experienced mountain climber told the collector that he used to hunt tapirs in the dense forest located at the present site of the Caparaó railway station. There seemed no definite limit to the forested areas.

SÃO BENEDICTO.—Alt. 110 meters; January 16–22, 1929.

On the Rio Manhuassú.

*SÃO JOSÉ DE PEDRA MENINA.—Alt. 900 meters.

SÃO FRANCISCO.—Alt. 461 meters.

SERRA DO CAPARAÓ (See Fazendinha).²

VARZEA DAS CONGONHAS, CAMPOS DO SÃO DOMINGOS.—Alt. 1840 meters; August 10, 11, 13, 16, 22, 23, 26, 1929.

A beautiful wide valley crossed by the Rio São Domingos. Few trees are to be seen. The valley opens to the south over a saddle between two mountain ridges into the Gruta da Pedra Minina valley.

ESPIRITO SANTO

BAIXO GUANDÚ (Rio Guandú).—Alt. 213 ft.; December 21–31, 1929, and January 1–4, 1930.

*BARRA DO RIO DOCE.—Alt. sea level.

*DOCE, RIO.

*GUANDÚ, RIO.

*JOSÉ PEDRO, RIO.

Forms part of the boundary of Minas Geraës and Espírito Santo.

JUPARANÃ, LAGÔA.—Alt. 400 ft.; October 30, November 1–31, and December 1–10, 1929.

*PRETO, RIO.

Forms part of the boundary of Minas Geraës and Espírito Santo.

SEGRADO DO VEADO (Serra do Caparaó).—Alt. 3000 ft.; October 8–13, 1929.

SERRA DO CAPARAÓ² (See Segrado do Veado).

*VICTORIA.—Alt. sea level.

PARANÁ

*ÁGUA CLARA.—Alt. 800 meters.

CORVO (Serra da Graciosa).—Alt. 2700 ft.; February 7–16, 18–22, 1930.

¹ Fern.

² On map.

*CURITYBA.—Alt. 908 meters.

FAZENDA MONTE ALEGRE¹ (See Tibagy).

FOZ DO IGUASSÚ (and Rio Iguassú).—Alt. 300 ft.; May 16–29, 1930, and June 2, 1930.

GUAYRA (Rio Paraná).—Alt. 600 ft.; April 14–26, June 9–11, 1930. IGUASSÚ, RIO (See Foz do Iguassú).

*IVAHY, RIO.

*PARANAPANEMA, RIO.

Forms part of boundary between Parana and São Paulo.

*PEQUIRY, RIO.²

*PIRAHY.—Alt. 1008 meters.

POÇO PRETO (See Santa Catharina).

*PONTA GROSSA.—Alt. 940 meters.

On the way from here to Tibagy.

PORTO ALMEIDA (Rio Iguassú).—Alt. 2000 ft.; March 20–30, and April 1–3, 1930.

PORTO BRITANIA (Rio Paraná).—Alt. 400 ft.; May 5–9, 1930.

PORTO MENDES (Rio Paraná).—Alt. 400 ft.; May 1, 2, 1930.

SERRA DA GRACIOSA (See Corvo).

TIBAGY³ (Fazenda Monte Alegre).—Alt. 1804 ft.; March 1–13, 1930.

The road from Ponta Grossa to Tibagy leads over open campo country with occasional patches of small forest,⁴ mostly pine.

SANTA CATHARINA

*CAMPO ALEGRE.—Alt. 900 meters.

CASCALHO.—Alt. 750 ft.; January 4, and February 3, 5, 1929.

On the right bank of the Rio Uruguay.

HANSA.—Alt. 250 ft.; July 2, 3, 4, 6, 7, 1929.

ILHA REDONDA (in the Rio Uruguay).—Alt. 500 ft.; January 23, 26, 29, 1929.

JOINVILLE (See Salto Pirahy).—Alt. 23 ft.; June 18, 1929.

OURO VERDE⁵ (Serra de Lucindo).⁶—Alt. 2500 ft.; April 25, 29, 30, and May 1, 9, 1929 (Pl. XXV, fig. 1).

PALMITAL (São Francisco).—Alt. sea level; June 18, 19, 20, 22, 24, 25, 26, 1929.

PALMITOS.—Alt. 1500 ft.; January 17, 19, 20, 1929.

¹ Not located.

² On map.

³ Rio Tibagy on map also.

⁴ Capão in Portuguese.

⁵ Formerly called Santa Cruz de Canoinhas, on most maps.

⁶ Serra de Lucindo not located.

POÇO PRETO.¹—Alt. 2500 ft.; April 21, 23, 1929.

SALTO PIRAHY (See Joinville).—Alt. 450 ft.; May 21, 22, 23, 24, 26, 27–29, 31, and June 1–13, 19, 24, 1929.

SÃO FRANCISCO.—Alt. sea level.

SERRA DE LUCINDO² (See Ouro Verde) (Pl. XXV, fig. 1).

*URUGUAY, RIO.

RIO GRANDE DO SUL

ARROIO D'EL REY.—Alt. 20 ft.; August 26–31, and September 1–3, 1931.

Campo country with palm groves (Pl. XXV, fig. 2).

*ARROIO GRANDE or FEDERAÇÃO.—Alt. 60 meters.

CAMPO BOM.—Alt. 400 ft.²; July 26–27, 1928.

*CAMPO DO MEIO.—Alt. 792 meters.

CANDIOTA.—Alt. 600 ft.; September 7–11, 1931.

CASINO.—Alt. sea level, on seacoast; November 29, 30, and December 1–4, 1931.

*CAXIAS.—Alt. 559 meters. On the way to Vaccaria (see Vaccaria).

COLONIA DOÑA CLARA³ (Nonohay).—Alt. 2000 ft.; March 4–12, 1929.

CONCEICÃO DO ARROIO.—Alt. 28 meters; August 18–27, 1928.

At this point the mountain ranges protect the coast from the cold west winds as they approach the lagoons. Navigation from one lagoon to another starts here. All northern lagoons have been limited by channels.

EREBANGO.—Alt. 2500 ft.; March 26–31, and April 1–5, 1929.

On the railway to the north from Passo Fundo.

A hamlet in a pine forest and some deciduous trees (Pl. XXVI).

*ERECHIM.—Alt. 490 meters.

FEDERAÇÃO (See Arroio Grande).—Alt. 60 meters.

HAMBURGO VELHO.—Alt. 400 ft.; July 31, 1928.

A hilly region with flat valleys and in the depressions small streams flow across country. Large stretches of original forest are still left.

JAGUARÃO, RIO (mouth of).—Alt. sea level; November 11–19, 1931.

*JAGUARÃO (town).—Alt. 20 meters.

LAGÔA DA FORNO (near Torres).—Alt. 50 meters; October 25–31, and November 1, 2, 1928.

¹ Over the boundary in Paraná, put here on account of date.

² Altitude given by collector. We deem it advisable to use meters on the map and in this gazetteer, where altitude is not mentioned by the collector.

³ Not located. A settlement near Nonohay.

“Forno” means oven = oven-shaped hill. A forest covered the hills.

From here the mountains and forests stretch to the north into Santa Catharina.

LAGÔA DA MANGUEIRA.—Alt. sea level; August 19–24, 1931.

Fifteen kilometers west of the southern end.

LAGÔA DOS PATOS.—Alt. sea level. Collecting was done north of São Lourenço; October 7–11, 1931.

*LAGÔA MIRIM.—Alt. sea level.

Near the Uruguay cattle ranch. To the north there are long stretches of forest going toward Santa Izabel on the Rio Gonçalves.

LAGÔA UIAM.¹—Alt. unknown; July 14, 1931.

LAGÔA VERMELHA.—Alt. 3000 ft.; December 28, 1928.

Campo country, though some forests are seen.

“Five hours from Vaccaria.”

*MARCELINO RAMOS.—Alt. 393 meters.

*NEGRO, RIO.

NONOHAY (See Colonia Doña Clara).—Alt. 2000 ft.; February 14–28, and March 1, 3, 1929.

*NOVO HAMBURGO.—Alt. 73 meters.

PALMAIRES.—Alt. sea level; October 7–15, 1928.

A small railroad leads from Palmares to Conceição do Arroio.

Situated on the banks of a small river on the northern end of the Lagôa dos Patos. The hamlet consists of some small houses surrounded by bamboo, eucalyptus and low brush.

Farther away some patches of forests are seen and the great endless campo country stretches to the north. In some open places there are small forests of the butea palm. In winter there are lagôas formed everywhere, which disappear in summer leaving swampy depressions. Cattle raising and production of palm fiber are the only industries of this region.

PASSINHA.¹—Alt. 10 meters; October 17, 1928.

PASSO DA ENTRADA.—Alt. 600 meters; February 13–28, and March 1, 3, 1929.

A small hamlet between Passo Fundo and Nonohay. The country is hilly with fine old forests and some campo.

PASSO FUNDO.—Alt. 2000 ft.; March 11–18, 1929.

*PELOTAS.—Alt. 3 meters.

On the way to the Mangueira region.

¹ Not located.

*PORTO ALEGRE.

In mid July the weather was so cold that people were wearing heavy winter clothes. Along the coastal lagoons it was cold and exceptionally rainy. Two months later there was a severe flood over Rio Grande do Sul.

PORTO DE TAPES (Lagôa dos Patos).—Alt. sea level; August 14, 1928.

This region was heavily inundated.

QUINTA.—Alt. sea level; July 3–12, 1931.

The best point from which to reach the Uruguay cattle ranch. The country is flat with many lagoons and great stretches of inundated land. Here and there a patch of low trees and brush and an occasional swamp.

*RIO GRANDE (city).—Alt. sea level.

Surrounded by artificial forest of eucalyptus trees and truck farms.

SANANDUVA.—Alt. 2000 ft.; January 2–11, 1929.

“Three hours by automobile from Lagôa Vermelha.”

Situated in a forest with no campo country to be seen.

*SANTA BARBARA.—Alt. 521 meters.

“By rail over Passo Fundo to Santa Barbara.”

SANTA CRUZ.—Alt. 300 ft.; September 17–22, 1928.

Hills covered with primeval forests, small streams, and some swampy areas.

SANTA IZABEL (Rio São Conçalo).—Alt. sea level; October 20–26, 1931.

*SANTA VICTORIA DA PALMAR.

SÃO CONCALO, RIO (See Santa Izabel).

SÃO FRANCISCO DE PAULA.—Alt. 3000 ft.; November 10, 12, 19, 21, 22, 23, 25, 26, and December 1, 4, 1928.

This town is reached by rail as far as Taquara. The region is mountainous, with deep intervening valleys and small streams. It is overgrown with untouched virgin forest of the pine tree *Araucaria brasiliiana* and many deciduous trees. Toward the west the campo country stretches over Rio Grande do Sul as far as the Uruguay frontier. Small and large patches of forest are found on the campo.

SÃO LOURENÇO.—Alt. sea level; October 7–11, 1931.

SÃO PEDRO.¹—Alt. (coast lagoons): October 22–23, 1928.

On the way to Lagôa Forno.

¹ Not located.

SAPYRANGA.—Alt. 100 ft.; August 2, 5, 8, 9, 1928.

Forest country.

SINIMBU.—Alt. 500 ft.; September 25–30, October 1, 1928.

Thirty miles north of Santa Cruz.

*TAHYM.—Alt. sea level.

South of Uruguay cattle ranch.

*TAQUARA.—Alt. 29 meters.

*TRES FORQUILHAS.

A hamlet on the border of a lagoon.

URUGUAY BORDER (Dept. of Santa Victoria).—Alt. (not given); August 9–16, 1931.

URUGUAY CATTLE RANCH (north of Tahym).—Alt. (not given; possibly near marshland, making it practically sea level); July 16–29, 1931.

“To reach this we travelled over the open campo covered in swampy ‘inundated areas.’ An occasional eucalyptus ranch was seen around a farm or store. Travelling in two-wheeled horse carts, it took a whole day to make 50 kilometers needed to reach our destination. At the ranch there were many small lagoons and much swamp land. Cactus was growing on some of the higher points of the campo.”

There were 6 different types of country and vegetation (Pl. XXVII, figs. 1 and 2):

- (1) Patches of forest, artificial eucalyptus and orange groves.
- (2) Campo with cactus, *Bromeliaceae* and fig trees.
- (3) Open dry campo or inundated campo country growing only grasses.
- (4) Swamps with reeds and high grass.
- (5) Swamps with *Bromeliaceae* and a few reeds.
- (6) Lakes with forest growth along the banks.

*URUGUAY, RIO.

VACCARIA.—Alt. 3000 ft.; December 15, 16, 18–21, 24, 1928.

Open country for miles with little forest, small areas of swamp land in the depressions.

MATTO GROSSO

AMAMBAHY (town).—Alt. 650 ft.; June 22–30, 1930.

AMAMBAHY, RIO.—June 22–30, 1930.

CAMPANARIO.¹—Alt. 1200 ft.; June 7, 16, 19, 20, and July 6–17, 1930.

¹ Not located; on map as Campeiro.

SÃO FRANCISCO (ranch).—Alt. 1200 ft.¹; July 3, 1930.

SÃO FRANCISCO TERERÉ.²—Alt. 135 meters.

TERERÉ, RIO.—July 3, 1930.

PARAGUAY

ABAI.³—Alt. 700 ft.; February 3, 9, 1931.

AQUIDABAN, RIO (See Passo Barreto).

ASUNCION.—Alt. 77 meters.

BELÉN (Rio Ypané).—Alt. 500 ft.; August 5–11, 1930.

*BERMEJO, RIO.

*CAAGUAZÚ (town).—Altitude unknown.

CAMPOS DO MANCUELLO.⁴—Alt. 500 ft.; August 15, 16, and September 11, 1930.

CHACO, PARAGUAYAN.—Alt. 100–400 meters.

The country is a vast plain with growths of palms and some patches of forest. The slope of the Paraguay River is very slight and any extensive rainfall inundates the country. The declivity of the land is not sufficient to carry off the water rapidly and rains cannot be absorbed by the "impermeable subsoil," consequently, the Chaco is freed from the inundations by the slow process of evaporation and the slow draining off into the few rivers.

COLONIA INDEPENDENCIA³ (See East of Villarica).

CONCEPCION (near).—Alt. 500 ft.; February 21–27, March 1, 1931.

*CONCEPCION.

EAST OF CAAGUAZÚ.—Alt. 1000 ft.; November 14–28, 1930.

EAST OF VILLARICA (Colonia Independencia).—Alt. 203 meters⁵; September 30 and October 1–23, 1930.

EAST OF YHU⁶ [Jovaty³ (lumber camp)].—Alt. 1000 ft.; December 28–31, 1930, and January 1, 5, 6, 12, 13, 1931.

JOVATY (See East of Yhu).

LA FONCIERE (San Luis de la Sierra).—Alt. 1000 ft.; May 11–23, 1931.

MAKTHLAWAIYA, MISSION VIËJA.—Alt. 400 ft.; March 11, 13, 14, 16, 18–22, 24, 25, 1931.

Situated on an island in the middle of a large swamp. The island is surrounded by forest and underbrush. Plants with spines made collecting difficult.

¹ Altitude seems too high but given by collector.

² No date given by collector as no collecting was done just there.

³ Not located; on map with question mark, according to date.

⁴ On map as Mancuello.

⁵ Not given in feet by the collector.

⁶ On map.

MANCUELLO (See Campos do).—Alt. 152 meters; August 15, 16, and September 11, 1930.

MAROMÁ (Chaco).—Alt. 115 meters.

Sixty kilometers from the *Rio Paraguay. A cattle ranch.

NIU PONA¹ (Rio Ypané).—Alt. 700 ft.; July 25–30, 1930.

PARAGUAY, RIO (See Maromá) (Chaco).

PARAGUAY, RIO (Upper) (See Puerto Pinasco).

PASSO BARRETO (See Rio Aquidaban).—Alt. 400 ft.; September 13, 1930.

PICA DEL MONTE CAAGUAZÚ.²—Alt. 1000 ft.; November 9, 1930.

*PILCOMAYO, RIO.

*PUERTO BERTONI.—Alt. 91 meters.

PUERTO PINASCO (Upper Rio Paraguay).—Alt. 420 ft.; April 10, 1931.

Eighty kilometers west of Puerto Pinasco.—Alt. 500 ft.; April 15–19, 1931.

SAN LUIS DE LA SIERRA (See La Fonciere).

SIERRA DE CAAGUAZÚ (See Pica del Monte Caaguazú).—Alt. 500 meters.

UPPER IGUAZÚ, RIO (See Yguazu, Rio).—Alt. 1000 ft.; January 7–8–10–12, 1931.

VILLARICA (See East of Villarica).

YGUAZÚ, RIO.—Alt. 1000 ft.; January 7–8–10–12, 1931 (See Upper Iguazú, Rio).

YPANÉ, RIO (See Belén and Niu Pona).

ZANJA MOROTI³—Alt. 1000 ft.; August 30, 31, September 2–8, 1930.

¹ On map (Niu Pona).

² Sierra de Caaguazú on map.

³ Not located; on map with question mark, according to date.

PLATE VI

Shore of the Rio Parnahyba near Nova York, Maranhão.



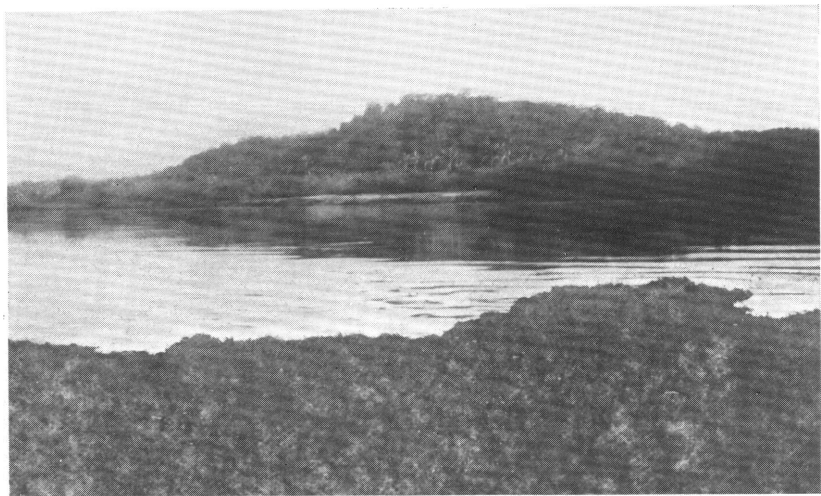
PLATE VII

Fig. 1. Rio Parnahyba.

Fig. 2. Rio Parnahyba.



1



2

PLATE VIII

Travelling overland from São João dos Patos (Maranhão) to Urussuhy
(Piauhy).



PLATE IX

Shore of the Rio Parnahyba near Amarante (Piauhy).

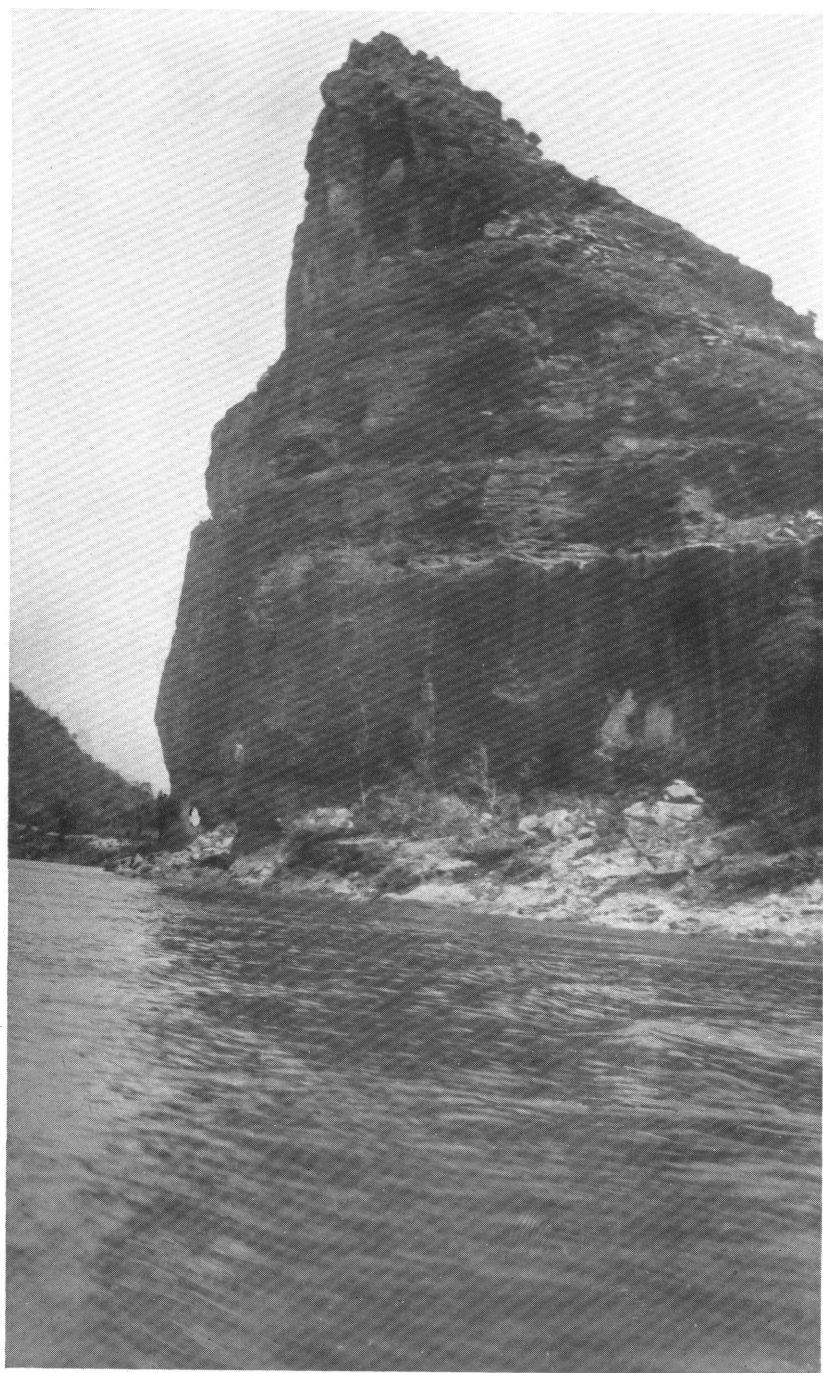
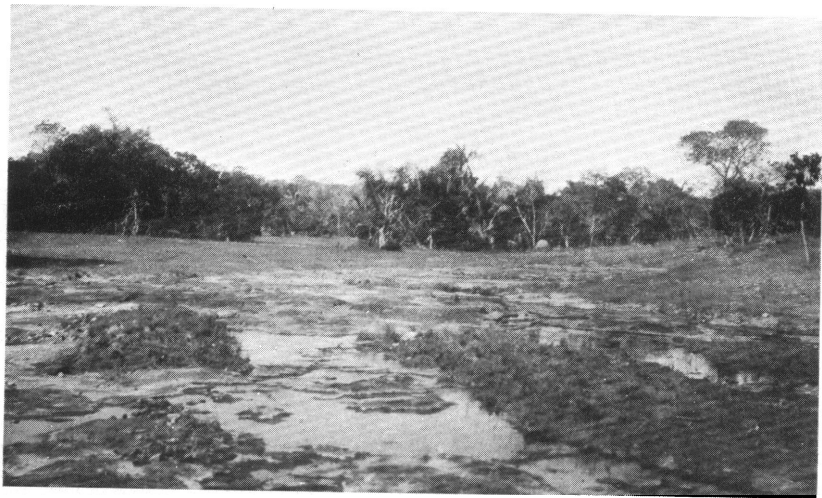


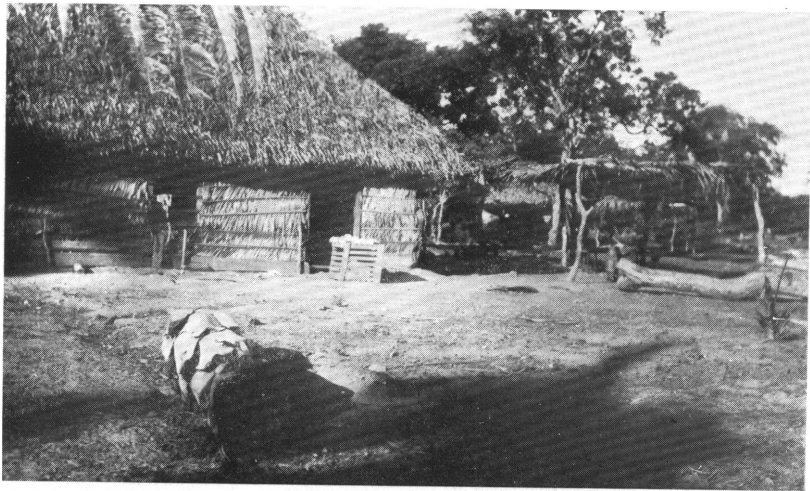
PLATE X

Fig. 1. Chapada landscape near Bello Horizonte (Piauhy).

Fig. 2. House at Bello Horizonte, Rio Parnahyba (Piauhy). Mr. Kaempfer stayed there in 1926. Before the door is a crate on which bird skins are drying.



1



2

PLATE XI

Fig. 1. On the banks of Lagoa Parnaguá near the settlement of Parnaguá, Piahy. (Photographed by Othmar Reiser.) March, 1903.

Fig. 2. The Burity palm¹ (*Mauritia flexuosa*) in Piahy. (Photographed by Othmar Reiser, 1903.)

¹ Mirity or Burity, 1927, R. Ruggles Gates, 'A Botanist in the Amazon Valley,' p. 170.



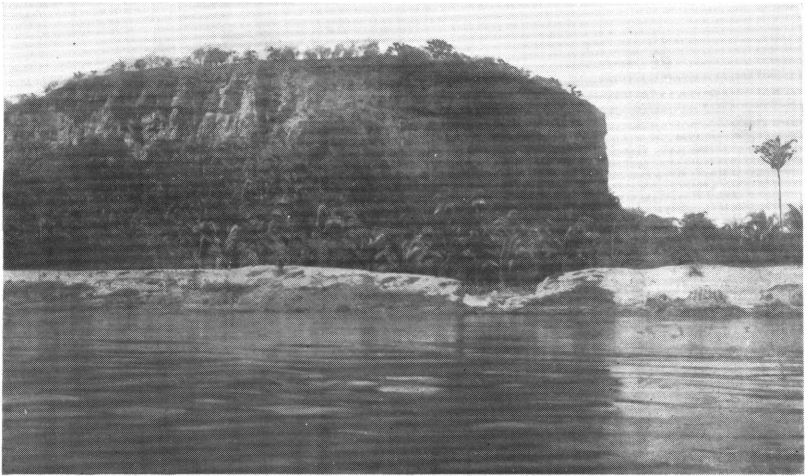
1



2

PLATE XII

- Fig. 1. Shore of the Rio Parnahyba near Urussuhy (Piauhy).
Fig. 2. Kaempfer on raft before his start at Urussuhy (Piauhy).



1



2

PLATE XIII

Desert-like landscape, Joazeiro, in northern Ceará.

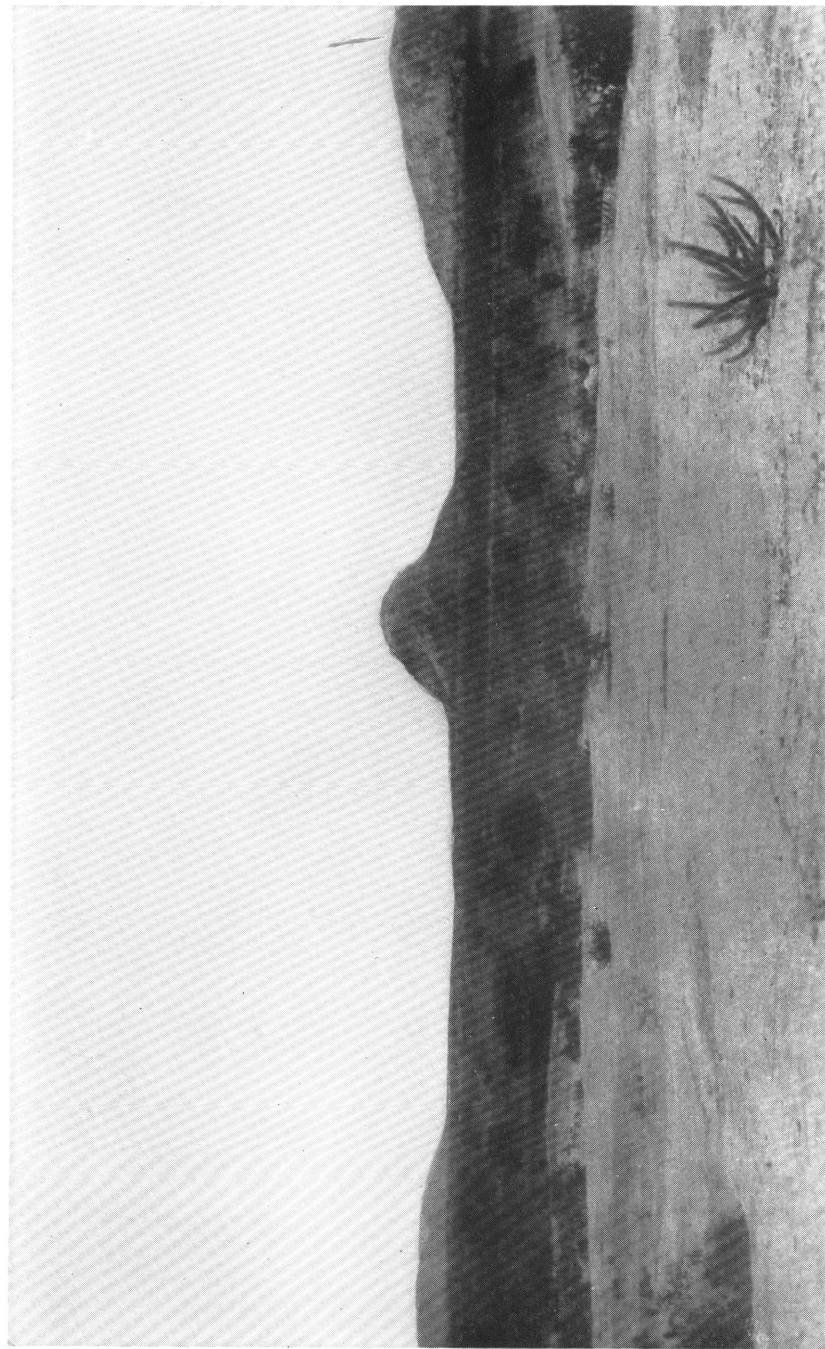


PLATE XIV

Country around Viçosa, Serra da Ibiapaba (northern Ceará).



PLATE XV

Forest between Garanhuns and Brejo (Pernambuco).



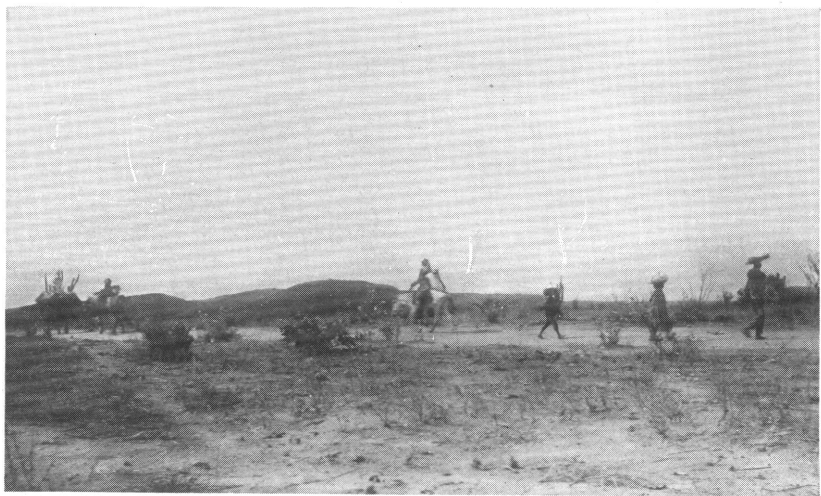
PLATE XVI

Fig. 1. Vegetation around the town of Rio Branco (Pernambuco).

Fig. 2. Caatinga country near the town of Rio Branco (Pernambuco).



1



2

PLATE XVII

Fig. 1. Shore of the Rio Grande (Bahia) showing wax palms (*Copernicia cerifera*).¹

Fig. 2. Caatinga forest at Barra on the Rio Grande, Bahia.

¹1906. Ule, E. : Vegetationsbilder, 6 Reihe, Heft 3. Das Innere von Nordost-Brasilien, Tafel 16.



1

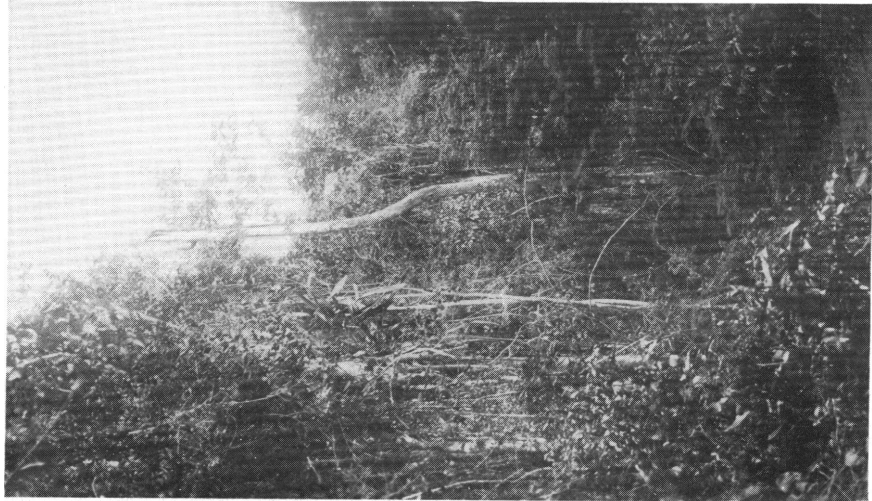


2

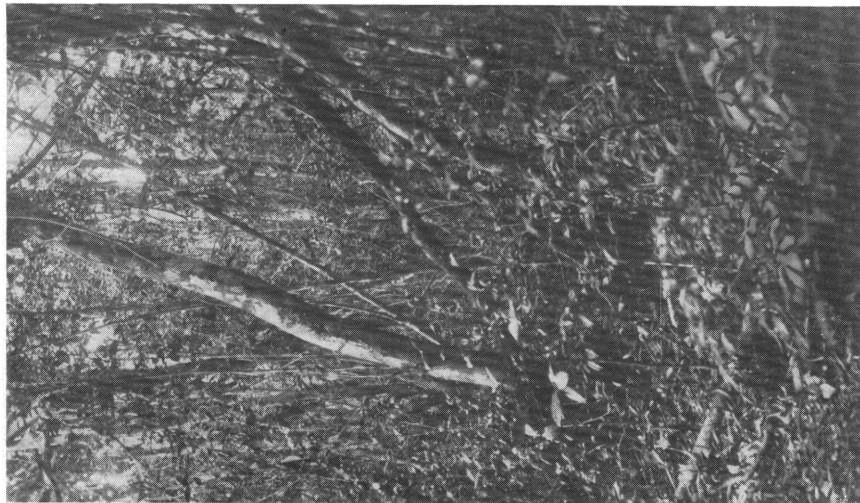
PLATE XVIII

Fig. 1. Forest at Boa Nova (Bahia).

Fig. 2. Forest at Boa Nova (Bahia).



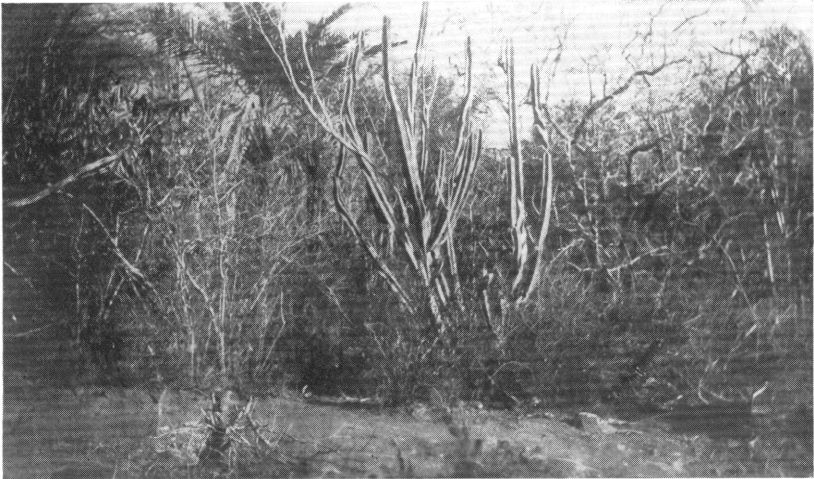
1



2

PLATE XIX

- Fig. 1. Caatinga country between Jequié and Boa Nova (Bahia).
Fig. 2. Caatinga country between Jequié and Boa Nova (Bahia).



1

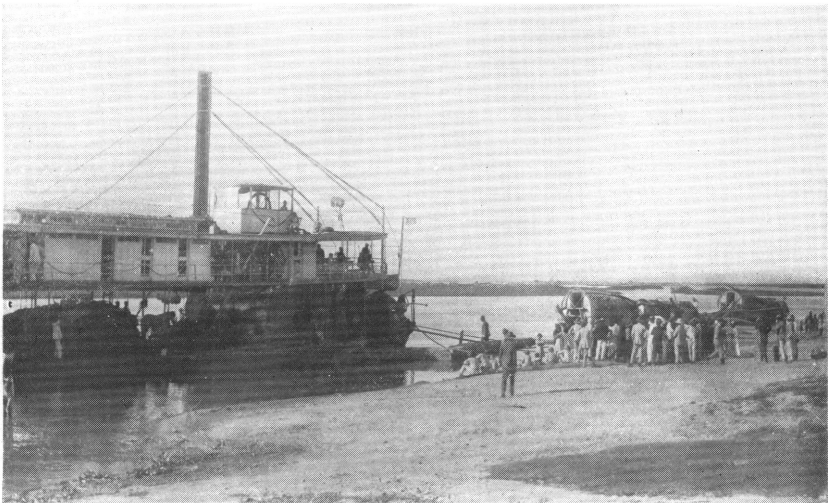


2

PLATE XX

Fig. 1. Steamship on the Rio São Francisco at Joazeiro (Bahia).

Fig. 2. The big event in a town on the shore of the Rio São Francisco: a steamship arriving at Joazeiro (Bahia).



1



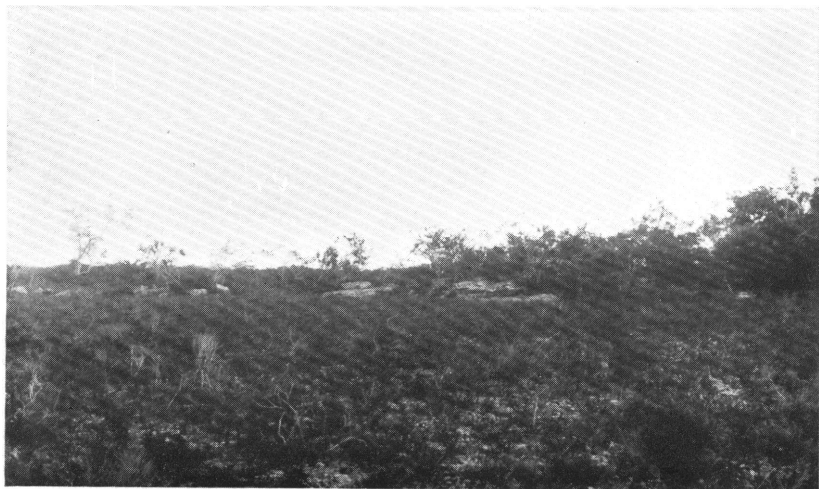
2

PLATE XXI

- Fig. 1. Vegetation at Morro do Chapeó (Bahia).
Fig. 2. Vegetation at Morro do Chapeó (Bahia).



1



2

PLATE XXII

Forest near Orobó (Bahia).



PLATE XXIII

Copernicia cerifera Mart¹: Wax palm found at Remanso on the Rio São Francisco.

¹1906, Ule, E.: Vegetationsbilder, 6 Reihe, Heft 3. Das Innere von Nordost-Brasilien, Tafel 16.



PLATE XXIV

Large cactus of the genus *Cereus cattingicola* Gürke¹: Sento sé Solidade near Joazeiro on the Rio São Francisco (Bahia), March, 1903.

¹ Photographed by Othmar Reiser at Sento sé Solidade (Bahia), March, 1903.

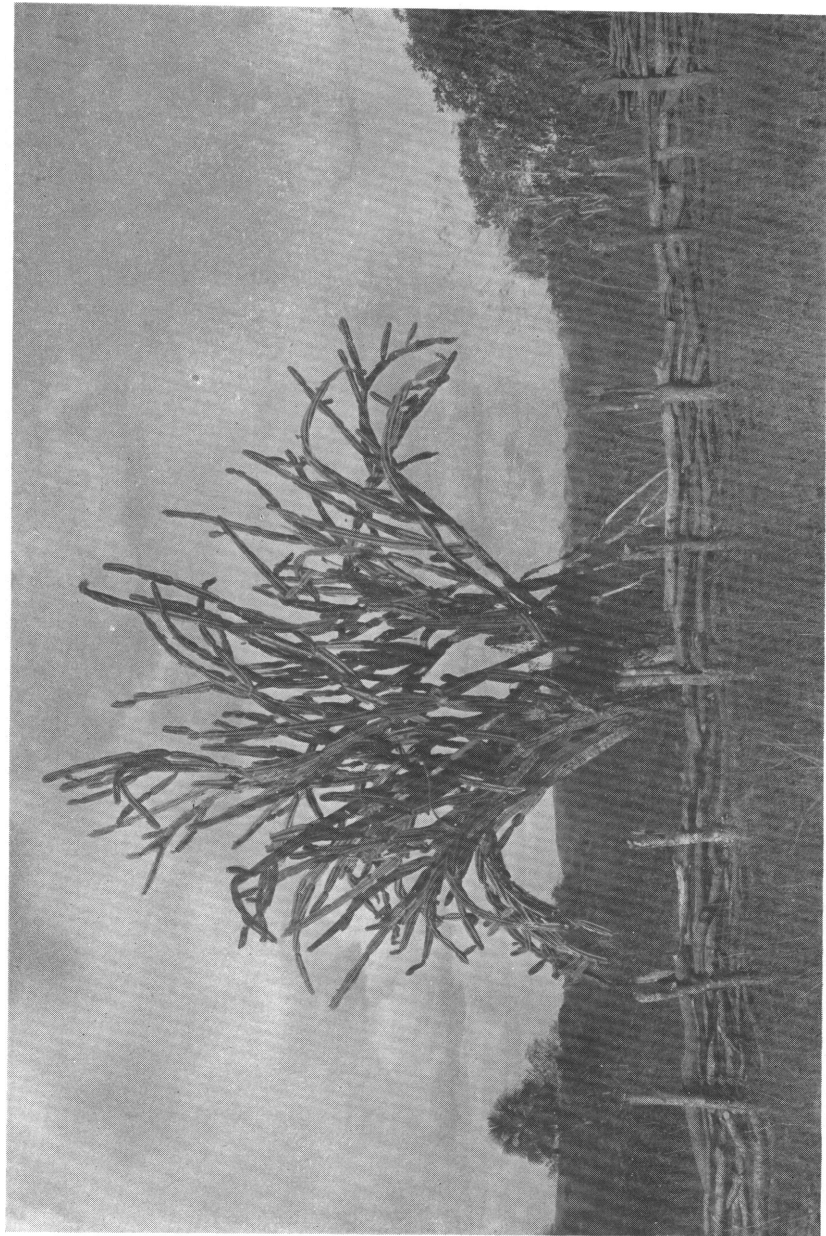
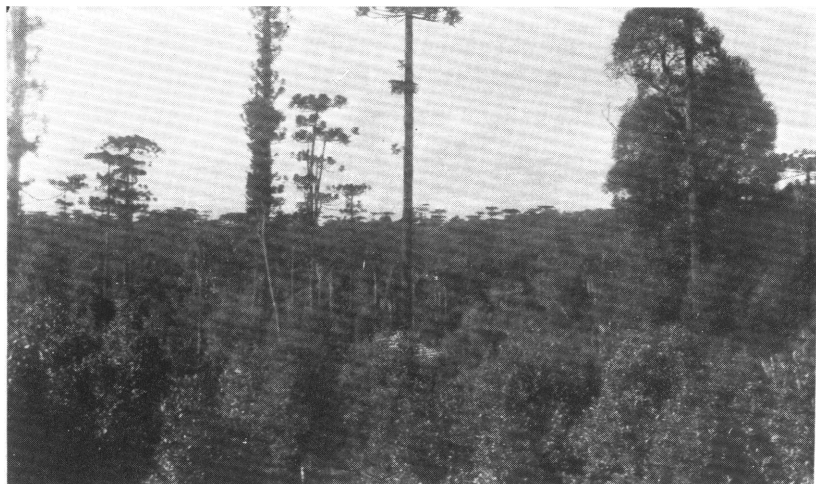


PLATE XXV

Fig. 1. Forest at Serra de Lucindo (Santa Catharina). Pines (*Araucaria brasiliiana*) mixed with tea¹ (*Ilex paraguayensis*).

Fig. 2. Campo with palm growth at Arroio d'El Rey (southern Rio Grande do Sul), August 1931.

¹ This is used as a tea called Maté.



1



2

PLATE XXVI

Forest at Erebango (northern Rio Grande do Sul).



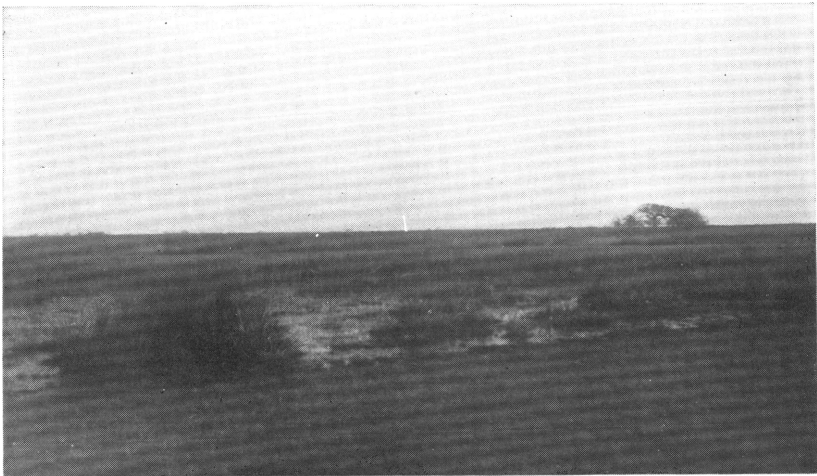
PLATE XXVII

Fig. 1. At Uruguay Cattle Ranch, north of Tahym (southern Rio Grande do Sul), July, 1931. Big fig trees on the open campo; in the rear cacti and *Bromeliaceae*.

Fig. 2. At Uruguay Cattle Ranch, north of Tahym (southern Rio Grande do Sul), July, 1931. Swamp. In the foreground *Bromeliaceae*; in the middle *Bromeliaceae* mixed with reeds; in the rear (deep water reeds only); on the horizon big fig trees.



1



2



