

IVONEIDE DE FRANÇA COSTA
HEMECLECIO NASCIMENTO SANTANA
LILIAN QUELLE SANTOS DE QUEIROZ
(ORG.)

COMISSÃO HIDRÁULICA DO IMPÉRIO

Cadernetas de Viagem de Milnor Roberts

VOLUME 2

Editora Zarte

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Editora zarte
Feira de Santana - Bahia
2026

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Projeto gráfico e Editoração eletrônica: *Editora Zarte*
Capa: *Lilian Quelle Santos de Queiroz*
Revisão textual e Rvisão de provas: *As organizadorras*

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Dados Internacionais de Catalogação na Publicação (CIP)

C726 Comissão Hidráulica do Império [recurso eletrônico] : cadernetas de viagem de Milnor Roberts (1879). – Volume 2 / Ivoneide de França Costa, Hemeclecio Nascimento Santana, Lilian Quelle Santos de Queiroz (organizadores). – Feira de Santana : Editora Zarte, 2026.
115 p. : il.

E-book.
Formato: PDF.
ISBN 978-65-83341-47-1

1. Comissão Hidráulica do Império, 1879-1880. 2. Engenharia hidráulica imperial. 3. Cadernetas de viagem. 4. Roberts, William Milnor, 1810-1881. 5. Brasil – História – Império, 1822-1889. I. Costa, Ivoneide de França, org. II. Santana, Hemeclecio Nascimento, org. III. Queiroz, Lilian Quelle Santos de, org.

CDU 626/627:94(81)“1879”

Elaboração: Luis Ricardo Andrade da Silva – Bibliotecário – CRB 5/1790

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Editora Zarte
Rua Nacional nº 300 A, Parque Ipê - CEP: 44054-064
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APRESENTAÇÃO

No final século XIX, o Conselheiro Cançanção de Sinumbú organizou a Comissão Hidráulica do Império, sob a direção do engenheiro americano William Milnor Roberts, e com a participação dos engenheiros Antonio Plácido Peixoto do Amarante, Rodolpho Waisser, Domingos Sergio de Sabóia e Silva, Alfredo Lisboa, Miguel Antonio Lopes Pecegueiro, Theodoro Fernandes Sampaio, Thomaz de Aquino e Castro e o geólogo Orville A. Derby na qualidade de adido da expedição. A comissão tinha o objetivo de estudar os melhoramentos do porto de Santos e a navegação pelo interior do País, também se propunha em preparar profissionais brasileiros para posteriormente participar de atividades de melhoramentos dos problemas identificados pela expedição e obras de crescimento nacional.

Após a finalização dos estudos do porto de Santos, a Comissão iniciou os estudos da navegação pelo interior do País pela exploração do rio São Francisco devido a sua posição geográfica em relação à zona litoral povoada e enriquecida, e pelo seu vale servir de comunicação entre as regiões centrais e norte do País (SAMPAIO, 1998). Após preparativos, iniciou-se em 12 de Agosto de 1879 a viagem que iria percorrer desde a ligação do rio São Francisco com o Atlântico em Alagoas indo até Pirapora em Minas Gerais. Este trajeto foi concluído em 17 de Dezembro do mesmo ano. O interesse pelo Conhecimento do Rio São Francisco residia na necessidade de realizar um sistema de viação pelo interior do País que ligasse os portos ao rio. As estradas de ferro já estavam sendo construídas partindo do Rio de Janeiro, Bahia, Pernambuco e havia necessidade de traçar um percurso através do rio.

A Comissão Hidráulica do Império (CHI) foi organizada através do Aviso nº. 5 de 14 de fevereiro de 1879, por iniciativa do Conselheiro João Lins Vieira Cansanção de Sinimbu, então Ministro dos Negócios da Agricultura, Comércio e Obras Públicas. O objetivo da CHI era estudar os possíveis melhoramentos a serem realizados no porto de Santos e as condições de navegabilidade do rio São Francisco. Visava também preparar profissionais brasileiros para, posteriormente, participarem das atividades de melhoramentos dos problemas identificados pela expedição e obras de crescimento nacional. Para Ademir Pereira dos Santos, a CHI se inseria no "contexto histórico do planejamento territorial, origem distante do urbanismo moderno no Brasil, cuja motivação também se relaciona à adoção de sistema de transporte a vapor, característica da primeira Revolução Industrial", cujo proces-

so assinalaria investimentos tecnológicos expandindo os mercados. Este contexto aliava o planejamento territorial ao planejamento urbano na busca de melhoramentos da infraestrutura de vida social e do sistema de viação, unindo rios, estradas e portos, a fim de permitir o escoamento da economia do país do centro para o litoral, e do litoral para outros Estados, províncias e/ou países. O mesmo processo também acontecia de forma inversa: na entrada de pessoas e produtos do litoral para o centro. Os aprimoramentos das vias de comunicação configuraram-se como as mais importantes obras da engenharia no século XIX. Suas questões permitiram a profusão das discussões científicas e técnicas para adequar os sistemas de transportes ao crescimento das cidades e o aumento das importações e exportações, principalmente nos portos do Rio de Janeiro e Santos.

A CHI iniciou as atividades primeiramente pelos estudos no porto de Santos, SP, em resposta ao Aviso de 2 de abril de 1879. O porto já havia sido objeto de estudo de outros empresários e engenheiros, mas pouco fora realizado para melhorar o comércio e suas condições sanitárias. Coube à CHI realizar novos estudos, identificar os problemas e propor novos planos para que pudessem ocorrer os melhoramentos adequados ao porto. Ao término dos estudos no porto de Santos, atendendo ao Aviso de 29 de junho de 1879, a CHI iniciou a expedição através do rio São Francisco, da foz, no oceano Atlântico, até a cidade de Pirapora, em Minas Gerais. O objetivo dessa etapa dos trabalhos da Comissão era identificar os obstáculos que impediam a franca navegação pelo rio e propor soluções para os problemas identificados. Os estudos do rio São Francisco começaram no dia 12 de agosto de 1879, e se estenderam até 22 de dezembro do mesmo ano. Esta parte dos trabalhos teve a presença do geólogo Orville Adalbert Derby, designado pelo Governo para realizar estudos geológicos do vale.

Para chefiar a CHI, foi contratado o engenheiro militar americano William Milnor Roberts pelo período de três anos, nos quais se dedicaria ao estudo do sistema fluvial do Brasil e, ao final, deveria indicar meios "práticos e econômicos" de integrar os rios ao sistema de comunicação entre o centro do país e a costa marítima. A contração foi celebrada não só pela experiência do engenheiro, mas, também, pela possibilidade de estreitar as relações com os Estados Unidos. W. M. Roberts já havia estado no Brasil entre 1857 e 1865, trabalhando na Estrada de Ferro D. Pedro II, acompanhado por outros engenheiros americanos contratados pelo Eng. Christiano B. Ottoni para executar as obras da Segunda Seção da Ferrovia da Estrada de Ferro D. Pedro II.

A composição da CHI ficou definida pelos seguintes engenheiros: William Milnor Roberts, engenheiro chefe; Antonio Plácido Peixoto do Amarante, 1º. engenheiro; Rudolph Wieser, chefe da seção; Domingos Sérgio de Sabóia e Silva, Alfredo Lisboa, engenheiros 1ª. classe; Miguel Antonio Lopes Pecegueiro, Theodoro

Fernandes Sampaio, Thomaz de Aquino e Castro, engenheiros de 2ª. Classe; João P. Rocha Pita, auxiliar (integrante que só aparece na lista escrita por W. M. Roberts); e o geólogo Orville A. Derby, na qualidade de adido da expedição através do rio São Francisco.

William Milnor Roberts dedicou sua vida ao desenvolvimento da engenharia nos Estados Unidos e no Brasil. Roberts nasceu na Filadélfia, Pensilvânia, em 1810, filho de Thomas Paschall e Mary Louise Roberts. Casou-se duas vezes: o primeiro casamento foi em 1837, com Annie Gibson, da Pensilvânia, com quem teve seis filhos; depois se casou com Adeline Debeelen, de Pitsburg, com a qual teve quatro filhos. Sua educação foi na Filadélfia em escolas particulares. Também fez curso de desenho arquitetônico na primeira escola estabelecida pelo Franklin Institute, com o arquiteto John Haviland. Depois de começar exercer a profissão de engenharia civil, continuou os estudos, principalmente em matemática, da qual gostava muito. Começou sua vida profissional em 1825, trabalhando no Canal da União da Pensilvânia e, em 1830, na construção de ferrovias. Sua carreira como engenheiro teve início e crescimento com o maior dos agentes em nossa civilização moderna, a engenharia ferroviária. Nos Estados Unidos, as construções ferroviárias começaram em 1826, na pedreira de granito chamada Quincy, onde construíram um bonde para o transporte de pedra da pedreira para a água, a uma distância de três ou quatro quilômetros. A primeira estrada de ferro, no entanto, foi a Mauch Chunk, com nove quilômetros de extensão, entre o cume da montanha Broad Top e o plano inclinado Mauch Chunk.

No decorrer de sua longa carreira como engenheiro, Roberts ocupou variados cargos de confiança e responsabilidade. Em 1830, foi nomeado engenheiro residente da estrada de ferro Union e um canal Union. De 1831 a 1834, trabalhou como engenheiro-assistente sênior principal na ferrovia Allegheny Portage, período durante o qual tinha o encargo de reparos na divisão oeste do Estado da Pensilvânia do canal de Johnstown para Pitsburg, danificada pela enchente de 1832. De 1835 a 1857 foi contratado como engenheiro para vários projetos em Ohio, Indiana, Pensilvânia e Canadá, trabalhando como engenheiro chefe ou prestando consultorias. De 1837 a 1841 ocupou o cargo de engenheiro chefe nas melhorias dos rios em Monongahela, trabalhou nas obras do canal na Pensilvânia, o canal Erie, e as melhorias do rio Ohio. De 1841 a 1842 trabalhou na construção do canal de Welland (Canadá). De 1843 a 1844, exerceu a função de engenheiro chefe para a Companhia do Canal Erie, e de 1845 a 1847 foi engenheiro chefe na empresa Sandy e Beaver, de Ohio. Em 1849 recusou o convite para ser chefe da primeira ferrovia na América do Sul para aceitar trabalhar na ferrovia Bellefontaine e Indiana, de Ohio, onde permaneceu até 1851. Entre 1852 e 1854 foi engenheiro

chefe da ferrovia Allegheny Valley. De 1855 a 1857 foi contratado para ferrovia em Minnesota, além de prestar consultoria em Pitsburg e outras cidades.

'No período compreendido entre 1857 e 1865 foi responsável pela construção do caminho de ferro D. Pedro no Brasil, como já foi mencionado, permanecendo no trabalho até a conclusão da obra, em 1864. Durante o restante de 1864 e parte de 1865 visitou várias ferrovias e obras públicas no Brasil e nas repúblicas platinas, retornando para os Estados Unidos ao final de 1865. Após seu regresso foi contratado para importantes obras hidráulicas e ferroviárias, tais como a melhoria dos rios Ohio e Mississipi, a construção da ponte de St. Louis Bridges, abastecimento de água de Pittsburgh e Filadélfia, e construção de uma ferrovia em Nova Scotia.

Em 1869, Roberts fez o reconhecimento de uma rota para a estrada de ferro do Pacífico Norte, que incluiu a rota através de Montana. Seu relatório, publicado por Jay Cooke, serviu de base para o financiamento da construção da linha para a costa do Pacífico. Atuou como engenheiro chefe da Northern Pacific Railroad de 1870 a 1879. Em 1874 partiu numa expedição com mais cinco engenheiros para examinar as embocaduras dos grandes rios do delta da Europa, a fim de recomendar o tratamento do delta do Mississipi.

No final de 1878, Roberts aceitou a nomeação do Governo Brasileiro para um exame do porto e águas do Império, com referência à sua melhoria – a Comissão Hidráulica do Império. Seu contrato era para um período de três anos, começando em 1879. Ele saiu de Nova York no dia 04 de janeiro de 1879 e chegou ao Rio de Janeiro no dia 27 do mesmo mês. Ao chegar, foi imediatamente fazer o exame do porto de Santos e entrou em seu novo trabalho no mês de fevereiro seguinte. Esta tarefa foi concluída em junho, e no dia 31 de agosto W. Roberts partiu para uma análise ampliada do Alto São Francisco.

Além dos trabalhos da CHI, Roberts também fez estudos e outros trabalhos de grandes escalas no país. Realizou estudos na Barra do Rio Grande, no Rio Grande do Sul, em 1881, (faleceu antes de inicar os trabalhos); apresentou projeto para o porto do Recife PE, após estudos dos engenheiros John Hawskhaw e Raphael Galvão; o porto de São Luiz, no Maranhão, também foi contemplado com um projeto de W.M. Roberts, em 1881. Fez parte de uma comissão para estudo do reservatório do Pedregulho no Rio de Janeiro com outros engenheiros ilustres da época, como André Rebouças, Honório Bicalho e Raymundo Belford Roxo. Também foi encarregado pelo Governo Imperial de realizar estudos e projetos de abastecimento de água em várias cidades.

Roberts participou de importantes associações. Foi membro da American Society of Engineers, da Institution of Civil Engineers e da American Geographical Society. No Brasil foi sócio honorário do Clube de Engenharia do Rio de Janeiro, admitido no ano de 1881. W. M. Roberts morreu de febre tifóide em Soledade,

MG, Brasil, aos 72 anos, quando trabalhava na estrada de ferro, em 14 de julho de 1881, e sepultado no dia seguinte no cemitério da freguesia de Carandaí, cidade próxima a Barbacena - MG. Em 1923, o edifício de engenharia no Estado Montana Campus foi nomeado em sua homenagem.

As cadernetas que se seguem se referem as atividades da CHI e fazem parte do acervo da Universidade de Montana, USA.

Professora Dr. Ivoneide de França Costa
Universidade Estadual de Feira de Santana

Professora Dr. Lilian Quelle dos Santos Queiroz
Universidade Estadual de Feira de Santana

Professor Ms. Hemeclecio Nascimento Santana
Universidade Estadual de Feira de Santana

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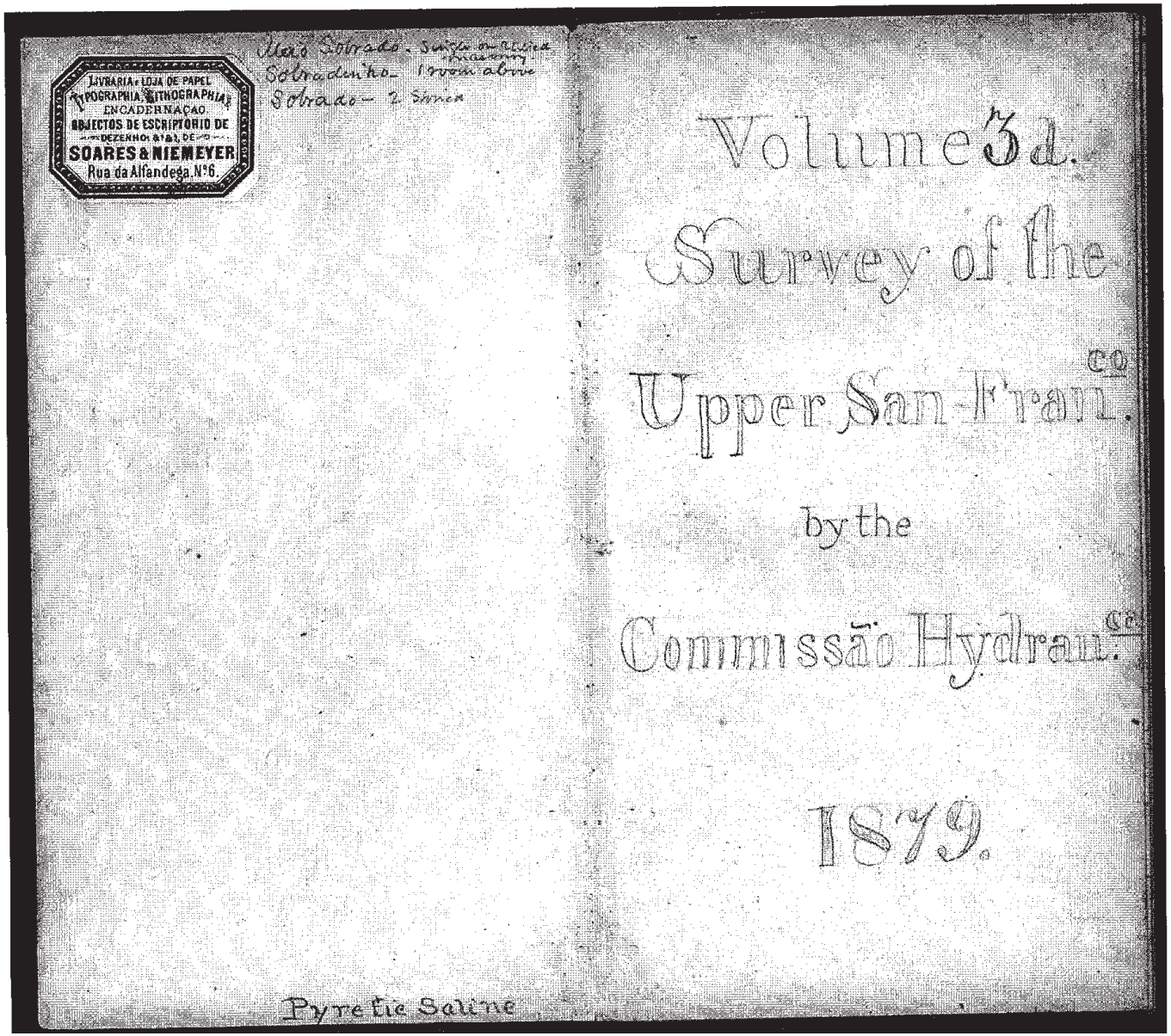
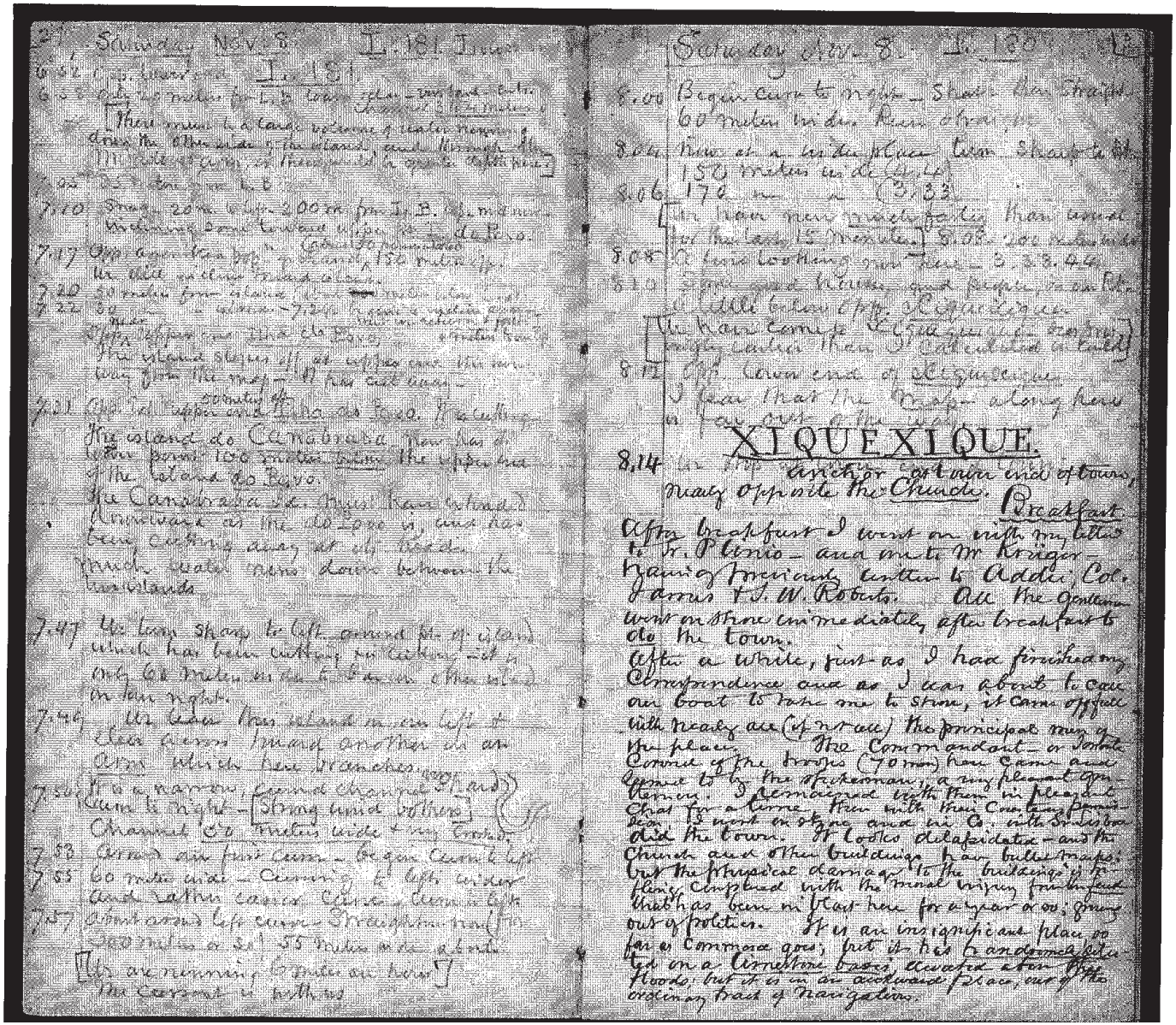
William Milnor Roberts Papers

Box 4

Folder 29

Part 1


LIVRARIA E LOJA DE PAPEL
TYPOGRAPHIA & LITHOGRAPHIA
ENCADERNAÇÃO
OBJECTOS DE ESCRIPTORIO DE
DEZENHO &c &c DE
SOARES & NIEMEYER
Rua da Alfandega N.º 6.
Mais Sobrado - Sotão ou Agua furada
Sobradinho - 1 Andar abaixo
Sobrado - 2 Andares
Volume 3d.
Survey of the
Upper San Fran.co
by the
Commissão Hydran.ca
1879.
Pyrtie Saine



Sunday Nov. 8 I. 181 Inver

7.02 Begin Course [illegible]

7.05 Calm no motion for the boat [illegible]

[There seems to be a Canal between Grand Harbour and the Other side of the island and through the Middle of Comino or Kemmuna is the Malta Road]

7.10 Steer 20° W by N - 2.00 m for I. B. Kemmuna Lighthouse bore E. and Light on de Paro.

7.17 Opp. a gap in high ground, 120 metres off. We call an Island Island

7.20 80 metres from island [illegible]

7.22 80 [illegible] 7.24 [illegible]

Steer [illegible] for Cina de Paro

The Island steers off as if it were part of the main - it has cut away -

7.31 Opp. [illegible] Cina de Paro. Weather

The island de Comobretta now bears from the point 120 metres being the opposite end of the Island de Paro.

The Canzirotta Rocks must have extended Northward as the old Lore is, and has been carrying away at its North end.

Much weed seen drifting between the two islands

7.47 We keep Steering to left around Pt. of Island which has been cutting in Looking like a Bay 60 metres in the Centre. Many Islets in this night.

7.49 We leave Mosquito Island on our left & Close Comino Island and another on our Right which have Branches [illegible]

7.50 To a narrow Canal Channel 50 yards wide [illegible] Channel 120 metres wide & very Embedded

7.53 Course due East - Begin Course to left

7.55 60 metres wide - Steering to left, widens and rather Course Steer E. by N.

7.57 Island across left Course - Straighten now [illegible] 120 metres & 50 [illegible] 55 metres wide & widening

[We are running 6 miles an hour]

The Current is with us

Sunday Nov. 8 I. 180

8.00 Begin Course to right - Steer due East for 60 metres in the Main Channel

8.04 Now on a reach due E. Course - Steer to the 150 metres in the Channel

8.06 170 [illegible] in [illegible]

[The Main Channel is Big than usual for the last 15 minutes]

8.08 [illegible] Course - 3.33.45

8.10 [illegible] and Islands and People on the Port [illegible] Opp. the Citadel

[The Main Channel is [illegible] wide]

8.12 Opp. Town end of Kemmuna

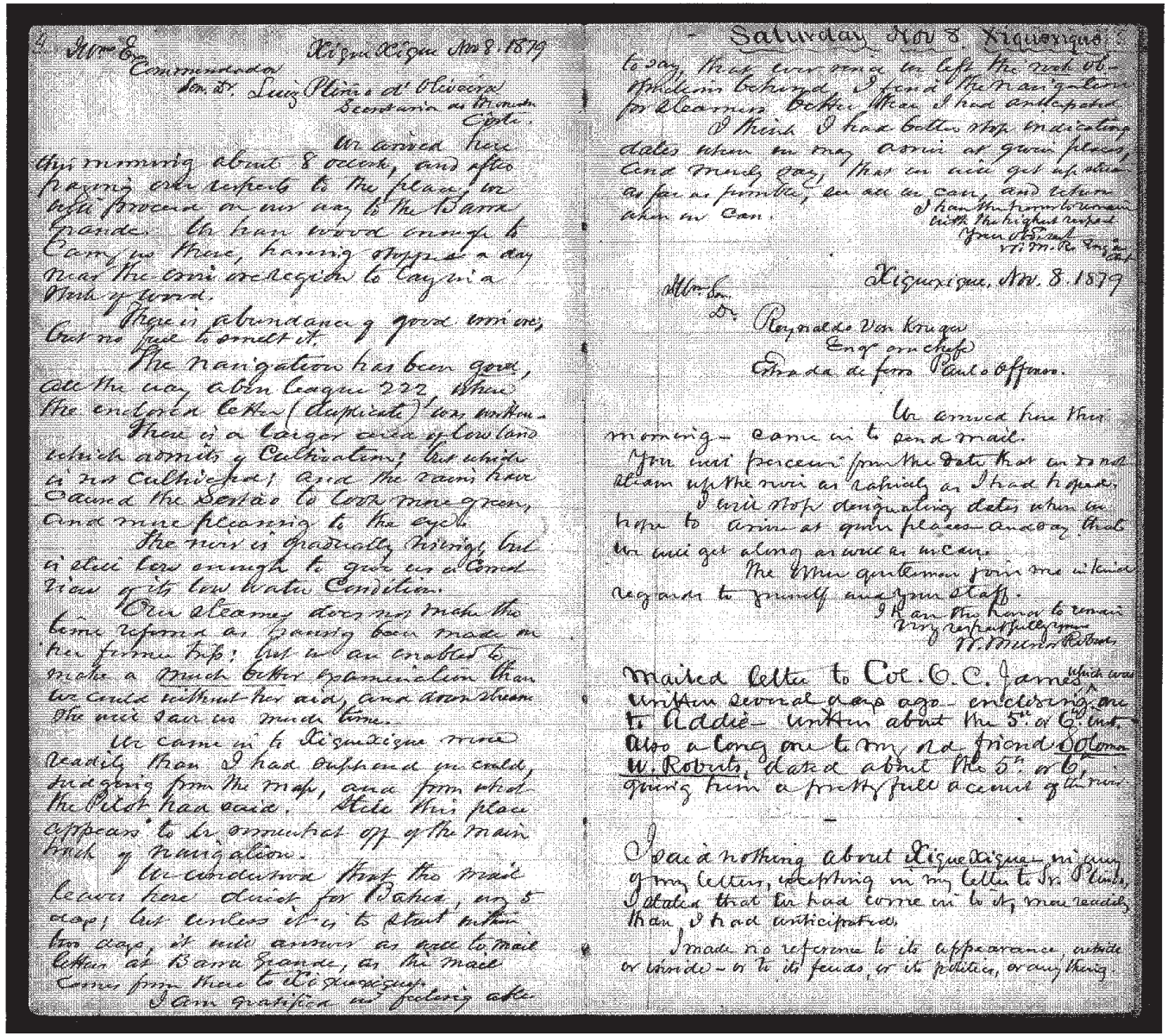
I fear that the Rocks along here is for our [illegible]

XIQUEXIQUE

8.14 [illegible] Anchor for certain end of Town, Nearly opposite the Church. Breakfast.

After breakfast I went on with my letters to Dr. Plinio - and wrote Mr Krieger Many of Friends Letters to Addie, Col. Jarvis T. I. W. Roberts. All the Gentlemen went on Shore immediately after breakfast to do the town.

After a While, just as I had finished my Correspondence and as I was about to go on board to take me to Shore, it came off full with nearly all (if not all) the principal men of the place. The Commandant - or Sotto Comm. of the troops (70 men) have Came and appear to be the Fisherman, a very pleasant Gentlemanly. I remained with them in pleasant Chat for a time. Then with them Capt. Parsons went on Shore and we Co. with Dr Dickson did the Town. It looks dilapidated - and the Church and other buildings have bullet marks. Not the slightest damage to the buildings if Plains, Complied with the usual Injury from Neglect which has been in fact here for a year or so, going out of politics. It is an insignificant place so far as Commerce goes, but it has a good Mole fitted on a Circular basis, towards which the Floods, but it is in an awkward place, out of the ordinary track of Navigation.



Xiquexique Nov 8. 1879

Commendador
Dr. Dr. Luiz Pinto d'Oliveira
Secretario do Governo
Cidade.

We arrived here this morning about 8 o'clock, and after paying our respects to the place we left Procurá on our way to the Barra Grande. We have wood enough to carry us there, having stopped a day near the one we began to cut in a Work of wood.

There is abundance of good wood, but no one to cut it.

The navigation has been good, all the way from League 222, where the enclosed letter (duplicate) was written.

There is a larger area of Low land which admits of Cultivation, but which is not cultivated, and the rains have caused the Sertão to look more green, and more pleasing to the eye.

The river is gradually diminishing, but is still low enough to give us a good view of its low water Condition.

Our steamer does not make the time reported as having been made on her former trip; but we are enabled to make a much better examination than we could without her aid, and down stream the rest saves us much time.

We came in to Xiquexique more readily than I had supposed we could, judging from the map, and from what the Pilot had said. Still this place appears to be connected off of the main track of navigation.

We conclude we shall the mail leaves here direct for Bahia, in 5 days; but unless it is to start within two days, it will answer as well to mail letters at Barra Grande, as the mail comes from there to Xiquexique.

I am gratified in finding after

Saturday Nov 8. Xiquexique

to day, that we were to the left the real obstruction behind. I found the navigation far clearer, better than I had anticipated.

I think I have better map indicating dates when we may arrive at given places, and more exact, than we will get up when as far as possible, we are to carry, and return when we can.

I have the honor to remain
with the highest respect
Your Obt Svt
W. M. Reynolds Engr in Chf

Xiquexique, Nov. 8. 1879

Hon Sir
Dr. Reynolds Van Krugen
Engr en chefe
Estrada de ferro Paulo Affonso.

We arrived here this morning - came in to send a mail.

You will perceive from the date that we do not steam up the river as rapidly as I had hoped.

I will hope designating dates when we hope to arrive at given places - and to say that we will get along as well as we can.

The Steam gentlemen join me in kind regards to yourself and your staff.

I am the honor to remain
Very respectfully yours
W. Milnor Roberts

Mailed letter to Col. C. C. James which was written several days ago - enclosing one to Genl Addie - written about the 5th or 6th inst. Also a long one to my old friend Solomon W. Roberts, dated about the 5th or 6th, giving him a pretty full account of the river.

I said nothing about Xiquexique in any of my letters, excepting in my letter to Dr. Pinto, I stated that we had come in to it more rapidly than I had anticipated.

I made no reference to its appearance within or without - or to its people, or its politics, or anything

6] Saturday Aug. 8th 1879 Dignessies
We arrive here at 8.14 a.m. and are
11.45 are clear of the Rocky Mts. and
11.47 Opp. Revere on the Columbia
11.55 Here Clear Water Creek comes in
12.02 Cl. & Snake River comes in
12.07 Shandon - pop. 2.000 Pendleton County
12.10 Cross Umatilla River
12.12 Cross Umatilla River
12.19 Cross Umatilla River
12.23 Cross Umatilla River
12.25 Opp.
12.27 Opp.
12.35 Opp. the Cayuse Indian Reservation
12.40 Pendleton Pop. 1500 Umatilla Co.
12.45 Pass Pendleton
12.53 Opp. High rocky Canyon on R.B. Side
1.02 Pass Cabbage Hill
1.10 Pass Alkali Station
1.17 Pass Alkali Station
1.20 Pass Alkali Station
1.24 Pass Alkali Station
1.27 Pass Alkali Station
1.30 Pass Alkali Station
1.34 Pass Alkali Station
Wednesday Nov 5 - L. 180 N. 179
We are rapidly out in sight of snow
mountains. We have passed 3 Rivers
Reno 1500 Pop. Capital of Nevada
On R.B. Side is a Range of
Mountains
Opp. High rocky Canyon on R.B.
Opp. Head of Canon
Opp. Head of Canon
L. 179
Pass Alkali Station
Pass Alkali Station
Pass Alkali Station
Pass Alkali Station
Pass Alkali Station
Pass Alkali Station
L. 179
Pass Alkali Station
Pass Alkali Station
Pass Alkali Station
Pass Alkali Station
Pass Alkali Station
Pass Alkali Station

Saturday Nov 8 L-178.

Running the anchor watch, 2 hours,

1.42 Dive alarm goes off. Wind 20 knots.
1.47 Dive alarm goes off. Wind 20 knots.

1.53 Dive alarm goes off. Wind 20 knots.

1.57 Dive alarm goes off. Wind 20 knots.

2.00 Dive alarm goes off. Wind 20 knots.

2.04 Dive alarm goes off. Wind 20 knots.

2.07 Dive alarm goes off. Wind 20 knots.

2.12 Dive alarm goes off. Wind 20 knots.

2.19 Dive alarm goes off. Wind 20 knots.

2.25 Dive alarm goes off. Wind 20 knots.

2.31 We are now back to the [illegible]

2.33 Dive alarm goes off. Wind 20 knots.

2.34 Dive alarm goes off. Wind 20 knots.

2.35 Dive alarm goes off. Wind 20 knots.

2.36 Dive alarm goes off. Wind 20 knots.

2.42 Dive alarm goes off. Wind 20 knots.

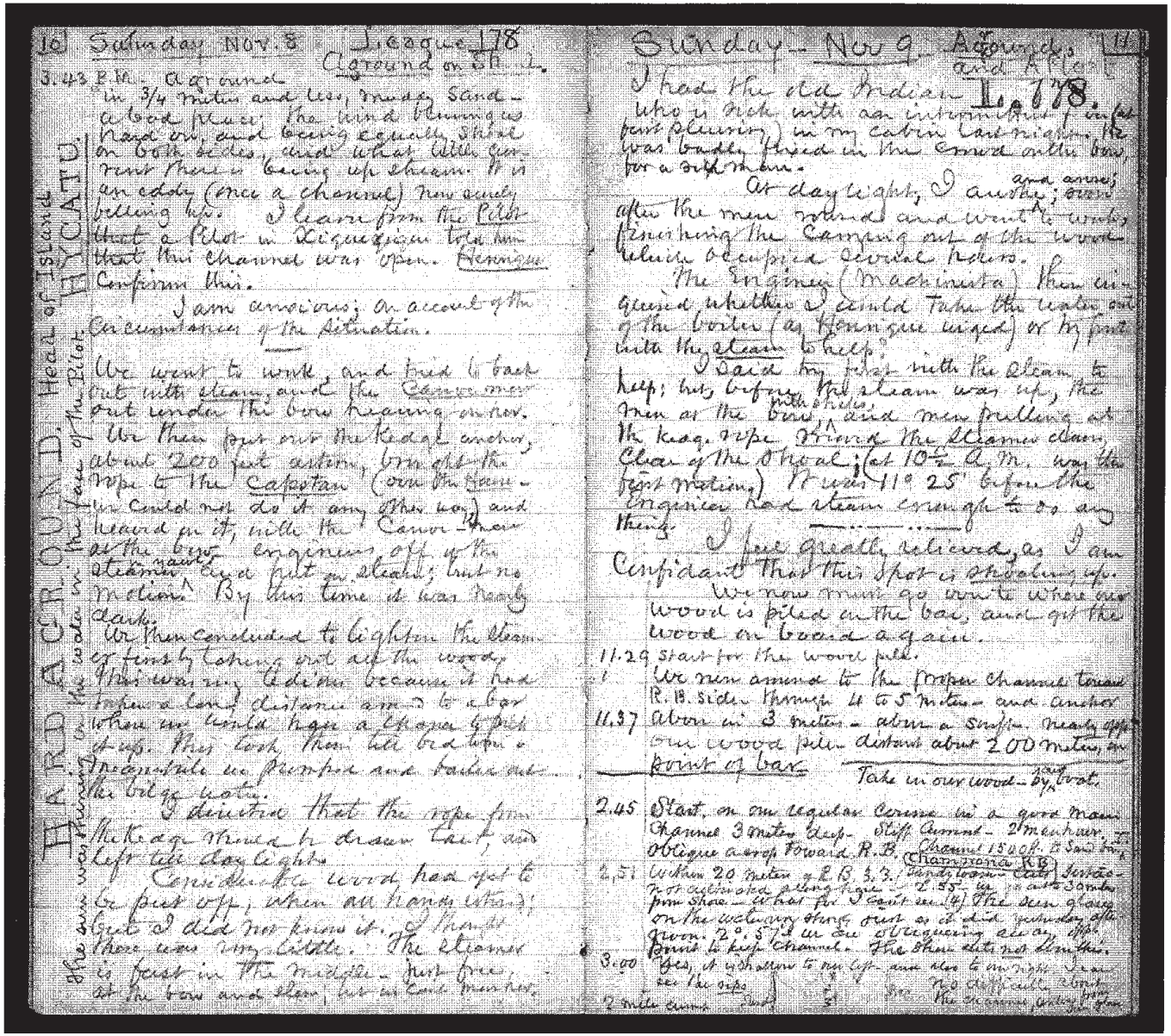
2.44 Dive alarm goes off. Wind 20 knots.

2.45 Dive alarm goes off. Wind 20 knots.

2.50 Dive alarm goes off. Wind 20 knots.

3.35 Steel capstan [illegible]

3.42 Dive alarm goes off. Wind 20 knots.



10 Saturday Nov. 8 League 178
Aground on Sh 2.

3.43 P.M. Aground in 3/4 metre and less, muddy Sand - a hard place; the wind blowing a hard gale, and being equally shoal on both sides, and what little current there is being up stream. It is an eddy (once a channel) now nearly filling up. I learn from the Pilot that a Pilot in Liqueguian told him that this channel was open. Hennigan confirms this.

I am anxious; on account of the circumstances of the situation.

We went to work and tried to back out with steam and the Capstan over out under the bow hawsing on bow.

We then put out the Kedge anchor, about 200 feet astern, brought the rope to the Capstan (over the boom - we could not do it any other way) and I heaved on it, while the Canoe-men at the bow engineer off of the steamer and pulled on shore; but no motion. By this time it was nearly dark.

We then concluded to lighten the steamer by first taking out all the wood. This was done, a distance because it had to be taken a long distance and to a bar where we could have a chance to pick it up. They took them till 8 o'clock and then knocked off for supper and the night.

I directed that the rope from the Kedge should be drawn taut, and left till daylight.

Considerable wood had yet to be put off, when all hands stopped and did not know it. I thought there were my cattle. The steamer is fast in the middle - bow free, at the bow and stern, but in hard mud now.

Sunday Nov 9 Accounts and Affairs 11

I read the 4th Indian Lesson, 178.

Who is sick with an intermittent fever (first pleurisy) in my cabin last night. He was badly pleased in the forward cabin bow for a sick man.

At daylight, I awoke; and arose; soon after the men rowed and went to work, finishing the carrying out of the wood which occupied several hours.

The Engineer (Machinists) then enquired whether I could take the water out of the boiler (as Hennigan urged) or by first with the steam to help.

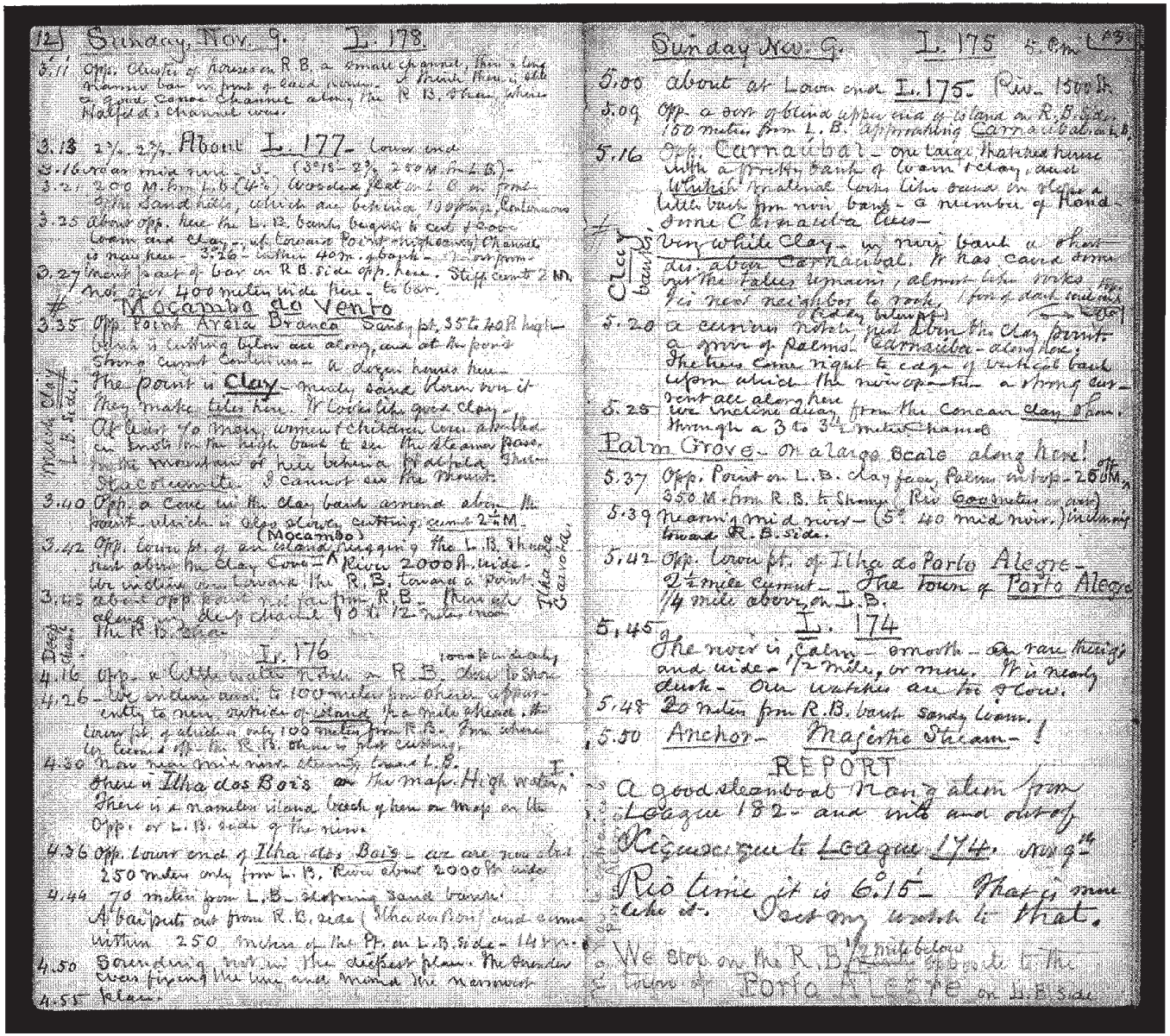
I said try first with the steam to help; but, before the steam was up, the men at the bow with axes and saws pulling at the kedge rope. Broke the steamer clear of the shoal (at 10½ A.M. was the first motion.) It was 11h 25' before the Engineer had steam enough to do any thing.

I feel greatly relieved, as I am confidant that this spot is shoaling up.

We now must go on to where our wood is piled on the bar, and get the wood on board again.

11.29 Start for the wood pile.
" We run around to the proper channel towards R.B. side through 4 to 5 metres - and anchor
11.37 About in 3 metres - about a snuffin. Nearly off our wood pile distant about 200 metres, on point of bar. Take in our wood - 2½ hours.

2.45 Start, on our regular Course in a good many Channel 3 metres deep - Stiff Current - 2 Miles an hour. Channel 150 off R. Sand Bar, oblique across Forward R.B. (Champrana R.B.)
2.51 Within 20 metres of R.B. S.S. (Sandy loam - Clay) Sentence not quite finished about Engine - 2.55 - in 2 metres 3 metres from Shore - 4 hour for 3 Coast men (4) The men always on the walkway stung over as it did yesterday afternoon. 2° 5' 2d in the Conguering all day. Appears to keep Channel. The shore clear not Low Flat.
3.00 Yes, it is shown to our left - and also to our right. Can see the ripples
2 miles Course and 5' 3.30 No difficulty. Shoals from



12) Sunday, Nov. 9. L. 178

6.11 Opp. Cluster of houses on R.B. a small opening, then a long narrow bar on front of said houses. Steer mid-river with a good Canoe Channel along the R.B. shore where Halfeld's Channel veers.

3.13 2¼ - 2¾ Above L. 177 - Course and
3.16 distance mid-river - S. (S° 15' - 2¾ - 250 M. from L.B.) -
3.21 200 M. from L.B. (4°) Wooded flat on L.B. in front of the Sand hills, which are behind a 100 ft. cliff, Continuous
3.25 Above opp. here the L.B. bends beyond it out of sight - Loam and clay cliffs of Tavares Point - neighbouring Channel is mid-river - 3.26 - within 40 M. of bank - 3.27 Mid-river from Mouth of bar on R.B. side opp. here. Stiff current 2 M. and over 400 meters wide here - to bar.

Mocambo c/o Vento

3.35 Opp. Point Areia Branca Sandy pt. 35 to 40 ft. high - Cliffs & cutting below are along, and at the point Strong current Caution - A dozen houses here -
The point is Clay - muddy sand down on it
They make tiles here. It looks like good clay -
At least 70 men, women & children Come aboard on both the high bank to see the Steamer pass.
Mouth of river Sand Bar
The mountain of Serra behind a Pyramidal Shape
Sta Catharina. I cannot see the Mouth.
3.40 Opp. a Cove in the clay bank around about the point, which is also steep cutting; current 2½ M.
(Mocambo)
3.42 Opp. Lower pt. of an island jutting out from the L.B. Thence just above the Clay Cove - River 2000 ft. wide.
Ilha Tavares
Channel inclines over towards the R.B. towards a point
3.45 about opp. point on R.B. - River 1/2 M. wide
along an deep channel 90 to 12 meters mean
The R.B. shore

Ilha dos Bois

L. 176

4.16 Opp. a little white house on R.B. close to shore
4.26 - We are now about 100 meters from shore, apparently to near extreme of island ½ a mile ahead. The Lower pt. of which is only 100 meters from R.B. From shore
Up stream opp. the R.B. shore is flat cultivation,
4.30 Now near mid-river steering towards L.B. I.
There is Ilha dos Bois on the map. High water
There is a nameless island (each of them on map on the
Opp. of L.B. side of the river.
4.36 Opp. Lower end of Ilha dos Bois - we are now about 250 meters only from L.B. River about 2000 ft. wide
4.44 70 meters from L.B. - Shoaling sand towards
A barco puts out from R.B. side (Ilha dos Bois) and comes within 250 meters of the Pt. on L.B. side - 14 ft.
4.50 Sounding mid-river in the deepest place. The Pilot even steering the line and minding the manoeuvres
4.55 Islan

Sunday Nov. 9. L. 175 5.0m

5.00 about at Lower end L. 175. Riv. 1500 ft.
5.09 Opp. a sort of blind appearance of island on R.B. side, 150 meters from L.B. approaching Carnaubal
5.16 Opp. Carnaubal - one large thatched house with a prickly bank of loam & clay, and Umbrella Palm Cocos like ones in Rio, a little back from river bank - a number of Palms - some Carnaubas here -
Very white Clay - in navy bank a short dis. above Carnaubal. It has come from out the Palms upstream, almost like rocks for it is near neighbor to rock. (from a dark soil mixed with clay below)
Clay bank
5.20 a canvas roofed just above the clay point - a row of palms. Carnauba - along low,
The trees come right to edge of vertical bank upon which the river cuts - a strong current all along here
5.25 We incline away from the Concave clay bank, through a 3 to 3½ meter channel

Palm Grove - on a large scale along here!

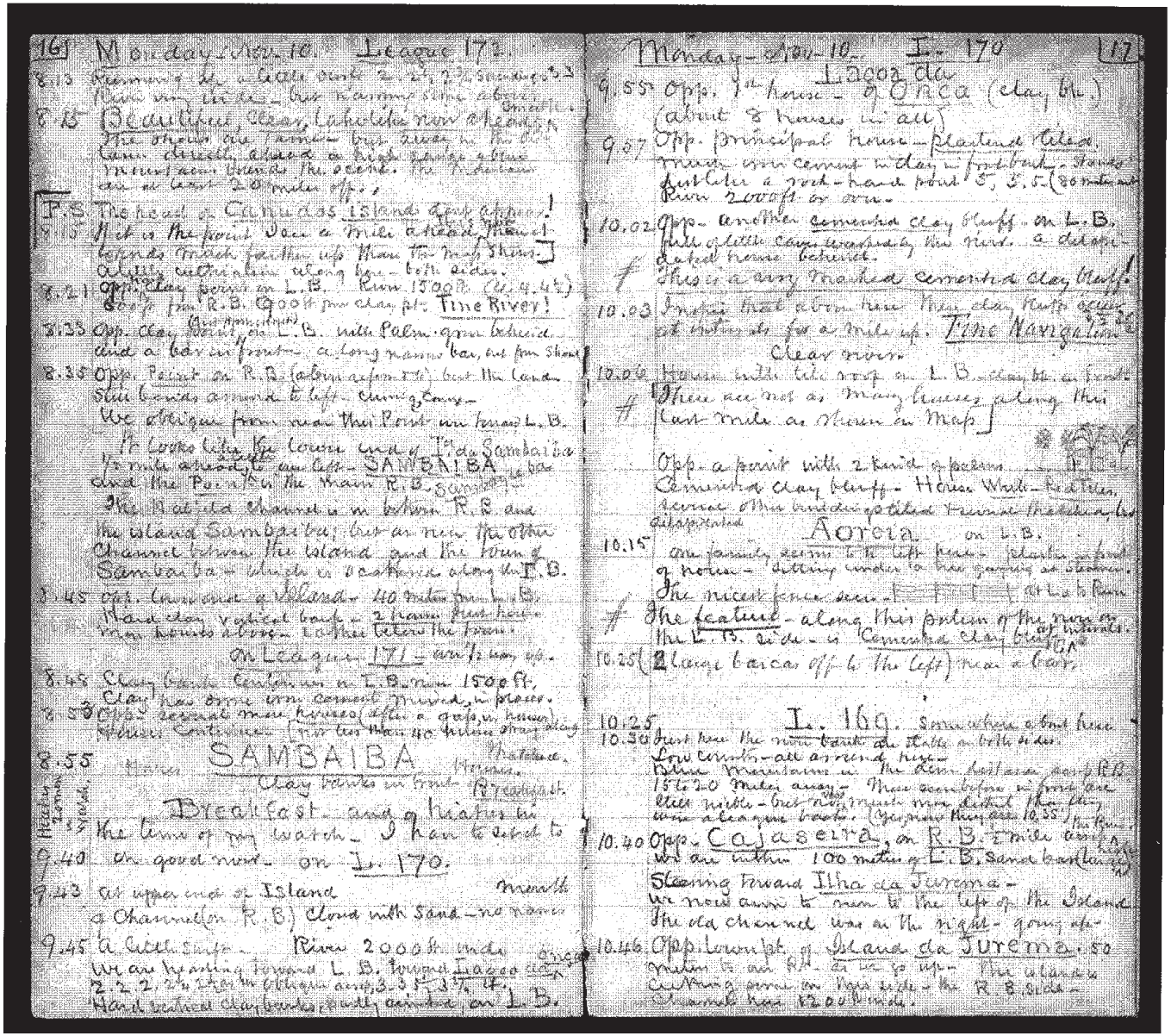
5.37 Opp. Point on L.B. clay face, Palms on top - 200 M. off 350 M. from R.B. to Shoaly Reef (counter current)
5.39 Nearing mid river - (5° 40 mid river.) Inclining towards R.B. side.
5.42 Opp. Lower pt. of Ilha do Porto Alegre - 2½ miles Current - The town of Porto Alegre 1/4 mile above on L.B.

L. 174

5.45 The river is Calm - smooth - Low rainy hills and wider 1/2 Miles, or more. It is nearly dusk - Our watches are by Cove.
5.48 20 meters from R.B. bank sandy loam.
5.50 Anchor - Majestic Steam - !

REPORT

A good steamboat Navigation from League 182 - and mile and above
Nigueira to League 174. Nov 9th
Rio time it is 6.15 - That is mean Lake st. Secondary watch is that.
We stop on the R.B. 1/2 mile below the Town of Porto Alegre on L.B. side



16 Monday - Nov 10. League 172.

8.15 Resuming the [illegible] course 2 - 2½ - 2½ Steaming S.S.E. Mud on the lee - low marshy shore about 1 mile off.

8.15 Beautiful, clear, [illegible] new aspects. The shores are [illegible] low, even in the distance, & are a high [illegible] of mud-banks. Islands to the ocean. The Amazon can be at least 20 miles off.

F.S. 8.16 The head of Canumã's Islands don't appear!

8.16 It is the point Jacaré Miles ahead. Mainland bounds much further up than the map shows.

Activity [illegible] along bye - both sides.

8.21 Opp. bay point on L.B. River 1500 ft. (2, 4.45) Boats from R.B. Good pm clay pt. Fine River!

8.23 Opp. clay, [illegible] on L.B. with Palm-grove behind and a bar in front - a long narrow bar, as pm shows.

8.35 Opp. Point on R.B. (about as pm) but the land still bends around to left - Channel long -

We obtain from near this Point on toward L.B. It looks like the course and Ilha Sambaiba ½ mile ahead, to the left - SAMBAIBA is bar and the Point on the main R.B. Sambaiba

The Boat's channel is on between R.B. and the island Sambaiba; but on near the other Channel between the Island and the town of Sambaiba - which is scattered along the L.B.

8.45 Opp. Channel & Island - 40 metres from L.B. Hard clay vertical bank - 2 houses first here - more beyond - Low flat between the trees.

On League 171 - ends 8.45 pm.

8.45 Clay banks continue on L.B. river 150 ft. Clay, new ones with cement mixed in places.

8.53 Opp. second new houses (after a gap, in trees) Mixed Continuous [illegible] than 40 metres along

8.55 Houses SAMBAIBA Mainland. Clay banks in front. Breakfast.

Breakfast - and Waiter in the time of my watch - I have to stop to

9.40 On good mud - on I. 170.

9.43 At upper end of Island a Channel on R.B. Cloud with Sand - no name

9.45 A little Safe - River 2000 ft. wide

We are heading toward L.B. toward Igarapé

2.2.2, 2½ [illegible] 3.3.3½ 4.

Hard scalloped clay banks, partly covered, on L.B.

17 Monday - 9/20 - 10 - I. 170

Igarapé da Onça

9.55 Opp. 1st house - Onça (clay bk.) (about 8 houses in all)

9.57 Opp. principal house - plantain, [illegible] trees - new cement midway in front bank - Flower pot [illegible] a road - have found 3, 3.5 (80 metres) Run 2000 ft or more.

10.02 Opp. another cemented clay bluff on L.B. full of little caves washed by the river. A dilapidated house behind.

This is a very marked cemented clay bluff!

10.03 Igarapé head 2 from here. New clay bluffs occur at intervals for a mile up. Fine Navigation clear river.

10.06 Houses with tiled roofs on L.B. clay bk in front.

There are not as many houses along this last mile as shown on Map.

Opp. a point with 2 kinds of palms

Cemented clay bluff - House White - feathers, [illegible] of this unidentified tribe [illegible] disappointed

10.15 Aorora on L.B.

are formerly seem to be left here - plantain - kind of house - [illegible] under to new quarters at Souzel.

The nicest [illegible] seen [illegible] at L.B. to Pará

The feature - along this portion of the river on the L.B. side - is Cemented clay bluffs at intervals.

10.25 2 large barcas off to the left) near a town

10.25 I. 169. Somewhere about here

10.30 Just here the main banks on both sides Low ground - all around high - Serra Maracanã in the distance, about N.E. 15 to 20 miles away - More conspicuous in front are [illegible] - but not much more distant than they were a league back. (Engines stop at 10.55 / Pm 8 pm)

10.40 Opp. Cajaseira on R.B. 1 mile away We are within 100 metres of L.B. Sand banks

Steering toward Ilha da Jurema - We now aim to run to the left of the Island The old channel was on the right - going up -

10.46 Opp. low pt. of Island da Jurema. 50 metres or so off. as we go up - The island is continuous on our left - the R.B. side - Channel here 1200 yards.

Monday – Nov. 10 – Lecagrie 169.

Ilha da Jurema.

When we get round upper end of the island the VILLA should be in full view.
The church was seen several miles back.
The vegetation on these low flat lands looks very green and abundant.
The inshore come down to the low water line.
There is a splendid Channel above 800 fathoms 4 miles deep. Banks nearly perpendicular. Clay bank on R.B. Side – and much clay in bank on island side over grown with bushes
Island curves (coming) beautifully round to right.
R.B. Coast –

11.00 Island curves to R.B. not.
The reach in it was in Halfield's time excepting that all the lower point of the bar along the island has disappeared – or else it was put too far down in the map.

11.17 Opp. point of island. Where formerly was the Channel is now only a lagoon – and outside of it a new island – and the Channel now is on the R.B. side, where the large bar shown on the map was in Halfield's time.
Clay bank on R.B. side, but it has cut away in places slowly cutting – no bar can stay here in this current Ebb. Channel now 1000 F. deep.

VILLA IN SIGHT

The view is bounded all among by the nearer and in front by high distant Mountains.
Passing a beautiful Channel!

11.24 Whistle for the VILLA – now in Sight

11.30 Opposite head of Ilha da Jurema.
An Immense bar above the island on the L.B. Side. appears to run from the head (or near it) obliquely up to the L.B. Shore, nearly a mile.

Opp.

12.05 Opp. Lower end of VILLA. Extensive clay
12.11 Church –
12.15 Stop – in front of Casa – with Steps.

VILLA DA BARRA DO R. Grande

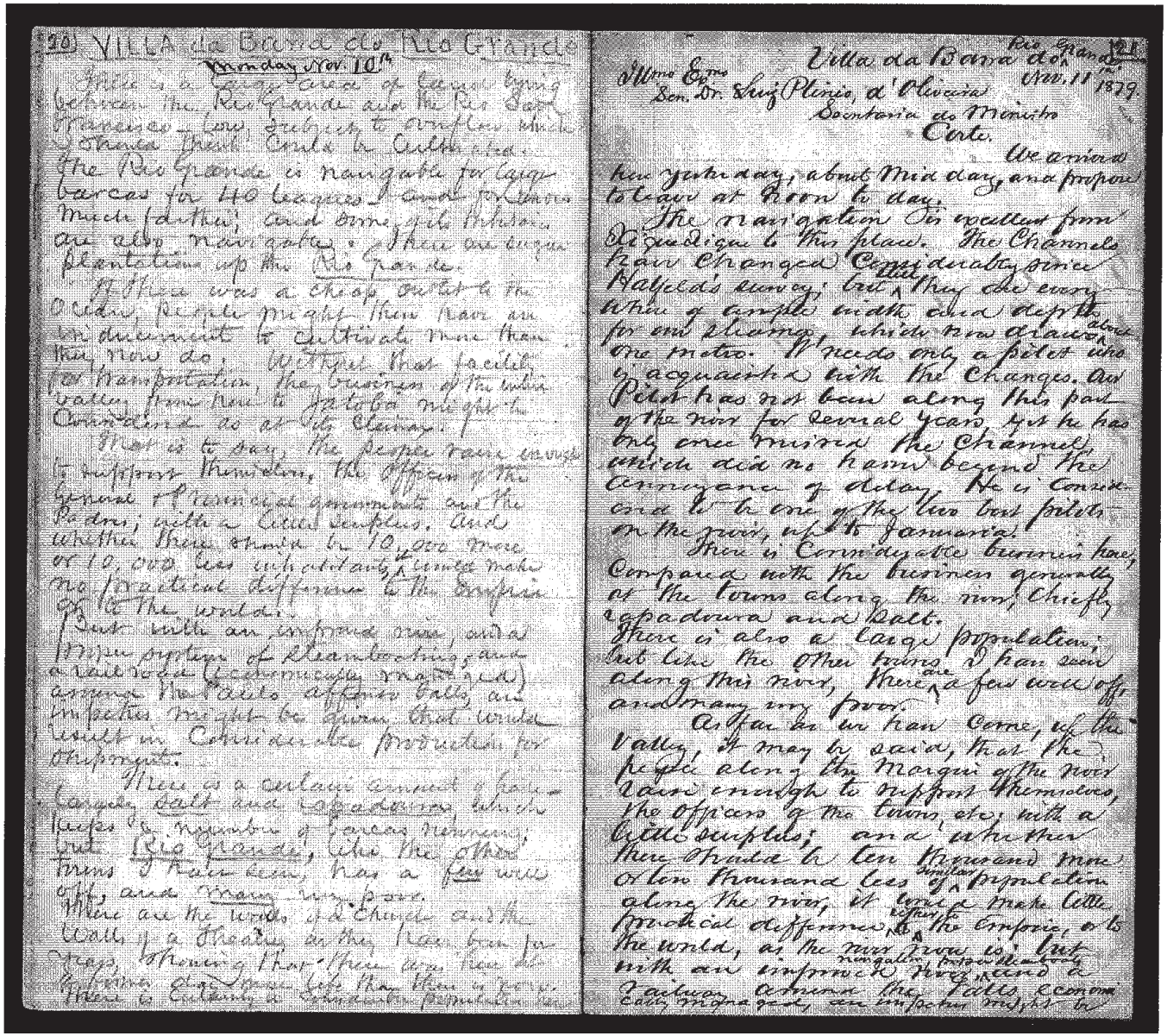
Monday. Nov. 10

Villa da Barra do Rio Grande.

Soon after anchoring, we went on shore. As we landed we met by a very polite little gentleman, who tendered his services to accompany, and show us anywhere. He proved to be the Post Master, and told us that the mail had started yesterday. My letters mailed at Rio Janeiro are all right; but those which must have been 5 days.

This gentleman took us to a store and introduced us; then upon our enquiring for the Juiz, he proffered his services to take us there. On the way Mr Carter discovered that he is Queen! The Juiz, a fine looking very large, portly gentleman, was not here in his house, and upon ascertaining that the valued, the Post Master, truly, the P.M. was a bore. As there were two Churches. One old one and one new one – The new one has all the main walls finished and the roof – and so of Towers for want of money to finish it 5000 dollars – things finished and make a fine Church. It is quite large.

We were then walked through the Villa, and were joined by the Tenente Coronel – who looks like Henry Fathaus – only he is a Cattle Caller. He was very polite and sensible. He took us through the Hospital. There are only a few patients but the stench was sickening in the room where they were, although it has normal open air doors. There is a garden attached with quite a variety of trees, Oranges, Lemons, Figs, Plums, Castor oil tree, &c &c – but it is not kept in any order. We then walked thro the Cemetery of the town which has some good houses, and good looking Small Stone.



20 VILLA da Barra do Rio Grande

Monday Nov 10th

This is a large area of Country lying between the Rio Grande and the Rio San Francisco — Low, subject to overflow which extends South Easterly to Caldeirão.

The Rio Grande is navigable for Cargo Barcas for 140 leagues I am told for Canoes much further; and some of its tributaries are also navigable. There are Sugar plantations up the Rio Grande.

If there was a Cheap Outlet to the Ocean, People might there have an inducement to cultivate more than they now do, without that facility for transportation, the Cotton of the whole valley from here to Joazeiro might be Cultivated as at the Clarendon.

That is to say, the People raise enough to support themselves, the Officers of the General & Provincial Governments and the Padres, with a Limited surplus. And whether there should be 10,000 more or 10,000 less inhabitants would make no Practical difference to the Empire of the world.

Just with an improved Road, and a Steam Propeller of Steamboating, and a Railroad (Economically made & laid) around the Falls at Paulo Affonso, and perhaps Navigation might be given that would result in Considerable Production for Exportation.

There is a certain Amount of Cargoes, Salt and Rapaduras, which leaves the Neighborhood of Barcas descending the Rio Grande, like the Ohio from Pittsburg, but a few miles off, and many more.

Where are the Herds of Cheyenne and the Wall of a Thousand Miles from Texas to Kansas, Wyoming & Montana, like the Prairies of Illinois & Indiana, Etc. Etc. There is certainly a Considerable population in

Villa da Barra do Rio Grande
Nov. 11 1879.

Mm. Exmo
Sen. Dr. Luiz Plinio, d'Oliveira
Secretario do Ministro
Corte.

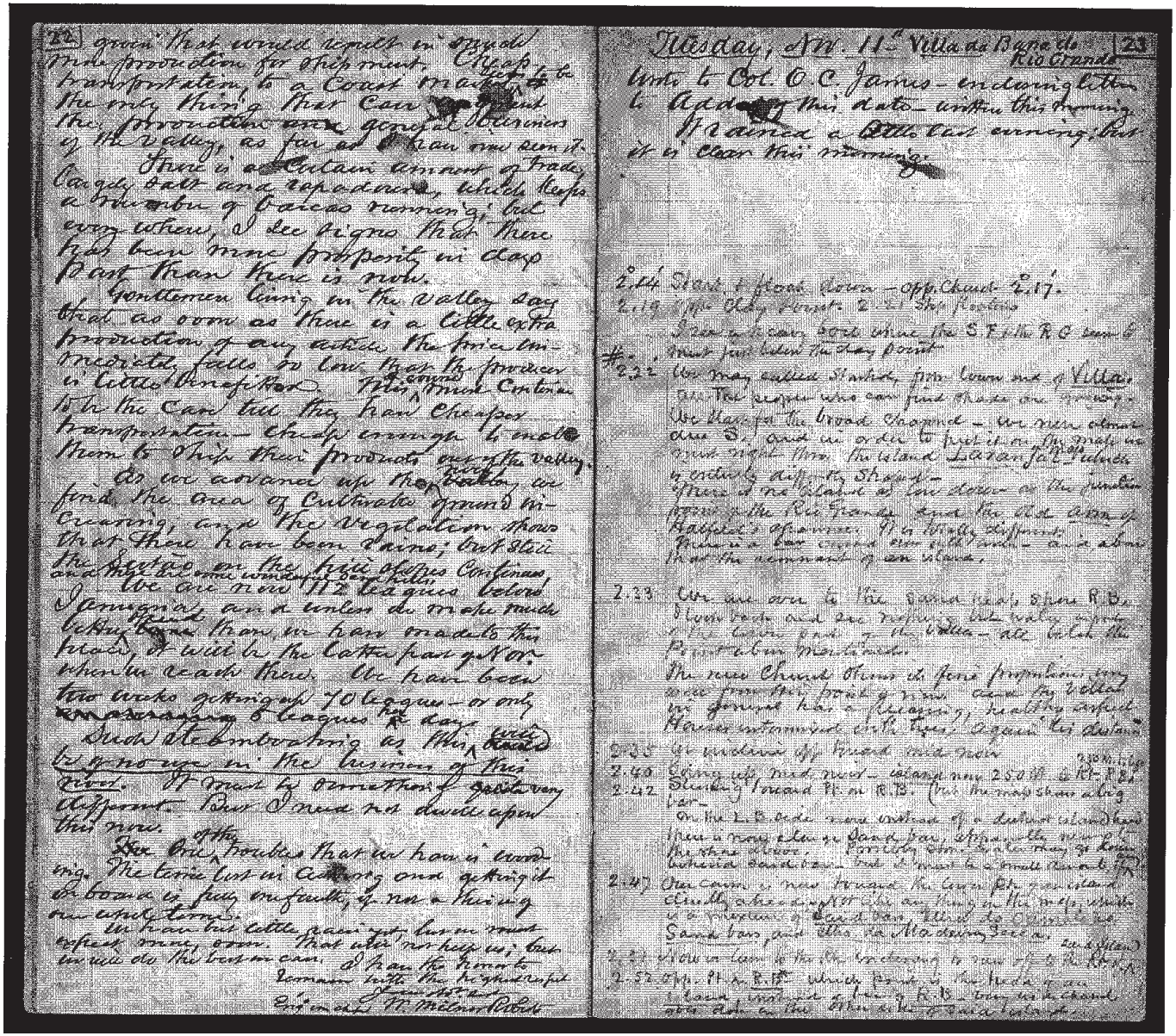
We arrived here yesterday, about Mid day, and propose to leave at Noon to day.

The navigation is excellent from Riachão to this place. The Channels have changed Considerably since Baylet's survey, but they do every where afford ample width and depth for one steamer, which now draws above one metre. It needs only a Pilot who is acquainted with the Changes. Our Pilot has not been along this part of the river for several years, yet he has only once missed the Channel, which did no harm beyond the Conveyance of delay. He is Considered to be one of the Very best pilots on the river, next to Januaria.

There is Considerable business here, Compared with the business generally of the towns along the river, Chiefly Rapaduras and Salt.

There is also a large population, but like the other towns I have seen along this river, there are few well off and many very poor.

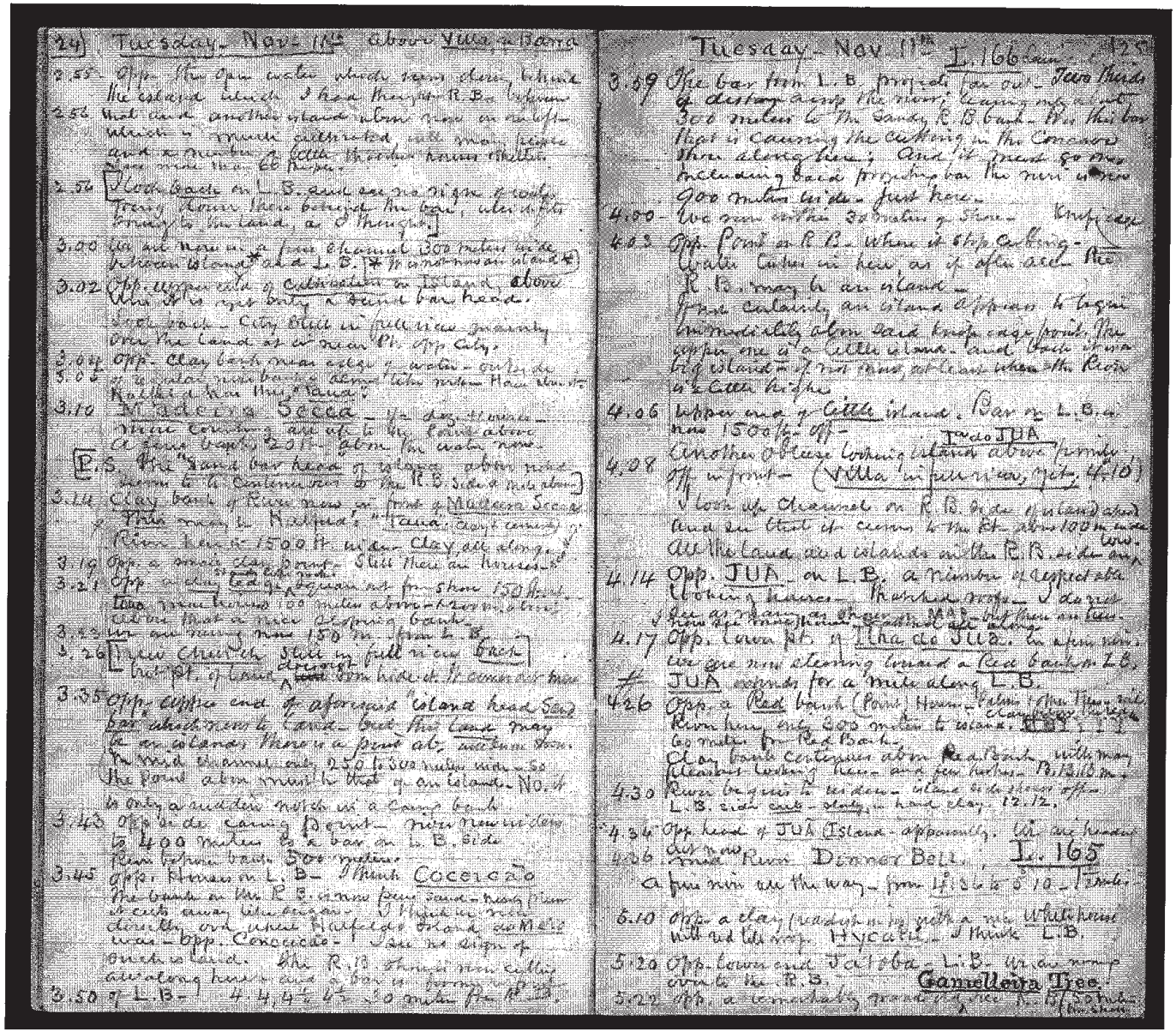
As far as we have come, up the valley, it may be said, that the people along the Margin of the river have enough to support themselves, the Officers of the towns etc, with a little surplus, and whether there should be Ten Thousand more or less of a population similar to the present, would make little practical difference to the Empire, or to the world, as the case now is. But with an improved Navigation around the Falls, economical Railway, and an Exchange, an increase might be



Tuesday, Nov. 11th Villa da Bagre to Rio Grande 23

Wrote to Col. O.C. James – enclosing letter to Capt [illegible] this date – written this morning. Weather a little cool morning, but it is clear this morning.

2.44 Start & stand down – Opp. Church 2.17.
2.19 Mr Clay's Point 2 to the Eastern
Can on S.E. side near the S.E. of the R.C. town & about just below the Clay Point
2.32 Low may called Starbuck, from brown end of Village. The regular nine can find marks on previous
We pass the broad channel – our nine colours
Dues D, and in order to put it on the Map we
count right from the island Lavan to Islands
& entering by diff. to Starboard
There is no Island at low water on the junction
from of the Rio Grande, and the N.E. arm of
Hassler's Arm. It is totally different
There is a bar crossed one side and
in the remnant of an island.
2.33 We are on to the Barra Seca, Stern R.B.
Shown both and are replaced the valley entrance
of the lower part of the Villa – all below the
Point is low marshy
The new Channel shows it some improvement from
as see from this point, a new cane for Villa
in general has a tendency of the valley arm of
Hassler entrance on the Texas, Opposite Big Island
2.38 Go inside of broad river near 230 Mississippi
2.40 Going up Rio Grande – island now 250 ft. to R.B.
2.42 Steering round Pt on R.B. (This may show a big bar –
On the L.B. side more inland of a distant island head
There is now also on Low Bar, Especially when
Entering Channel, Bar Dry, Sandy Shoal to Starboard
Entrance Sand Bank and [illegible] a small Reach to Port
2.48 One Cane is now round the Low Pt. on island
Closely observing NOT to go anything on this to go inside
of the Mangrove of Low Bar. Will be Careful to
Sand bar and also to Mid steering Course.
2.51 Will be Low to the Eastward to round off the Pt. A
2.52 Opp. Pt on R.B. which point is the head of an
island and Pt on R.B. Entrance to Channel
Pole on the Other side of Pt.



24 Tuesday - Nov 11th above Villa, a Barra

2.55 Opp. Slow Open water which runs close behind the island which I take through R.B. between

2.58 that and another island about 200 m on my left which is much cultivated with many huts and a number of tall thin trees known as Coco nuts. 60 Paces.

2.58 Both banks on L.B. and are no signs of cultivation. Trees close behind the bank, also dotted through the land, as I thought.

3.00 We are now in a fine Channel 300 metres wide between Island and L.B. & mainland on right

3.02 Opp. upper side of Cultivation on Island above Villa & is right bank & second bar head.

Both banks - Clay Bluff in full view generally over the land as far as I can see. Opp. Clay.

3.04 Opp. Clay bank near edge of water - quality do

3.05 of Island same banks & about 15 metres Hard clay.

Rolling & Non Undulating Barra.

3.10 Middle of Secca - 1/2 day. Island - River continuing as up to the Point above

Secca Bank 2.5 ft. Clay for main part.

P.S. The Sand bar head of island above mine seems to be continuation of the R.B. Side & runs along

3.14 Clay bank of River now in front of Mulleca Secca

& This runs to Rolling Barra, Campo country

River here 1500 ft wide - Clay all along

3.19 Opp. a small Clay Point - Still Flat Barra

3.21 Opp. on Island 2nd Point Square cut from shore 150 Paces

Land rising 100 metres about 200 metres above

3.25 Now are rising now 150 m from L.B.

3.26 New Church Still in full view Bank

Bar Point of Island from side of Island as before

3.35 Opp. Upper end of aforesaid Island Sand Bar which now is Land - But this Land may be an Island. There is a Point about 200 metres from

the Mid Channel and 250 to 300 metres wide - So the Pond above mine is that of an Island - No. 4 is only a wooden notch in a Camp bank.

3.43 Opp. of the Caving Point - Here now we close to 400 metres to a bar on L.B. side

River before both 300 metres

3.45 Opp. Houses on L.B. - Church Cocerção

The bank on the R.B. is now four feet - many trees & cuts away like cliffs - I think in rock

distantly and white Bluffs of Island as Mello

was - Opp. Cocoanuts - I can see sign of

Ouro Island. The R.B. shows now rolling

all along here & a bar of sand

3.50 of L.B. - 4.4 4 1/2 - 30 metres Pt

Tuesday - Nov 11th I. 166 125

3.59 The bar from L.B. projects far out - Two Thirds of distance across the river, keeping near it - 300 metres to the Sandy R.B. bank - But this bar that is causing the Caving in the Concavo

Shore along here; And it must go on

increasing hard projecting bar the river is now

900 metres wide - just here -

4.00 - We now within 30 Brahas of Shore - Ouro Cego

4.03 Opp. Point on R.B. where it stops Caving - Water Calm in here, as it often does - The

R.B. may be an Island -

Some Cultivation, an Island appears to begin

but more likely about land keeps edge point. The

upper one is a little Island - and back is now

of Island - of not mine, at least when the River

is 2 Cables higher

4.06 Upper end of Little Island. Bar on L.B. a

mile 1500 ft off - Ilha de JUA

Another Village looking Island above formerly

4.08 Off in front - Villa in full view, Opp. 4.10

Look up Channel on R.B. side of Island and

land on that it seems to be Ilha above 100 m wide

All the land and Islands on the R.B. side are low.

4.14 Opp. JUA - on L.B. a number of respectable

looking houses - Thatched roofs - I descried

a few as many as three or four Mud - but then are tiles.

4.17 Opp. Lower Pt. of Ilha de JUA. In shoal water

we are now steering round a Red bank on L.B.

JUA extends for a mile along L.B.

4.26 Opp. a Red bank (Point) Houses - Palms - Mud Village

River here only 300 metres to island. Clay

150 metres from Red Bank.

Clay bank continues above Red Bank with many

Cleanings looking houses and few Palms - Pt. 2.10 m.

4.30 River begins to widen - Island to the Starboard off

L.B. side end - Shelly - hard clay. 12.12.

4.36 Opp. head of JUA Island - apparently. We are headed

4.36 into new River Dinner Bell. I. 165

A few now on the way - from 1h 36 to 5.10 - Trees

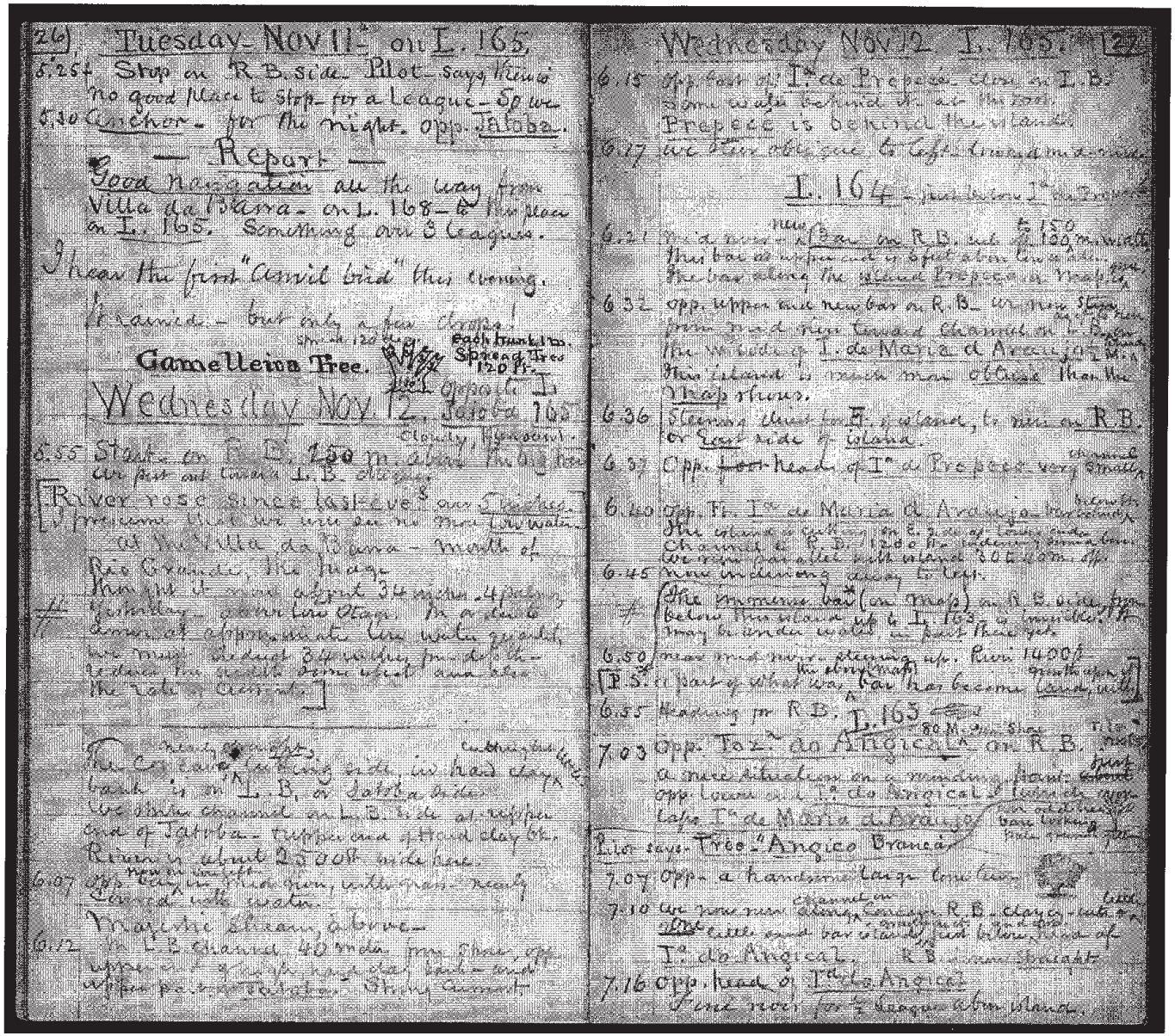
6.10 Opp. a clay Headland with a new White house

with red tiles on. Hyacath - I think L.B.

5.20 Opp. Lower end Jacoba - L.B. We are now

close to the R.B. Gameleira Tree.

5.22 Opp. a considerably broad Pt. Nice Pt. 15.50 Metres



26. Tuesday Nov 11th on I. 165.

5.25 Stop on R.B. side. Pilot says there is no good place to stop for a League - So we
5.30 Anchor for the night. opp. Tabôa.

— Report —

Good Navigation all the way from Villa da Barra - on I. 168 - to this place on I. 165. Something over 8 Leagues.

I saw the first "Carnaúba" this evening. It is common - but only a few clumps!

Gamelleira Tree. Each trunk 1 to 2 ft. Spread of Tree 120 Ft.

Wednesday Nov 12. Tabôa I. 165.

Cloudy, Hazy weather.

5.55 Start on R.B. 150 m. above the big Isle on first and lowest I. B. steering

[River rose since last evening 5 or 6 feet. It presumes that we are on the Main Low Water of the Villa da Barra - mouth of Rio Grande, the Rio Sao Francisco. Thermometer at sunrise 74 inches. 4 fathoms of cable. Yesterday - a warm low day. In a dense fog at sunrise. Water 2 fathoms. Fog cleared off about 8 A.M. and the day proved to be a fine one. Sunset 6.30 P.M. The Rate of Current 2 miles.]

6.07 Opp's Point on left bank, with grass - nearly covered with water.

Majestic Stream, 4 to 5 miles wide.

6.12 On L.B. Channel 40 miles from shore. Opp. upper end of Island on left bank - Tabôa on R.B. Point Rocks. Strong Current.

6.15 Opp. East end of I.a da Pregaça - close on L.B. Some water behind it - at the rear. Pregaça is densely timbered Island.

6.17 We steer obliquely to Left - Channel narrows.

I. 164 - Just below I.a da Pregaça

6.21 Mid river - a Bar on R.B. end of I. 150 m. wide. This bar as usual is spit about two miles. The bar along the Island Pregaça is Muddy.

6.32 Opp. Upper end new bar on R.B. We now steer from mid river Channel on to Bar. The Middle of I. da Maria d'Araujo on L.B. This Island is much more obtuse than the Map shows.

6.36 Steering West for E. point, to run on R.B. or East side of Island.

6.37 Opp. Low head of I.a da Pregaça very small.

6.40 Opp. E. I.a da Maria d'Araujo - Mid channel. The Island a Gallery Forest. On E. side of Island, under Channel is R.B. 1200 ft. Indented, small bays. We run parallel with Island 300 to 400 m. off.

6.45 Now inclining away to Left.

One moments bar (or rock) on R.B. side from below this Island up to I. 163 - invisible. It may be under water - but there yet.

6.50 more mid river steering up. River 1400 ft. wide.

[P.S. A part of what was Bar has become Land, with Trees.]

6.55 Heading for R.B. I. 165 - 80 M. off shore. This is a mere detail on a rambling Island. Opp. Lower end of I.a do Angical. Island ends here. Lofty I.a de Maria d'Araujo on left bank.

Pilot says - Tree - "Angico Branco"

7.07 Opp. a handsome large Lone Tree.

7.10 We now run along Concave R.B. shore - Island on left. Channel on R.B. close to shore. Deep water. Island of I.a do Angical. R.B. shore shoals.

7.16 Opp. Head of I.a do Angical

Three rocks for a League off Island.

Wed. Nov. 12. I. 163. Angical

7.19 Rivs. widens grad[y] away fr. R.B. towds. mid-R. Fine River ahead!

7.23 Opp. Angical — 150 M. from R.B. Calm.

7.30 Mid-R. Steering for L.B. Riv. 2000ft. wide clear.

7.40 Opp. Island nine hours, White tilings fr. R.B. Tapera

We are 250 Myles from L.D. rocky cliffs just here begin Robinson Island R.B. Tapera.

Tapera.

The river makes a heavy Concave to the East about here — We now nearly parallel with R.B. 200 mts. out, about three a Large bar is on MAP. Bar not visible, a corner bar on mid R. & the R.B.

I. 162.

7.50 We are requiring closely now within bar is a MAP.

7.53 opp. Mata Fome — in the bend, R.B. 100 M off

Grand Serras, 2 leagues on are Pt. fr Serra da Boa Ordem or Itacuticara.

7.57 appearance pts. at — not an island but appears Shown on Chart 1/2 mile above — again it appears R.B. back water pts. and above it. The main reach Main is a fine reach of water. The river is very fine, but the river is Reaching the land is only 2 to 5 ft. above present water Beach Early Record

8.05 We are away from R.B. Steering for Pt on L.B. Bears on R.B. side as on Map. Lofty Mountains. As we approach the said Point the main reach

8.25 Opp. what I called the Point. 150 M out to Hands on Concave beyond about Point.

8.30 Riv. 1500 ft. — not as wide as entrance. The L.B. rising low — woody and Cultivation.

8.34 Island L. 1600 ft. wide — all clear.

8.37 mid R. — I. 161. Riv. 2000 ft. wide. Beautiful River!

No bars appear on L.B. Blue Shown on Map. Opposite Itacuticara a bar shows at the Point on R.B. side — opp.

8.46 Opp. Itacuticara on L.B. Point on R.B. Some houses also on R.B. about Point.

8.53 Opp. Town and Ilha da Itacuticara on L.B. Pass here island 2000 ft. to town on the L.B. side of Island. 1000 ft. wide at East.

8.56 Hamlet on L.B. Ilha da Itacuticara. Main part 50 miles from L.B. Shore — 80 m. mile from

8.58 Opp. hard clay point at each end of island. Above Hamlet, Island 4 miles long. Good channel here. 600 ft

9.07 Opp. Point on R.B.

9.13 Opp. Riacho da Itacuticara. a bar shows above this on L.B. BREAKER & Trail 500 ft

9.30 Opp. up. end Bar on L.B. I. 160

9.31 Opp. up. end I. da Itacuticara R.B. side No cultivation along L.B. Indians hunting, [Can pass Iranduy, Lights, Pilot drifts to day]

on I. 160

9.40 River 1600 ft. wide. to mid Reach 770 ft. from L.B. making Two Pts — Serra Peixes ahead, mid R.B.

They appear to be a mile or more apart and (Current) the left appears considerable more distant. I heard they are not in the Maps.

9.45 Heading for R.B. Side.

We are now about Opp. the Ends of the Chain of Mountains Itacuticara

Their Ilha, at least 1000 feet ab. Range partly rocky — partly covered with Small trees. Trees are now Excessively green. The hills & the high points are Standing — not changed

9.50 The bars on Map — and their Situation — are Correct

9.56 Heading for L.B. Shore but about two miles off

10.10 Opp. Point on R.B. 100 M. to left.

10.13 Opp. Hamlet — about Point on R.B.

10.14 Opp. tail of Ilha I (H.W.I) Canal to on L.B. Side We now parallel with R.B. 10.15 — Islands away. Fine — Beautiful River ahead — 1/2 league!

10.18 — about I. 159.

10.40 Approaching L.B. side a Small bar just above here on L.B. a Sandy point

10.41 within 25 miles of L.B. Left (W) Ilha de Assilla — one small bar also on Mafalda's Chart

Wedn. Nov. 12. I. 159. I.ª da Rocha.

10.43 within 40 metres of L. B. Sandy bank – Cutting only a short dist. below Pt of island. 2½ B. mid

10.46 Opp. Lower end of I.ª da Picada. ½ B. mid

10.50 Mid R. 1000ft – Clear for smoke chart, apparently. Shores white cutting grass. woods. ob L. B.

11.01 Opp – mostly open shores (rather hilly) on L. B. side. A point (the last of a branch) each bar – blot Comes in the spring growth. About ¼ a mile. It projects out as a plain sand bar 1/8 way across now.

11.10 Low down at the island – opp the projecting sand bar. Rem named R 500 ft – ext. an island – with deep Channel.

11.15 I. 158. about.

11.29 Opp. here Island Crosses to Right. L. B. woods. (Clay & Cut) We began to head away from and L. B. shore

11.22 for our mooring place. Riv 1500 ft here.

11.29 Opp. Mouth. of upper end I. da Picada And Lower end of I. do Timbó' I.ª das Sebastiões behind do Timbó I.

11.30 We are near L. B. (sandy) holding up on a short dist below Timbó.

We stop here to cut and load Wood

3 large loaded barcas from down 6m after we stop – from Salgado.

I. 158

Thursday Nov 13. at Timbó

On Left Bank about a league below Torrinha – do Commandador Ant.º Mariani

We have now about 5000 Pichira (good)

The river has been rising steadily all the time. Raised about 5 inches by 6.ª morn of the 12th and morning of the 14th and about 3 inches more by the evening of 13th

Friday – Nov. 14 – Timbó I. 158 (Boriohoum)

Our starting is delayed this morning by bad management of the engineer. My impression is that he started the fire in pretty good time, and then let it go out.

There seems to be some new trouble of delay – nearly every day. Pacciencia.

Top-bank about 18 ft – above present water.

3½ hours Lost – by absence of Piranhas!

(Clay & sand bank) (Mapd)

9.20 Start From Lower end of Timbó (Sarrapia)

One river current is about 1½ M. a hour, now

9.25 Rivn to I.ª do Timbó. 1000 ft. upper end Timbó

9.35 Opp. Upper end of I. da Pacada – Rem an Open 400 ft wide through which river – leaving the I.ª do Timbó on Rt.

Mid Open is shown too low down in map by 1/2 a mile or ¾ mile.

9.42 Just through a sand Opening – with the main river – no Island now on the other side as shown on map.

9.53 Opp. upper end of Ilha do Timbó – as it is now – I. 157 – about here –

9.57 Opp. Lower end small island to Left (on map) we are Acquiring our Friend Torrinha (Sm. map)

The Fazenda of Commendador Ant.º Mariani an entering landing place.

10.00 Opp. upper end of Sara Small island on Rt.

I. 157.

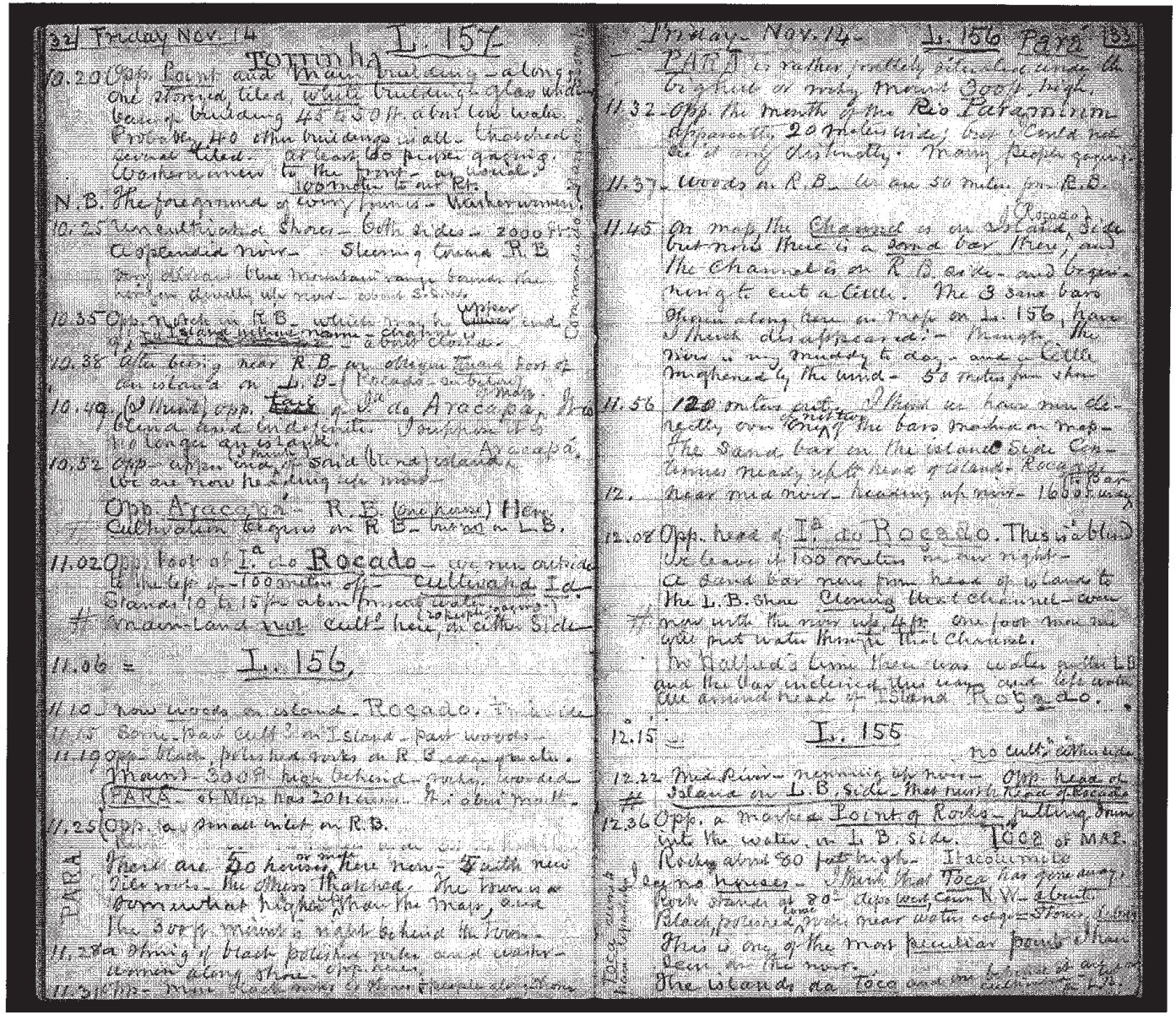
This is a very Marked point – a rocky Creek bone mid gr. L. just behind the Fazenda Buildings. Upon down the river – it [illegible] descends some big Rapids very and again rises to the height of 800 ft

It looks like Ilha Bluenda.

The Southern and Eastern and Western Boundary of the Island is about the flood range – the two both are Agreed.

On the map, Mathias giving merely the name of the place, and two faint knees, shaggy hills.

P.S. Q. Grande Fault on Mathias's Map of Showing Separation with Yamundá and Trombetas Channels



Friday Nov. 14 I. 157

Tortuga

10.20 Opp. Point and Main Island – along it one Hamid, tiled, with buildings – close white beach of building 45 to 50 ft. above low water. Probably 40 other buildings in all. Thatched several tiled. At least 60 people gazing. Women amongst to the front on beach.

N.B. The foregrounds of many pictures – Native women.

100 metres East Pt.

10.25 Uncultivated Shores – both sides – 2000 ft. Cooperdale Navr – Steering Course R.B.

Very distant One mountain range beyond the rest on Equally the most – round S. Shore.

10.35 Opp. Notch on R.B. which may be Channel and Island without name – Engineer's Island – about 2 miles long.

10.38 Islet being near R.B. on obscure Point East of Island on L.B. – Rocado – on bearing.

10.49 (2) Hamid, opp. East p. of I.a do Aracapá, Island and Uncultivated. Footprints of Native no longer any to bark.

10.52 Opp – upon land of said (Island) Island Aracapá, We are now heading up mid –

Opp. Aracapá – R.B. (one point) Here Cultivation begins on R.B. but not on L.B.

11.02 Opp. foot of I.a do Rocado – we now anchored in the Opp. p. – 100 metres off – cultivated I.d. Stands 10 to 15 ft. above mean water spring. Mainland not Cult.d here, as either Side –

11.06 = I. 156.

11.10 – Now woods on Island – Rocado. Thick

11.15 Some Part Cult.d on Island – Part woods –

11.19 Opp – Black polished rocks on R.B. edge of water. Hamid – 300 ft. high behind – Rocky, forested – PARA – at Mouth has 20 ft. – 4 ft. about mouth –

11.25 Opp. to small inlet on R.B.

PARA There are 50 houses or more here now – South new Side more – the Whole Thatched. The Town is a prominent object when the Map, and The 300 ft. Hamid is right behind the Town –

11.28 Opp. Bluff of black polished rocks and coarse – women along Shore – opposite

11.31 1/2 – More Rocky rocks on R.B. Opposite side of Toca Island

Friday – Nov. 14 – I. 156 Page 153

PARA is rather prettily sited, and rises in irregular or rocky Mount 300 ft. high.

11.32 – Opp. the mouth of the Rio Tatajuba. Apparently 20 Miles wide; but Coast not seen distinctly. Many people gazing.

11.37 – Woods on R.B. – As one 50 miles on R.B.

11.45 On map the Channel is on Island Side but not Rocado is a sand bar there, and the Channel is on R.B. Side – and beginning to cut a Cutt. The 3 sand bars shown along here on map on I. 156, have all there disappeared – Mangrove. The Water is very muddy to day – and a Cutt. Implemented by the wind – 50 metres from shore

11.56 120 metres outside Island we have now decidedly over Engd's the bars marked on map – The Sand bar on the Island Side Continues nearly right Bank of Island – Rocado –

12. Near mid river – heading up river – 1600 ft. away

12.08 Opp. head of I.a do Rocado. This is doubled We leave it 100 metres on our right – A sand bar runs from head of Island to the L.B. Shore Closing West Channel – even now with the river only 4 ft. on foot now we get out water through that Channel.

In Hadfield's time there was 2 fathoms in the LB and the bar enclosed this way and left only an Island head of Island Rocado.

12.15 I. 155

no cult.d Plantations

12.22 Mid River – running up river – Opp. head of Island on L.B. Side – Most north Point of Rocado

12.36 Opp. a marked Point of Rocks – jutting from out the water on L.B. Side. TOCA of MAP. Rocky about 80 feet high – Inaccessible

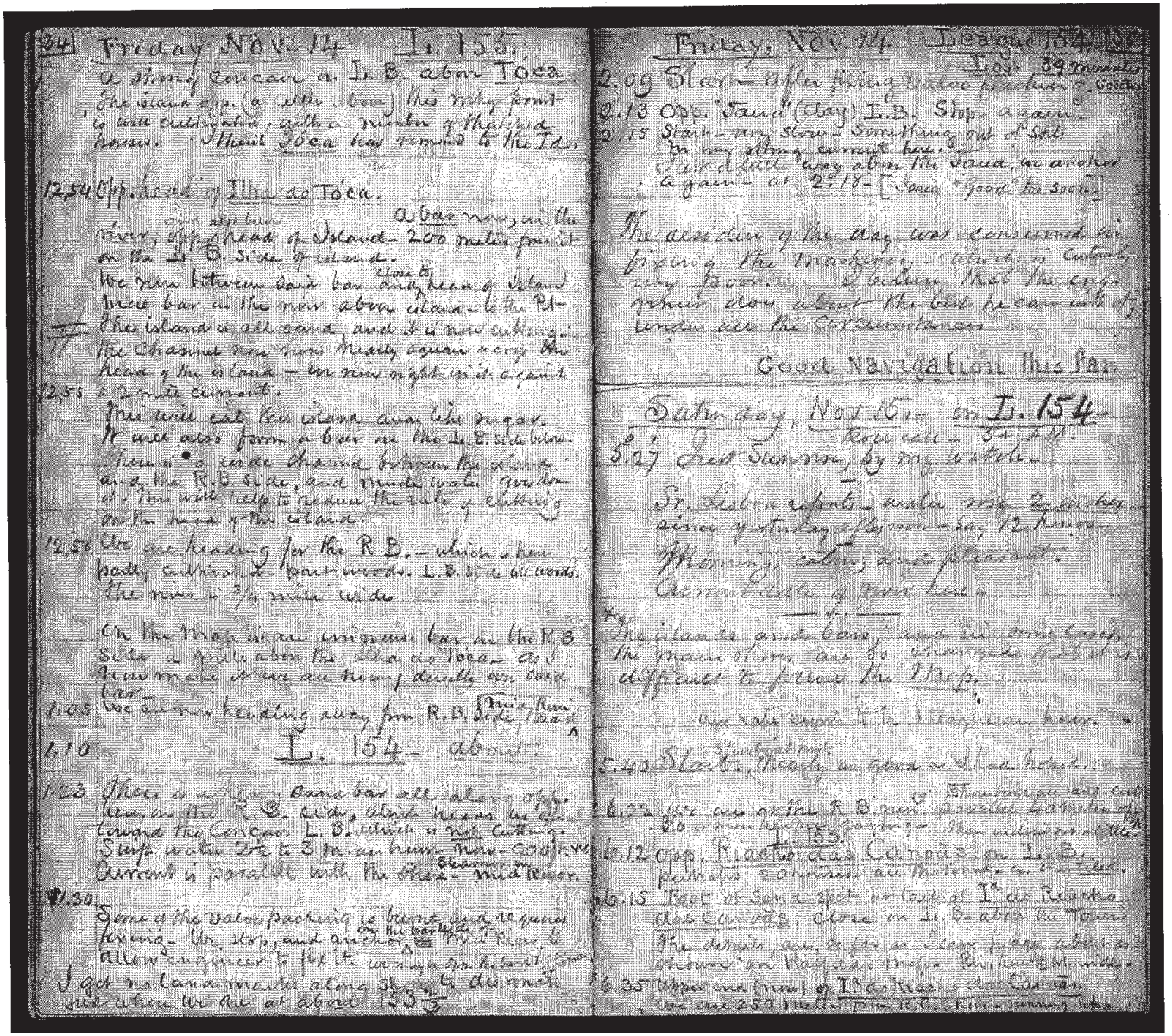
Log no Name – Mark that Toca has gone away

North Shores at 80 – dips West, Coun N.W. – 4 knots

Black polished Rocks near water edge – Stones – Sand

This is one of the most peculiar Islands I have seen on the river.

The Islands da Toca and [illegible]



Friday Nov. 14 L. 155.

A Steep Cascade on L.B. above Toca

The island opp. (a little above) this may form a safe anchorage, with a number of Channels Canoes. Small Toca has ground to the Ida.

12.54 Opp. head of Ilha do Toca.

a bar now in the middle of river, off head of Island - 200 metres from the L.B. side of island.

We now between same bar and head of Island have a bar in the new above alone - to the R.B. This island is all sand and it is now submerged. The Channel now runs nearly across the river by the head of the island - we now right in it against a 2 mile current.

12.55 You will cut the island near the sugar. It will also form a bar on the L.B. side below. There is a large Channel between the island and the R.B. side, and much water, you can see. You will help to reduce the rate of climbing on the head of the island.

12.57 We are heading for the R.B. - which is here partly submerged for 4 metres. L.B. is all woods. The river is 3/4 mile wide

On the map is an immense bar on the R.B. side a mile above the Ilha do Toca - as I now make it we are nearly beside the bar.

1.05 We are now heading away from R.B. side, Ilha Rasa

1.10 L. 154 - about.

1.23 There is a large sand bar all along off the R.B. side, about half way to the island the Canoes L.B. which is now cutting. Steer in the 2 to 3 fm. as here - now - 500 metres. Current is parallel with the Shore - Mid River.

1.30 Some of the Valor packing is burnt and we guess Fevereiro - Un. stop, and anchor in the middle of Mid River to allow engineer to fix it - we are now 200 R. to L.

I get no land marks along shore by compass just above we are at about 153 3/4

Friday. Nov. 14. Became L. 154. Lost 39 minutes

2.09 Start - after fixing valve for 1 hour 7 Coasts

2.13 Opp. "Sand" (Bay) L.B. Ship a gain

2.15 Start - very slow - Something out of Sorts In very strong current here.

Put a little away above the Sand, we anchor again - at 2.18 - [Seem "Good" for Soon]

The direction of the day was consumed in fixing the Manifesto - which is Enclosed - very Secret. I believe that the engineer slept about the last part of the time - the Captain was the Circumstances

Coast Navigation this far

Saturday, Nov 15 - on L. 154 -

Roll call - 5 1/4 A.M.

5.27 Left Starting, by my watch -

St. Lebrina rapids - under way 2 1/2 hrs. Arrive yesterday afternoon - 5 1/2 hours -

Morning - calm, and pleasant.

Current a little up every Line -

The islands and bars and the same Course, the main items are so unimportant & not of a difficult to follow the Maps.

One rate shown in the Map, I am keeping

5.40 Start, Nearly in open or Mid channel

6.02 Rocks on the R.B. side. Distance 2 Miles

L. 155

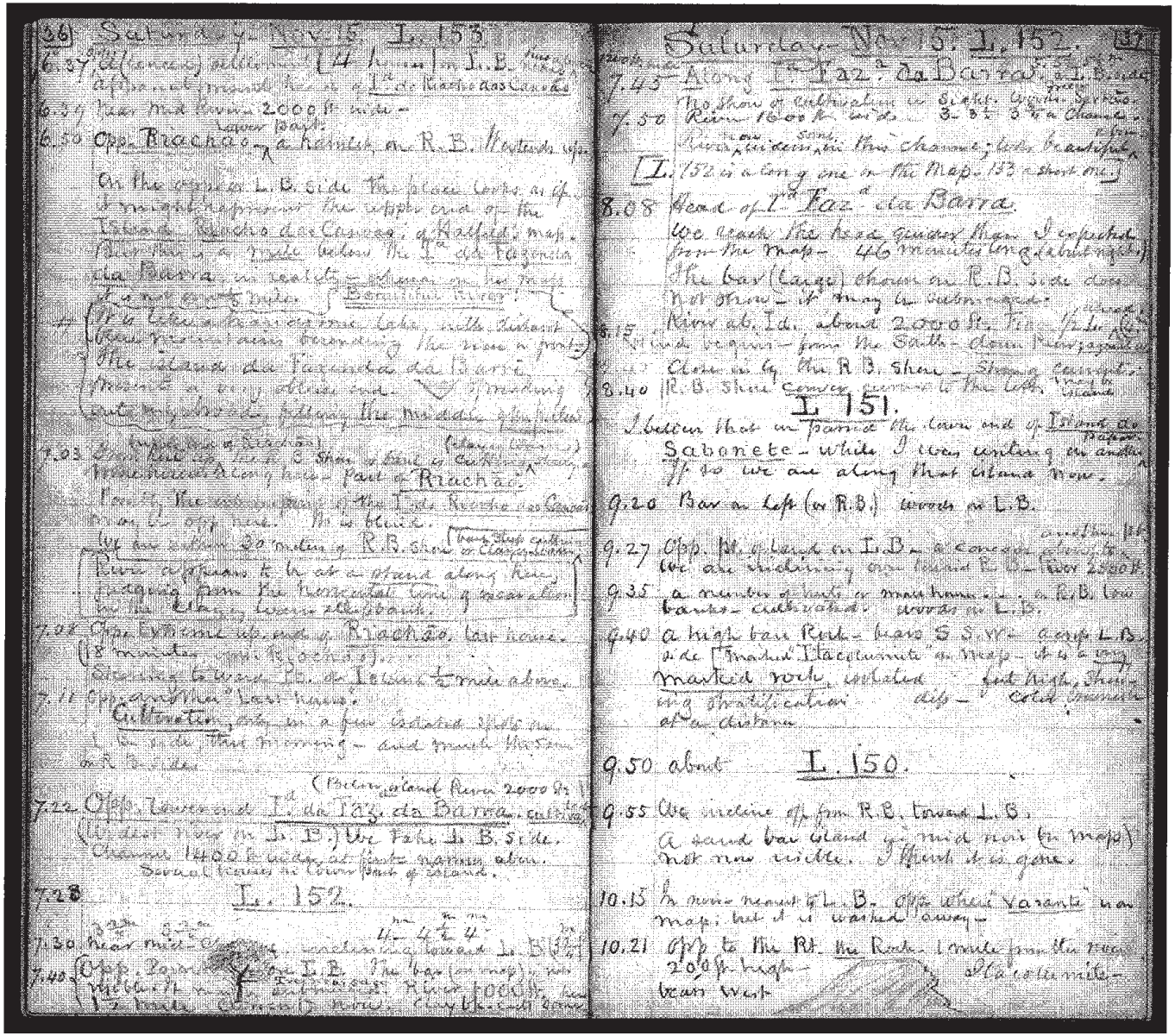
6.12 Opp. Rocks Cascades on L.B. Pedrados Channels on both sides.

6.15 Foot of Small spot at top of Ilha das Rasinha das Cascadas. Close on L.B. above the Tower

The Islands now begin to be large, and the Channels are Muddled - Pencil Mine

6.35 Upper end (now) of Ilha Rasa - above Cascadas

Now use 252 metres from R.B. - Mid-stream



Saturday Nov 15. L. 153.

6.27 A (canoe) paddling [4 h...] in L.B. [Navy] approaching mouth here of 1st de Riacho dos Cavalos

6.39 Near Mid Channel 2000 ft wide.

6.50 Opp. Riachão - a Rainish on R.B. Mostly open [Lower part]

On the open L.B. side the Island looks as if it might represent the upper end of the Island Rancho dos Cavacos of Rolfe's map. After this is a mile below the 1st de Fazenda da Barra on reaching which on the map [Barra Grande Inlet] [Boa Vista River]

[The Island dos Cavacos, one time Lake, with Tributary Creek now and main Branching. The river in front.]

[The Island da Fazenda da Barra. Mouth of a very obtuse end. Of reaching Coast Ship channel following the middle of the Island]

7.03 Point [Entering a Reach] (Island...) Shoal [Sand] Bank [Shoal] Mouth of Creek Along here - Part of Riachão.

[Low Flat covered at High Tide Riverine Coast on the opposite side. Mangrove.]

We are abreast 20 miles off R.B. shore [Navy Shoal ending]

[River appears to be at an end along here, judging from the horizontal line of mangroves on the distant Island ahead.]

7.08 Opp. Extreme upper end of Riachão. Last house. (18 minutes coming & passing). Steering to ward Pt. de Ieuara ½ mile ahead.

7.11 Opp. another Last house. Cultivation, only in a few isolated Huts on the Island this morning - and much Mangrove on R. side.

(Barra Grande River 2000 ft)

7.22 Opp. Town and I.d. da Faz. da Barra. [Navy] (Church now on I. P.) We take L.B. side. Channel 1400 ft wide, at first narrow, abou. Several houses in Town part of Island.

7.28 L. 152.

7.30 Near mid-Channel, reaching towards L.B.

7.40 Opp. Point on L.B. The bar (on map) is not [Entrance] River 1000 ft wide Mile & ½ from Town (Island) now. Only the end some

Saturday Nov 15. L. 152.

7.43 Along the Faz.da Barra on L.B. [Navy]

7.50 No show of cultivation on Right. Gently Sloping Rain. 16 or 18 ft wide 3 to 3½ to 3½ to 4 Fathoms.

River [Sand] on the Channel side. Looks beautiful [from]

[I. 152 is a long one in the Map. 153 a short one.]

8.08 Head of 1st Faz.da da Barra.

We reach the head Quarter Mark I expected from the map - 46 minutes long & direct night.

The bar (large) shown on R.B. side does not show - it may be submerged.

River ab. 1d. about 2000 ft. Fine [from] L.B. [Navy]

8.15 Land begun - from the South - down River, opposite Shore on L.B. shew - Strong Current.

8.40 R.B. shew Corner [Navy] [Point] to the left. [Mouth] [Island]

L 151.

Lbetween that we [pass] the Low end of Island da [Paper] Sabonete - while I was writing on and off so we are along that Island now.

9.20 Bar on Left (or R.B.) covers at L.B.

9.27 Opp. Bk. of Land on L.B. - a Concave [Low] [Land] We are inclining over towards R.B. [Navy 2000 ft]

9.35 a number of Huts or mat houses - on R.B. (no Banks - cultivated) covers on L.B.

9.40 A high bare Rock - bears S.S.W. - a cop L.B. side [Madre Ilacquinha on map - it is a long] marked rock isolated - but high, showing Stratification diff - & cold [Granite] at a distance.

9.50 about L. 150.

9.55 We incline off from R.B. towards L.B.

A sand bar aland (a mid river (on map) not now visible. I think it is gone.

10.15 A mere mound on L.B. Opp. where "Varante" on map, but it is washed away -

10.21 Opp. to the Rt. the Rocks 1 mile from the river 20 ft high - [Low] [Land] [Mouth] ½ a mile - beam West

(38) Saturday – Nov 15. L. 150.–

10.35 Opp. Lower end Ia das Carrihas.

10.38 L. 149.–

We are heading to R.B.

10.40 Opp. Upper end Ia das Caravaas.
The bar ab. 1m. distant & not visible.

10.46 Opp. a quay 50 metres from the R.B. Fine River.

10.55 Sand bank (R.B.) a cutting lake on gain.
River is 7/8 of a mile wide – with bar (Sand) on L.B. side, and R.B. side now cutting.

11.02 Some clay in the banks now – mixed with clay.

11.07 a Rare Mulatto lass – nudge (whistle body – fully)
The men use oars, with a quay.
Another beautiful tree a Cow.

An enormous bar has formed on the L.B. side. It has forced the Channel over to the R.B. where it is now cutting.
Low Lands on both sides. Not v. low enough to be covered in high floods.

11.15 Woods on both sides of river

11.28 Within 250 metres of L.B. Still oblique to the River nearly 1 mile wide.

11.35 We saw a few miles away, near L.B. and near our forward R.B. named Caravaas. a R.B. a small hamlet.

11.50 L. 148.

11.50 – Opp. Caravaas, Hamlet. H.M.S. houses (some 25 years ago)

11.52 Opp. Lower end of Ia da Boa Vista.
This island has grown down stream at least a fourth mile to the Opp – upper end of the hamlet of Caravaas.

We pass the new Channel, between R.B. and Island of Boa Vista – 700 M. wide.
a wide reef on the L.B. side.

12. Clay banks along here which do not cut easily: (Island)
No cultivation on R.B. (Banana Plantation)
Plenty of Savanna (Grass) along river

Saturday Nov. 15th – L. 148 (39)

12.20 – Opp. Hamlet of Boa Vista – half dozen thatched houses. Pt. Nair was surveyed in 25 years. some Hatfields day. Clay banks first case it from being washed away.
It stands a little back opp. Rock of St. Cruz.
Opp. garden – negro fond cultivating.

[Strange! how such a miserable Place should continue for a Century or more]

12.30 Opp. head of Boa Vista Island on Starboard
Channel widens out at head of island to 1000 M. Shallow in mid-stream.
Pt. Nair that has widened has continued at both ends.

12.34 Opp. Barra da Tijuca. Dry Delicate feature about Pt. Nair – Cultivated Patches.
River very wide above island (Brook) Lake Image endorsed with Sand, now visible above the contour. The L.B. Side. Opp. and for a Mile of a mile above island.

12.37 Opp. Lower pt. of Ia da Sissandranca on Starboard
Country Coast, 30 miles wide – with graphic Cumulus.
We now have from mean South of Pan island on Obliquely towards the L.B. to avoid bar projecting into more actively of island.

A large house on map, called As Tres Ilhas, has disappeared, in part. We run across where it is marked on map. The lower part has cut away. The face of the mound has cut it into a different shape.

12.54 No cultivation on L.B. (150 M. to Pt.)
a little cultivation on islands – Opp. 2 to 3 M. below.

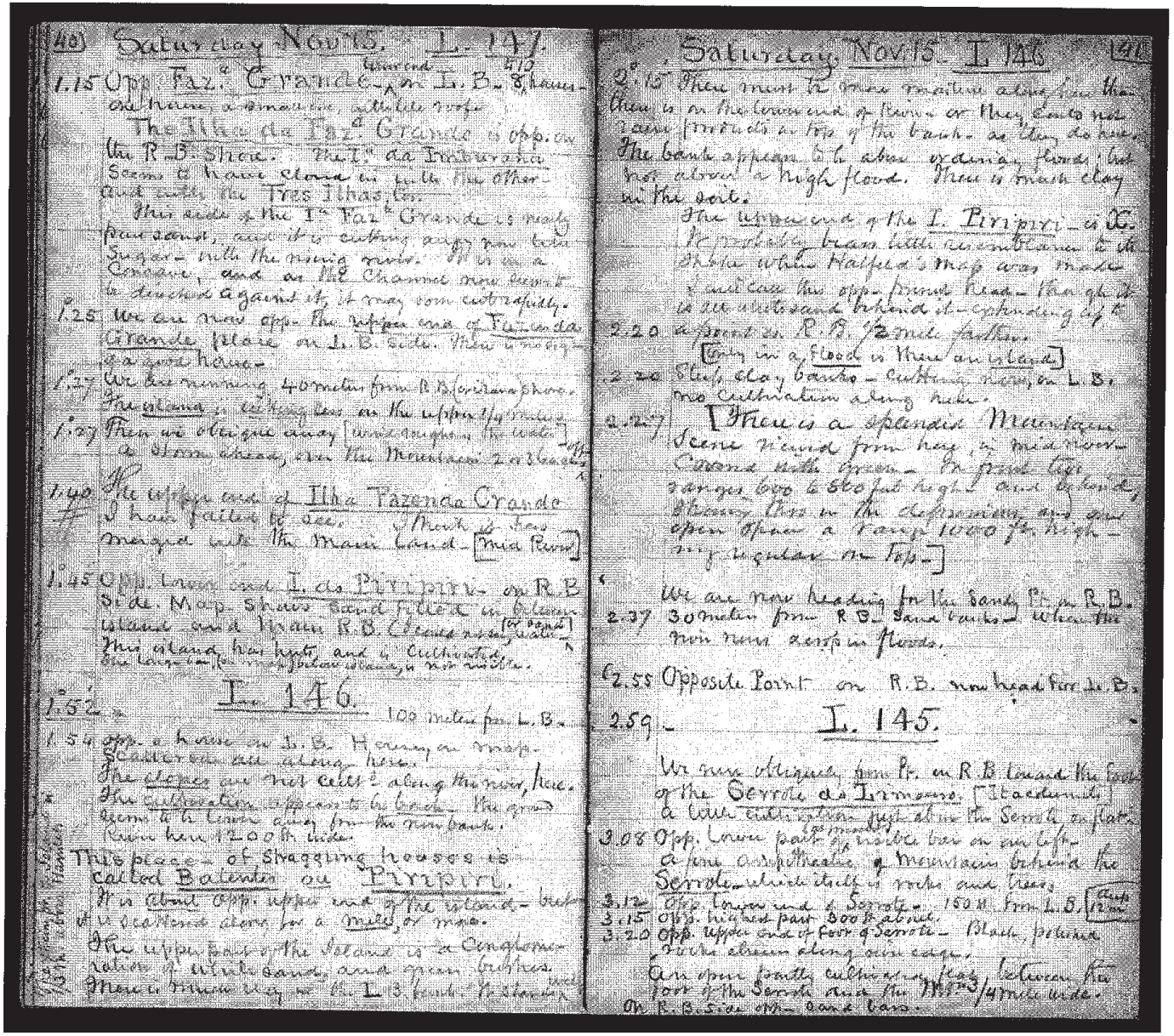
12.56 – L. 147.

1.00 Opp. Head of Island – New Sand Spit. Channel between that and the next island below. Pt. of it may not be mangrove land.
We now run directly up (or nearly so the general Course of the river) divide a rate; we are now 1 Mg. time obliquing from one side to the other. Pt. Nair.

1.05 The R.B. shore shows clay with lines – but does not appear. The L.B. side is a low waste.

The proportion of cultivation is much less to day than usual.

A fine range of Mountains 2 to 3 miles off on L.B. side (San Mao) on R.B. flat land commencing on both sides. Irregular Dots.



(40) Saturday Nov 15. I. 147.

1.15 Opp. Faz.ª Grande on L. B. 8 houses old ruins & many do. middle roofs

The Ilha da Faz.ª Grande is opp. on the R.B. Shore. The Iª da Inhuumba Seems to have closed in with the other and with the Tres Ilhas, &c.

The side of the Iª Faz.ª Grande is nearly parallel, near it is cutting away now both Sugar-loaf & the mining rocks. It is on a Course, and as the Channel runs towards & touches against it, it may run entrapfully.

1.25 We are now opp. the upper end of Faz.ª da Grande Island on L. B. Side. Here is no sign of a good house.

1.27 We are running 40 metres from R.B. (Caridina shore). The island is 1/2 long as the upper 1/3 rocky. Then we oblique away [and toughen the wide] — off a stone ahead, on the Mountain 2 or 3 leagues

1.40 The upper end of Ilha Fazenda Grande I have failed to see. A Mark of Trees marked with the Main Channel — [Mid Perm]

1.45 Opp. Lower end I. da Pimpiry on R.B Side. Map shows Sand Islets in Estuary island and Main R.B. Channel [or Point]

This island has hosts and is cultivated. One large [illegible] house, & min cultivation.

1.52 I. 146. 100 metres from L.B.

1.54 opp. a house on L.B. Houses on map. Scattered all along here.

The slopes are not called ª along the river, here.

The cultivation appears to be [illegible]. The ground seems to be lower away from the river banks.

Rains have 1200 ft wide.

This peace of Straggling houses is called Balentes ou Pimpiry.

It is about Opp. upper end of the island — back

We ascended along for a Mile, or more.

The upper part of the Island is a Conglomeration of white sands, and green bushes.

There is known rock on the L.B. [illegible] to Staccato

(41) Saturday Nov 15. I. 146

2.10 There must be some marsh along the Shore to on the lower end of Pimpiry or they Could not have [illegible] on top of the bank as they do now. The bank appears to be above ordinary floods, but not above a high flood. There is much clay in the soil.

The upper end of the I. Pimpiri — is [illegible] probably been little encroached & the shape which Halfield's map was made & said Case the opp. Pimpiri Head — though it is all white sand behind it — extending up

2.20 a stone on R.B. 1/2 mile further.

[Only in a flood is Mine an island.]

2.20 Steep clay banks — cultivation [illegible] on L.B. one cultivation along bank.

2.27 There is a splendid Mountain Scene viewed from here, a mid River Course with Green — In front Low ranges 600 to 800 feet high — and behind, Blue, Low in the distance, and one open Space a Range 1000 ft high — [illegible] on Pole —

We are now heading for the Sand Pt. on R.B.

2.37 30 metres from R.B. Sand banks — when the main runs across in floods.

2.55 Opposite Point on R.B. now head for the R.B.

2.59 I. 145.

We run obliquely from Pt. on R.B. towards the foot of the Serrote de Inmoens. [Steadily] a little cultivation just above the Serrote on flats.

3.08 Opp. Lower part of Serrote [or mountain] a long ridge [illegible] a long Amphitheatre of Mountains behind the Serrote — which itself is rocky and bare.

3.12 Opp. Lower end of Serrote — 150 M. from L.B. [Lat 12 m]

3.15 Opp. highest part 300 ft above.

3.20 Opp. Upper end of foot of Serrote — Black, [illegible] rocks above along our edge.

An open fertile cultivated flat between the foot of the Serrote and the Mid 3/4 mile wide.

On R.B. Side [illegible] and bare.

42

Saturday Nov. 13 I. 145

3.33 about Opp. accpt the flat range of the foot of the Mts 13 mounted passing in front of plot.

3.35 Opp. high peak of Mts one 700 to 800 ft high

3.39 Opp. grand ridge and mountains in the Mts

3.41 Then comes opp. the end of another Mts or another view end of the same All of them covered with splendid, Green, healthy looking woods - far ahead of the Serras down the valley

No vegetation in front here.

We Anjua accpt touch R.B.

3.42 In front acpt the valley is a beautiful Landscape, the horizon being Mountains of various shapes.

1st View - on port - 11 miles off S.

all covered with forest

3.50 Running along on R.B. Side - 30 M from shore

The Mountains are one night of leagues and a half off behind them from Mts Referred to above (not compare with the Sketch) quite different in appearance, less higher and more of a chain, but of uniform Level are of bare surface - and a Juicle thereon vegetation - a comparison of dark foliage, some being parched and opals others with scalped here and there, gives decidedly a different formation from those mains to the back of the mind.

I. 144.

4.08 -

4.05 We are now heading away from R.B. no continuation on either side of River in sight.

4.12 Opp. foot of Ia das Abobaras.

Bassa Alto

4.35 Opp. head of I. das Abobaras.

Barra Alta is about head of Island with sand bars and other islands, on the R.B. side not clearly to be made out.

Saturday Nov. 13 - I. 144. 104

4.52 We are running in the Channel between the R.B. and the Island - first the I. da Barra Alta - and next the Mangabeira

I.B

4.56

Most Curious topography!

2d View on Port

in the blue distance Mountains

(Scale) All covered with Forest Green

Looking aft now 2 miles off S. & N.

Now all on Port are Mts over 500 & 600 ft high

All distant are all Mts over 1000 ft high

5.05 Heading off towards I. B.

Make pre-sumption Shore in Right water is Sp

I suppose that we have passed the

5.05 I. 143

5.15 High, clean white sand bars, with timber between us and the Large island do Sibo on the Boa Vista - which is on our right -

5.20 Now heading for the R.B. shore to Stop for the night -

Antunes Navy

5.39 Anchored in front of Roçado - nearly Opp. head of I. do Sibo ou da Boa Vista

About at Lowrance of I. 142.

Having run 11 2/3 leagues = 39 1/4 Day 40 miles.

One Clear days work. =

All good navigation - with a good Ohio River Steamer I. Carla has run the Whole distance in 4 hours - instead of 12.

Nothing whatever is to be done along here by the Government - except, it may be, put on the front for Steamers.

Sunday Nov 16. ROCADO

Lower end I. 142. R.B.

New Name - arched window.

Cool, cloudy morning, some mist
Strong Var Straw am q.y
Evening NNW - S.S.W by S. Rain fell last night
(Sunday and the difficulty)

Mountain mist - before, on our night, and behind.

5.43 Start - and pass 100 m. off R.B. side.
Round a Rocky Chevelete - make for N.y shore.

5.55 Opp. S.E. ext. and bar at head of I. da Sinos

6.00 The canoes, manned & mounted with each other pass now to our N.W.

6.03 Buildings still on the R.B. side of Rocado, Barra do Pechaim, on L.B. Opp. head of Small island, bar, We head for L.B. side. to W.

6.10 On the Mountains, half way down, there is a curious marked contrast between light green foliage, pale tufted species, with dark green touched with brown. River 1000 ft. and On the mountains on L.B. side, the shade of all

6.15 The Canoe, now on L.B. as Master is not visible in fact we now are head of the Island Ilha Sinos

6.16 bottom 100 meters off L.B. - heading to Point

6.23 " 50 " " L.B. Directly on shore

The bar is shown

6.25 Where nearly up to Point on L.B. on head of other Island mid river.

6.28 Lower pt. of island is now only a little way above lower pt. channel 200 ft. Low-water The island Caximbo has lengthened down

6.31 Opp. lower point of Mountains on R.B. side 1/4 mile back of river.

6.32 Island Caximbo is entirely under.

6.40 Opp. Upper end of Mountains - low shades of green - on R.B. side - 1/2 mile from River - This mountain is 1/2 mile long - marsh forms all with river - on map 2 or 3 Ilhas

6.46 Opp. Upper end I.a do Caximbo
Same bearing now from the head of the river still Channel to another island, name (to L.B.) Pichaim - on L.B.
Same grounds on R.B. now, for League or more to the Mountains, which now appear

6.53 I. 141.
Channel

7.02 Upper end of island, now connected with Mid island Caximbo, by sand bar. Above. There is water to head entirely - sand, on both sides.

7.03 opp. The striking object, Morro da Imagem on L.B. is a huge mass of rock - has a reddish tinge - 1 mile back from the river - rises up about 1000 ft above the plain - has bare crags on its face - There is another mass nearly as great as high - half mile behind it. Conical at the base - of rocky granular character.

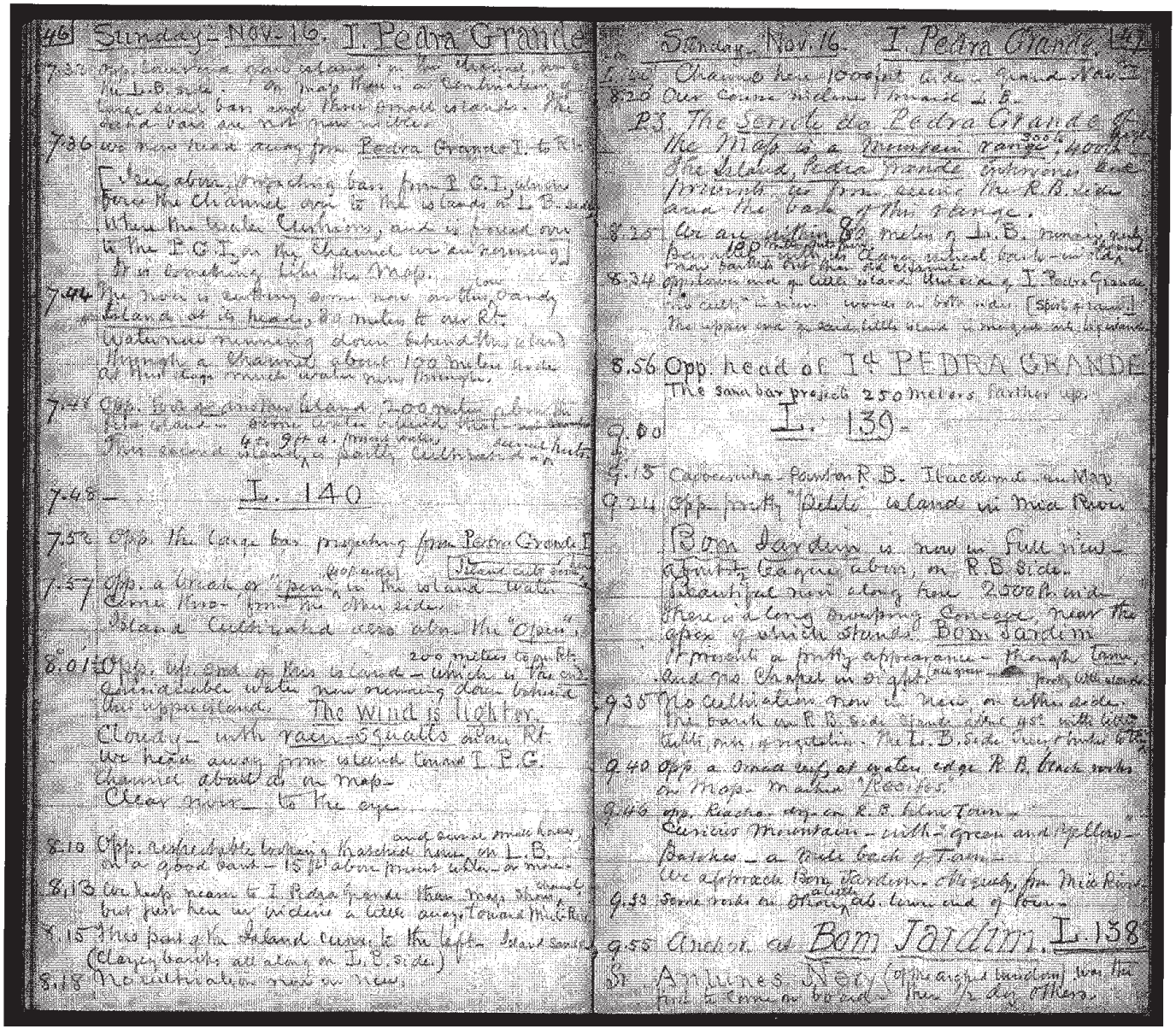
Clear river now for nearly a mile ahead - low shore to pass on the old Channel on L.B. side of the LARGE ISLAND Pedra Grande.

7.10 Opp. a point on R.B. called Ponta da Ilha da Pedra Grande. - we are near L.B.

7.15 Opp. lower end I.a de PEDRA GRANDE Channel 1000 ft now.

7.18 Opp. deserted Point on L.B. about 1/4 mile

The bar for ships from town and mid island are in front of town within 4 miles of island a half mile above town end. Channel about 1000 ft. Mid Cultivation on the SERRA PEDRA Entire Mountain Range on L.B. side, about 1000 ft. range about 10° S. of E. & 10° N. of W.



46 Sunday – Nov. 16. I. Pedra Grande

7.32 Opp. Entrance a dark island in the Channel on the L.B. side. On map there is a combination of three detached bars and three small islands. The second bar are not shown on this.

7.36 We now have a view from Pedra Grande I. to R.B. [View above, of reaching bars from I. G. I. above Fore the Channel and to the islands on L.B. side. Where the trades Clear hairs, and is beyond our to the I. G. I. on the Channel we are approaching] It is looking like the Map.

7.44 The main is curving some more on the Sandy Island at its head, 2 miles to our Rt. Waterway running down behind this island through a Channel about 100 meters wide At this stage smooth water now through.

7.48 Opp. S.E. projecting Island 200 meters off the [illegible] Some water between. Some [illegible] 4 to 9 ft. (mean water) Sandy bottom. Four scattered islands, a portion Cultivated on R.B.

7.48 – I. 140

7.52 Opp. the large bar projecting from Pedra Grande I. [Extreme outer point of bar]

7.57 Opp. a break or "open" in the island – water Some Rocks – from the other side Island Cultivated also also the "Open".

8.01½ Opp. the end of Main Island – under a Point Considerable water now running down behind this appearance. The wind is light fair. Cloudy – with rain squalls on our Rt. We have away from island toward I. P. G. Channel about as on map – Clear now – to the eye.

8.10 Opp. Respectable looking thatched house on L.B. on a good part – 15 ft above present water – or more.

8.13 We help nearer to I. Pedra Grande than Map shows but just how in evidence a little away, toward Mid Ch.

8.15 This part of the Island curving to the left. Island sandy (Clayey banks all along on L.B. side)

8.18 No cultivation now on now.

Sunday – Nov. 16. I. Pedra Grande. 47

8.20 Channel here 1000 feet wide – Pedra Nova

8.20 Our Course midway between – L.B.

P3. The Serrote da Pedra Grande from the Map is a Peninsular range, 3006 ft. The Island, Pedra Grande [illegible] and projects far from, except the R.B. side and the back of the range.

8.20 We are within 80 meters of L.B. running [illegible] 100 meters with the deep channel [illegible] [illegible] further out than the depth.

8.34 Opp. low sandy island on L.B. side of I. Pedra Grande [illegible] [illegible] [illegible] The upper end of said little island is marked and important

8.56 Opp. head of I.a PEDRA GRANDE The sand bar projects 250 meters further up.

9.00 I. 139 –

9.15 Cabeceira – Point on R.B. Thatched house on Map

9.24 Opp. pretty "Petite" Island in mid River [Bom Jardim is now in full view – Agulha Cagarra about, on R.B. side. Beautiful row along here 2000 ft wide – There is a long sweeping Concave, near the apex of which stands Bom Jardim It presents a pretty appearance – Hemple town, And the Chapel in the gift. [illegible] [illegible]

9.35 No cultivation now in view on either side. The bank on R.B. side stands about 40 ft with [illegible] [illegible] [illegible] The L.B. side [illegible] [illegible]

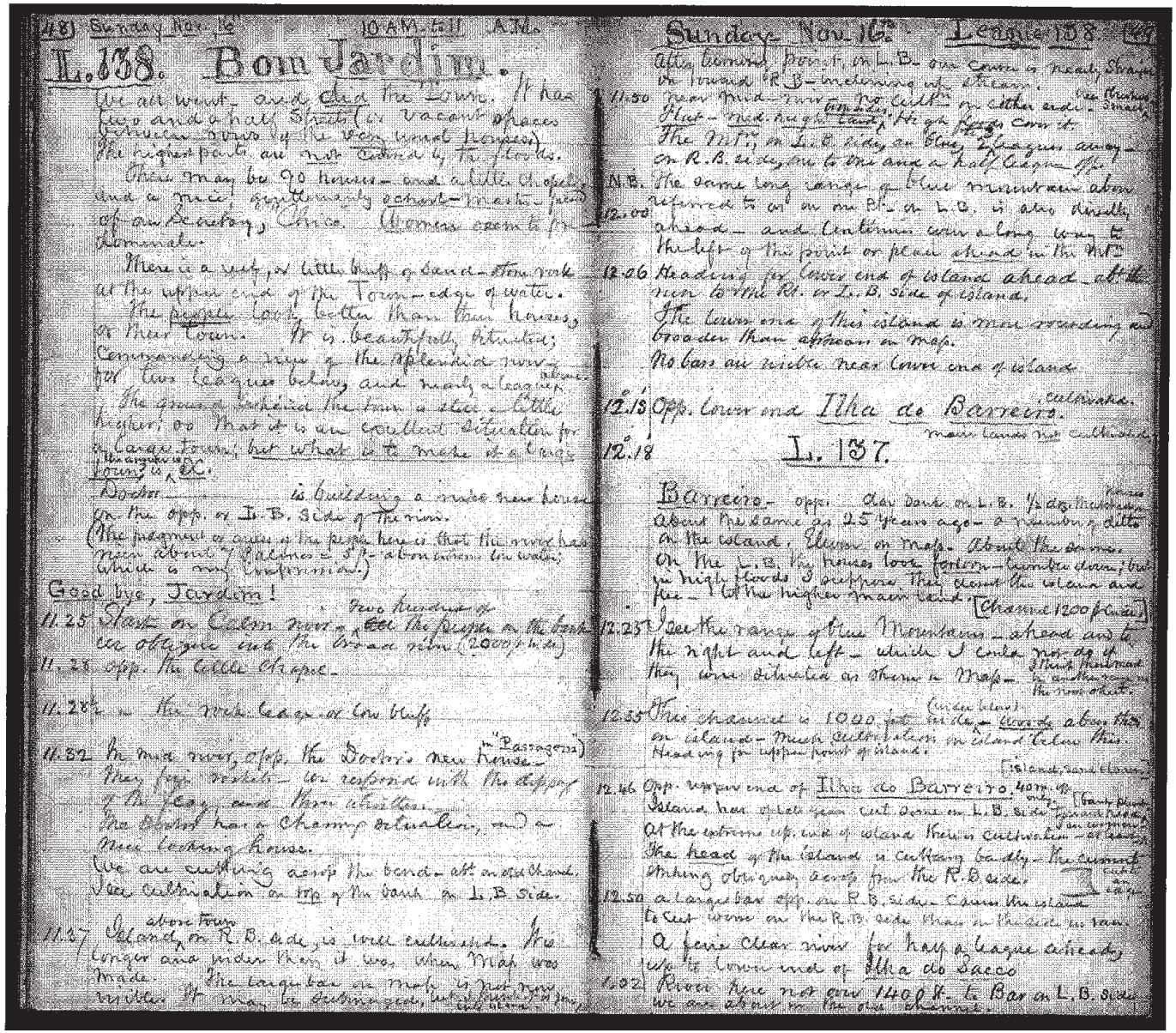
9.40 Opp a small cut at water edge R.B. Black rocks on Map – marked "Rocks"

9.46 Opp. Riacho – up on R.B. below Town – Cursaos Mountain – with green and yellow – Barreiras – a mile back of Town – We approach Bom Jardim. Mr Souza, from Mid River

9.53 Some rocks on Other side. Town end of town –

9.55 Anchor at Bom Jardim. I. 138

10 Amines Nery (Mr Araujo's brother) from the [illegible] to Town on R.B. and – Then ½ dozen others.



(48) Sunday Nov. 16 10 A.M. to 11 A.M.

L. 158. Bom Jardim.

We all went ashore this Morn. It has five and a half Streets (or vacant places for streets) running by the river (most parallel). The highest parts are not covered by the floods.

There may be 90 houses — and a little Chapel, and a nice gentlemanly school-master (paid by our Society) Prince. Women seem to be in demand.

There is a reef, or little bluff of sand-stone rock at the upper end of the Town — edge of water.

The people look better than their houses, or their town. It is beautifully situated; commanding a view of the splendid range for ten Leagues below, and nearly a league above.

The ground behind the town a steep little higher, so that it is an excellent situation for a large town; but what is to make it a large town? is &c.

Doctor ____ is building a wooden house on the opp. or L.B. side of the river.

(The judgment of ages of the people here is that the river has risen about 7 Inches = 5 ft. above known low water mark. This is my conjecture.)

Good bye, Jardim!

11.25 Start on Calm now. Two hundred &c. The people on the bank see Obligee and the Broad river (2000 ft wide)

11.28 Opp. the Little Chapel.

11.28½ — the mud Cliffs or Low bluffs

11.32 the mud river, opp. the Doctor's new house. ("Passagem")

Many fogos (wakes) — or responds with the dipping of the flag, and three cheers.

The Doctor has a charming situation, and a nice looking house.

We are entering across the bend — the old channel. Steer Calm-wise on the bank on L.B. side.

11.37 Island, above Town on R.B. side, is well cultivated. The longer and wider than it was when Map was made. The Langue bar on map is not now visible. It may be submerged, but if [illegible]

Sunday Nov. 16. League 158.

Atlantic Ocean. Point on L.B. our Course & nearly Shore ward R.B. — widening into stream.

11.50 Town mid-river to Cultivation on either side. Small Island — mud-bank (Langue) to go Pass on it.

The Mts, on L.B. side, are 6 leagues away — on R.B. side, one to one and a half Leagues off.

N.B. The same long range of blue mountains above referred to on our Port — or L.B. is also visible, ahead — and Continues even a long way to the left of the point or place ahead in the Mts.

12.06 Heading for Lower end of Island ahead — about even to the R.B. or L.B. side of Island.

The Lower end of this island is more rounding and broader than appears on map.

No bars are visible near Lower end of Island.

12.13 Opp. Lower end Ilha do Barreiro. (Calpivara. main lands not cultivated.

12.18 L. 157.

Barreiro — opp. clay bank on L.B. ½ dozen houses about the same as 25 years ago — a number of ditto on the island. Shown on map. About the same. On the L.B. the houses look forlorn — lumber down; but in high floods I suppose that almost the whole and flee — to the higher ground behind. [Channel 1200 ft wide]

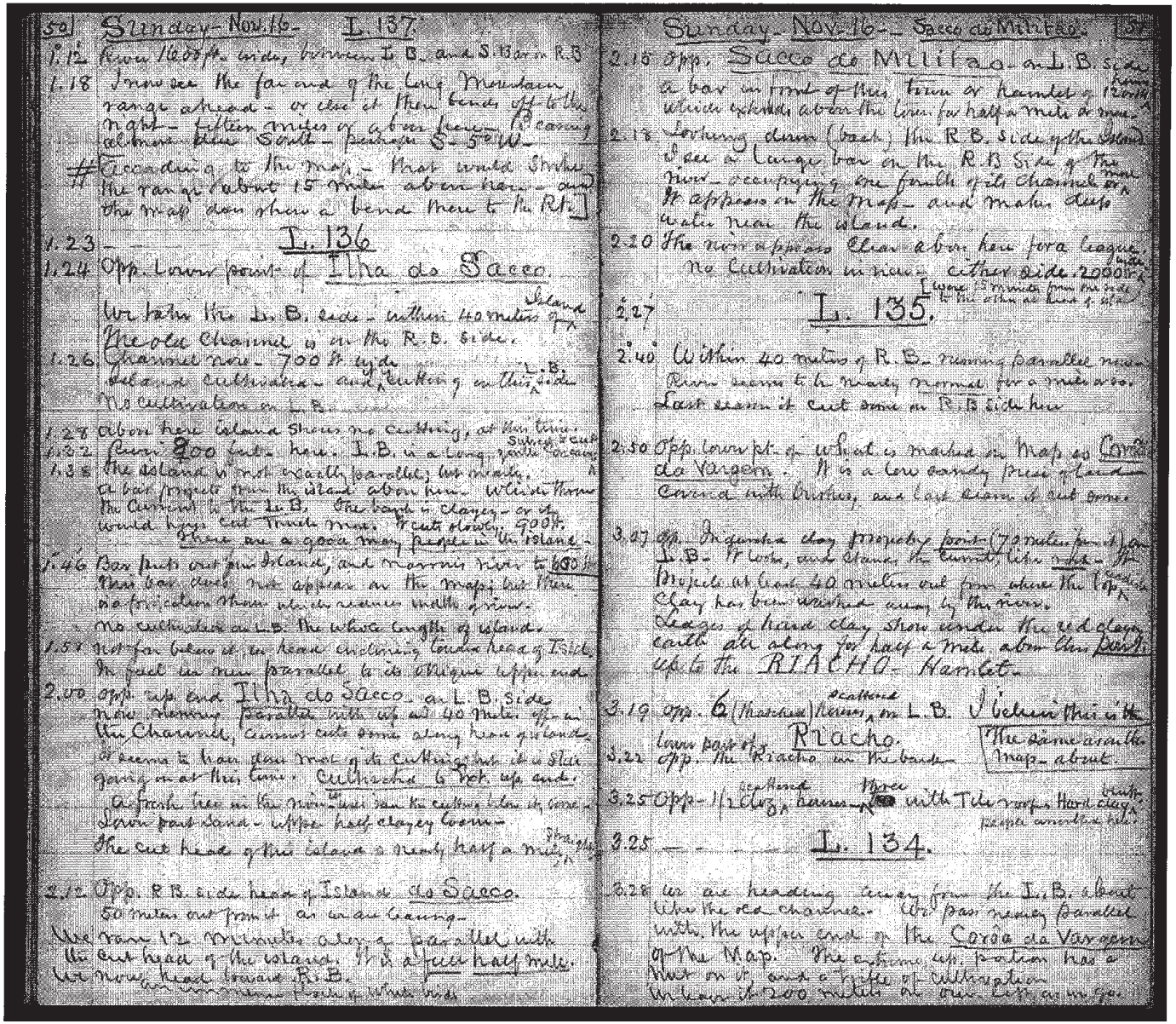
12.25 I see the range of blue Mountains — ahead and to the right and left — which I could not see at Start. They were situated as shown in Map — (Third Heading in another page to the next sheet.

12.35 This channel is 1000 feet wide — (Lower below) Island on Island — Marsh Cultivation on Island below this. Heading for Upper point of Island. [Island, and Channel

12.46 Opp. upper end of Ilha do Barreiro. 4000 ft. long. [Sand-bank Island has cleared year out some on L.B. side. [Sand-bank in continuation At the extreme up. end of island there is cultivation — of cane. The head of the Island is cut away badly — The current striking obliquely across from the R.B. side.

12.58 a Large bar opp. on R.B. side — Causes the island to cut away on the R.B. side. Shoal in the deep water. A fierce clear river for half a league ahead, up to Lower end of Ilha do Sacco

1.02 River here not over 1400 ft. to Bar on L.B. side. We are about on the old channel.



50] Sunday – Nov. 16 – I. 137.

1.12 River 1200 ft. wide, between I. B. and S. Bar in R.B.

1.18 I now see the far end of the long Mountain range ahead – or else it bends off to the N.W. – fifteen miles or above. Course, allowing Variation, East – Compass S – 5° W –

According to the map, – that would show the range about 15 miles above here – and the map does show a bend here to the Rt.]

1.23 – – – – – – – – – –

I. 136

1.24 Opp. Lower point of Ilha do Sacco.

We take the L.B. side – within 440 metres of it.

The old Channel is on the R.B. side.

1.26 Channel now – 700 ft. wide.

Island

Below is cultivation – and planting on this side.

No cultivation on L.B.

1.28 Above here Island shows no cutting, at this time.

1.32 Some 800 feet – here. I.B. is a long, gentle Sacaing. Sacaing = cut

1.38 The island is not exactly parallel, but nearly. A bar projects from the island above here. Which shows the Current to the L.B. The bank is clayey – or it would have cut much more. 900 ft.

There are a good many people in the Islands.

1.46 Bar puts out from Island, and narrows river to 680 ft. Pass bar does not appear on the maps; but there is a fine Island there which reduces width of river.

No cultivation on L.B. the whole length of island.

1.58 Not far below it we leave an opening towards head of Island. We feel the main parallel to its oblique upper end.

2.00 Opp. upper end Ilha do Sacco. on L.B. side. Now running parallel with it at 40 Metres off – in the Channel, Current cuts some along here of island, it seems to have done most of its Cutting. but it is Slacking on at this time. Cultivation & Pot. up and.

A fresh tree in the main land can be cutting below it, some. Down post sand – upper half clayey loam –

The cut head of this island a Nearly half a mile. Sha.

2.12 Opp. R.B. side head of Island do Sacco.

50 metres out from it on our Course –

We run 12 minutes, obliquely parallel with the cut head of the island. It is a full half mile.

We now head toward R.B.

Sunday – Nov. 16 – Sacco do Milfeo. 137

2.16 Opp. Sacco do Milfeo – on L.B. side a bar in front of this town or hamlet of 12 Houses which extends above the town for half a mile or more.

2.18 Looking down (back) the R.B. side of the Island I see a Large bar on the R.B. side of the river – occupying one fourth of the Channel as it appears on the map – and makes deep water near the island.

2.20 The river appears clear above here for a League. No Cultivation in sight either side. 2000 ft. wide

2.27 Lower point of Island

I. 135.

2.40 Within 40 metres of R.B. running parallel now. River seems to be nearly normal for a mile or so. Last season it cut some on R.B. side here

2.50 Opp. lower pt. of which is marked on Map as Corda da Vargem. It is a low sandy piece of Land covered with bushes, and last season it cut some.

3.27 Opp. Inguinha clay promontory point (70 metres from) on L.B. It looks, and stands the current like rock. Projects at least 40 metres out from where the top of clay has been washed away by the river.

Ledges of hard clay show under the red clay earth all along for half a mile above this point up to the RIACHO – Hamlet.

3.19 Opp. 6 (Mauritius) scattered houses on L.B. I believe this is the lower part of the Riacho. The same as the Riacho on the banks – Map – about.

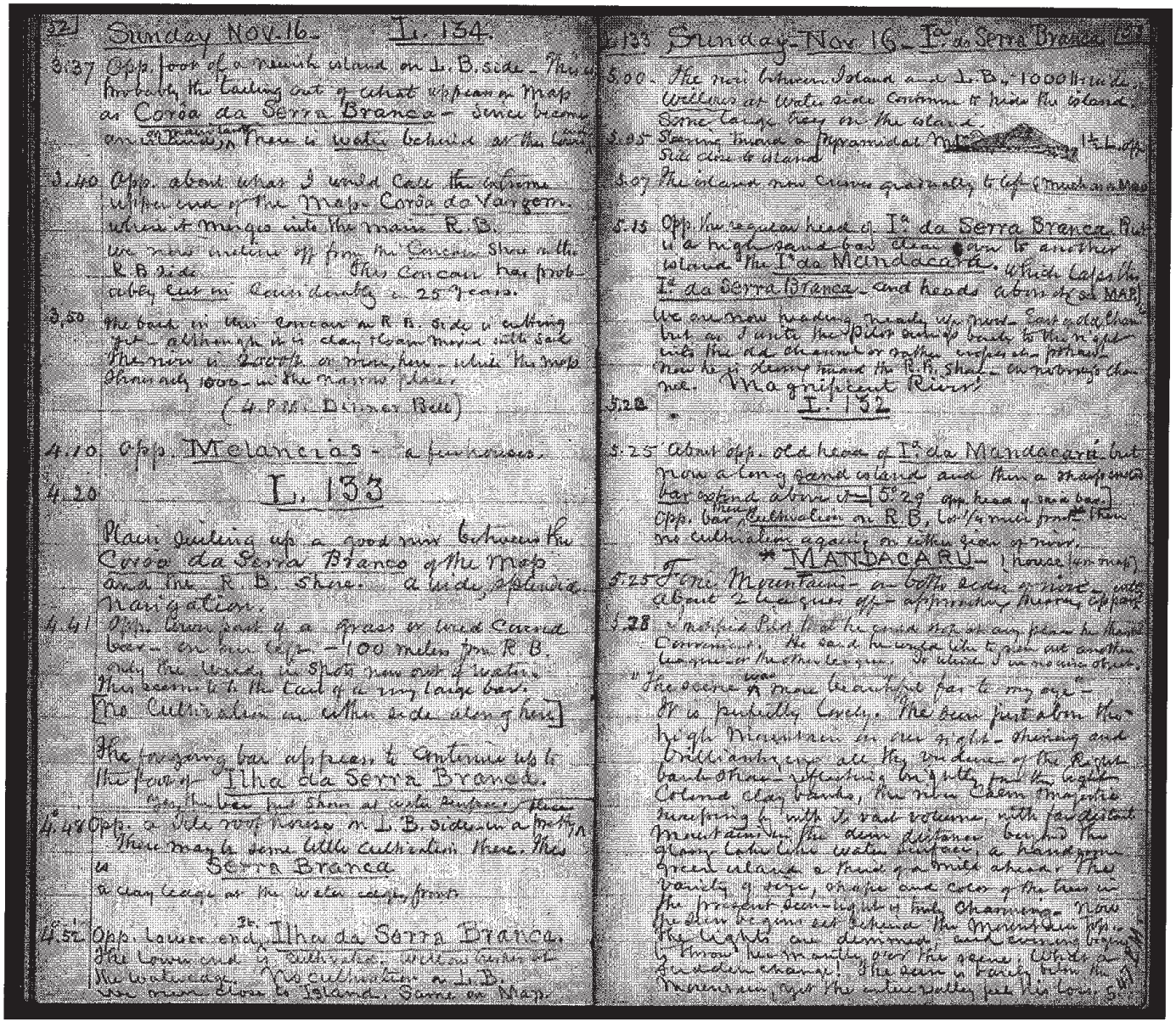
3.22 Opp. the Riacho on the banks

3.25 Opp. – 1½ Clay, scattered houses – Mixed with Tile roofs. Hard clay, Pebbles under the

3.25 – – – – – – – – – –

I. 134.

3.28 We are heading away from the I. B. about where the old channel is. We pass nearly parallel with the upper end of the Corda da Vargem of the Map. The extreme upper point has a Post on it, and a Tuft of Cultivation. We keep it 200 metres on our Left as we go.



32 Sunday Nov. 16 — I. 154

3.37 Opp. foot of a reach aland on L. B. side — This is probably the tailing out of what appears on Map as Corôa da Serra Branca — Since becomes an island. There is water behind at the Low Tide

3.40 Opp. about what I would call the extreme upper end of the Map Corôa da Vargem. where it merges into the main R. B. We now endeavour off from the Concave Shore on the R B side. This Concave has probably been in Course of time 25 Yards.

3.50 The boat in the Concave on R B. side is catching fish — although it is clear Coarse Moving with Sails The river is 200 Yards or more, from which the Map Shows only 1000 — in the narrow place.

(4 P.M. — Dinner Bell)

4.10 Opp. Melancias — a few houses.

4.20 I. 133

Plain Sailing up a good run between the Corôa da Serra Branco of the Map and the R. B. Shore. A wide, splendid Navigation.

4.41 Opp. Crew past a Brass or Lined Canoe Boat — on our Left — 100 Metres from R B. only One Woman in Sight now out of water. This seems to be the Coast of a very large Island.

[No Cultivation on either side along here]

The foregoing bar of trees & Antenna is to the front of Ilha da Serra Branca.

Many Huts can be Shown at wide Intervals

4.48 Opp. a Nice roof House on L. B. Side in a Notch. There may be some little Cultivation there. This is Serra Branca

a clay Cliff as the water carries forwards

4.52 Opp. Lower end of Ilha da Serra Branca. The Low end is Cultivated. Well on Centre of the Watershed. No cultivation on L. B. Low Trees to Island. Some on Map.

133 Sunday Nov. 16 — Ilha da Serra Branca

5.00 The river between Island and L. B. 1000 Metres wide. Willows at Water side Continue to mark the Island. Some large Trees on the Island.

5.05 Steering towards a Pyramidal Mountain 1½ L. Opp. Side of the Island

5.07 The island now Ceases gradually to Exist (Much as a Map

5.15 Opp. the Low Level head of Ilha da Serra Branca. Rises to a high sand bank Island — Low to another Island the Ilha da Mandacarú. Which Caps the Ilha da Serra Branca — and heads about as per MAP.

We are now heading Nearly up Stream — East and then but as I write the Pilot Orders back to the Middle into the Channel or other words — Port Hand now he is steering round the R. B. Shoal — on Morning Channel. Magnificent River!

5.28 I. 132

5.25 About Opp. old Head of Ilha da Mandacarú but now a long Sand Island and then a Shoal Bar extend about 1½ [5.29 opp. head of new bar]

Opp. Bar, Cultivation on R. B., Low ½ mile from the river Cultivation again on other Side of river.

* MANDACARU — 1 House (on map)

5.25 Fine Mountains — on both sides of river — one about 2 Leagues off — appearing Many Cupped

5.28 Magnificent Bird to the Port Hand — Many Cranes Commorants, the Sand Herons like to pick out another Longer Neck Navigation. Jr Island I am not sure about. "Jacaranda more beautiful far to my eye" — It is probably Cocoa. The Bear just above the high Mountain on the right — Shining and Brilliant Green all the way on Banks of River — Abounding in Gaily Tail the Eagles Colonel Clay Banks, Pure white Cliffs Magnificent Mountains with Vast Volumes with Fantastic Mountains in the Blue Distance beyond the Glassy Lake like water surface, a Hand some Green Island a Mile & a half ahead. The Variety of Verge, shape and color of the Trees in the Prospect Reminds me of Lake Okanagan Now the River begins to Narrow the Mountains Rise. The Lights are dimmer, and evening begins to throw her mantle over the scene. What an Enchanting change! The Bear is Perfect with the Mountains, but the entire valley for the Low 5th

54] Sunday Nov 16. I. 132.

5.45 Opp. Commencement of Island - Navarre - on L.B. side. They are nothing but sand bar islands. The channel The large bars - on the map - now mark the R.B. are either gone or submerged. They are gone - or else in new position entirely, now.

5.57

6.00 Opp. Teazeiro - on L.B. 3 or 4 houses above the upper of the two former islands. Some Cultivation on L.B. ground is low.

We are now approaching Estre on the R.B. side for a Stopping place. The Pilot takes us above this Hamlet

6.15 Stop - Engine

6.16 Anchor I. 131.

Report - splendid progression, all day!

Before dark, I must ordain, once more, "What a grand river is here!"

RAINY. (last night and this morning.)

Monday Nov. 17 - I. 131

7.37 Starb. on R.B. side - running nearly from E with little Ebbing -

7.53 Opp. Lower toe of Mt. on left bank quite near river -

8.08 Opp. Marin etc - on R.B. 3 or 4 houses.

8.20 Opp. Upper toe of the first Mt. which is quite near the river - R.B.

8.30 Opp - Lower toe of 2d Mt. near the River R.B.

I. 130.

8.34 Opp. Riazo - on R.B. Stony beach covered with bleach houses -

8.46 Opp toe of 2d Mt. Another Mt. about

Monday - Nov 17 - on I. 130 [55]

8.47 The same plan as the upper Lower toe of the 3d Mt. along near the river.

8.52 Opp. Many houses - scattered - with tile roofs - on R.B. Side -

Woods cleared off - along here - The land nearly as quite as high as the high plateau.

Mountains still along on the L.B. side of the river.

9.24 - a small Opening on R.B. with houses - quite near river

Finished Cutler & Adjutant Laughlin Conquest and Conclude a Cutler bdr. Plinius, &c. & C. James.

I. 129.

9.55 The range of mountains undulating mountains which have been close to the river, have left it a mile or more in land -

Land both sides Continues with out Cultivation -

The navigation is splendid!

Halfield's map does not give a correct idea of this range

which is somewhat like this Sketch

10.10 Opp - 2½ Runs (on R.B.) I suppose the "Barro" on I. 129

10.15 Opp - a clearing Fault - ¼ mile long on L. B. Side on Steep Slope and on Top. Colonel only a little back There is a bar on that side, as on the map - 129

Very small population along River on Leagues 131, 130, Scarcely any Cultivation

10.30 70 metres from R.B. Island (about) Many of same, as we are about ½ mile below Island. (do UBUBU)

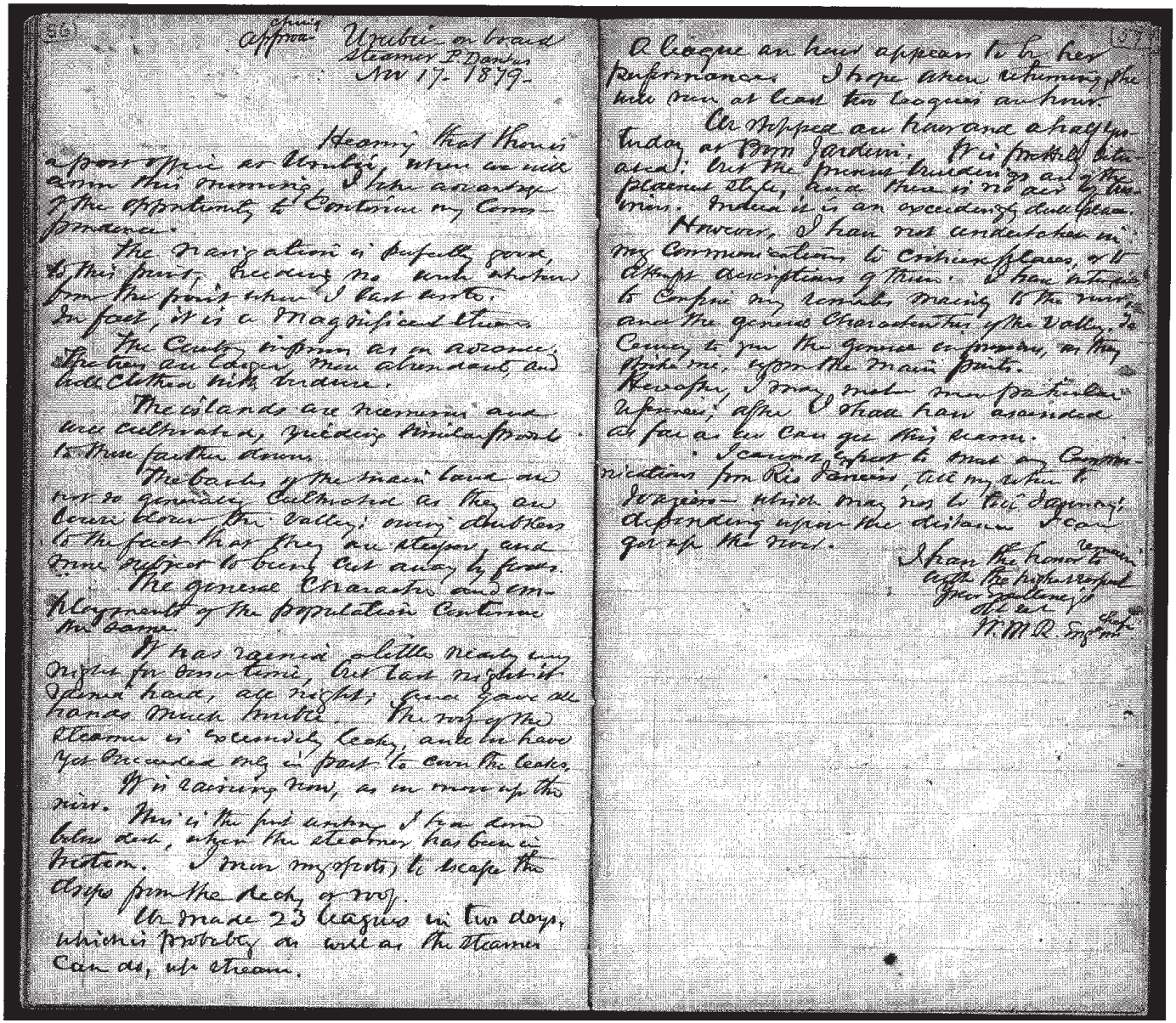
10.33 A little cultivation here, on R.B. Island banks of clay bairky - Cut some grass with it. Rw. ½ Mile.

10.40 River is over 3000 ft. wide & Undenying, with Cultivation continues up stream along R.B.

10.45 Heading for pt. of Island. Pt. Point on L.B. is nearly above Opp. foot of Island

10.49 Opp. Lower one - close to I.a do UBUBU

We run right over where bar is on map - 56



36

Steamer Uruguay
Off Porto Alegre
Nov 17- 1879-

Hearing that there is a boat off Porto Alegre this morning I take advantage of the opportunity to continue my Correspondence.

The navigation is perfectly good, to this point. Receiving no news whatever from the point where I last wrote.

In fact, it is a Magnificent steam.

The Country is open as an avenue, the trees are Copper Mountains and bold Cliffs with verdure.

The islands are numerous and are well cultivated, yielding Plantations to the water's edge.

The banks of the main land are not so generally cultivated as they are lower down the Valley, owing doubtless to the fact that they are steeper, and more subject to being cut away by floods.

The general Character and Arrangement of the population continues the same.

It has rained a little nearly every night for some time, but last night it rained hard, all night; and gave all hands much trouble. The roof of the steamer is exceedingly leaky, and we have not succeeded only in part to cure the leaks.

It is raining now, as we move up the river. This is the first morning I have seen below deck, since the steamer has been in motion. I mean myself, to escape the drops from the deck above me.

We made 23 leagues in two days, which is probably as well as the steamer can do, up stream.

37

A league an hour appears to be her performances. I hope when returning she will run at least ten leagues an hour.

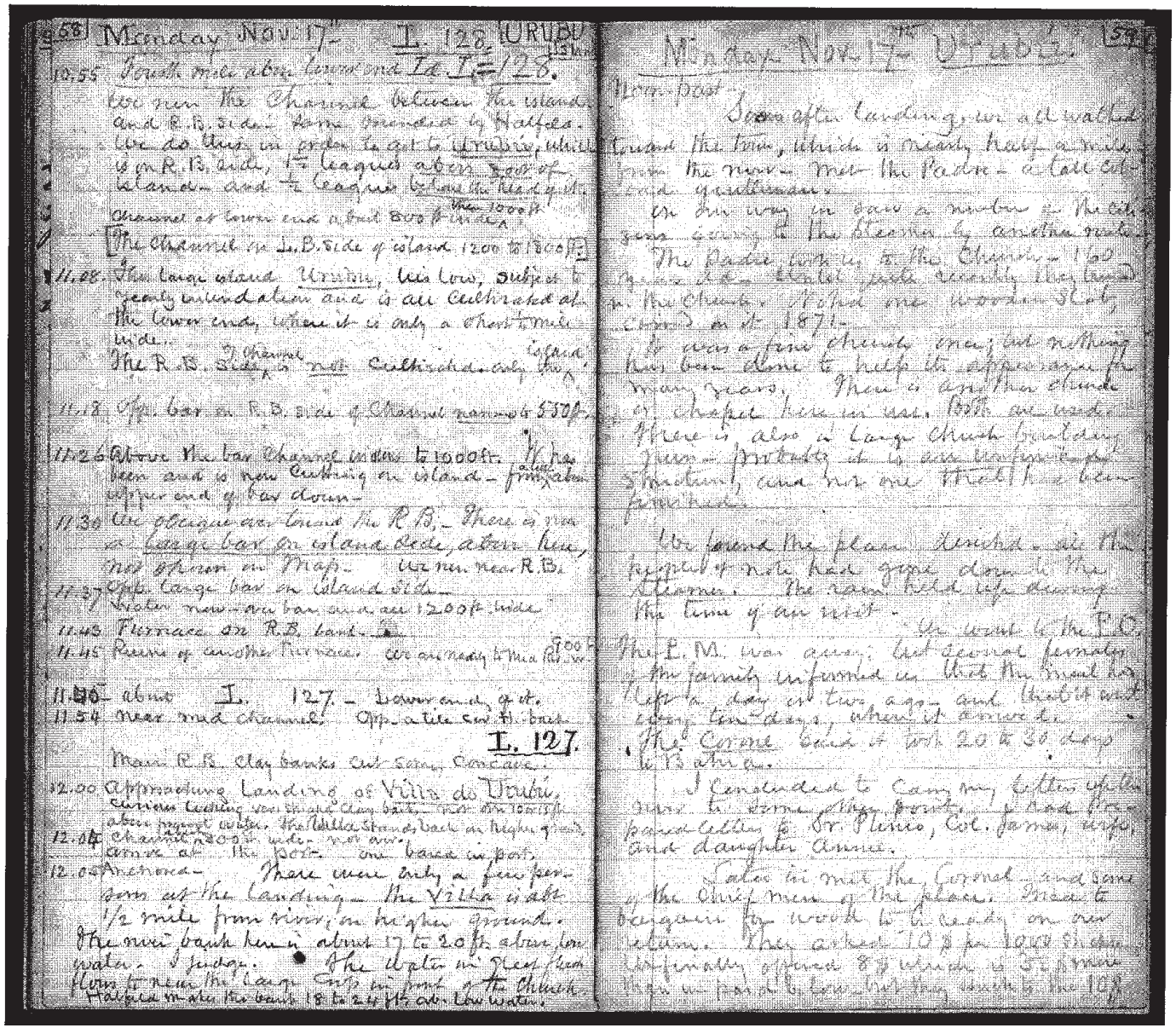
Our prospect are now and always Indian at Porto Alegre. But the prevailing Religion and Politics are, here as in most other places, bad. There is no real Christianity. Indeed it is an exceedingly dull place.

However, I have not undertaken in my communications to criticise places or attempt descriptions of them. I have attempted to confine my remarks mainly to the running the general Characteristics of the Valley, to convey to you the general impressions as they strike me, upon the main points.

Hereafter I may make more particular inquiries, after I shall have assembled as far as we can get the facts.

I cannot expect to hear from my communications from Rio Janeiro, till my return to Rio Janeiro - which may not be for many days depending upon the delays I can get up the river.

I have the honor to remain
with the highest respect
your obedient
obt servt
W. M. R. Inglis



Monday Nov. 17 — I. 128 URUBU 1st Visit

10.55 South side abm. town and I. I.-128.
Cor run The Channel between the island and R.B. side. Some mangrove by Halfdeb.
We do this in order to get to Urubú, which is on R.B. side, 1/2 league above Low of Island and 1/2 League below the Head of it.
Channel at town end about 800 ft wide (less than 1000 ft)
The Channel on L.B. side of island 1200 to 1800 ft.
11.08 The large island Urubú, is low, subject to yearly inundation and is all cultivated at the lower end, where it is only a short mile wide.
The R.B. side of Channel is not cultivated only the island.
11.18 Opp. bar on R.B. side of Channel narrows 550 ft.
11.26 Above the bar Channel widens to 1000 ft. It has been and is now cutting on island — from above upper end of bar down.
11.30 We pass near on board the R.B. — There is now a large bar on island side, above here, not given on Map. We run near R.B.
11.37 Opp. large bar on island side — Water now — bar and narrows to 1200 ft. wide
11.43 Furnace on R.B. land.
11.45 Ruins of another furnace. We are ready to run (700 ft)
11.50 abm I. 127 — Down end of it.
11.54 near mid channel. Opp. a tile on the bank.
I. 127.
Many R.B. clay banks cut some concave.
12.00 Approaching Landing of Villa do Urubú, Curious Landing near the old Clay bank — near dm 1000 ft. above present water. The Villa stands back on high ground.
12.04 Channel 1200 ft. wide — now are near enough at the port on board in port.
12.05 Anchored — There were only a few persons at the Landing — The Villa is abt 1/2 mile from river, on higher ground.
The river bank here is about 17 to 20 ft. above low water — I judge. The water in place from flows to near the Large ship in front of the Church. Halfdeb make the bank 18 to 24 ft. abv Low water.

Monday Nov. 17th Urubú 1st Visit 59

Noon Post

Soon after landing, we all walked around the town, which is nearly half a mile from the river — met the Padre — a tall old and good gentleman.
On this trip we have a number of the old scars caused by the Steamer by anchor rode.
The Padre came up to the Channel 1 or 2 years ago — Stated [illegible] recently there had been in the Channel. Pointed me to wooden Cross erected in it 1871.
It was a fine church once; but nothing has been done to help its appearance for many years. There is another church or chapel here in use. Both are wooden. There is also a Large Church building, but — Probably it is a new unfinished structure, and not one that has been forsaken.
We found the place described — as the report of note had gone down to the Steamer. The rain held off during the time of our visit.
We went to the P.O. The E.M. was away, but several females of the family informed us that the mail had left a day or two ago — and that it was a long time — days, when it arrived.
The Corral held from 20 to 30 days to R.B. ports.
I Considered to carry letters of the place to some ship ports. I had two — one to Sr. Plinio, Col. farmer, ship, and daughter Annie.
Called to visit the Coronel — and some of the Chief men of the place. Made arrangements for wood to be ready on our return. They asked 10$ per 1000 sticks. Unfavorably offered 8$ which is 5 francs. Agreed to pay 10$ — but they would take the 10$

Monday Nov. 17 – Uncoia

This place is Caripe Mission, and has a few more of the Native figures connected with it. [illegible] and dress made Shapes small paras.

Mr. Pavements. Most of the town and the Churches are a few feet above the floods. The high flood a pattern of the town and all the flat land are [illegible] under.

Here are several stores, all small, having the usual articles suited to the Population.

There were an unusual display of various Colored dresses and Shawls of the women who crowded the [illegible] in front of the Church to see us Start.

One elderly Indian Lady, with Cane on Horse back, a very respectable looking person, had on a pretty clean, [illegible] yellow dress, and white [illegible] which looked [illegible]. She was Standing on the bank when we Started.

The Padre came from Bahia 28 years ago, and has never been back.

Just as we were ready and about to start – between 2 and 3 o'clock – the Pilot came and said he was sick; that he had not slept the night before, (on account of the rain, I think) and ordered that we should stop till morning. So I could stop.

This far I have made it a rule not to appear to disobey the Regulations made to me by the Pilot and engineer, although I have sometimes thought they might be a little deficient. It was raining then, and it continued to rain all the afternoon – evening – and all night.

It was a very bad night on account of the leaky roof, and this rain could be done with than many things, by covering the [illegible] our [illegible] tents.

Tuesday Nov. 18 – Uncoia

TRAINING.

One day has been prolonged from unintentionally.

There is a wooded place 2 Leagues below here – belonging to Col: [illegible]. There is another, on the Opa, or 1st 3 days of the run 3 Leagues above, but the wood is that the steamer cannot get to the place. There is also another 7 Leagues above and the engineer says he has wood enough to carry us there.

It says he would do [illegible] with the machine) but that he can manage to run [illegible] Leagues.

It is still raining, but the steam is pretty well up; so that I hope we may soon depart from URUBU. 6.45 am

Now comes another trouble with Piranhas – he wants to stop here. I have ordered that he be paid off, and informed that he cannot go back with us on this steamer. This the third or fourth time this fellow [illegible] man has made trouble; but I will not allow him to stay.

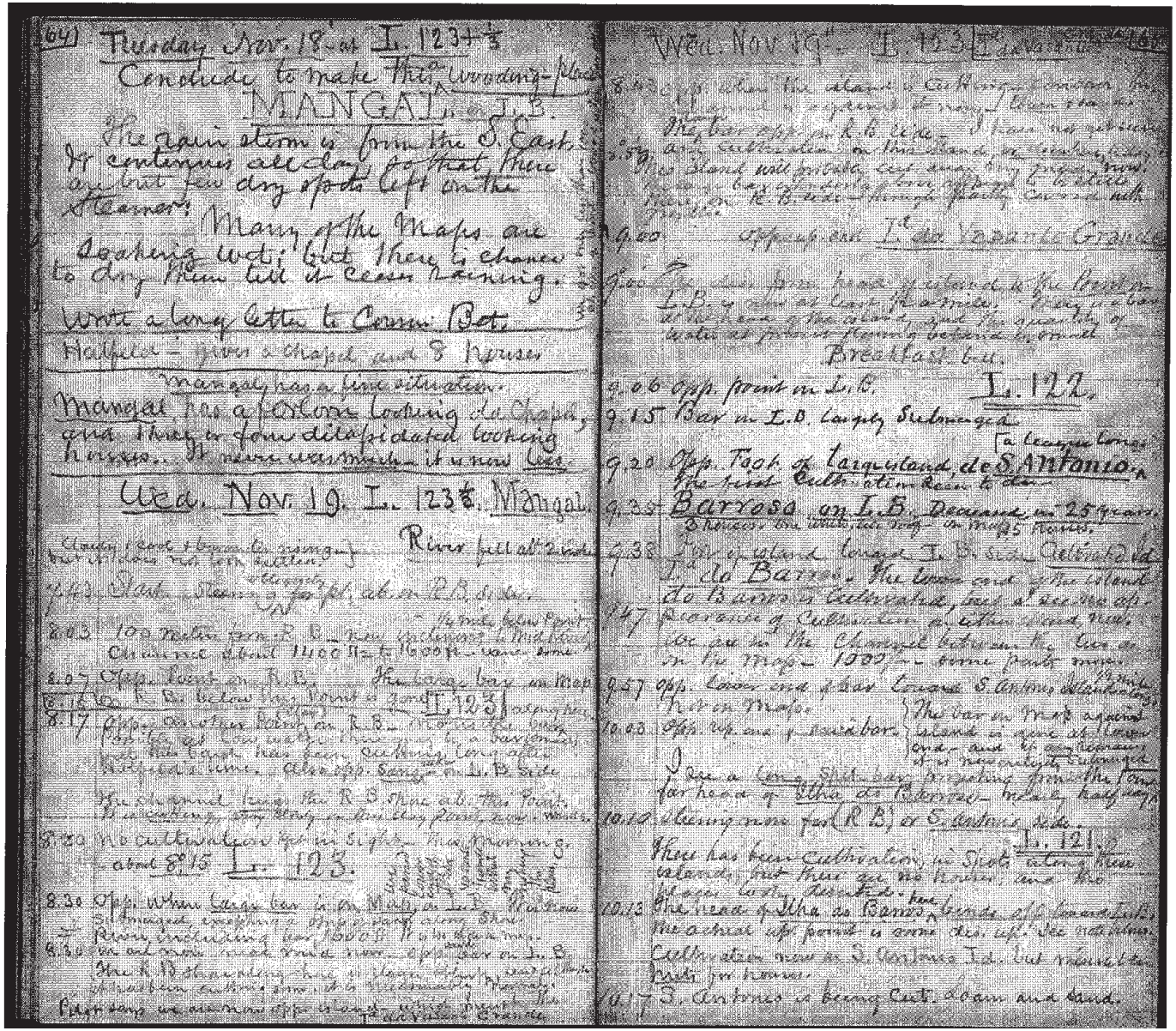
They come with their water jars all the way to the river for water. I saw no sign of a well in the town. Water arrangements, generally along the river are entirely primitive; and there is no town of sufficient importance to be able to support water works. The river water is as good as the water of the Mississippi – and is comparatively clear half the year.

Hides are here for about 3$ to 3½$ an arroba, and a hide weighs from 1/2 an arroba up to 3/4 or so – one is therefore worth 1½$ for the small hides, and 2$250 to 2$750 each. Say about 2$000 an average hide.

Piranhas leave us.

7.30 I am now informed that "we are waiting for a man who wants a chance to get on shipping for us." at 7.45 comes a man with bottles of [illegible] then come a Canoe load of fish.

Tuesday - Nov 18 - L. 123. Tues.
Rain continues - but moderate.
Start at last. She moves 3 miles an hour against the current - Mangroves - Rain and mist. Land on the port bow - Rain ceases - Land on both sides - Mangroves - Rain ceases - Land on both sides - Mangroves - Rain ceases - Land on both sides - Mangroves



Tuesday Nov. 18 at I. 123½
Concluded to make this a Working-Place
MANGAL. on I.B.
The rain storm is from the S. East.
It continues all day so that there
will not be very few dry spots left on the
Island. Many of the Maps are
soaking wet; but there is chance
to dry them till it ceases raining.
Write a long letter to Cerron Bot.
Halpeler = gives a Chapel and 8 Nurses
Mangal has a fine situation.
Mangal has a fortress looking church,
and they is four dilapidated looking
houses. It never was much — it is now Less.

Wed. Nov. 19. I. 123½. Mangal.
River full at 2 ebb
Clearing
Start Steam for Pel. ab. on R.B. side.
N
8.03 100 meters from R.B. — new anchorage in mid-channel
Channel about 1100 ft to 600 — varies some
8.07 Opp. Point on R.B.
8.16 On R.B. below long Point is 2nd I. 123½ anchorage
8.17 Opp. another Point on R.B.
8.20 Mo cultivation here on Sipolo — Mangal S.
about 8.15 I. 123.
8.30 Opp. Wham Large bar in Mid-channel
8.30 On old coral rock road
The R.B. shoreline has a large drop
9.00 Opp. point on I.B.
9.06 Opp. point on I.B. I. 122.
9.15 Bar in I.B. Largely Submerged.
9.20 Opp. Tach. of Tarquisland, de S. Antonio.
The first Cultivation Reen to day.
9.33 Barroso on I.B. Decrease on 25 years.
3 houses on beach. Ten roofs — on map 5 houses.
9.38 Bar in island Longer. I. B. side. Celebrado
I. do Barroso. The lower end of the island
do Barroso is Cultivated, but I see no appearance
147 of Cultivation at other end. Mud
as on the Channel bar on I. Cerron
in the map. 1000 — some fresh mud.
9.57 Opp. Cocoa end of Bar Cerron S. Antonio de Tarquisland
Rock on Map 5.
10.03 Opp. up and down bar. The bar on map appears
island in spite of Cocoa
and is now quite Submerged
I see a Cocoa Shell-bar projecting from the Point
far head of Ilha do Barroso — Mud & Rock on map
10.10 Clearing none for (R.B.) or S. Antonio side.
I. 121.
There has been Cultivation on Sloth eating Reen
Islands, but there are no houses and no
Cocoa now. Reen Fed. — one
10.13 The head of Ilha do Barroso, Grande of Cocoa Fed.
No chrac after point is some dec. cult. See notes.
Cultivation now on S. Antonio I.d. but miserable
Cocoa for home.
10.17 S. Antonio is being Cut. Cocoa and Sand.

Wed. Nov 19. L. 121.

10.22 Opp. Starboard (about midway) of the S. Central Channel a small Channel side to make the Islands. Very extensive mangrove flats on Coast of mor. Trees 15 head of I. B. Antonio.

10.28 Opp. the east head of Ilha de Barros. It is about the head of

10.32 opp. upp. end of bar on head of I. de Barros. I.B.

10.37 Opp. Pt Cadaço – 2 houses one white the other Sabrina as 2.5 years ago.

No cultivation visible – except I think the orange & fruit of garden on Point below.

10.50 Cancer Opp. on I. B. about 10 acres round very evidently thatched houses – 2 with chimneys Some Cultivation on Top of Bank – Slopes steep Well Cultivated

Channel 1200 feet.

10.50 L. 120.

10.57 Opp. the point of Concaixe – We are nearing in Close to I. B., hardly even where bar appears on map.

Appearance of iron ore heaps on I. B. point along slope of land – They are iron ore heaps and probably a formation here, overlapped with Clay – Yellow coloured like bog ore.

Hatenda 200 miles around this Point

High Clay bank. Cocoa trees. Cultivated.

11.03 Opp. lower end of new green island.

11.04 Opp. a wooden little Matchbox at I. B. shore.

11.05 Opp. Vieogas. – 3 Common houses visible – all the Number 25 years ago.

11.10 Opp. upp. end of little new green island.

The bar on R.B. side on Map is Slue White Yellow

11.14 Opp. Where I. B. high bank Suddenly drops from 25 fms to about 18 fms about mor. Nice woods

The bar on map on I. B. Shore along here is gone

The Channel is right on the shore

11.20 Opp. Lower end I. de Vieogas. Though there is nothing but a sand bar with a Thin growth

The Channel bet. this and I. B. is now 800 ft. wide

We now pass Channel Map this is the 2nd de-

Wed. Nov. 19. L. 120.

11.25 Opp. Since leaving Sta Isabel N. Coast we find up the river. On Examining by Map, I see it has to continue along near I. B. Shore – Ilha S Barbara

This former island now high sand bar often aground farther up the river than Map shows, and broke over inward the R.B. side – but still leaving a fair deep channel on the R.B. side.

Nothing up to opp. the mouth of the Riaxo dos Cavallos on I.B. L. 119.

11.36 Ac Coast L.B. Scale and Slue between sand island bar and the mouth of Rio dos Cavallos.

11.40 Opp. point of Rio dos Cavallos – and also Opp. Upper end of Ilha do Vlegas sand bar.

I believe that the main channel is on R.B. side but this is very good; Map is not correct.

11.45 Ilha da Maxiamba on our R. Sp Coconuts on a Sand bay island – of no account – low wooded

The low ground beyond on I.B. is somewhat Cultivated – several huts appear. None on R.B.

11.48 Quite a wooded on R.B. – 200 miles to run Apt.

Beautiful River, Wooded. Lake like. Trees of more on the.

11.55 Opp. head of Ilha da Maxiamba. a sand bar with trees, just above on I.B.

11.58 Opp. point on R.B. – 200 miles to left – We are now heading away from R.B.

Sand bar Continues on I.B. Side.

12.05 Opp. 1½ houses on R.B. a little cultivation.

12.13 Opp. Ponta de Barreira – (can I take it to be) Also opp. Lower end of bar to our left in mid river. This bar runs up obliquely towards R.B. for 2 miles but it still keeps a channel and a much wider form through it now.

But I am uncertain as to where to place this on the map.

12.28 Heading rather inward R.B.

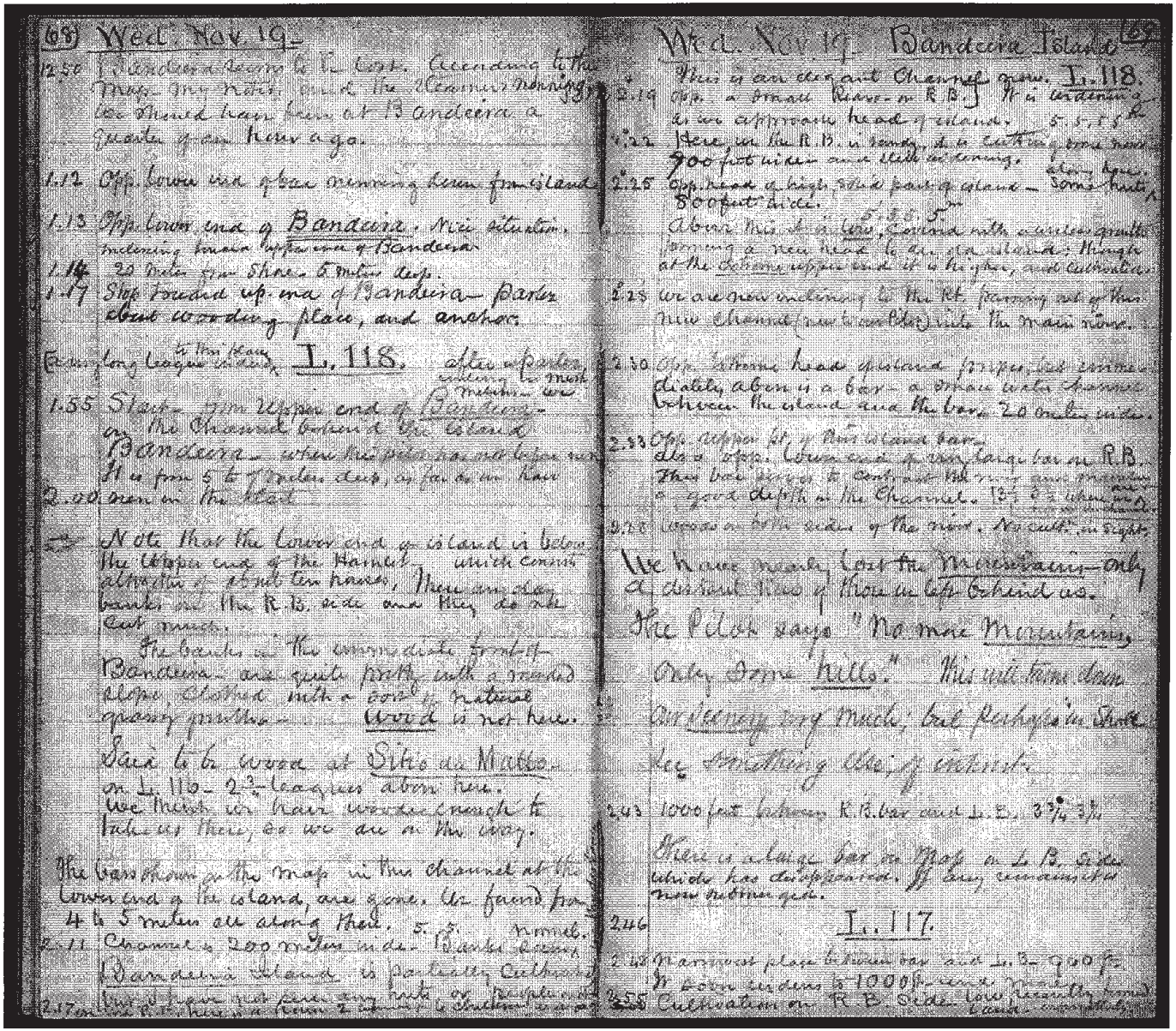
12.36 Within 200 meters of R.B. still approaching.

12.40 " 30 " " R.B. Steering up, & Opp.

12.42 Opp. Cacl Cocoa trees hanging from banks

12.45 Steering out from shore.

Now shoal water, mile or more from shore. Island Grassy, close here edge of Wooded Continent Real 40.



(68) Wed. Nov 19–

12.50 I Sandeira Point to the East. According to the Maps my next mark the Examiner Morning Cape should have been at Bandeira a quarter of an hour ago.

1.12 Opp. lower end of bar running down from island

1.13 Opp. lower end of Bandeira. Nice situation, inclining towards upper end of Bandeira

1.14 20 Fathoms from Shore. 5 meter deep.

1.17 Stop Forward up. end of Bandeira— Parker about mooring place, and anchor.

Bearing long Leagues to the East L. 118. after a Parker ordering to moor Meridian

1.55 Start— from Upper end of Bandeira— the Channel between the Island Bandeira— where the Pilot has not been required to go from 5 to 7 Meter deep, as far as we have seen on the Chart

2.00 Note that the Lower end of island is below the Upper end of the Harbour which consists almost of about Ten Houses. There are steep banks on the R.B. side and Bay to the East mark.

The banks on the immediate South of Bandeira— are quite steep with a rounded slope Clothed with a good of natural grassy growth— Wood is not here.

Good to be wood at Sitio da Mabbe. on L. 116— 2 3/4 Leagues about here. We must in hour wooded enough to Take us there, so we are in the way.

The Bars shown on the map in the Channel at the Lower end of the island, are gone. We found from 4 to 5 meter all along that. 5 3/4 Nautical.

2.11 Channel 200 meters wide— Banks steep, Bandeira Island is partly Cultivated

2.17 on R.B. there is a House 2 Leagues to Southward

Wed. Nov 19. Bandeira Island (69)

2.19 Opp. a small River on R.B. It is situated at the upper end of island. S. S. E 5/8

2.22 Here, on the R.B. is sandy, & a cutting some 300 feet wide and with no trees. Many Houses.

2.25 Opp. head a high Rock part of island — some huts, 800 feet above. S. S. E 5/8

Above this is low, Covered with a willow growth forming a new head to the island. Height at the Lower upper end of is 80 feet, and Cultivated

2.28 We are now entering to the Rt. passing out of the New Channel (now in another) into the main river.

2.30 Opp. Extreme head of island, steep, and terminates abruptly above is a bar— a small water Channel between the island and the bar. 20 Meters wide.

2.33 Opp. upper end of Pons island bar. also a Opp. Lower end of the large bar on R.B. These bars appear to be only one, and the water is good depth at the Channel. 13 1/2 fathoms

2.38 Woods on both sides of the river. No cultivation in sight.

We have nearly lost the Mountains— Only a distant View of those we left behind us.

The Pilot says "No more Mountains, Only some hills." We will have them

Current very much, but Perhaps in Shore

Rec Something Obs of Current.

2.43 1000 feet between R.B. bar and L.B. 3 3/4 3/4

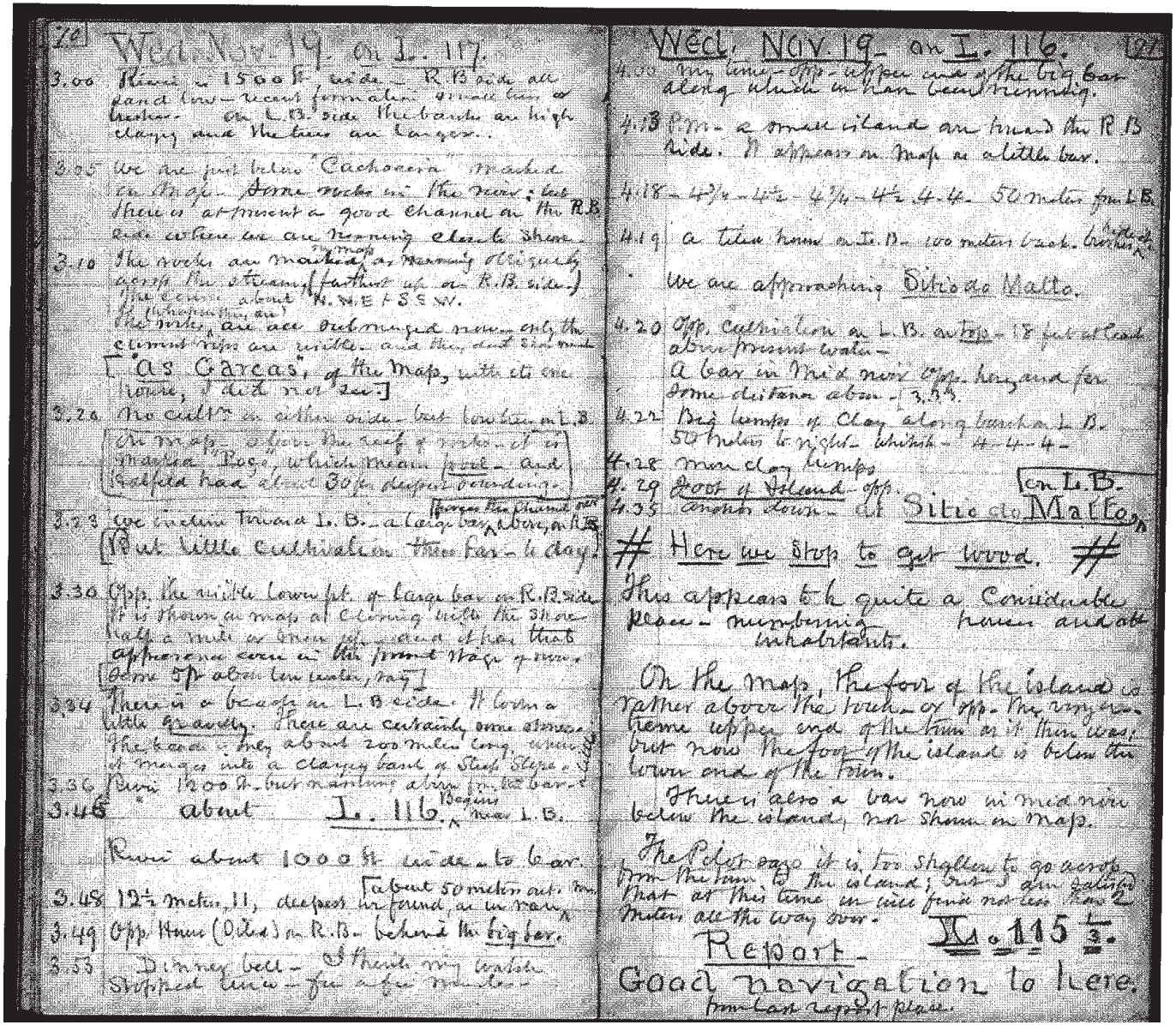
There is also a bar on Map on L.B. Side which has disappeared. If any remaining is now submerged.

246 I. 117.

2.48 Narrowest place between bar and L.B. 900 ft

In Lower reaches is 1000 ft. wide. Nearly round

2.58 Cultivation on R.B. Side— low Nearly round



Wed. Nov. 19 on I. 117.

3.00 River = 1500 ft wide – R.B. side all sand low – recent formation – small bar or barrier – On L.B. side the banks are high clayey and the trees are larger.

3.05 We are just below "Cachoeira" marked on Map. Some rocks in the river; but there is at present a good channel on the R.B. side & here we are running close to them.

3.10 The rocks are marked on Map as running obliquely across the stream (farthest up on R.B. side) the ends about N.NE & S.S.W. (Whereas they are) The rocks are now submerged now only the clumps tops are visible – and they don't show much [as Caracas, of the Map, with etc one hours, I did not see.]

3.20 No cultn on either side – but low lying on L.B. On Map, above the reef of rocks – it is marked Pedra, which means just – and Salpeta has about 30 ft deeper depth.

3.23 We enter Towards I. B. – a large bay above, on R.B. [But little cultivation there far – a day.]

3.30 Opp. the middle lower pt. of large bar on R.B. side. It is shown on map as Clearing with the 3 houses & a mill or three of them – and it has that appearance even in the present Map of river. [Some 5 ft above low water, say.]

3.34 There is a beach on L.B. side. It looks a little gravelly. There are certainly some stones. The bank is very about 200 miles long, when it merges into a clayey bank of Steep Slope.

3.36 River 1200 ft. but narrowing above the bar.

3.46 " about I. 116. Begins near L.B.

River about 1000 ft wide – to bar.

3.48 12½ metres, 11, deepest we found, as we pass

3.49 Opp. House (Ollas) on R.B. behind the big bar.

3.53 Dinner bell – & thereby my watch stopped time – for a few minutes –

Wed. Nov. 19 – on I. 116. 127

4.00 My time – Opp – upper end of the big bar along which we have been running.

4.13 P.M. – a small island on toward the R.B. side. It appears on Map as a little bar.

4.18 – 4¾ – 4½ – 4¼ – 4½ 4.4. 50 Metres from L.B.

4.19 a Tiles house on L.B. – 100 metres back. Another

We are approaching Ilha de Matta.

4.20 Opp. Cultivation on L.B. on top – 18 feet at least above present water –
A bar in mid river Opp. long and far some distance above – 3.5½.

4.22 Big lumps of Clay along bank on L.B. 50 Metres to right – which – 4 – 4 – 4 –

4.28 more clay lumps

4.29 Foot of Island – opp. on L.B.

4.35 Enormous clump – at Ilha de Matta.

Here we stop to get wood.

This appears to be quite a considerable place – numbering houses and about inhabitants.

On the map, the foot of the Island is rather above the bank – or opp. The very extreme upper end of the town as it then was; but now the foot of the island is below the lower end of the Town.

There is also a bar now in mid river below the island, not shown on Maps.

The best way is, too shallow to go across from the town to the island; but I am satisfied that at this time on this side not less than 2 Metres all the way down.

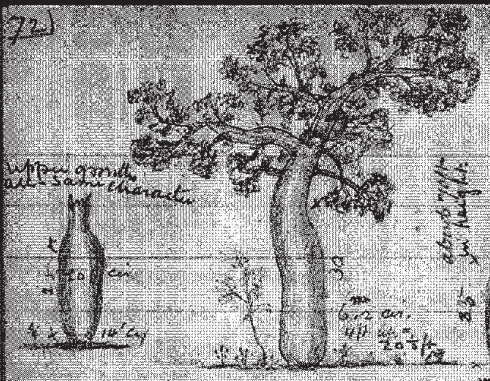
No. 115 1/3.

Report –

Good navigation to here.

from last report of place.

72



About 35 ft to the first limb — 40 ft to 60 ft
An opp. tree from here — and 35 ft max.
native woods
We saw 4 of these odd trees within a small area not over 200 meters — [illegible] apart — about One Mile from the river — back of the Sitio da Matta. [Visited them two days later — May occur in the
mid of high woods, on a tolerably level Sandy plateau elevated a few feet above the highest floods — 10 feet or more.

I think then, judging from the natural growth that agriculture might succeed here without irrigation, by planting at once at or toward the end of the rainy season — Jan. or April — getting the crop in July. [Prof Derby is of opinion that this place a mile from the river has formed part of the valley, because it is comparatively clear — as if it had been cleared & mean. I am not sure, however that it has not been cultivated, or used if was cleared by man. We never also not reach it.]

The other trees in the woods where these large Bamgudas grow are comparatively small; though they are numerous, since the ground has a varied growth at this time, of bushes and weeds under and surrounding the small and large trees. The season for steamers is but a little further onto March when we were.

Thur. Nov 20th Sitio da Matta

We remained here all day — and men, and others living here, with whom we bargained, getting wood at 5 & 6 milreis — per 1000 sticks.

During the day we had numbers of visitors — females largely in the majority.

One young Indian Lady, of about 20, had never before seen herself in a looking Glass, till she looked into the Cabin looking-glass. Some of the others appeared quite astonished, and looked only glances at the glass. The others stared and laughed amusingly at themselves.

This place has about 100 houses, more or less, but not one good house. Many of them are at present uninhabited, but the Professor, (Teacher of the School) who with his wife and baby called, says, that the people are more Cultivating, in the islands, and that when the river begins high waters, their plantations will be cut off and already the harvest.

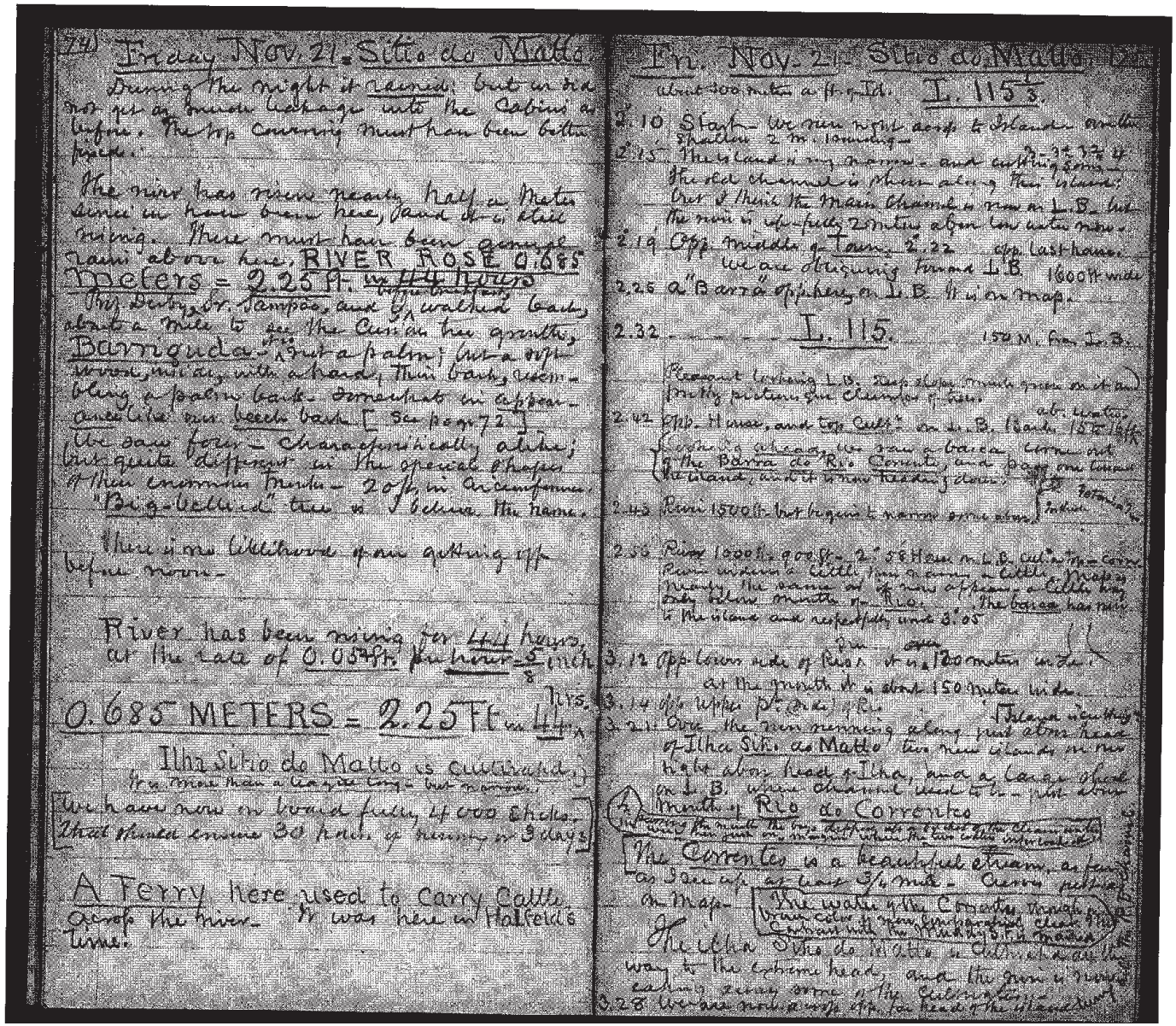
The Chapel was begun many years ago but there is nothing but the adobe walls & tile roof. There is an wooden large wooden cross in front on the new route; but there is no padre.

The people appear to be good natured and polite, though ignorant.

The Professor says there are nominally 80 scholars; but none hardly more than 40 attend and even not more than two or three times. When they come back from the islands, they learn the greatest rapidity. They learn reading and writing. (I am reminded of the Indian Agency Schools at home — which are more famous — only that they Cost the people [the government] a good deal of money.) This gentleman brought quinine but my doctor. His wife is quite dark — the baby a little lighter.

Most of the Sitio is elevated above the high floods having a river bank of gravel, sloped in places, 25 ft high. The clay has a large admixture of sand.

The river is rising. A fine Clear day.



74) Friday Nov. 21 - Sitio do Matto.

During the night it rained; but in the morn per an unseen leakage into the Cabins as before. The top covering must have been better pitched.

The river has risen nearly half a Meter since we have been here, and the Natives say it is rising. There must have been a rapid rain above here. RIVER ROSE 0.685 Meters = 2.25 ft. in 44 hours

My Derby Dr. Sampaio, and Gl Watkins Boat, about a mile to see the Curious tree growing Barriguda. "A Gut a palm; Gut a pipe Wood, made with a hand, Main Bark, Resin- bling a palm bark. Ornament on Effoar- ance like our beech bark. [See page 72]

The same four - Characteristically alike; but quite different in the special shapes of their Enormous Trunks - 20 ft in circumference. "Big-bellied" tree is a Velvet like name.

There is no likelihood of our getting off before noon -

River has been rising for 44 hours, at the rate of 0.015 ft per hour = 5/8 inch per hour.

0.685 METERS = 2.25 ft in 44 hrs.

Ilha Sitio do Matto is cultivated; it is more than a League long - but narrow.

[We have now on board fully 4 000 Shells. That Market ensures 30 hours of running or 3 days]

A Ferry here used to carry Cattle across the River. It was here in Halfeld's time.

Fr. Nov. 21 - Sitio do Matto

about 300 meters a ft. pt. I. 115 3/4.

2.10 Start - We run right across to Islands and the Shallow 2 m. running -

2.15 The Island is very narrow and cutting some - The old channel is shown along these Islands. Out of these the Main Channel is run on L.B. but the river is now fully 2 Miles & from low water mark.

2.19 Opp. Middle of Town 2.22 opp. last House. We are passing round L.B. 1600 ft. wide

2.26 a "Barra" off here on L.B. ft. in on map.

2.32 - - - - I. 115. 1.5 M. from L.B.

Pleasant looking L.B. Many shops, much green on the hills, pasture, fine Champion of Cows

2.42 Opp. House, and top Cattle on L.B. Bank 12 ft high

Passing a Creek on L.B. a branch comes out of the Barra do Rio Corrente, and a bay on the Island, and it runs Reaching down.

2.42 Runs 1500 ft. but begins to narrow some also

2.56 Runs 1500 ft. 900 ft. - 2" 58 Have on L.B. called "the Corre- Runs in from a little Town or Cattle Many Many the name of the river of Town a Cattle has only these mouths on Rio. The town has many & the islands are respectfully one 3" 05 pm

3.12 Opp. town side of Rio. It is 1200 meters in L. at the mouth it is about 150 meters wide.

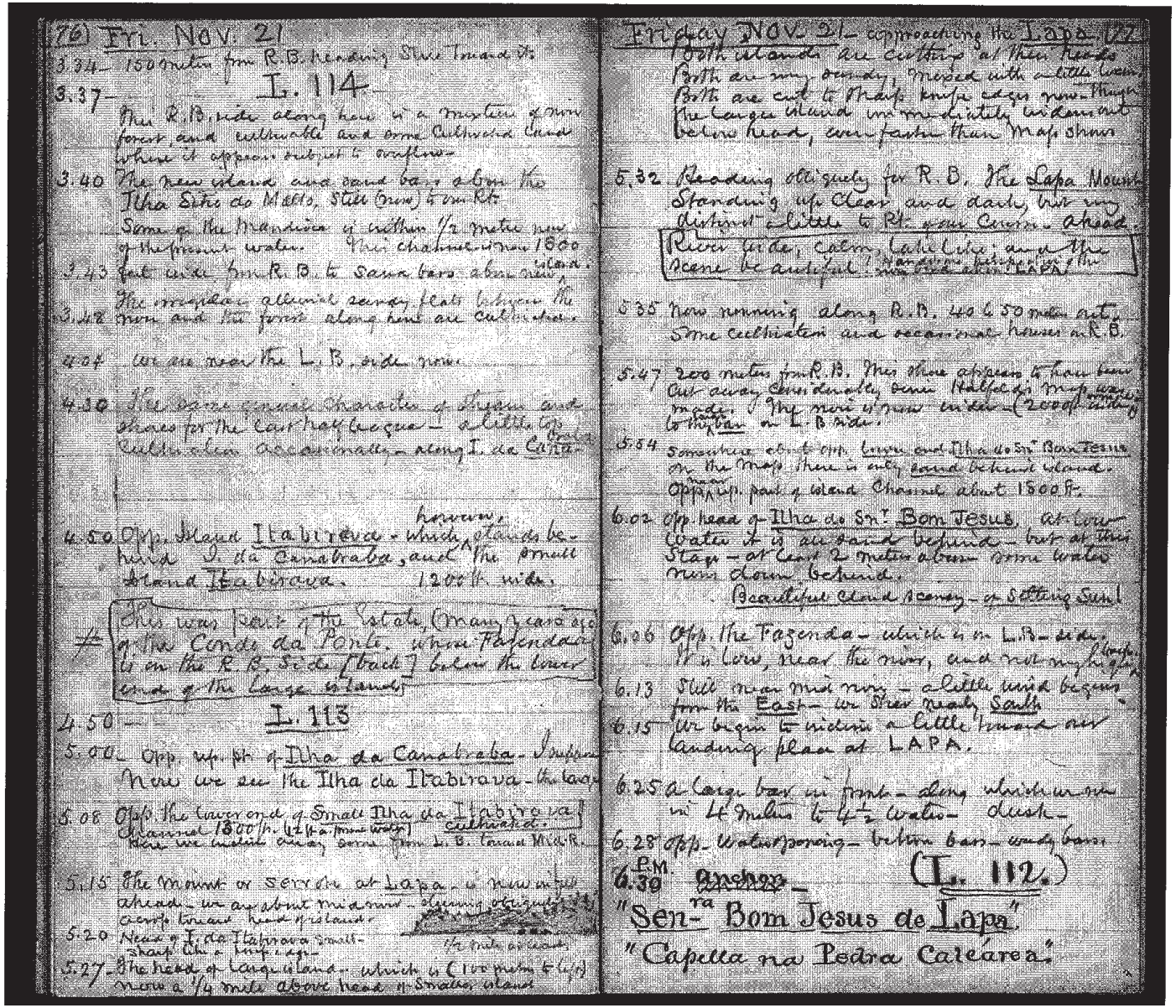
3.14 Opp. upper pt. of Ilha "Talaya" on Map

3.21 One - the run running along just above head of Ilha Sitio do Matto has now islands in the middle along head of Ilha, and a large Shoal on L.B. where channel used to be - just down the Mouth of Rio do Corrente

The Corrente is a beautiful stream as far as I can see at least 3/4 mile - Course pictured on Map. [The water of the Corrente much of a Coffee color - running rapidly clear of Sand - contrasts with the muddy S. Fr. waters]

Ilha Sitio do Matto is Cultivated all the way to the extreme head, and the grass is rapidly coming across one of the Channels

3.28 We are now opp. the head of the Island



(76) Fri. Nov. 21

3.34– 150 metres from R.B. heading S.W. to I. and N.

3.37– I. 114

Thro R.B. side along here is a mixture of new forest, and cultivated and some Cultivated land where it appears subject to overflow.

3.40 The new island and sand bars a little Ilha Silva do Mello. Still (now) 4 on Rt.

Some of the Mandioca & cultivation 1/2 metre now of the present water. Main channel now 1600 feet wide from R.B. to Sand bars above island.

3.43 The irregular alluvial scenery peculiar to the river and low forest along here are cultivated.

3.48 We are near the L.B. side now.

4.04 We have general character of bigness and shores for the last day or so — a little hilly Cultivation occasionally — along I. da Cruz.

4.30 Opp. Island Itabirova — which stands behind I. da Canabraba, and the small Island Itabirava. 1200 ft. wide.

4.50 Opp. upper pt. of Ilha da Canabraba — I suppose now we see the Ilha da Itabirava — the large

5.00 Opp. upper pt. of Ilha da Canabraba — I suppose now we see the Ilha da Itabirava — the large

5.08 Opp. the lower end of Small Ilha da Itabirava [cultivated.] Channel 1800 ft. [1/2 a mile wide] Here we incline away some from L.B. course N.W.

5.15 The Mount or Serra de Lapa is now in full ahead — we are about mid-river — steering obliquely for a large broad hump of land.

5.20 Near E. da Itabirava small — [sketch] The mts. are Lapa.

5.27 The head of Large island, which is [illegible] now a 1/4 mile above head of Small island

Friday Nov. 21 — approaching the Lapa. 112

Both islands are cultivated. Their ends Both are very sandy, mixed with a little vegetation. Both are cut to sharp knife edges now. The large island is undoubtedly inundated before flood, even faster than Mississippi

5.32 Heading obliquely for R.B. The Lapa Mount Standing up clear and dark, but very distant — a little to Rt. of our Course — ahead.

River wide, calm, table like; and the scene be autiful! [illegible] of the LAPA

5.35 Now running along R.B. 400 & 50 metres off. Some cultivation and occasional houses on R.B.

5.47 200 metres from R.B. Mts. there appears to have been cut away considerably some [illegible] way made. The new is now in sight — (200 ft. [illegible] to the bar on L.B. side.

5.54 Somewhere about opp. Lower end Ilha do Snr. Bom Jesus on the map. There is only sand behind island. Opposite part of island. Channel about 1800 ft.

6.02 Opp. head of Ilha do Snr. Bom Jesus. At Low Water it is all sand behind — but at this Stage — at least 2 metres of water some where near down behind.

Beautiful cloud scenery — at Setting Sun!

6.06 Opp. the Fazenda — which is on L.B. — it is low, near the river, and not very large

6.13 Still near mid-river — a little wind begins from the East — we steer nearly South

6.15 We begin to incline a little towards our Landing place at LAPA.

6.25 A large bar in front — along which we run in 4 ft. [illegible] to 4½ Water — dusk —

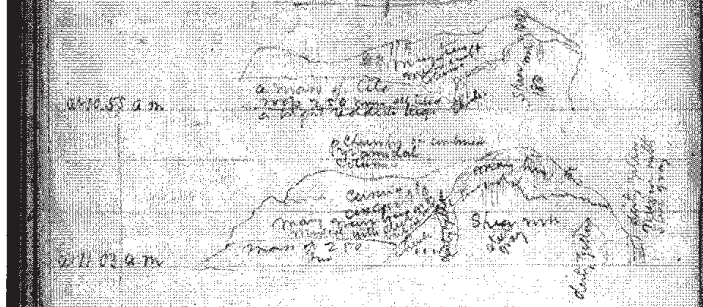
6.28 Opp. Water sprouting — bottom bars — windy bars

P.M. 6.39 Anchored — (I. 112.)

"Sen- Bom Jesus de Lapa"

"Capella na Pedra Calcarea."

On League 112



Senhora Bom Jesus do Lapa.

Saturday - Nov. 22nd LAPA L. 112

10.45 Start from L 3?2 — River full — Last night

11.08 Port of Present Extreme Lower end of Ilha do Meio. It has extended down Rheum since Halifax time a long distance below the old post, and the bank is now only a few feet above mean water level through it is cultivated. Cultivation on (lower) Islands

11.15 about opp extreme lower end formerly, as shd. be seen. The Channel we are in is but island and I.B.

11.20 We run now over L.B. 3.3.2? - (Chart 1200 metres)

11.27 opp. up end of Ilha do Meio. low sandy. Sand bar extends 500 metres from island (Mainland one ½ mile long) L. 111.

11.37 Opp. up end of bar extending about ¼ of the bar on Map, on L.B. about ¼ over. The Channel is now on that side of the river. The bar is

11.39 The river has been widening the L.B. side of late years.

11.43 now are 200 metres from L.B.

11.45 Opp. Lower end of Ilha Vaz, 250 metres to our left. It is Sandy, submerging at high water, some Island (Map) small.

11.51 Opp. up end of Ilha Vaz, Say ½ mile long, small ½ mile on Map. It is Say 200 metres from R.B. Shore.

11.53 Opp. Lower end of small island now joined R.B.

11.54 Opp break in bank of L.B. down to level of mound 12 ft.

In the neighbourhood of Tambil on L.B. and Cambos on R.B.

12.04 Opp. up end of small island now joined R.B. This island about ½ mile long - and cultivated. ¼ and not seen on Halfield's survey.

River about island is 2500 ft wide. R.B. and L.B. Also cultivated, timber back, and ? bright.

12.10 Sand bars - partly submerged, beginning, mid river - many over ½ wide. River 2500 ft. L.B. clear from Bush Channel on L.B. side - Where in run

12.22 Fazenda do Tambil, on Map - about here

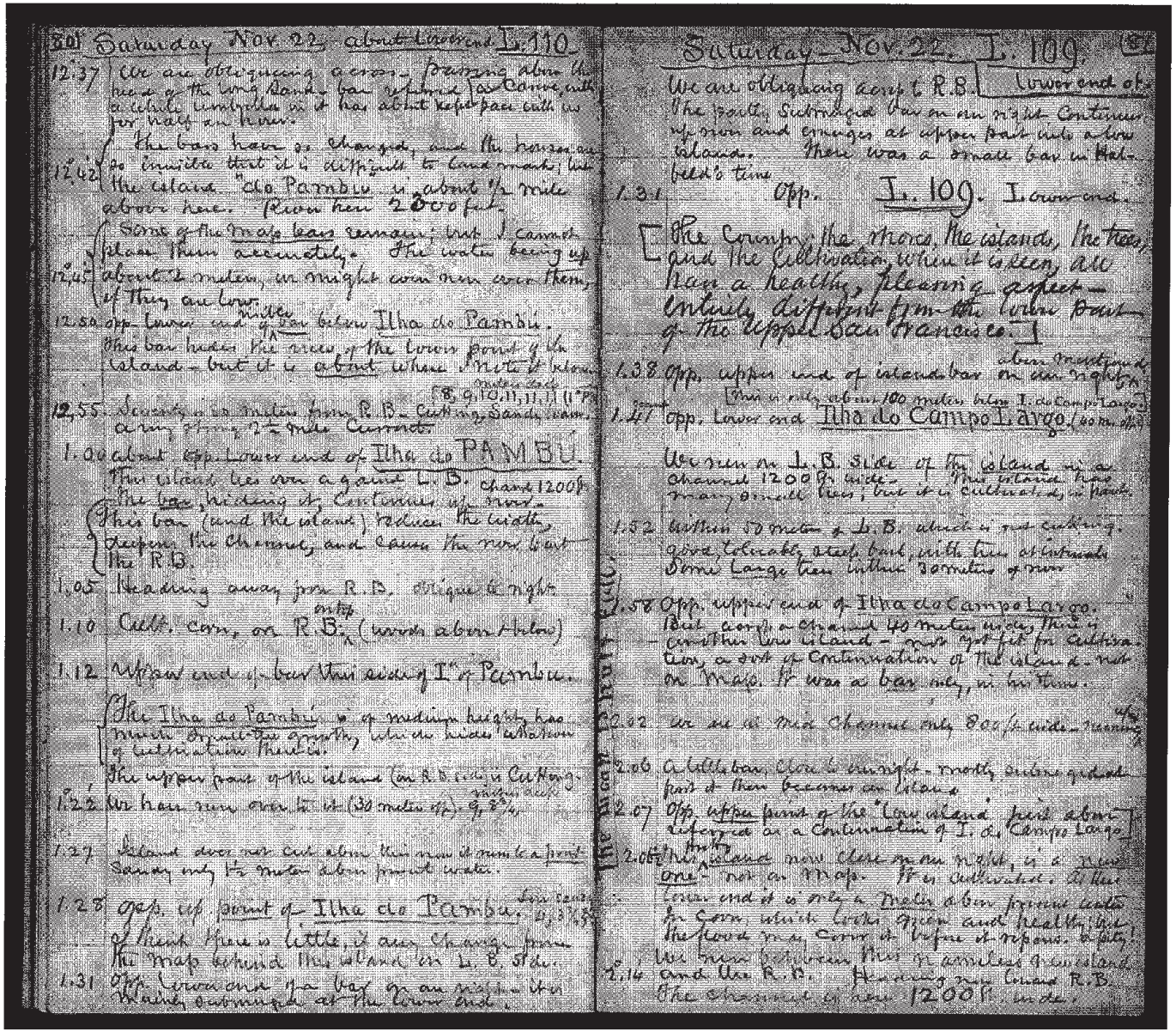
12.29 Some little cultivation to edge of sloping bank from L.B.

12.30 Opp. depression in L.B. marked on a slope on map

12.34 " " Pasture on " - Sand

12.36 " " L. 110. mid channel now from L.B.

12.38 about opp. head of the long Sand Bar.



30 Saturday Nov 22 about Lower end L. 110

12.37 We are obliquing across a broad bay with the head of the long Bombay bar on the port bow. As Canoe with a white umbrella in it has about kept pace with us for half an hour.

12.42 The bar has changed, and the horizon is so invisible that it is difficult to find marks, but the island Ilha do Pambu is about ½ mile above here. River here 2000 feet.

12.45 Some of the Map bars remain; but I cannot place them accurately. The water being up about 2 meters, we might cross over them if they are low.

12.50 opp. Lower end of bar below Ilha do Pambú. This bar hides the river of the lower point of the island - but it is about where Mota it shows.

12.55 Nearly 2 miles from R.B. - Cutting Sands com. a ring, 2½ mile Current.

1.00 about Opp. Lower end of Ilha do PAMBU. This island lies on a gaunt L.B. chan 1200ft

The bar, heading it, Continues up river -

This bar (and the island) reduces the width, deepens the Channel, and causes the rise on the R.B.

1.05 Heading away from R.B. obliques to right

1.10 Calk. com. on R.B. (words above & below)

1.12 Upper end of bar that ends I. of Pambu.

The Ilha do Pambú is of medium height, has much Spontaneous growth, but no trees with exception of Cultivation Patches.

The upper part of the island (on R.B. side) is Cutting. rising

1.22 We have run over it (30 meters up). 9, 8½

1.27 Island does not end where Map shows it runs to a point. Sandy only ½ meter above present water.

1.28 opp. upper point of Ilha do Pambu, 2, 3½ fm of Mud. There is little, if any, Change from the Map beyond the Island on L.B. side.

1.31 Opp. Lower end of a bar on main line of Islands, submerged at the Lower end.

Saturday - Nov. 22. L. 109. (31)

We are obliquing across R.B. Lower end of the [illegible] Sandy Submerged bar on our right. Continues up river and emerges at upper part with a few Islands. There was a small bar in Halfield's time

1.31 Opp. L. 109. I. Lower end.

The Country, the moors, the islands, the trees, and the Cultivation, where it is seen, all have a healthy, pleasing aspect - entirely different from the Lower Douro & the Uppal. Sao Francisco.

1.38 Opp. upper end of island bar on our right, about 2 meters uncovered. [This is only about 100 meters below I. do Campo Largo]

1.41 opp. Lower end Ilha do Campo Largo. (40 m. off)

We run on L.B. side of the island in a channel 1200 ft wide - This island has many small trees, but it is cultivated, by the Pombo.

1.52 within 50 meters of L.B. which is now sandy, gave, tolerable, steep bank, with trees at intervals. Some Large trees within 30 meters of river

1.58 Opp. upper end of Ilha do Campo Largo. But comp. a channel 40 meters wide; this is neither Low island - nor yet fit for Cultivation, or part of Continuation of the island - not on Maps. It was a bar only, in high times.

2.02 We are in Mid Channel only 800 ft wide - running

2.06 A little bar, close to right - mostly Sand, gradually first of them becomes an island

2.07 Opp. upper point of the "Low island" just above referred as a Continuation of I. do Campo Largo.

2.08½ This island now close on our right, is a New one - not on Maps. It is cultivated. At the lower end it is only a Mere bar, former used for Corn, which looks green and healthy. The land in it, Corn & before it appears to be fully 2 meters above the water.

2.14 We have between Mid Channel & Islands 9 fathoms and We R.B. Hearing now Close R.B. The Channel is now 1200 ft wide.

Saturday Nov 22. on I. 109.

2.22 Opp. Upper end of Navigators Island on Rt. Bank river Tapajoz R.B. Strong current on this shore but it is not cutting - or scarcely any. Cultivation surrounded by woods. Mere huts are 50 miles from Obidos.

There is a bar on L.B. Side the other side of the new island.

Hut, not known in connection with the River - 1400 ft. but widening, up stream.

[There is on the map an unnamed island close along the R.B. shore - I think that the Land we left this morning is this island but I cannot trace beginning or ending.]

2.31 Reading away from R.B. — when in reach Nice view up head very stony but the general bearing is obliquely down the wide river.

[If the Pilot could make more accurate gues we could say some distance but sometimes I suppose they are born in the area.]

2.42 We are opp. the point of an island which is only a bar at the lower end - on L.B. side of River miles from it

There is another island (after a channel of 400 meters width) immediately above the other.

These islands are not on the Maps; but there are very large bars along their point of the river shown on the Maps on the L.B. shore.

2.42 I. 108 - here. Remarks along

2.47 I think that the large bars shown on the neighbourhood on the maps have since become cultivated Lands

2.47 We are now heading away from R.B. but gradually inclining up river mid river.

2.55 Now in line heading up towards the island, a mile or more ahead. [I. do Veiga]

2.58 [Pilot, since above, seeing the water opening to the right of the island and the port course steer on an right, with the dwarfing Cone of Obidos ahead. Now left, with remarks he and Commandant steers about and a Navigators Island above the Cone] 3.00 P.M.

Saturday, Nov. 22 - on I. 108

83

3.05 We are running better now than we did formed hours back. We are heading to run to the L.B. Side of the Island (Halfway Channel)

3.06 [Now he heads the other side - now it xx Steers more pilotings. I dont wonder that Navigators get mad - now and then.]

Upon the whole we head for the island and on both sides of it.

3.15 Opp. Campo de Veiga.

3.21 Opt. Volta de Veiga. - where we are to stop to get off our passengers.

Commandante

Sub Delegado -

And the Engineer says he thought examination of the Cylinders - that there is some - thing wrong with it. A screw loose perhaps.

3.22 Stop. just opp. Point of Island do Veiga, Navigation Lost 22 minutes.

3.46 I set it again at 3h 46'.

I find that we have invited our guests - Commandante and Sub-Delegado to dine at 4h - and after that to leave them except the two in our Yacht - to which we will remain here for the night -

Bid farewell. It was just 5 before dinner was finished, and half past 5 by the time our Yacht returned. I had previously sent to the Engineer that we could go no further to day - He wants to do something with one of the Cylinders.

Report Good navigating to this point on Sheet 108.

Sunday - Nov 23 I.a da Volta

with full 28 inches.

5.43 Start. Upper end I. 107 [illegible] Channel about 500 ft. wide at this end of island

5.54 About. I. 107

5.56 The L.B. appears to have cut some more Naffaga timber as evidence of running. It widens and is here 1000 ft. The connecting (on the map) has evidently been cut away.

* If a Grand Navigation now!

Channel is on L.B. side. 7 & 8 metres deep at

* The Pilot's system of numbering somewhat differs from the map. I would now call Lizarme, with a flat round shape on it, No 1 as it is the most conspicuous.

6.03 "Sangador," Rum 1100 ft. cultivation on L.B.

Nothing, or appearance of, on L.B. No harm but as appearances may

[About Opp. As Tochas. The Mountain of Island on R.B.

Nil Our course along here was then best half of the Channel depths. We are running mid river, and the Channel is on L.B. side.

6.20 Opp. the Upper end of Ilha da Volta. The chart as noted on map is not near correct. 43 minutes running length of Island. This ended] meets the island about ½ miles. Rum on map

6.31 Large clearing directly over the plain of the bar at head of Island. Coral dep 4 miles

6.36 We are now 200 metres from R.B. near opp. Rio 1600

6.42 Opp. Lower end I.a do Bebedor. Channel to R.B. about 1200+ metres.

BOA VISTA (on L.B.) Fazenda do Assassinho Guimaraes

* A number of the people gathered on the bank. The large house, is a little above foot of island of the

6.45 Opp. the large, new planted, tiled house L.B.

6.50 Opp. Lower end I.a d Batalha. which takes and hides I.a do Bebedor.

The channel between this & Island is filling up.

This island Batalha - also hides the Ilha do Cabeira - which is on close to the

6.52 R.B. side of Rum [illegible] R.B. not rum visible.

Sunday - Nov 23 - I. 106.

6.55 - about at I. 106 Lower end of M. along

7.02 The main river - in which we now, is 1200 ft+ Wooded shores along L.B. Island partly cultd.

Then seems to have been little change from Maya

[Pretty, new cleared island (appears)

7.07 Channel is against island - cutting - deep, loam. Opposite, on and not going from the deep Channel, but between the islands Batalha and Palma.

7.12 Opp. Lower end of I.a da Palma. Chan 700 ft.

7.15 opp. upper end of I.a da Batalha. Now 2 only up a long island just above R.B.

The RIO DAS RAÃS entering from R.B. opposite ... here, as shown on Map, [illegible]

7.27 The little islands [illegible] Channel 800 ft. mid of the River Mouth.

Barra do RIO DAS RAÃS.

On the Map the Rio is shown to be as near 20 minutes for inaccuracies on the Map.

7.39 Opp. a water shoot on I.a da Palma. Lower end of Palma is on a channel cut across the island - through a very low undervation from this side. Channel 200 ft. and the channel is deep about 250 metres.

R.B. side beautifully wooded. Not cultivated.

The I. da Palma is considerable, cultivated 500 yards

7.47 Island opp. is very low - I.a Mutum Ilha. [illegible] cattle.

[Ngr one Palm tree visible on I da Palma!]

I think this is where water runs across. when the river is 15 metres higher, meeting the [illegible]

7.51 New channel now 250 metres - widening to 500 metres

S. S. (8.0 AM I. 105.

8.03 Opp. Upper end of I.a da Palma. The little island just above is now, on map, is gone.

8.10 opp. Palma (one good house tiled roof + 5 or 6 huts) about this is a larger or smaller than Hollyhock town or a question.

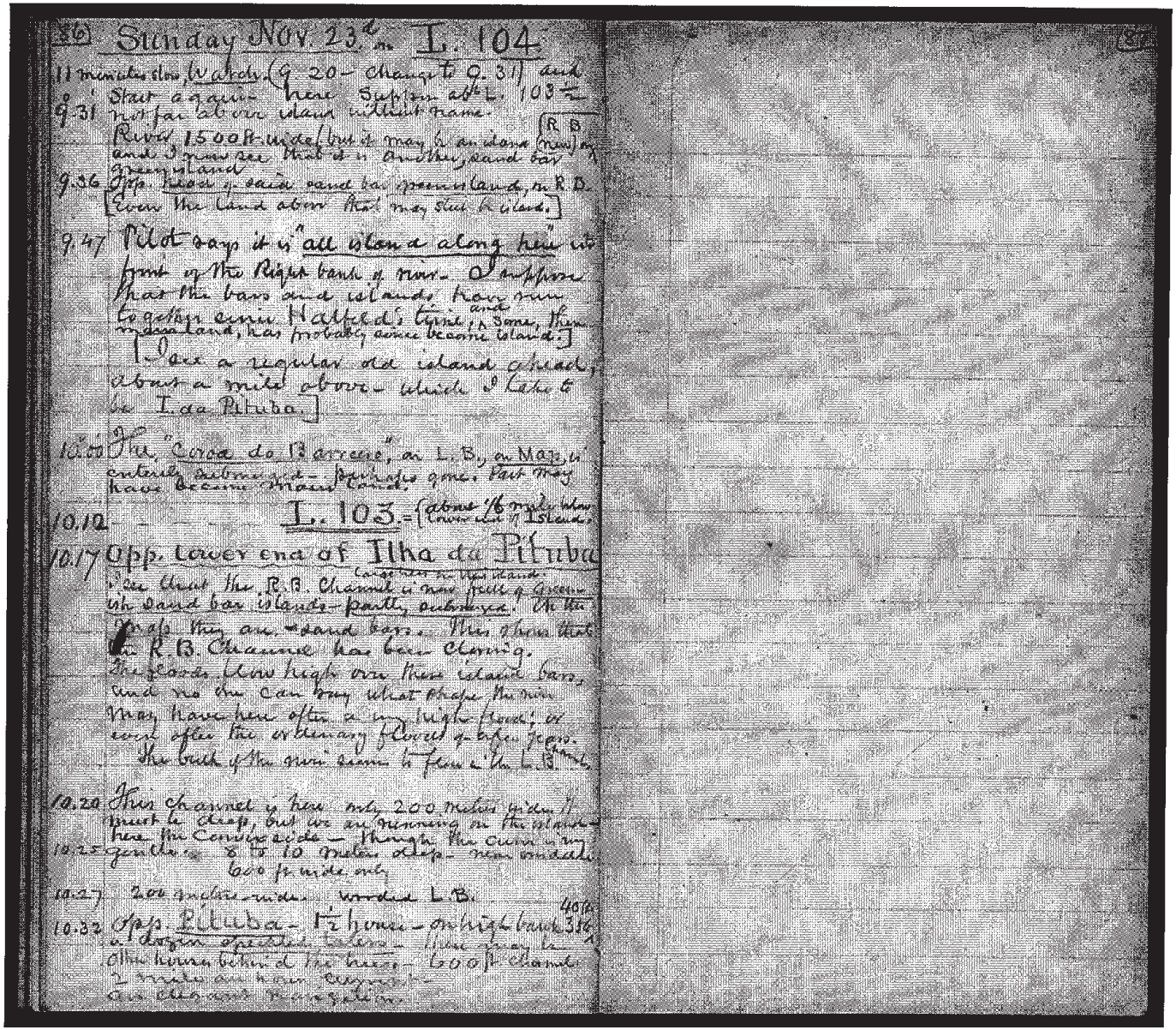
Palma is nearly

8.12 head of the island as the Map shows.

8.45 Opp. Lower end of unnamed island, on R.B. shore. Chan is quite different from Map. but this island may have been cut away at its lower end.

9.07 Opp. Island [illegible] Water channels

9.18 [illegible] like those on the main R.B. shore Opp. [illegible]



(36) Sunday Nov. 23d in L. 104

11 minutes slow, [4 clocks] (Q 20 – change to Q. 31) and
9.31 Start again – here Supposn abt L. 103 –
not far above island without name.
River 1500 ft wide (but it may be an alone [new] one
and I now see that it is another, and bar
9.36 Opp. head of said sand bar, pronounced Island, in R.B.
[Even the land above that may still be Island.]

9.47 Pilot says it is "all island along here" in
front of the Right bank of river – Supposn
that the bars and islands have risen
together since Halfeld's time, and some there
was land, has probably since become Island.]
[See a regular old island ahead,
about a mile above – which I take to
be I. da Pituba.]

10.00 The "Corda do Barreiro", on L. B., on Map, is
entirely submerged – Perhaps gone. Part may
have become mainland.

10.12 – I. 103. – [about ½ mile slow
Crew in 1 Island.

10.17 Opp. Lower end of Ilha da Pituba
Canoe seen on right shore.
Sees that the R.B. Channel is now full of Grass
ish sand bar islands – small, submerged. On the
Map this are "sand bars". Shows that
the R.B. Channel has been closing.
The Woods how high are these island bars,
and so one can say what shape the river
may have been often in high flood, or
even after the ordinary flood of before 1600.
The bank of the river seems to form a "Ilha" I.

10.20 This Channel is here only 200 Metres wide –
must be deep, but we are running on the island
10.25 [gentle] 8 to 10 Metres deep – river undivided
600 ft wide only

10.27 200 Metres wide – wooded L.B. 40 ft

10.32 Opp. Pituba – ½ hour – on right bank 30 ft
a dozen [palms] together, [above] – [there may be
others hiding behind the trees] – 600 ft Channel
2 miles an hour current –
Cut Cliffs and Bungalow.

(37)

Rien sur la page 84
Observations.
Départ de Cherbourg au premier
Calcul chaque matin à midi le dernier
Relèvement du Phare Nieuport pris avec
Vent de Sud-Ouest Cap à prendre au
Nord de Janeiro dans 29° 41.30 (au
25 au 29 - 43.16 Constellation) et au
Cap Observatoire Hospital de Rio de Janeiro
36. 2. 0.11 au Pain au 2 252 - 39.5 au
Examen.

Observations à consigner
Latitude et Longitude
au Matin Midi ou Minuit Chron-
Montres ou sur Observations du Matin
Calculs devront Observations du Midi
Longitude du Cap Corse au Rio de Janeiro
à Passage de 1.861 e. Long E. du Rio
de Janeiro) - 2h 52 - 26.30 Longitude
de Calcul Présente ou (- idem)
43 06' 38.4 (idem, Retour.

90

Astronomical Positions Engº anos 1867-68.
Determined by Sor. Carlos Krauss, IA

		Lat.		Long. W. in T. Green.	
1	Margin of River S. Francisco in front of the lower point of Ilha da Cachoeira	9°	25' 47"	2h. 48m.	06s.8
2.	Joazeiro – matriz.	9	24 36	2 41	51.4
3	As Pedras – beira do Rio	9	09 39	2 40	05.5
4	Villa do Capim Grosso	8	59 24	2 39	32.5
5	Margin of Riv. opp Caraz. bas.	8	40 19	2 38	51.0
6	Mis.º de S.J.º Bap.ª de Rodellos	8	50 11	2 38	59.3
7	Margin esq.ª of Riv. opp Riachão	8	59 56	2 38	44.6
8	Atalho, (Casa de José M.el de S.a ouro	8	59 22	2 33	13.1
9	Brejinho de Terra	9	05 45	2 33	05.4
10	Log.º a margin esq.a Riv. Mor. ofg.	9	13 12	2 32	25.5
11	Volta – Casa de Oração	9	14 57	2 32	30.7
12	Lagerro Alto	9	18 44	2 32	12.3
13	Lagoinha	9	26 47	2 31	53.0
14	Talhado	9	26 16	2 31	22.7
15	Ao pé do Rio do Curral- cinha.	9	31 32	2 31	10.8
16	Porto de Piranhas.	9	37 33	2 30	49

The obs.ns independently of Chron.r gave for the resulting Longitudes 7 menores em 12.s termos medio.
O cumprimento das precedentes longitudes a 2h 52' 28.42" Correspondeu ao longitude relativa ao I. Observat.o do Castello no Rio de Janeiro. S. Paulo em 24 de Março (1869)

See Page 89. for Observação.

Page 41. Burton Va. 1.

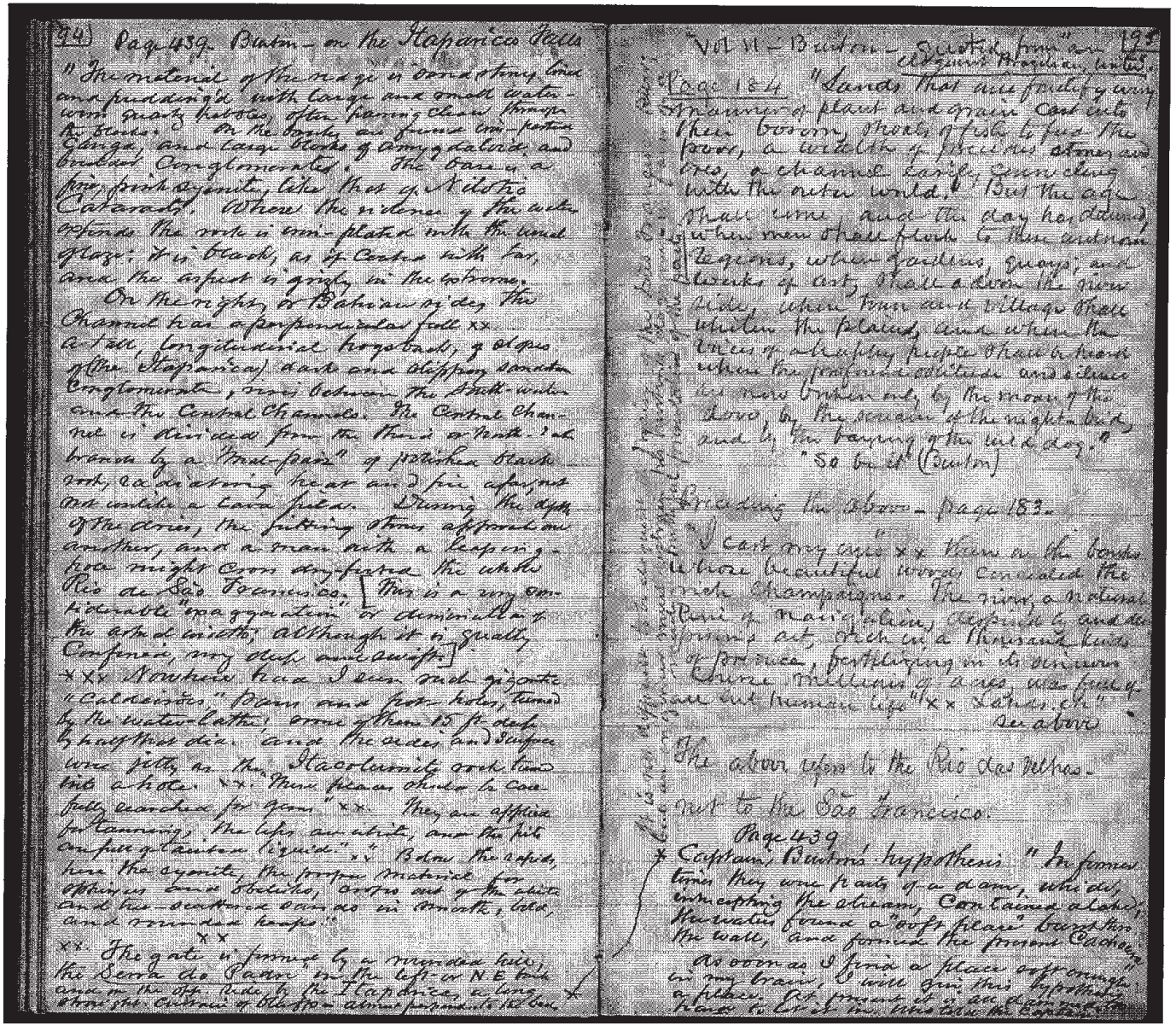
"Cultivation extended to the waterside"

"We shall spend three days on the fronteen to fifteen leagues which separates us from Varzea Redonda. ×× This section unexpectedly found chiefly the most interesting part of the voyage."

Nov. 5. We found the Ventura stream to measure only 300 fathoms (braças) [2160 feet] and its Comparatively narrow mouth was set off by a dark sun shrub on the right side, like a normal feature. I was surprised to see so many signs of labor, cultivation extended to the water side, and long lines of hedge ran down the gently sloping bank. ×× "Where that is completed as far as"

Now, all the Cultivation that there is, or has ever been, on these fourteen or fifteen leagues, as compared to the rest of the Rio Grande Valley, the Cultivation begins at the edge of low water and extends rarely or thinly 2 yards – in some places more, to about high water; and that is all there is of it! The hedges, or brush fences, and sometimes planted hedges separate the little plantations; many of which are less than an eighth of a mile long. a plantation 660 feet long, by 66 feet wide (many are smaller) contains just One Acre. There may be 8 Acres in a mile of length. In some places, where the slope is very flat, and on low islands, there is much more in a mile: but there are many stretches of miles, (in places the river, where there is no Cultivation along the river – where the banks are too steep, and where the river cuts.

No trace that I have seen, has Capt. Burton taken the pains to make this matter clear to readers. Perhaps it was not clear to him –



Vol II – Burton – Page 6

Between Sabará & Jaguára

The river is 20 leagues 1,118,400 Metres
68 miles
Breadth 44 to 47 metres – 144 to 150 ft
av. Slope 0.413.5 m. per Kilometre

Stream deeply encased.
Hardly any breadth of Valley
The banks, often perpendicular, gravel
Sand, or dark foggy clay.
Between Oct & Jan. deeply furrowed banks,
1 to 20 palmes rise – (11 to 12 feet)

according to M. Dias, the river at Sabará
stands 695 metres above sea-level
and at the Confluence 432,3 metres
Dis – 666,000m = 361.28 miles or 120.4
Geographical Leagues; and thus the
General declivity is 0.3941m per Kilom.
1.208 – per Kilometre.
The Slope of the upper São Francisco
between the Paraopéba River and
and the rapids of Pirapora – 0,4890

Page 204 – Capt Burton – writes:

"The Pirapóra is a serious Obstacle
Not insurmountable, but it would cost much
money and take a long time to remove,
than all the most serious obstructions upon
the Rio das Velhas.
No work could be carried on in the rainy
season, and the inundations would
damage the Labor done during the drys.
xx Above it also the Rio São Francisco
becomes a mass of rapids, and when you
clear one you are within hearing of another
Canoes ascend with difficulty to the mouth
of the Abaété. M. Dias accurately sur-
veyed as high as the confluence of the
Paraopéba and by figures the Obstruction
limited thus – from 40 leagues

Dimensions of "Paque Jaguára"
Built of hard Vinhatico and Canella
woods – with ribs of Páo d'Arco
and Cross-slated bottom.
105 feet long
24 in broad
24 inches deep
Weight 32 000 lbs
Greater part metal.

Unloaded draws 4 inches
increases 1 inch per 4 tons
clean
Canoe 72 tons, 22 inches deep.
between Abaetehubás & Jaguára
Makes Sabará in 12 days from
Jaguára – returning in 2 or 3 –

Page 203

"M. Dias makes the length of the
Piraporas obstacle a little of one Kilometre,
on a fall difference of level 3.55 metres.
This would give a velocity of only 3 & 4
Metres or yards per second.

The estimates for opening 40 Leagues
Canalizing up the Piraporas 1,400:000$
To the Cachoeira Grande 4.100:000$
To the Porto das Melancias 3.200:000$
5.700:000$
Say £870,000
Say 4,500,000 dollars.

Capt. Burton makes the fall 6 ft and 7 ft
– 13 ft total – descends 700 yards.
"During the "Cheias" the Rápids can pass

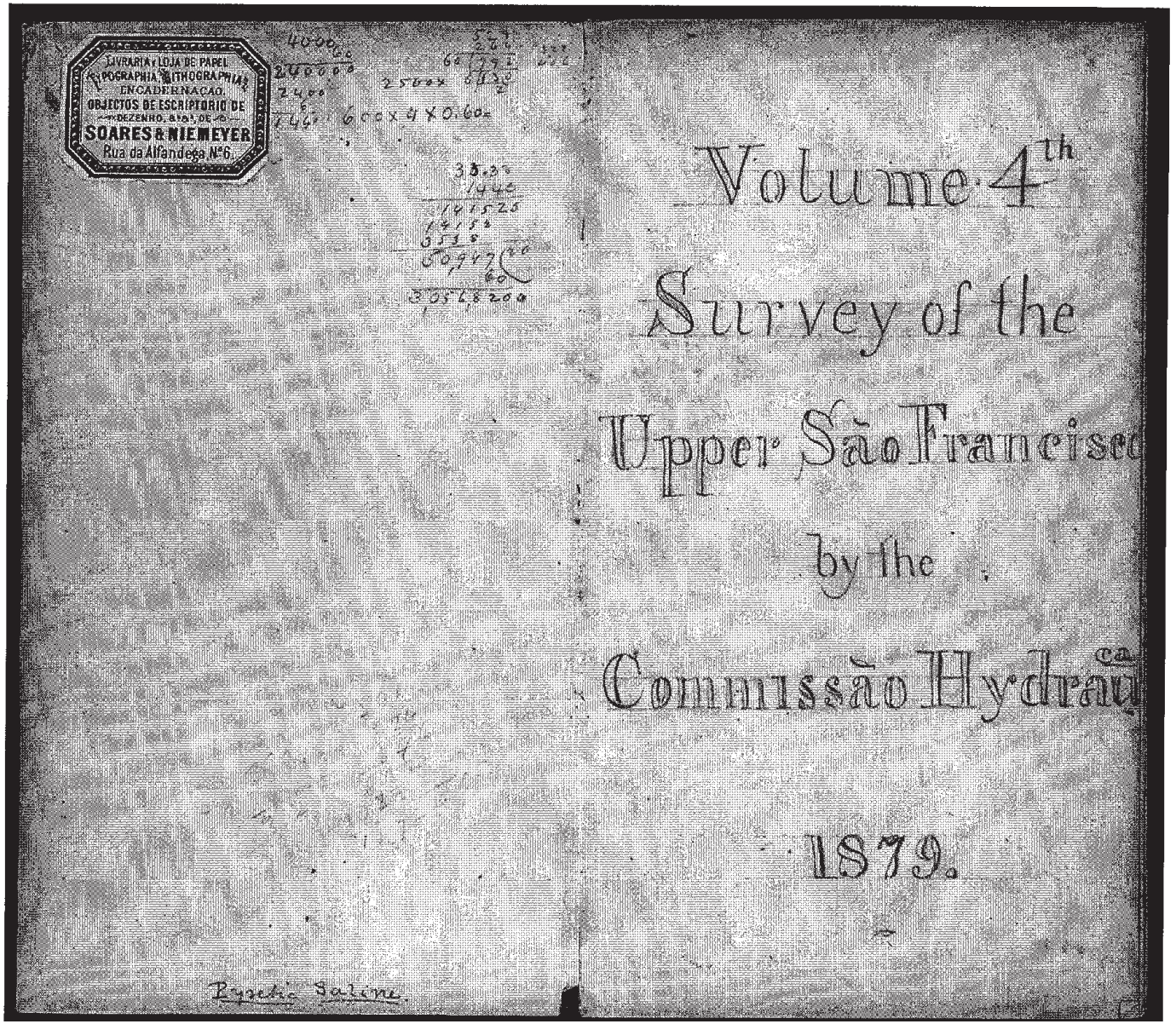
Collection 783

William Milnor Roberts Papers

Box 4

Folder 29

Part 2


LIVRARIA E LOJA DE PAPEL
TYPOGRAPHIA, LITHOGRAPHIA
ENCADERNAÇÃO
OBJECTOS DE ESCRIPTORIO DE
DEZENHO, atc, DE
SOARES & NIEMEYER
Rua da Alfandega N°6.
Volume 4th
Survey of the
Upper São Francisco
by the
Commissão Hydraca
1879.

Sunday Nov 23rd I. da Piuba.

L. 102.

A. M.

10.49 Running between Oleander Pt. & R.B. Channel 12 miles SSE of Pinkerton Rock. Course 2 miles per hour.

[Sun's L.L. 15.000 X 7/8 = 2 bells and a quarter]

[Running down Main Channel 6 miles]

At course a quick run & anchor in Channel in the Other Channel. Channel 6 miles

Pier channel entrance on S.E. point of Island. Pier 2.50 metres. No water in Pier. Island is running up and down Pt. da Piuba.

11.01 Cmp. Upper end of Pt. da Piuba one anchorage (No. 1 on master chart) 1

Left Island 2½ miles N.W. Stone Island Common bay 2½ miles N. Stone Island. The anchorage was easy, and sheltering entrance.

We run along, keeping close to the shore.

Pier on Island. Pier 2.50 metres. R.B. about here. Island 2 miles. Pt. da Piuba. The map is as seen as I can make it.

11.05 Running down the Long R. of Channel

On the starboard side of the Channel is Southern cape of Main Island. No. 2. Stand far enough to keep on the Channel.

11.08 Off Peaches Island on L.H. The R.B. shore is very high and wooded. Island has grassy hills and trees. [Pt. a Bonito, 1,000 metres]

Island a mile off Pt. da Piuba.

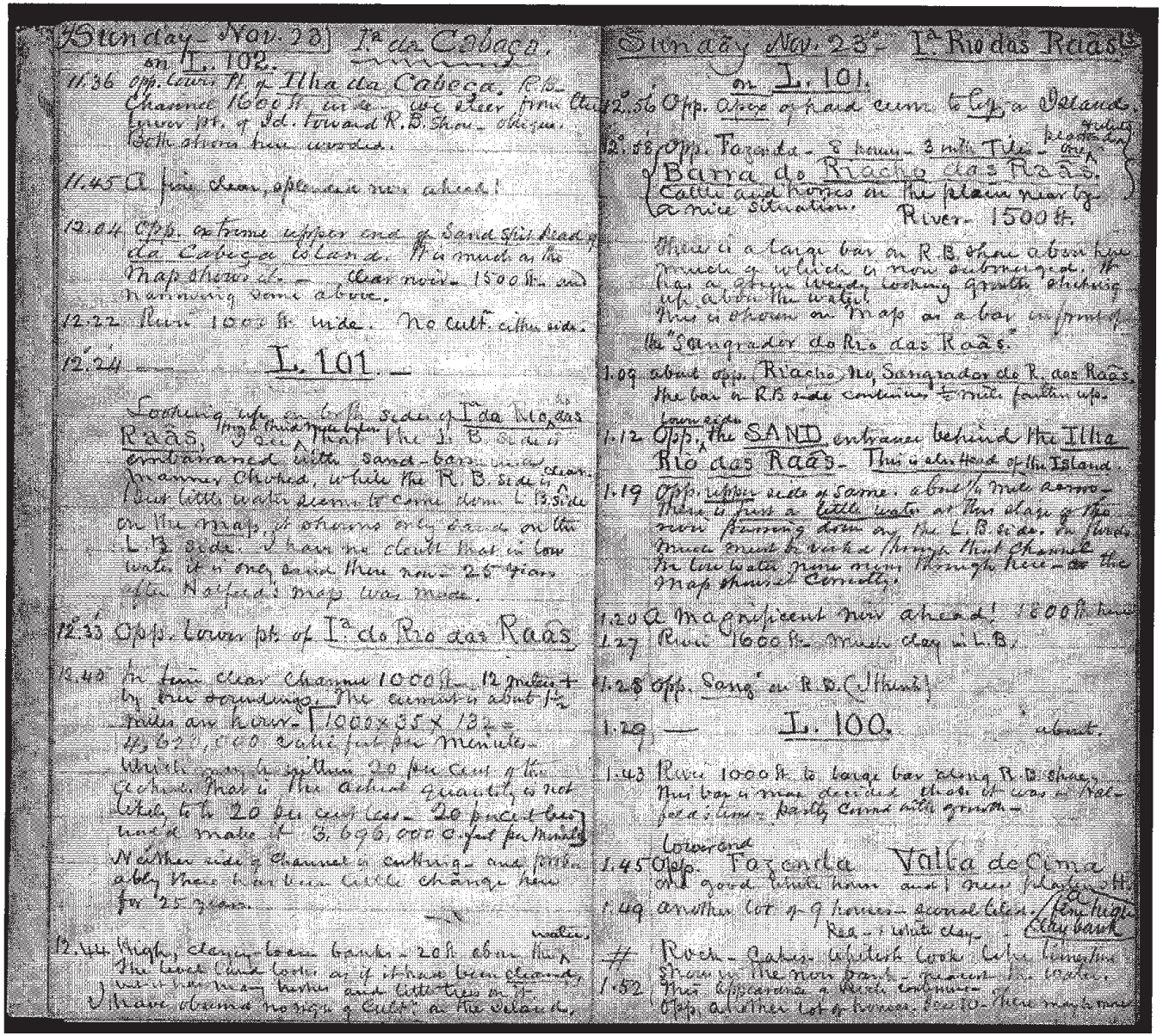
11.15 Pier on Pt. da Piuba on R.B. Island 2 miles R. [Sun's L.L. 2.000 R. course]

11.24 = L. 102.

Stopped [illegible]

The R.B. channel is very narrow. The L.H. channel is very deep. Pt. da Piuba is a high point, and the Pier is built on it. The Pier is 2.50 metres.

11.38 Pt. da Piuba on L.H. Pt. da Piuba. The R.B. channel is very narrow. Pier on Pt. da Piuba



Sunday - Nov. 23 I.a da Cabeça.
on I. 102.

11.36 Opp. Lower Pt. of Ilha da Cabeça. R.B. Channel 1600 ft. in the W.C. Steer from this Lower Pt. of Id. toward R.B. shore - obliquely. Both shores low wooded.

11.45 A fine clear, splendid view ahead!

12.04 Opp. the Lower end of Sand Spit head of Ilha Cabeça to Land. As much as the Map shows it - Clear river 1500 ft. and running same above.

12.22 River 1000 ft wide. No Cult.n either side.

12.24 — I. 101. —

Looking up the Left side of Ilha do Rio das Raas, the L.B. side is embarrassed with sand-bars, the R.B. side is clear. Many Channels, while the R.B. side is Deep Water, seems to come down L.B. side on the map, as shown on the L.B. side. I have no doubt that in low water it is only a small River now - 25 years after Nolfield's map was made.

12.33 Opp. Lower pt. of I.a do Rio das Raas

12.40 In fine clear Channel 1000 ft. 12 miles + by true soundings. The current is about 1½ miles an hour - 1000 x 35 x 132 = 4,620,000 cubic feet per Minute - Which supply is within 20 per cent of the Echoes, that is the actual quantity is not likely to be 20 per cent less - 20 per cent less would make it 3,696,000 cubic feet per Minute. Neither side of Channel is shelving - and fine deep. There is an Ebb & Flow Tide change here for 25 miles.

12.44 Mighty clayey-loam banks - 20 ft. above Water. The Level Land looks as if it has been cleared, but it has now grown bushes and little trees on it. I have observed no signs of Cult.n as the velocity

Sunday Nov. 23rd - I.a Rio das Raas
on I. 101.

12.56 Opp. Above of Land cuts to Lft, a Island.

12.58 Opp. Fazenda - 8 houses - 3 miles T'ds - pleasantly situated on A Barra do Riacho das Raas. Cattle and horses on the plain near by - a nice situation. River - 1500 ft.

There is a large bar on R.B. shore a bar here which is what is now embraced, it has a green wooded looking growth showing up above the water. This is shown on Map as a bar in front of the "Sangrador do Rio das Raas"

1.09 about opp. Riacho, the Sangrador do R. das Raas. The bar in R.B. side continues ½ mile further up. Low ground.

1.12 Opp. the SAND entrance behind the Ilha Rio das Raas - This is also Head of the Island.

1.19 Opp. Upper ends of Same. about ½ mile across - There is just a little water at this stage of the river running down on the L.B. side. In further Much Sand to make a Strong Main Channel in low water from right through River as the Map shows it correctly.

1.20 A magnificent view ahead! 1800 ft. wide

1.27 River 1600 ft. Muddy clay in L.B.

1.28 Opp. Sang.r on R.B. (Island)

1.29 — I. 100. about.

1.43 River 1000 ft to large bar along R.B. shore. This bar is more developed than it was in Feb.a 5 miles - partly Covered with grass -

Lowground

1.45 Opp. Fazenda Valha de Cima on good River house and 2 green plantations. Hi

1.49 another lot of houses - Second Cabin / Rio Tuga / Ebb bank

Rock - Gabro, Whitish Cook Calc. Sinuous Shows in the river bank - quartz &c. Gneiss.

1.52 This appearance a Rock continues - Opp. another lot of houses. Pop 10 - There may be more

4 Sunday Nov 23, Fazenda Volta da Cima

E.M.

1.57 Opp. the upper house of the place. Rock of coarse here also – near water. Some iron ore also – and a deep mass of red clay on the top bank – Clothed with trees.

1.59 Opp. point on L. B. on which there is a Col. of the coarse or detached stones, &c. forming whitish rock – which may be only argillaceous – but it looks limestony.

Here Volta da Cima – is one of the prettier places along the river. Mean the situation. The houses except two or three are like others.

2.02 Beautiful River – for a mile ahead.

Red clay formation on top, and whitish clay below, contains a Conglomerate distance for the river. exp. the bank also. Continues high – Rise of d. Elc.

2.15 Low bar on Mag. on R. B. shore as well there a portion of it is, however, submerged.

2.19 Opp a depression in L.B. height to each side cleared here – and a house.

2.20 I. 99.

2.21 Other ground here – low, plantains & Clear – Cultivation on top – but woods still remain. The people look more Cultivated &c.

2.28 Here the peculiar red clay & white clay formation seems to terminate. Above here the ordinary clayey loam banks & the and woods & the edge appear. River 1200 ft wide – 15 and feet above. I must get sheet No 8 –

2.30 New grounds on L.B. (Nazaré) Cultivation in front of high ground back.

Reach Iª do Estreito ½ mile ahead. River 1100 ft.

The map shows a Sandal Channel on L.B. side at present it shows water as far up as I can see.

Sunday Nov 23, Iª do Estreito 5

on I. 99.

a large bar on L. B. for ¼ mile below outlet of L.B. island Channel.

There is a wide water course now on the L. B. side, but my impression is from the general appearance, that it is largely back water.

I see the mouth of a large bar ½ a mile up. Note the head – carefully.

2.41 Opp. Ft. of Iª do Estreito – 10 20 ft.

Shore cut is Cultivated.

2.48 A grove of Castor beans (150 metres long) along near the river bank – with others Cultivated behind.

2.50 River widens to 1200 ft.

There extends a bar shown on map on R B side & also a for about 3/4 mile about the foot of it is there there it is submerged now.

3.00 River 1200 ft wide 3 or 4 metres deep now where in mean channel Pimenta Cunha near to, mid River. Current a knot 1½ miles an hour.

3.02 Opp. a new clearing on R B. for 1/4, heavy woods.

3.04 River 1400 ft wide.

3.13 Opp. the Shoulder projection of Iª do Estreito – where it Curves off to the right to its uppermost point a full Mean Low Water mile to the right.

We run far from it near R. B. side. 80 ft

3.18 Beg. of low banks on R. B. There Cipo bands are of loam and the rim of Cut of them away more Castor beans and Cultivation by the body appears 3° 23 Yes, here is a hut or two families, immediately above – no Cultivation.

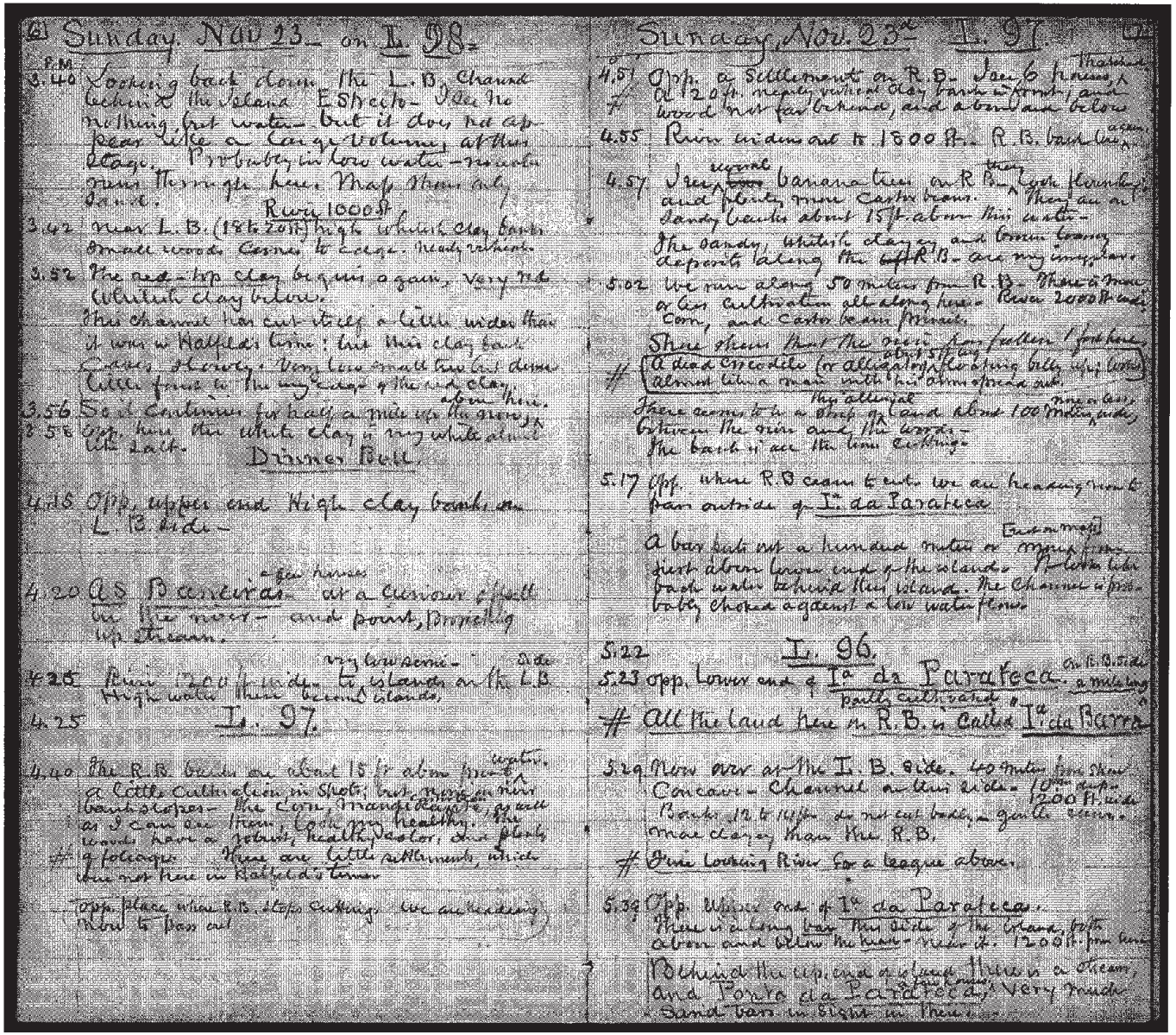
3.27 I. 98.

Banks now nearly parallel with other on each side.

3.32 Opp. Upper Point of Iª do Estreito. River 1000 ft. about

The water being left to form about it for steep shore must from water on the L.B. side, as shown on Map

3.40 Opp. here is now a new Channel on L.B. side.



Sunday. Nov 23 – on L. 98

P.M.
3.40 Looking back down the L. B. Channel between the Islands E Stretch – All is nothing but water – but it does not appear like a Large Volume of flow stage. Probably in low water – no water from Merrique here. Map shows only Dried.
River 1000 ft
3.42 near L. B. (18 to 20 ft) high white clay banks small woods Coarse to Large. Ready rebirth
3.52 The next – top clay begins again. Very like White clay before.
This Channel has cut itself a little wider than it was in Halfield's time: but this clay bank Looks strong: Very Low small trees and dense Cane grass to the top edge of the red clay.
3.56 Sand Continues for half a mile up the stream
3.58 Opp. here the white clay is ring white almost like salt.
Dinner Bell

4.18 Opp. upper end High clay banks on L. B. side –

4.20 A S Bonaventura – a few houses at a Cleavour of all on the river – and point, Prominent up stream.

4.25 River 200 ft wide – many low semi-islands on the L.B. High water there beyond Islands.

4.25 I. 97.

4.40 The R.B. banks are about 15 ft above water. A little Cultivation in Shots, but mostly on river bank slopes – The Corn, Mandioca &c, as well as I can see from Canoe, looks very healthy. The woods have a robust, healthy color, & the plants a foliage. There are little settlements, which are not here in Halfield's time.

Opp. place where R.B. stops Cuttings. We are heading N.N.W to pass out

Sunday, Nov. 23d – L. 97

4.57 Opp. a Settlement on R.B. Low 6 houses & 4 or 5 canoes, nearly vertical clay banks in front, and a wood not far behind, and a bend ahead below

4.55 River widens out to 1800 ft. – R.B. bank low

4.57 Trees – usual banana trees on R.B. – Cecropia, Heavy Leaves, more Castor beans. There are also Sandy banks about 15 ft. above this water – The sandy, whitish clay and brown loamy deposits below the left R.B. are very singular.

5.02 We run along 50 miles from R.B. – There is more or less cultivation all along here – River 2000 ft wide – Corn, and Castor beans Plenty.

Shore shows that the water has fallen 15 feet here

A dead Crocodile (or alligator) floating belly up (white) about 5 ft long almost like a man with his arms spread out. The alligator

Here comes to be a Bluff on L. and about 100 Metres wide between the river and the woods – The bank is all the low Cutting.

5.17 Opp. where R.B. again turns we are heading N.W. to pass outside of I. da Paraleca

Bar a mile

A bar back out a hundred metres or more from first about Lower end of the Islands – Outside this bank water behind these islands. The Channel is probably choked against a low water flow.

5.22 I. 96. On R. side

5.23 Opp. Lower end of Ia da Paraleca. a mile long partly cultivated

All the land here on R.B. is called Ia da Parra

5.29 Now over at the I. B. side. 40 metres from shore Concave – Channel on this side – 10 to 12 ft deep – 1200 ft wide. Banks 12 to 14 ft. do not cut badly – gentle slope. Mud clayey than the R.B.

Pixie looking River for a league above.

5.39 Opp. Upper end of Ia da Paraleca. There is a long bar this side of the Island, forty about and below the river – under it. 1200 ft. from land

Behind the upper end of a long Island there is a Stream, and Porto da Paraleca. Very much Sand bar in sight in there.

5 Sunday. Nov 23d Ide Barra da Ypoeira

5.45 The Ilha da Barra da Ypoeira begins about 400 metres above the upper end of Ide da Paratecca

There are low sloping sand bars forming the Lower part of the island Barra da Ypoeira

5.53 a little clearing on L.B. side - Bananas.

[We are in the shadow of the woods and feel the cool of the morning, quite sensible. Not unpleasant; after Contrast -]

5.58 Cultivation along here, with good dark soil - redeemed from wood, about the highest floods. -

6.00 Stop - Anchor - at Barra da Ypoeira. (2 miles further) now very far below opp. head of Island.

Stop all night

Barra da Ypoeira.

We have run 12 leagues to day, without a stop - about 4 leagues and hour, in what the Steamer does when she can keep going, regularly.

REPORT.

The navigation excellent, all the way.

The Country improving in agricultural capabilities - every league.

Population has not been on the increase here as it was some days back; but here, if this wood land is sold, there is room for many workers. - More settlers.

The people appear to be of a better class. However, this is Sunday, and many have not left to day.

Monday - Nov 24th - Barra da Ypoeira

I. 96

a.m.

6.00 Start said. - High bank - 2d bank - Start & stop

6.02 Opp. Large Planting home - on 2d bank

6.06 " more Houses - High bank - on 2d bank (clay) We head over for the Island Shore - obliquely upstream

6.12 Opp - another Large house (Planters) on high bank, Bar on our right between us and L.B.

6.17 Opp a Lot of Houses - good, four houses. Opposite the upper part of Barra da Ypoeira - We stopped at the lower end of the Village.

We run near (50 metres) cultivation on island side of Island.

6.26 * Opp. Upper end of Ide da Barra da Ypoeira The map shews only Sand between for some

* The upper end of this island is now merged with the R.B. - as to be indistinguishable - from land.

6.26 I. 95 = about here.

Run 1800 ft.

** There seems to be about the same thing in the case of the little unnamed Island on the L.B.

6.38 Sand, bend on R.B. Cutting. Run 2200 ft

6.43 Run 2500 ft. in direction of Torre Velha almost N.E.

6.47 an Obligue away from R.B. The island has Pedras, appears to have mighty good land - on L.B. Mucuri Town - on L.B.

6.55 opp. town (new) upon island on R.B. side - It was a sand bar in Halfeld's time -

Sand bars, and Sand bar islands, Characteristic the R.B. side of the river - along about here.

7.00 River only 1200 ft. wide from L.B. to sand bar. We are running about mid-Channel, 6.5.6.6.

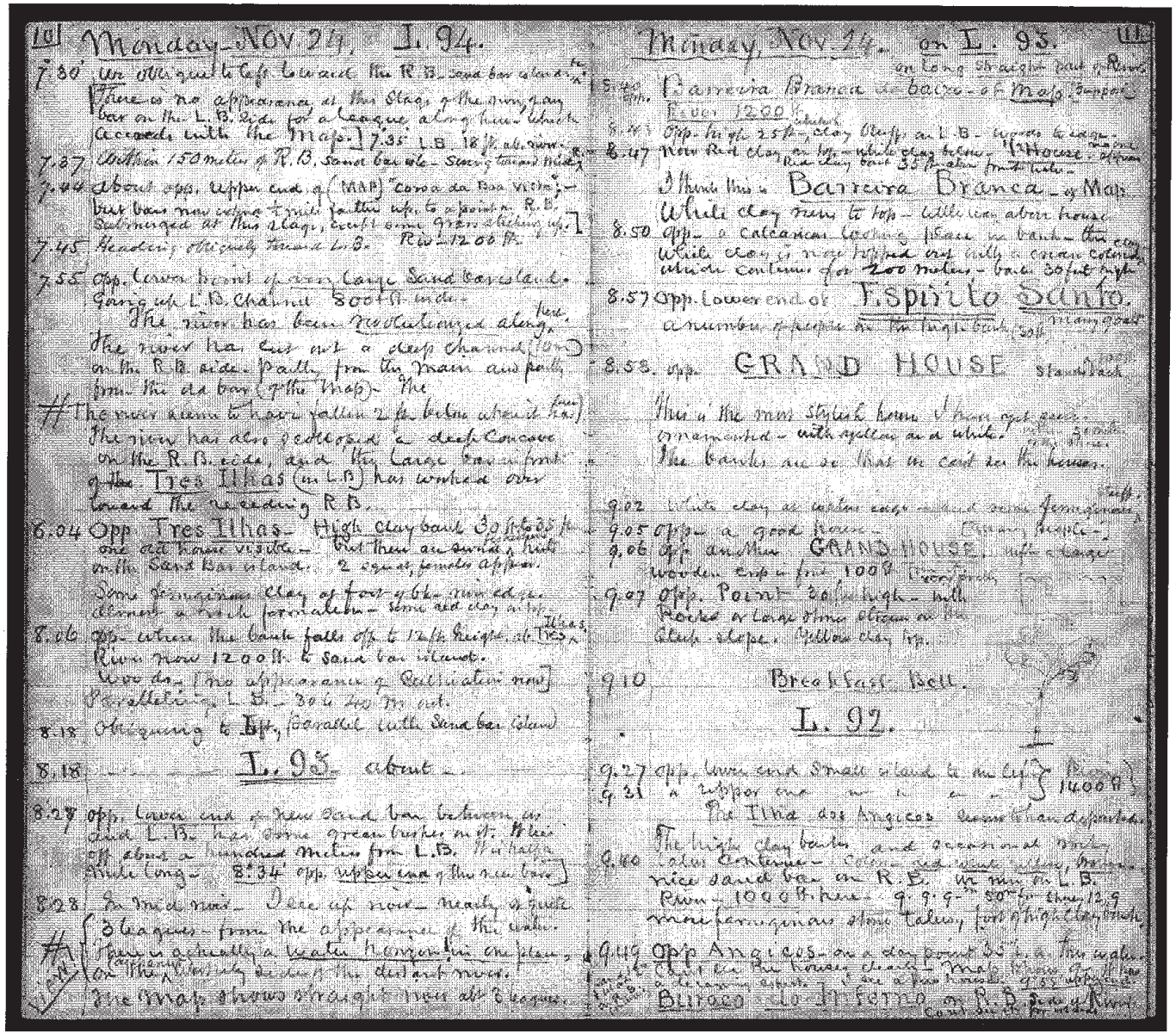
7.05 75 m. from L.B. sandy clayey bank, 10 ft. a. cutting We immediately obligue to 6 p.m. Ennard Sand bar

7.10 " Corrego da Boa Vista - marked on Map somewhere along here. There is a mighty sand bar here on our left, as an obligue target of, with 3 huts - "Water shallow" Fishermen - Main beautiful place for Seine fishing!

7.15 I. 94 = about here.

7.16 Clear obligue to right, Ennard L.B.

7.25 about 150 metres from L.B. shore - Sand bar island and Cane-island ahead on R.B.



Monday-Nov 24, L. 94.

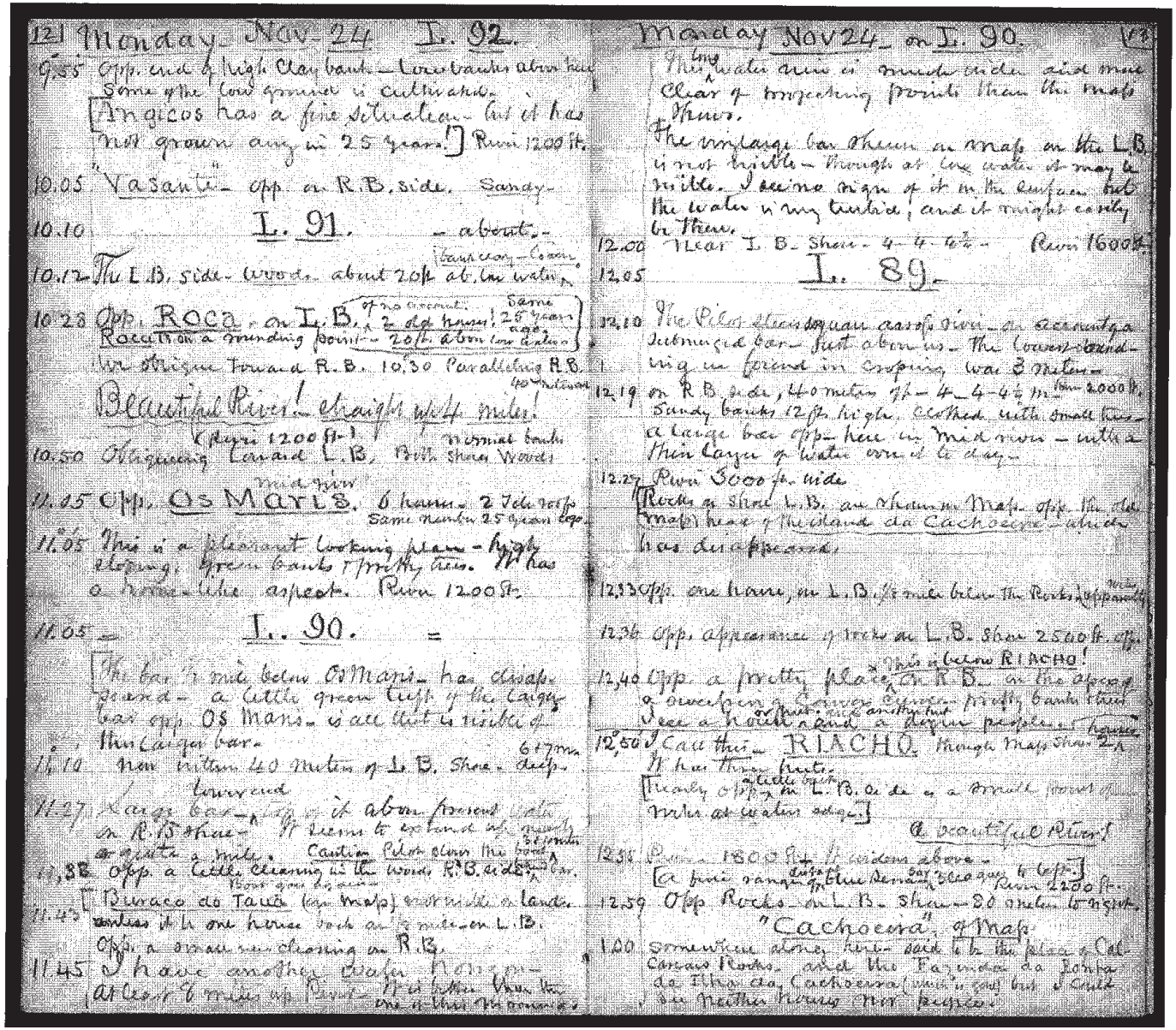
7.30 Un Mr quite left towards the R.B. sand bar island
There is no appearance at this stage of the sand bar on the L.B. side for a league along here which accords with the Map.] 7.35 L.B. 18 ft. above
7.37 Within 150 metres of R.B. sand bar side - Steep turning N.E.
7.44 about opp. upper end of [MAP] "Corda da Boa Vista" - bar now veers N.E. with flat point R.B. Submerged at this stage, but some grass sticking up.]
7.45 Heading obliquely towards L.B. R.W. = 1200 ft.
7.55 Opp. lower point of new large Sand bar island.
Going up L.B. channel 800 ft. wide.
The river has been re-sounded along here.
The river has cut out a deep channel (now) on the R.B. side. Partly from the main and partly from the old bar (of the Map). The
The river seems to have fallen 2 ft. below what it was.
The river has also developed a deep Concave on the R.B. side, and the large bar in front of the Tres Ilhas (on L.B.) has worked over towards the receding R.B.
6.04 Opp Tres Ilhas - High clay bank 30 ft. to 35 ft. one old house visible - but there are evidently huts on the Sand Bar island. 2 canoes, females apparent.
Some ferruginous clay at foot of bk - river edge. alternate with formation - some red clay at top.
8.06 Opp. where the bank falls off to 12 ft. height. ab Tres Ilhas
River now 1200 ft. to sand bar island.
Woods - [no appearance of cultivation now]
Paralleling L.B. - 304 400 m out.
8.18 Abreasting to Bpt, parallel with Sand bar Island
8.18 L. 93. about -
8.27 Opp. Lower end of new Sand bar between our old L.B. has some green bushes on it. Water off about a hundred metres from L.B. Narrow Creek (long - 8.34 Opp. upper end of this new bar]
8.28 In mid river - Deep all now - nearly a quite 3 leagues - from the appearance of the water.
[There is actually a Wash however on either side, for the Charting as in the distant views.
The Map shows straight river about 3 leagues.

Tuesday, Nov. 14. or L. 93.

on long straight part of River
1.50 pm Barreira Branca - bar to - of Map [Sandbar]
River 1200 ft. [Island]
8.45 Opp. high 25 ft. - clay Cliffs on L.B. - upper & large -
8.47 New Red clay on bk - white clay below, [1 House - often New Clay bank 35 ft. above from this to
Think this is Barreira Branca - of Map
White clay runs to top - Wild cow, above house
8.50 Opp. a Calcareous Ledge (Base in bank - thin) White clay is now topped and fully a certain colored which contains for 200 metres - bank 30 feet high
8.57 Opp. Lower end of F. Spirito Santo.
a number of people on the high bank - 30 ft many goats
8.58 opp. GRAND HOUSE Standpack
This is the most stylish house I have yet seen - ornamented - with yellow and white. 30 ft.
The banks are so that we can't see the house.
9.02 White clay as before caps - and some ferruginous 40 ft.
9.05 Opp - a good house -
9.06 Opp. another GRAND HOUSE - with a large wooden cross - 100 ft
9.07 Opp. Point - 30 ft high - hill
Rocks or large stone strewn on the
Bank - slope. Yellow clay top.
9.10 Breakfast bell.

L. 92.

9.27 opp. Lower end Small island to mr Cliff } River
9.31 a Stopper one } 1400 ft
The Ilha dos Angicos [name] and deserted.
9.40 The high clay banks and occasional [white] Colors Contenue - Cocoa - and [white] clay, Brown nice sand bar on R.B. Mr mm on L.B.
River - 1000 ft. here - 9.9.9 - 30 ft. to then 12.9
more ferruginous stone taking, feet of high clay with
9.49 Opp Angicos - on a low point R.B. [Island]
Chain the lower end of [Map] Mouth of Rio Negro
Opposite upper end of a low island. 9.55 opp
Belford - to Mr Feitio on R.B. Sandy River



12 Monday Nov 24 I. 92.

9.55 Opp. end of high Clay bank — Low banks above here. Some of the low ground is cultivated. [Angicos has a fine situation — but it has not grown any in 25 years.] Rivn 1200 ft.

10.05 "Vasante" — opp. on R.B. side. Sandy.

10.10 I. 91. — about. — (Same as on — Low)

10.12 The L.B. side — Woods — about 20 ft ab. low water.

10.28 Opp. Roca on I.B. (of no account. Same 25 years ago.) 2 deg hmm! Roca is on a rounding point — 20 ft. above low water.

10.30 Parallelling R.B. (40 metres)

Beautiful River! straight with 4 miles! (Rivn 1200 ft.)

10.50 Assigning Canard L.B. (Both shore Woods) (Normal banks)

11.05 Opp. Os Maris. (Mid river) 6 hmm — 2 Fathoms Same number 25 years ago.

11.05 This is a pleasant looking place — high sloping, green banks & milky tint. It has a home-like aspect. Rivn 1200 ft.

11.05 — I. 90. —

[The bar ½ mile below Os Maris — has disappeared — a cattle crossing tip of the large bar opp. Os Maris — is all that is visible of the large bar.

11.10 Now written 40 metres of L.B. Shore — deep. (Low and) (6.7 mm)

11.27 Large bar — (Opp.) it about forward of (Mid) on R.B. shore — It seems to extend off nearly (Caution) (Rivn 1200 ft.) a mile. (Caution Pilot about this bank)

11.32 Opp. a cattle clearing in the wood R.B. side (Poor grass country)

11.45 [Buraco do Tauá (on Map) — not visible — a landmark as it is one house rock on ½ mile on L.B. Opp. a small new clearing on R.B.

11.45 I have another Map Nº 2 — at Cap 6 miles up River — It is John Thos Cap 6 miles up River — one of their Mr Powers &c.

Monday Nov 24 — on I. 90. (V?)

(Big) The large water area is much wider and more clear of projecting points than the Map shows.

The big large bar shown on Map on the L.B. is not visible — though at low water it may be visible. I see no sign of it on the surface but the water is very turbid, and it might easily be there.

12.00 Near I.B. Shore — 4 — 4 — 4½ — Rivn 1600 ft.

12.05 I. 89.

12.10 The Pilot steers square across river — on account of a submerged bar — just above us — The Lower Island — big on forward in Cropping was 3 metres —

12.19 on R.B. side, 40 metres off — 4 — 4 — 4½ m. (Rivn 2000 ft. Sandy banks 12 ft. high, clothed with small trees — a large bar opp. here in mid river — with a thin layer of water over it to day —

12.25 Rivn 3000 ft. wide

[Rocks & Shoal L.B. on Chart — on Map opp. the end of Island da Cachoeira — which does not appear.

12.33 Opp. one house, on L.B. ½ mile below the Rocks (apparently)

12.36 Opp. appearance of rocks on L.B. Shore 2500 ft. off.

12.40 Opp. a pretty place on R.B. on the apex of a curve for a corner. Opposite — pretty banks (This is below RIACHO!) Seem a South and a day in perplexes (figures) (or but) (nick and why but)

12.50 Cautchi — RIACHO. (Rough Map) Shore 2 ft. W here three fruits. (Little bay) [Nearly opp. in L.B. a deep a small forest (Rivn 2200 ft.) water edge.]

A beautiful River!

12.58 Rivn 1800 ft. — Islands above — [a fine range (Blue Remote) (Sea) (Rivn 2200 ft.)

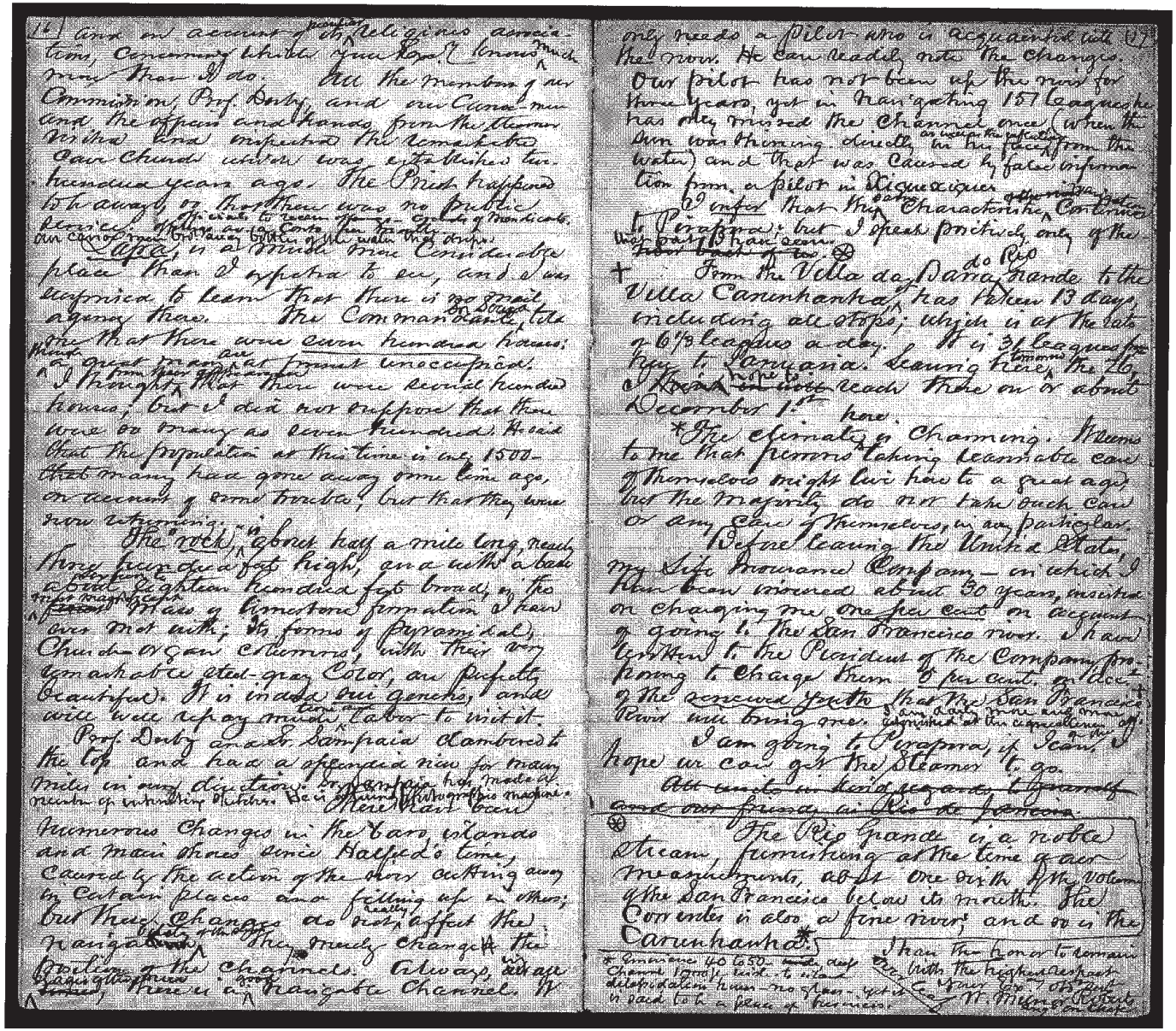
12.59 Opp. Rocks — on L.B. Shore — 80 metres to right. "Cachoeira" of Map.

1.00 Somewhere about here — said to be the place of Cachoeira Rocks — and the Farinha da Ilha da Cachoeira (which is good but I could see neither herring nor Pigeon)

Monday, Nov. 24, L. 88.

L. S. S.

CARUNCHA



[18]

There is a rumor here that the Para Coal steamer is preparing to come down the river. She is said to be inferior to this one, both in regard and power. If that is correct, they can make more money by burning her up, than they can by burning wood in her and running her. Such steamers as these, on this river, cannot be profitably run, where stalwart first class Cabocs men can be had for a Milreis per day from 28¢ to 26¢ — per day will pay the total cost (including interest and renewal) of a first class barca — carrying about 80 Tons; whereas the Mercury alone, of a steamer — putting its Coal in the river, at 60:000$000 a is 96$.000 per day and the Coal per day of running it, caused a run, than twice the Cost of running the barca; and the steamer would make better if any better time, in the long run. How, then, Could such steamers Compete with the barcas or how Could they benefit the valley?

It is quite obvious that in order to improve the transportation facilities of this fine navigation, new powerful and quicker steamers, Capable of towing two or three barges of 1500 Tons each, are indispensable. At present this subject is much glossed over but it is found, as far as it goes.

I had a barca that is in port measured this morning — the "Estrella Brilhante" — which trades between Jamaica and Joazeiro. She is 20.18 long (66 ft) 4.88 Wide (16 ft) with a draught of about 0.77 (2½ ft) when loaded; her cargo 140 000 rapa dessoa, (Cattle hides) each — 50 000 lbs. or 25 Tons (2000 lbs) These barcas are new flat bottomed boats; with low Cabin Change in the shape they will make good barges for towing. Infact such Cabins as the "Estrella Brilhante" have too well, but if used to Cattle [illegible] about the ends to keep the water out would [illegible]

Col. O. C. Jame
Rio de Janeiro

Carunhanha Nov 25/[illegible]

My dear Col.

[A long letter, giving an account of the Lapa Chenda and the Grand Cornetine mk Mountain with the general account of the river and Country and the Town, & once a day for Tenders of Hedges — my Hedges —]

Sent letter also — up then further down the river, to Cunnie Rof Van Leur; and two letters to Crosby. One of them Containing Copies of letters to your Father.

Two letters to Dr. Plinio. Copy one in Vol. 3. Copy of the other in the Recording [illegible] pages.

(Including both sides)



Barca "Estrella Brilhante". Built at Jamaica, 66 ft long — 14' wide
Cargo 56,000 lbs = 28 Tons.

Said to be (by Jovino Boa — "Machinista") the Largest barca on the river: but I think that the [illegible] barca that I saw in Joazeiro, was (is) Larger — as long, or longer, and deeper — and nearly as wide — not quite

Measurement of
Carunhanha River — Nov 25th

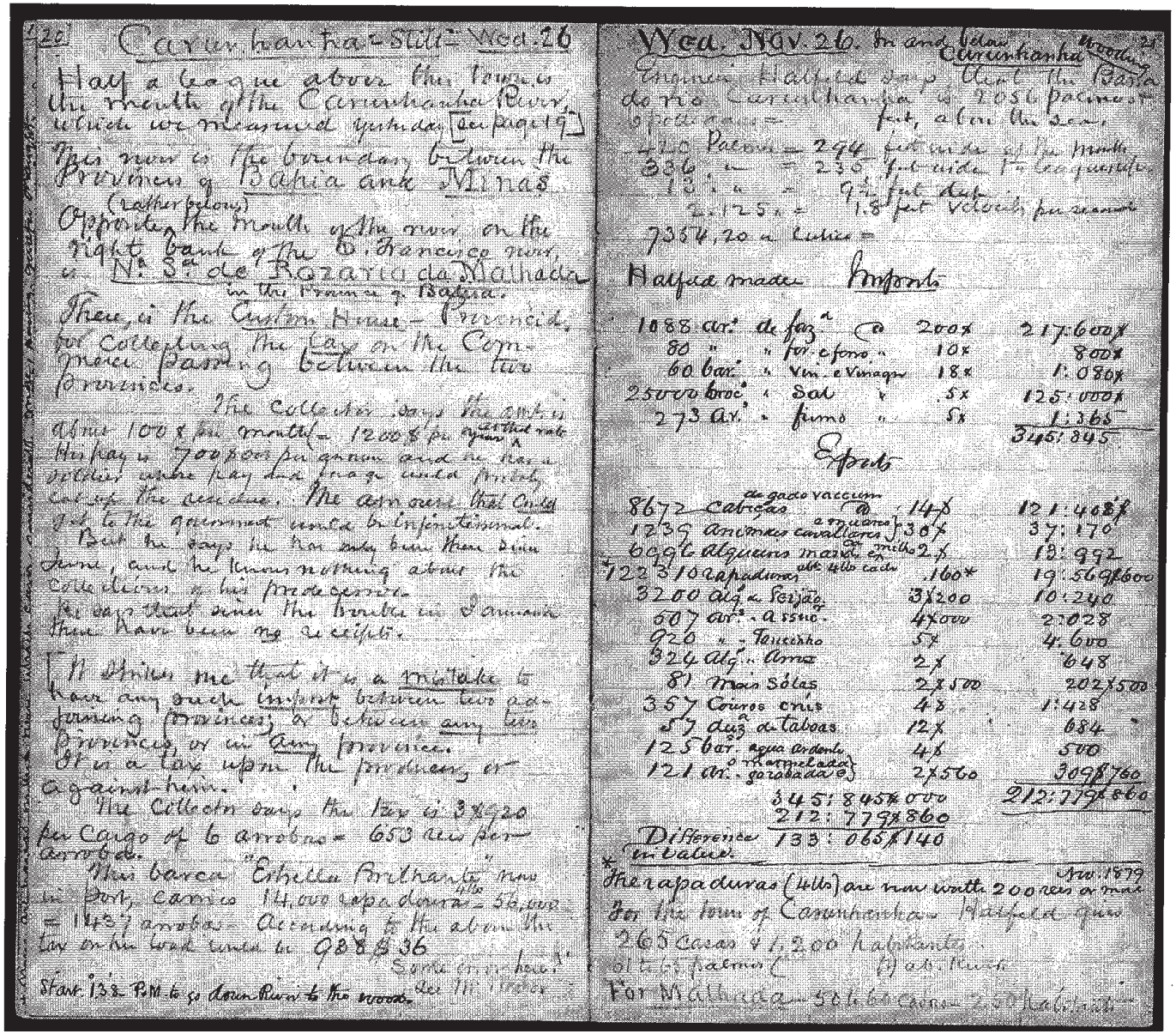
The water is Clear but a Clash [illegible] Current — a great Contrast to the Muddy [illegible]

60m above mouth = 197 ft

Width 89m = 292 ft
depth 3 to 4½m or say 3½m = about 11½ ft.
Area 273m
Volume 156 cm per Sec = 5519 cft = 331,140 per minute
Vel. 0.57 m per Sec = 34.2 per minute
1.28 miles an hour.

Nov 26

Wrote a very long letter to Consultheure A. P. de Carvalho Borges, Minister Plenipotentiary, to the U. States.



26 Carvoeiro Harbor – Still – Wed. 26

Half a league above this Point is the mouth of the Carvoeiro River, which was measured yesterday [see page 19]

This river is the boundary between the Provinces of Bahia and Minas (rather below)

Opposite the mouth of the river on the right bank of the S. Francisco river, is N. S. do Rozario da Malhada in the Provincia of Bahia.

There is the Custom House – Provincial, for collecting the Tax on the Commerce passing between the two Provinces.

The Collector says the amt. is about 100$ per month = 1200$ per annum at that rate. His pay is 700$000 per annum and he has a soldier under pay & a Praça similarly circumstanced. The amount that Custom House collects is infinitesimal.

But he says he has only been there a year, and he knows nothing about the collections of his predecessors.

The Capt. Port says the Brazilian Steamers have been paying no dues.

It strikes me that it is a mistake to have any such import between two adjoining Provinces, or between any two Provinces, or in any Provinces.

It is a tax upon the producers or against them.

The Collector says the tax is 3$920 per Cargo of 6 arrobas = 653 reis per arroba.

The barca "Estella Brilhante" now in Port, carries 14,000 rapaduras = 56,000 lbs = 1423 arrobas – According to the above the tax on the load comes to 930$36

Some one should do away with it.

Start 1.38 P.M. to go down River to the wood. Arr. 11 Inches

Wed. Nov. 26. In and below Carvoeiro Harbor 25

Carvoeiro Harbor Wednesday

Engineer Hatfield Surveyed the Barra do rio Carvalhas in 2056 paces of 2½ feet, above the sea.

+120 Paces = 294 feet in the bed of the mouth
336 " = 235 feet wide in Enquerdo
18 " = 9½ feet deep
2.125 = 1.8 feet Velocity per second

7364,20 a Cubic =

Halfa made Imports

1088 arr.s de faz.ª	@	200$	217:600$
80 " " for.o forno "		10$	800$
60 bar.s " Vin.e Vinagre		18$	1:080$
25000 broc.s " Sal "		.5$	125:000$
273 arr.s " fumo "		5$	1:365
			345:845

Exports

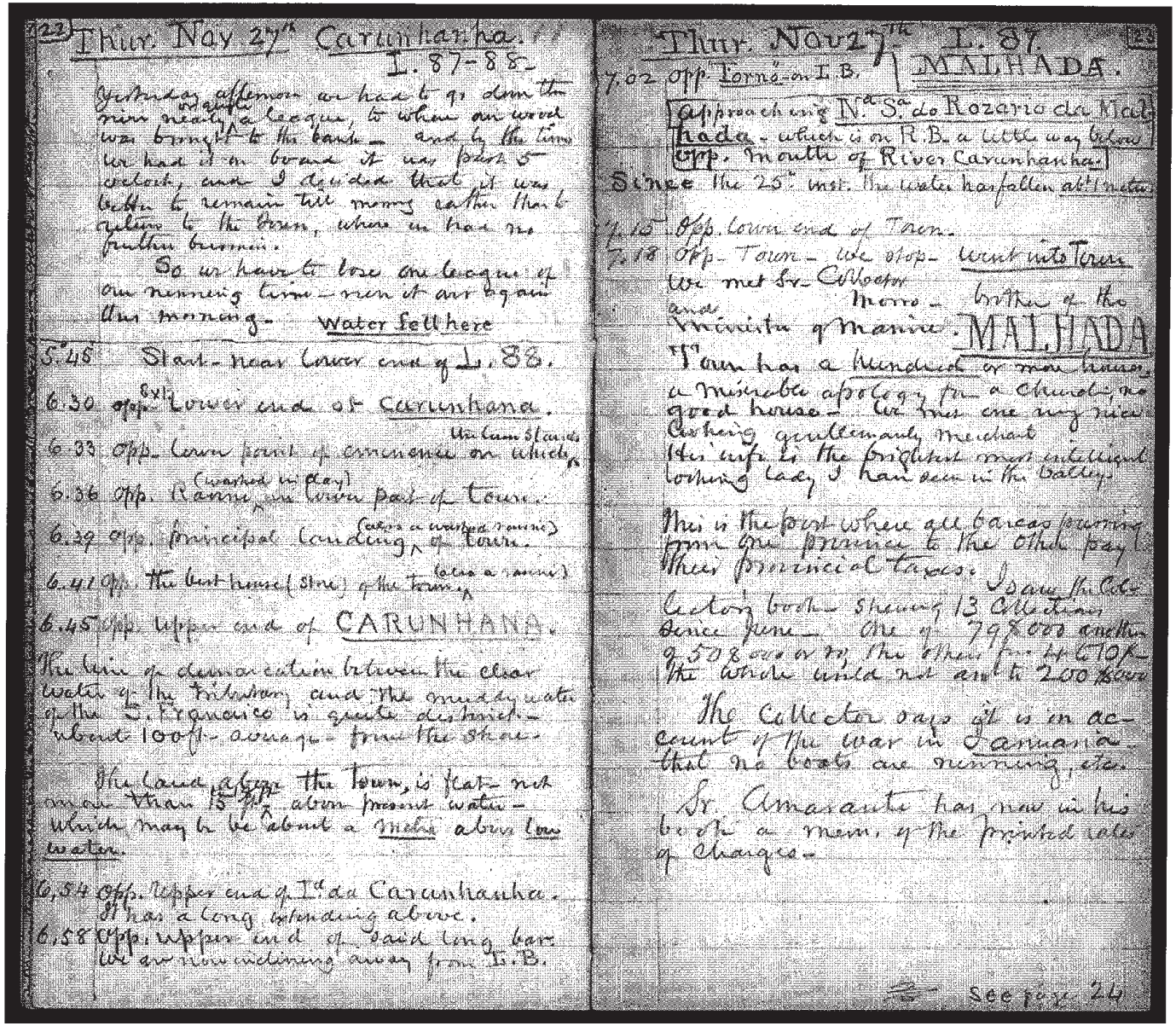
8672 Cabeças de gado vaccum	@	14$	121:408$
1239 animaes cavallares a sqanar		30$	37:170
6996 Alqueires maiz em milho		2$	13:992
*122310 rapaduras 4lbs cada		.160$	19:569$600
3200 Alq.s de Feijão		3$200	10:240
507 arr.s de assucar		4$000	2:028
920 " de Farinha		5$	4:600
324 Alq.s de Arroz		2$	648
81 Maos Sólas		2$500	202$500
357 Couros crus		4$	1:428
57 duz.s de taboas		12$	684 "
125 bar.s aqua ardente		4$	500
121 arr.s marmelada goiabada		2$560	309$760
		345:845$000	212:779$860
		212:779$860	
Difference in value		133:065$140	

*Nov. 1879
The rapaduras (4lbs) are now worth 200 reis a piece

For the town of Carvoeiro – Hatfield says

265 Casas & 1,200 habitants
old 60 palms (?) ab. Rua

For Malhada – 326 Casas – 2,000 Habitants



(22) Thur. May 27th Carunhanha. I. 87-88.

Yesterday afternoon we had to go down the river nearly a league, to where our wood was brought to the bank — and by the time we had it on board it was past 5 o'clock, and I decided that it was better to remain till morning rather than to return to the town, where we had no further business.

So we have to lose one league of our morning time — when it are to go down morning — Water fell here

5.48 Start — near Lower end of I. 88.

6.30 opp. (6x) Lower end of Carunhana.

6.33 Opp. Lower point of commence on which (the Cum stands)

6.36 Opp. Ranne (washed in day) on Lower part of Town.

6.39 Opp. Principal (Lower a wooded ravine) Landing of Town.

6.41 Opp. The last house (Stone) of the Town. (Lower a ravine)

6.45 Opp. Upper end of CARUNHANA.

The line of demarcation between the clear water of the Tabatinga and the muddy water of the S. Francisco is quite distinct — about 100 ft. average — from the shore.

The land above the Town, is flat — not more than 15 ft. above present water — which may be about a Metre above low water.

6.54 Opp. Upper end of Ilha Carunhanha. It has a long extending above.

6.58 Opp. Upper end of said long bar. We are now inclining away from I. B.

(23) Thur. Nov 27th I. 87. MALHADA.

7.02 opp "Torre" on I. B.

Approaching N.a S.a do Rozario da Malhada — which is on R. B. a little way below opp. Mouth of River Carunhanha.

Since the 25th inst. the water has fallen about 1 metre.

7.15 Opp. Lower end of Town.

7.18 Opp. Town — We stop — went into Town

We met Snr. Collector

and Minister of Marine. MALHADA

Town has a Hundred or more houses, a Miserable apology for a Church, no good house — We saw one very well clothed gentlemanly merchant

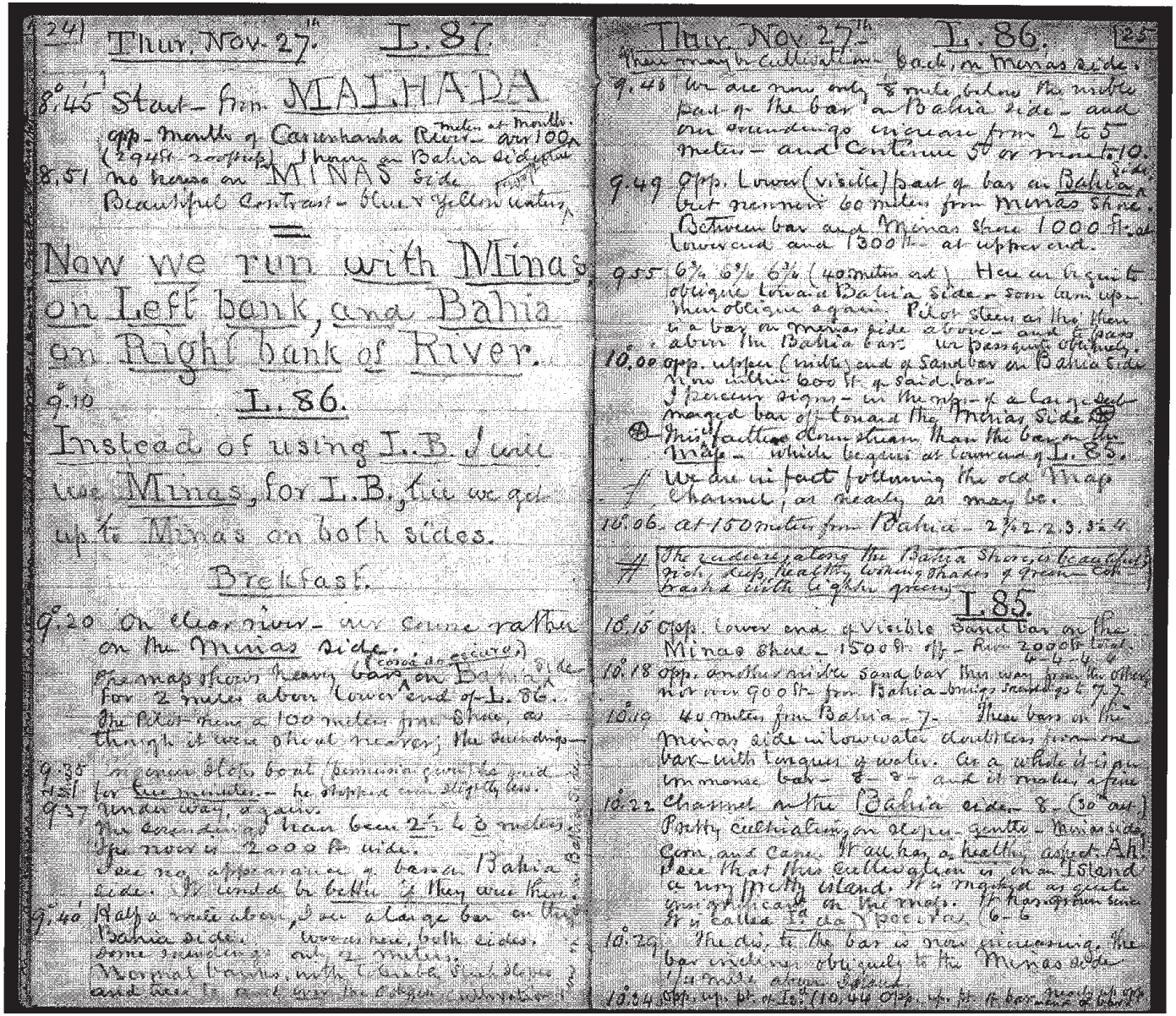
His wife is the brightest most intelligent looking lady I have seen in the Valley.

This is the port where all Barcas proceeding from our province to the other pay their Provincial Taxes. I saw the Collectors book — Showing 13 Collections since June — One of 79$000 another 9$508 000 or so. The others from 4$ to 70$ — The whole would not amount to 200$000

The Collector says it is in account of the war in Paraguay — that no boats are running, etc.

Snr. Amarante has now in his book a memo. of the printed rates of Charges —

see page 24



(24) Thur. Nov. 27th I. 87

8.45 Start – from MALHADA
opp – Mouth of Caravellas River – mile at mouth. arr 100 fm
(2948 – 2 soundings) I keep on Bahia side of the
8.51 no breeze on MINAS side
Beautiful Contrast – Blue & Yellow waters

=

Now we run with Minas on Left bank, and Bahia on Right bank of River.

9.10 I. 86.

Instead of using I.B. I will use Minas, for I.B. & we go up to Minas on both sides.

Breakfast

9.20 On clear river – we come rather on the Minas side.
(cross do escuro)
The maps show heavy bar on Bahia side for 2 miles above Lower end of I. 86.
The River – now 2 100 meters from shore, as though it were about nearer; the soundings
9.35 my canoe sets boat (permission given) to go ahead for five minutes – he stopped even slightly less.
9.37 Under way, again.
The Sounding of Mean 6 fm 2½ 4 3 meters.
The river is 2000 ft wide.
See no appearance of bar on Bahia side. If I indeed be better if they were there.
9.40 Half a mile above, I see a large bar on the Bahia side. Two men here, both sides.
Some soundings 3 and 2 meters.
Normal Banks, with Coral & Sand Shoals and trees to mark over the Edges (Mangroves)

Thur. Nov. 27th I. 86. (25)

There may be cultivation back, on Minas side.

9.48 We are now only ½ mile below the middle part of the bar on Bahia side – and are descending on increase from 2 to 5 meters – and Continue 5 or more to 10.

9.49 Opp. Lower (visible) part of bar on Bahia side. Bar removed 60 meters from Minas shore. Between bar and Minas shore 1000 ft. at lower end and 1300 ft – at upper end.

9.55 6½ 6½ 6½ (40 meters ad) Here we begin to obliquer towards Bahia side – soon turn up then obliquer again. Pilot steers as if there is a bar on Minas side above – and I pass above the Bahia bar. We pass quite closely.

10.00 opp. upper (visible) end of Sand bar on Bahia side Nine million 600 ft of said bar.
3 percum signs – in the middle of a Long deep marked bar off towards the Minas side
This shallow downstream than the bar on the Minas – which begins at Lower end of I. 85.
We are in fact following the old Map of Channel, as nearly as may be.

10.06 at 150 meters from Bahia – 2½ 2 2 3 3½ 4

The cadence along the Bahia Shore, is beautiful & rich, deep, healthy looking shades of green – Coffee bushes with bright green

I. 85.

10.15 Opp. Lower end of Visible Sand bar on the Minas shore – 1500 ft off – River 2000 ft total. 4 4 4 4
10.18 Opp. another visible Sand bar this way from the other river 900 ft from Bahia – bring soundings 6 & 7.
10.19 40 meters from Bahia – 7 – These bars on the Minas side in low water conditions form one bar – with tongues of water. As a whole it is quite an immense bar – 8 – 8 – and it makes a fine
10.22 Channel on the Bahia side – 8 – (30 ad) Pretty cultivation on deep – gentle – Minas side. Corn, and Cane. It all has a healthy aspect. And I see that this Cultivation is on an Island a very pretty island. It is marked as quite good on the charts. It has a farm house
It is called Ilha do Pocinho 6 – 6
10.29 The dive to the bar is now proceeding. The bar evidently obliquely to the Minas side
Ilha Nova about 3 miles
10.34 Opp. upper ft of Ist 10.44 Opp. upper ft of bar

26 Thur. Nov. 27. — League 85.

between Minas & Bahia.

10.32 The water has fallen here, rather a fast drop / 6 metres judging, from the recent water lines on the bank.

10.37 Here, where the river has widened to 1600 ft to the bar — it is not over ¼ miles — River is also broadening.

10.38 — An obligue away from Bahia Shore.

10.44 " " Word from the Machinists — must stop — machinery too hot. Stop — 150 ft. fr. Bahia (nearly) up to upper end of Bar on Minas side

10.46 Start — again.
Now the bar puts out from Bahia, and an obligue toward Minas; Though these two great bars do not now overlap as much as on map.

10.58 Opp. upper end of Bar on Minas side
In fact

11.03 Near the Minas Shore (40 metres out) Beam full [illegible]

11.09 opp. Lower end of Island (unnamed on MAP) marked "Peara" at lower end.
There is now, first a little island, then wider than the large island — then water, then a long id.

1609. L. 84. Hamanna Vessup. Nov.

11.19 — about opp. where upper end of the island might be; but it merges into the island Anguseira.
We now close to the Tiny Island and run in to the shore of the Island Anguseira (30 m) River from island — 1800 ft. to Minas Shore.

11.27 Minas mamas above here. 4½ 4½ 5½ 4½

The natural vegetation from much greater than along the lower part of the river.

11.30 Obligue away from Id. Anguseira.

11.32 Opp. a Level, bit, on the Shoulder of island, where the head of the island inclines off toward Bahia side — leaving a clear water Channel between that and another island, or bar with much growth on it. Opp. Estreito — Bahia side

11.35 Opp. Lower pt. of said island or bar,

11.42 Opp. Upper end of said island or bar. River here 1000 ft

Thur. Nov 27. L. 84. (27)

All this part of river on Bahia side is Sand Bar, partly submerged, but visible in many places.

11.47 Approaching visible bar — which narrows now to 600 feet — 6, 6½, 6½, 7. (60 metres from Minas)

11.50 60 metres from Minas — 7-7-7 — Stiff clay bank — 11 much deeper nearer shore

11.51 Minas bar on Bahia side — 600 ft. off — 7-7-7-7.

P.S. Much water must go down the other Channel on the Bahia side

11.54 Now the bar / evidences away, leaving 7 7's Minas Side Channel on

I perceive that there is a wide Channel on the Bahia side of the large bar.

11.55 Say — L. 83

12.00 Opp. Upper end of large Bar on Bahia Side.

12.05 Obliquing toward Bahia side.
Somewhere along here is opp. the Lower end of the High Water Island da Cachoeira but the line of trees is so dense on Minas side as to hide the place.

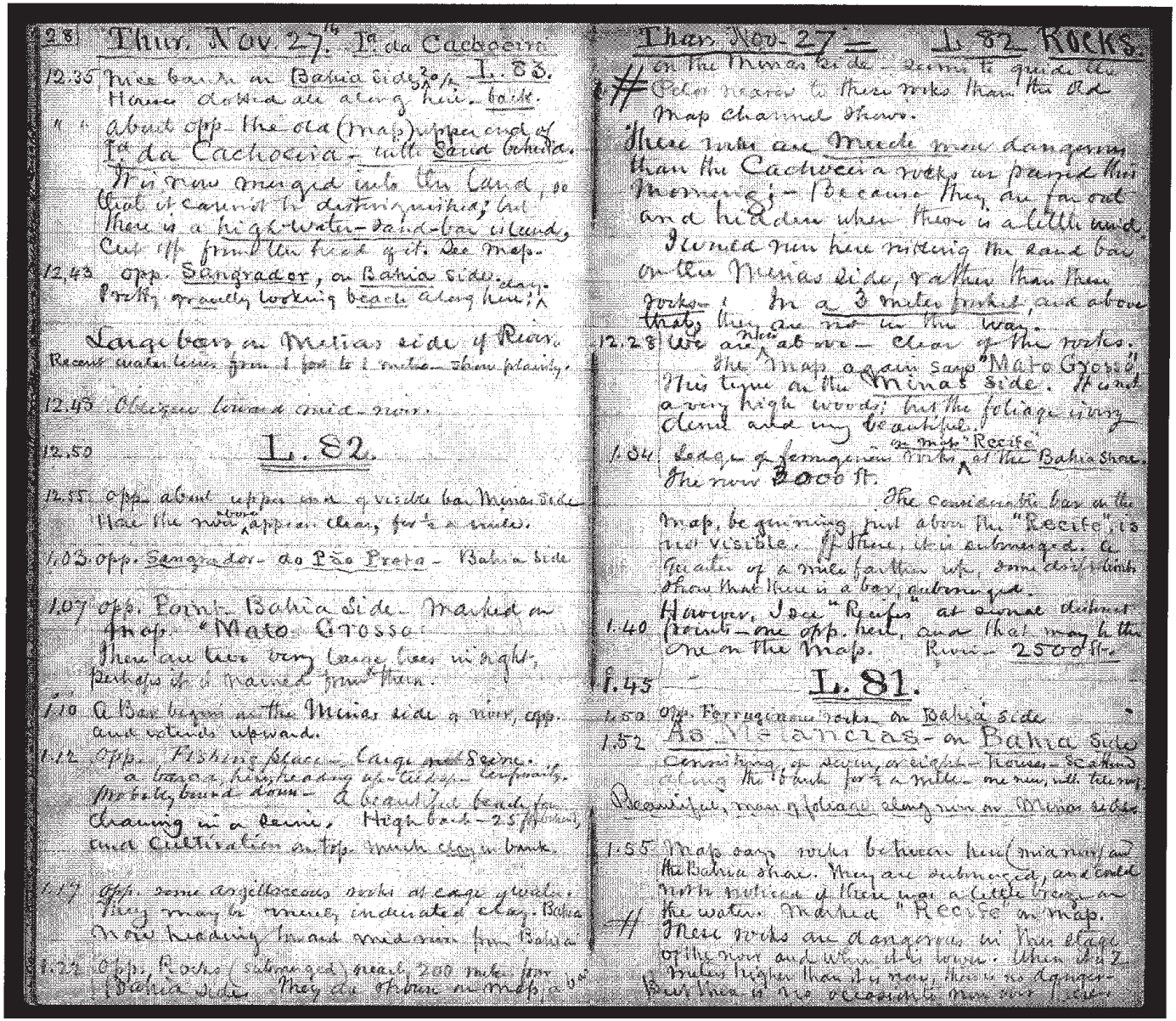
12.15 Opp. Lower end of bar from Minas side; the a little Lower down than the bar shown in the map.

12.19 Opp. Lower end of Cachoeira — 5½ 5½ on Bahia side
Not much more than dozen inches in many places rocks now visible. The upper portion shows a drop covering of coarse, hiding all the rocks.

12.27 Opp. where this Sand Covering begins
[Hatfield — says "Quartz Esp."]

The town or village or hamlet of Cachoeira is strung out along for a mile.
There is a deep Channel 4½ metres [illegible] width between this bar and the Minas shore.
[In connection with Steamboating, Cachoeira — is no consequence.]
There is no occasion for boats to keep near these rocks, unless they have to land at Cachoeira.

12.29 Opp. Upper end of the rocks or sand bar



28 Thur. Nov. 27th Ilha da Cachoeira

12.35 Nice bar on Bahia side 3 fms. I. 83.
Have doubled all along her bank.
" " about opp. the old (map) upper end of Ilha da Cachoeira - with Barra Velha.
Mirrow emerged into the land, so that it cannot be distinguished, but there is a high-water-sand-bar island, cut off from the head of it. See map.

12.43 opp. Sangrador, on Bahia side. clay. Pretty gravelly looking beach along here.

Large bars on Minas side of River. Recent water lines from 1 foot to 2 metres - show plainly.

12.45 Obrigão Island and river.

12.50 I. 82.

12.55 opp. about upper end of visible bar Minas side. Near the river appear clear, for ½ a mile.

1.03 opp. Sangrador - ao Pão Preto - Bahia side

1.07 opp. Point - Bahia side - Marked on map "Mato Grosso".
There are two very large trees in sight, perhaps it is named from them.

1.10 A Bar begins on the Minas side a river, opp. and extends upwards.

1.12 Opp. Fishing Place - Large net Seine. a large fire heading up-stream - temporarily. Mr Bailey heard down - A beautiful beach for drawing in a Seine. High bank - 25 ft. and cultivation on top. Much clay in bank.

1.17 Opp. some Angelloceras rocks at edge of water. They may be merely indicated clay. Bahia now heading inward and again from Bahia

1.22 Opp. Rocks (submerged) nearly 200 mts. from Bahia side. They do not appear on Map, so

Thurs. Nov. 27 — I. 82 ROCKS.

on the Minas side seem to guide the Pedra nearer to them rocks than the Old Map channel shows.
These rocks are much more dangerous than the Cachoeira rocks we passed this morning; - Because they are far out and hidden when there is a little wind. I would run here rather than have on the Minas side, rather than have Yorkshire! In a 3 mates breast, and above that, they are not in the way.

12.28 We are now above - clear of the rocks.
The Map again says "Mato Grosso" This time on the Minas side. Wood a very high wood; but the foliage rising clear and very beautiful.

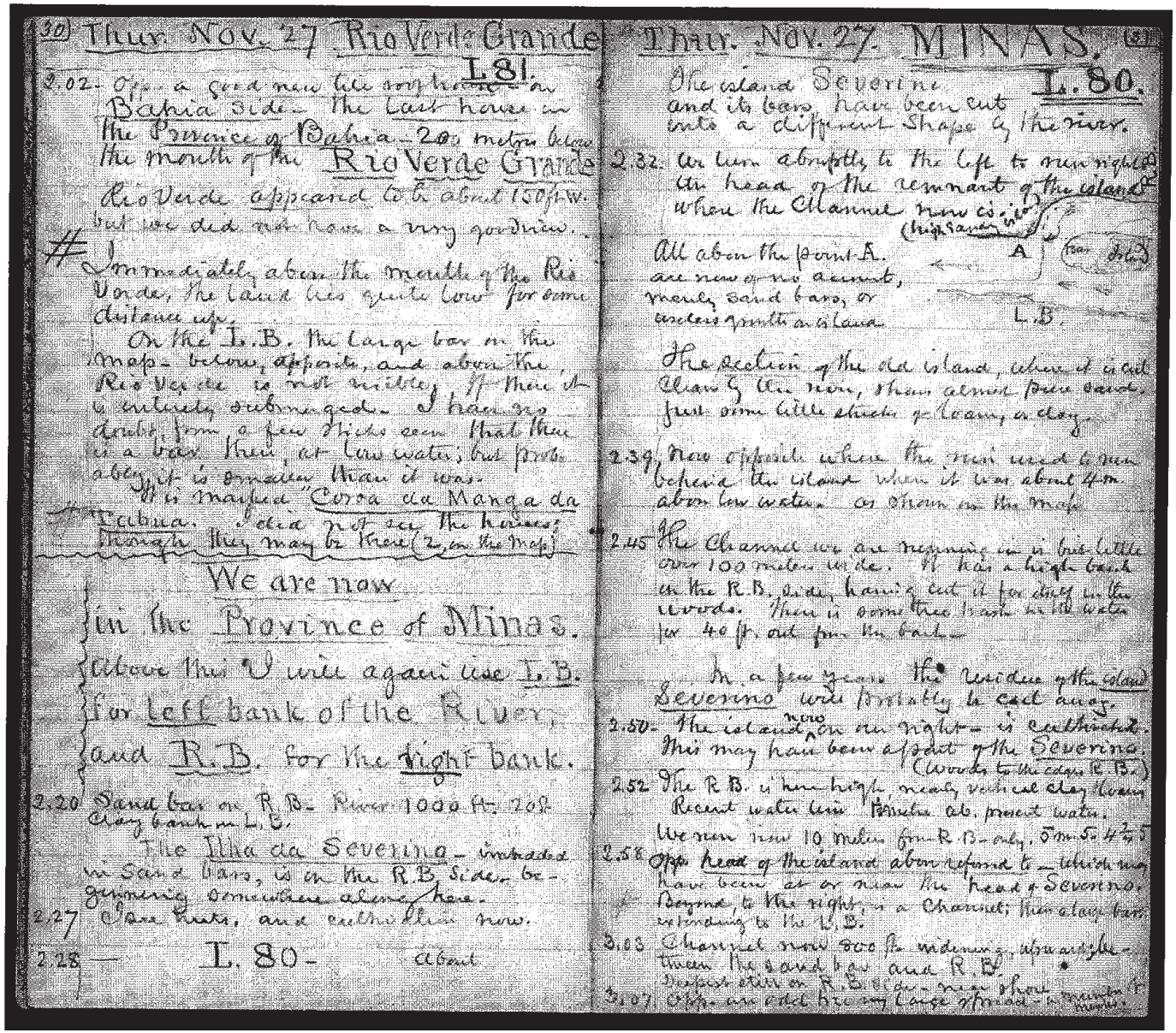
1.04 Large ferruginous rocks on the Bahia shore. on map "Recife"
The new Zoom St.
The continuation bar in the map, beginning just above the "Recife" is not visible. If there, it is submerged. A Quarter of a mile further up, some discoloration show that there is a bar, submerged.
However, I see "Rocks" at equal distance from it - one opp. here, and that may be the one on the Map. River - 2500 ft.

1.45 I. 81.

1.50 opp. Ferruginous rocks on Bahia side.

1.52 Ao Mangueiras - on Bahia side commencing, or seeming, a reef - Trees - scattered along the Bank for ½ a mile - no new, all the way. Beautiful, mass of foliage along now on Minas side.

1.55 Many rocks between here (mid river) and the Bahia shore. They are submerged, and could not be noticed if there was a little breeze on the water. Marked "Recife" on map.
These rocks are dangerous in low stage of the river and when it is low. When 2 to 3 miles higher than it is now, there is no danger. But then it is necessary to keep out of sight



30 Thur. Nov. 27 Rio Verde Grande L 81.

2.02 Opp. a good new Lite on the Bahia side. The last house in the Province of Bahia. 200 metres below the mouth of the Rio Verde Grande.

Rio Verde appeared to be about 150 ft. w. but we did not have a very good view.

Immediately above the mouth of the Rio Verde, the land lies quite low for some distance up.

On the L.B. the large bar on the map - below, opposite, and above the Rio Verde is not visible. If there is entirely submerged. I have no doubt, from a few ripples seen that there is a bar there, at low water; but probably it is smaller than it was.

It is marked "Coroa da Manga da Vaca". I did not see the houses; though they may be there (2 on the map)

We are now
in the Province of Minas.
Above this I will again use L.B.
for left bank of the River,
and R.B. for the right bank.

2.20 Sand bar on R.B. River 1000 ft. 20 ft. clay bank on L.B.

The Ilha da Severina - invaded on sand bars, is on the R.B. side. Is - gumming somewhere about here.

2.27 More huts, and cultivation now.

2.28 — L. 80 - about

Thur. Nov. 27 MINAS. (31)

The island Severina and its bars have been cut into a different shape by the river. L. 80.

2.32 We turn abruptly to the left to run right to the head of the remnant of the island where the Channel now is. (high sandy bank)

All above the point A. A (from Island)
are new or no account,
mostly sand bars, or
useless growth on islands. L.B.

The section of the old island, where it is cut down by the river, shows almost pure sand, just some little streaks of loam, or clay.

2.39 Now opposite where the river used to run behind the island when it was about 4 m. above low water. as shown on the map.

2.45 The Channel we are running in is but little over 100 metres wide. It has a high bank on the R.B. side, having cut it for days in the words. There is sometimes 3 m. water for 40 ft. out from the bank.

In a few years the residue of the island Severina will probably be cut away.

2.50 The island now on our right - is called Severina. This may have been a part of the Severina. (Accords to the edge R.B.)

2.52 The R.B. is here high, nearly vertical clay (loam) Recent water line 2 metres ab. present water.

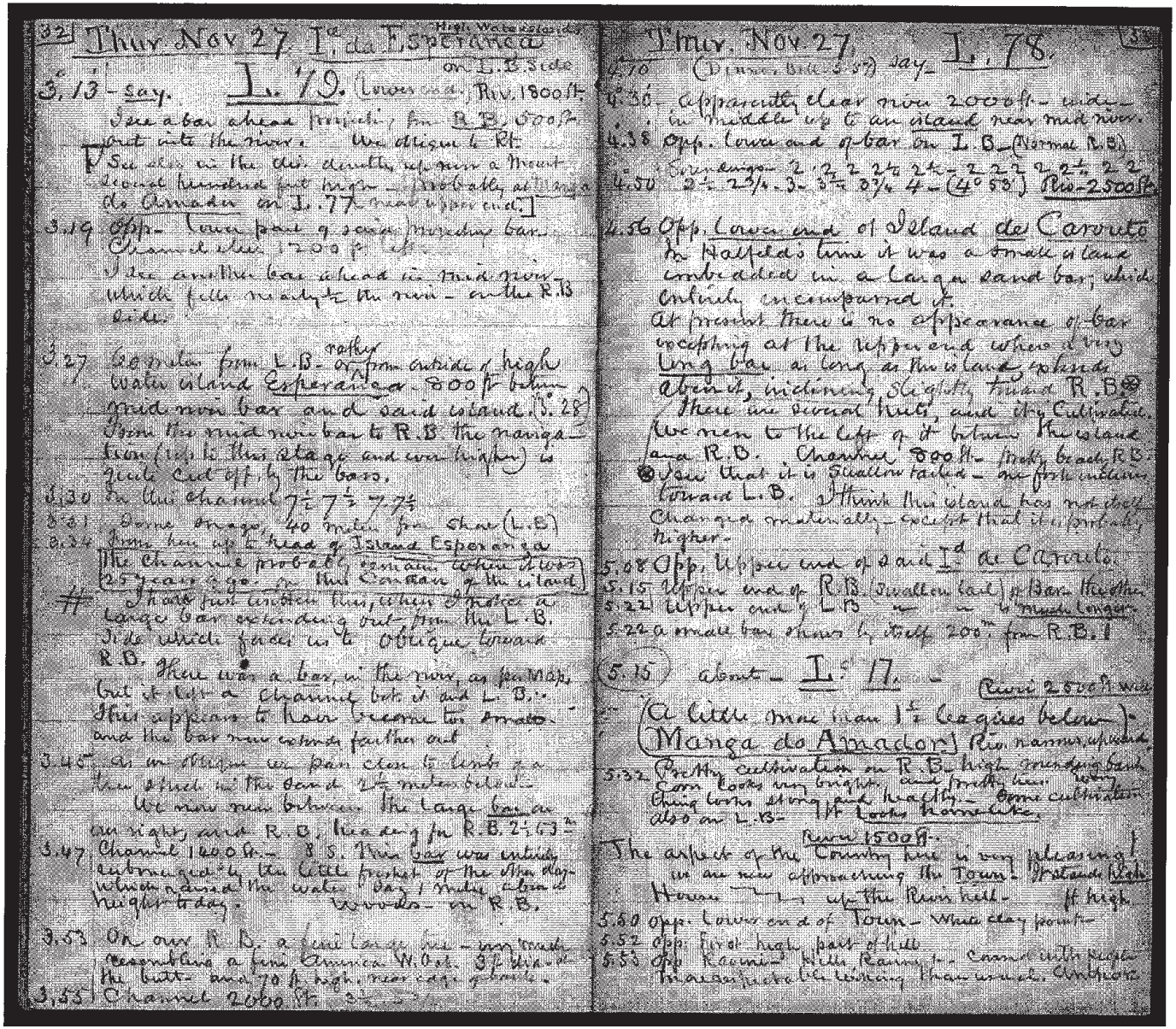
We run now 10 Metres from R.B. only, 5 m. 5 m. 4 2/3 5

2.58 Opp. head of the island above referred to — which may have been at or near the head of Severina. Beyond, to the right, is a Channel; then a long bar extending to the L.B.

3.03 Channel now 800 ft. in diameter, about equally between the sand bar and R.B.

Dark color on R.B. edge - may show marks of high water.

3.07 Opp. we cut the very large island - to the right.



32 Thur Nov 27. I.a da Esperança
High Water slack
on L.B. Side

3.13 - say. I. 19. (Lower end) Rw. 1800ft.
I see a bar ahead [illegible] from R.B. 600ft
out into the river. We oblique to Rt.
See also in the dist. ahead, up river a Mount
[illegible] [illegible] [illegible] [illegible]
do Amador on I. 77 [illegible]

3.19 Opp. Lower part of small [illegible] bar
Channel else 1200 ft off.
I see another bar ahead in mid river
which falls nearly to the surface - on the R.B
side.

3.27 Go close from L.B. - rather
from outside of high
water island Esperança - 800ft between
mid river bar and said island. (S. 28)
From the mid river bar to R.B the manga-
tiba (right the stage and even higher) is
quite cut off by the bars.

3.30 In the Channel 7½ 7½ 7½

3.31 Some image, 40 miles from shore (L.B)

3.34 From here up to head of Island Esperança
The Channel probably remains [illegible] as it was
25 years ago. On the Canada of the island
I have just [illegible] this, which makes a
Large Bar extending out from the L.B.
side which [illegible] to Oblique towards
R.B. There was a bar in the river as per Map,
but it left a Channel both it and L.B.
This appears to have become [illegible]
and the bar now extends further out

3.45 As in Oblique on pass close to [illegible] of a
[illegible] in the [illegible] 2 to 3 miles behind.
We now run between the Large bar on
our right, and R.B. heading for R.B. 2½ to
3.47 Channel 1200 ft. B.S. This bar was entirely
submerged by the little freshet of the 25th day
when I found the water 1 Faz 1 Mile above it
higher today.
Wrecks on R.B.

3.53 On our R.B. a [illegible] [illegible] - [illegible] [illegible]
resembling a fine Quinca W. Ord. 3 ft high -
the butt and 70 ft high, near edge [illegible]

3.55 Channel 2000 ft [illegible]

Thur. Nov. 27. I. 78. 33

4.10 (Dense [illegible] 5.57) say - I. 78.

4.30 Apparently clear now 2000 ft - under
the middle of C an island near mid river.

4.38 Opp. Lower end of bar on L.B - (Normal R.B)
Soundings 2 · 2½ 2 2½ 2½ - 2 2 2½ 2 2½ 2 2
4.50 2½ - 2 3½ - 3½ - 3¾ 4 - (4° 58') Rw - 2500ft

4.56 Opp. Lower end of Island de Carvalho
In Hatfield's time it was a small island
imbedded in a Large sand bar, which
entirely encompassed it.
At present there is no appearance of Bar
excepting at the upper end where a very
Long bar as long as the island extends
about, inclining Slightly, from R.B.
There are several huts, and the Cultivable
we seen to the left of it between the island
and R.B. Channel 800 ft - Muddy beach R.B.
Note that it is Swallow tailed - one fork inclines
toward L.B. I think the island has not been
Changed materially - except that it is probably
higher.

5.08 Opp. Upper end of 2 and I.a de Carvalho

5.15 Upper end of R.B. (swallow tail) of Bar. Weather

5.22 Upper end of L.B. " " " Muddy Longer.

5.24 a small bar shows by Wolf 200m from R.B. I

(5.15) about - I.s 17. - Rw. 2500ft wide

A little more than 1½ Leagues below
Manga do Amador Rio Namorado

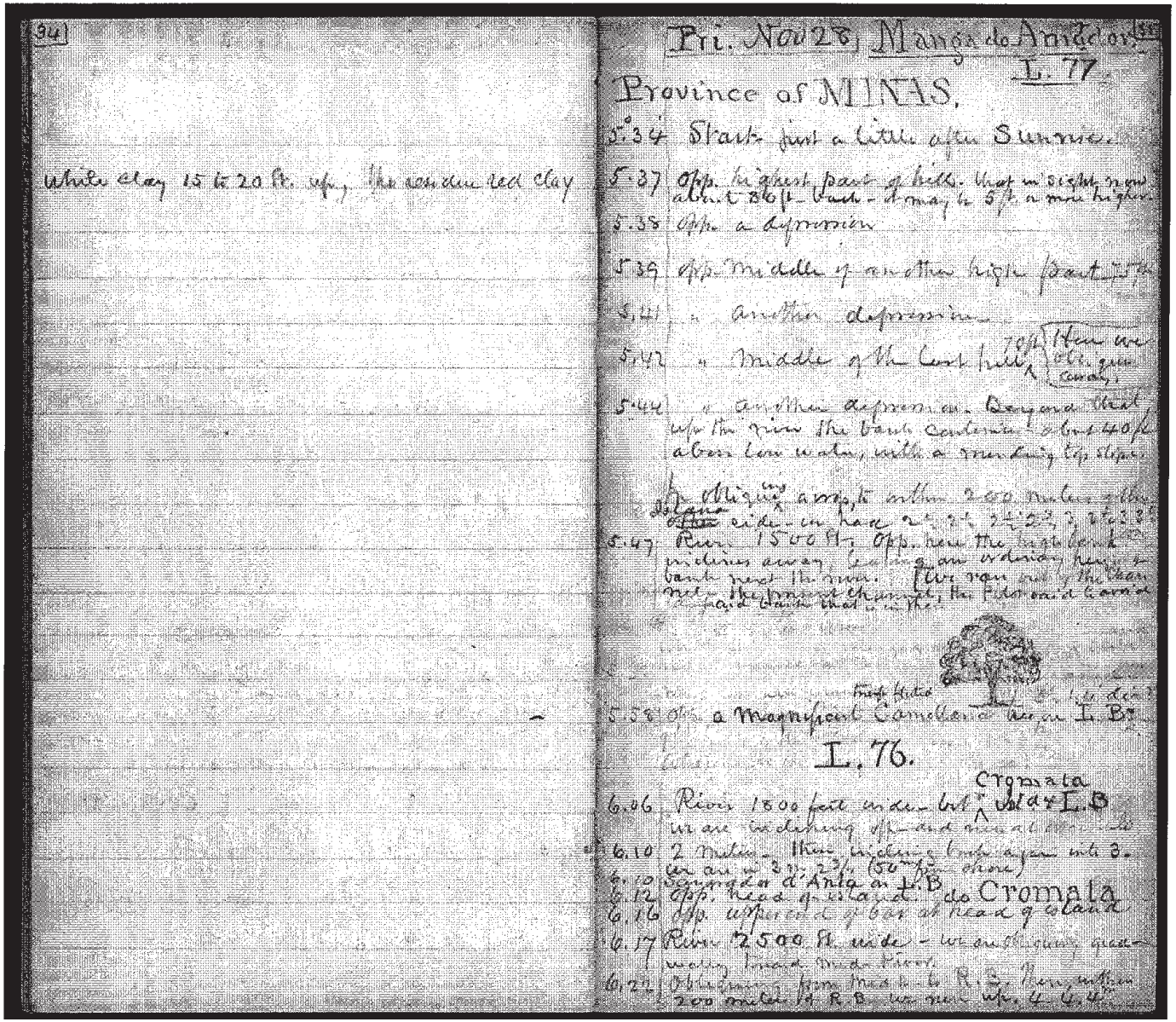
5.32 Pretty cultivation on R.B. high trending land
Cane looks very bright and healthy - very
Fine looks strong and healthy - Some cultivation
also on L.B - It looks home like.
Rw 1500ft.

The aspect of the Country here is very pleasing!
as we now approaching the Town. Pretty Wooded
Hills [illegible] up the River hill - 1ft high.

5.50 Opp. Lower end of Town - White clay front -

5.52 Opp. First high part of hill

5.55 Opp. Rocinha Mills (Ramos &c) - Canoe with Negro
Many [illegible] [illegible] [illegible] [illegible] [illegible]



94

White clay 15 & 20 ft. up, the reddened red clay

Fri. Nov 28 Manga do Amaro

L. 77

Province of MINAS.

5.34 Start first a little after Sunrise.

5.37 Opp. highest part of hills. Last in sight range about 2 miles back - d may be 5 ft a mile higher.

5.38 Opp. a depression

5.39 Opp. Middle of another high part

5.41 " another depression

5.42 " Middle of the last hill [Here we ↑ Virgem cavalry]

5.44 " another depression. Beyond that up the river the bank contains 3 to 4 ft above low water, with a very big slope.

Obliging arrangement with 3 or 4 men of the Plano side - in case of [illegible]

5.47 River 1500 ft. Opp. here the high bank [illegible] receding on ordinary here a bank next the river. [We pass out the channel between the Island of Chumbo, the Pilot and Carmo and bank that is the

5.58 Opp. a Magnificent Camellia tree on L. B.

L. 76.

6.06 River 1800 feet wide [illegible] Cromata ↑ Island L. B

we are widening the [illegible]

6.10 2 miles - Here widening both ways into 3. we are in 3 ½ fathoms (50 ft. more)

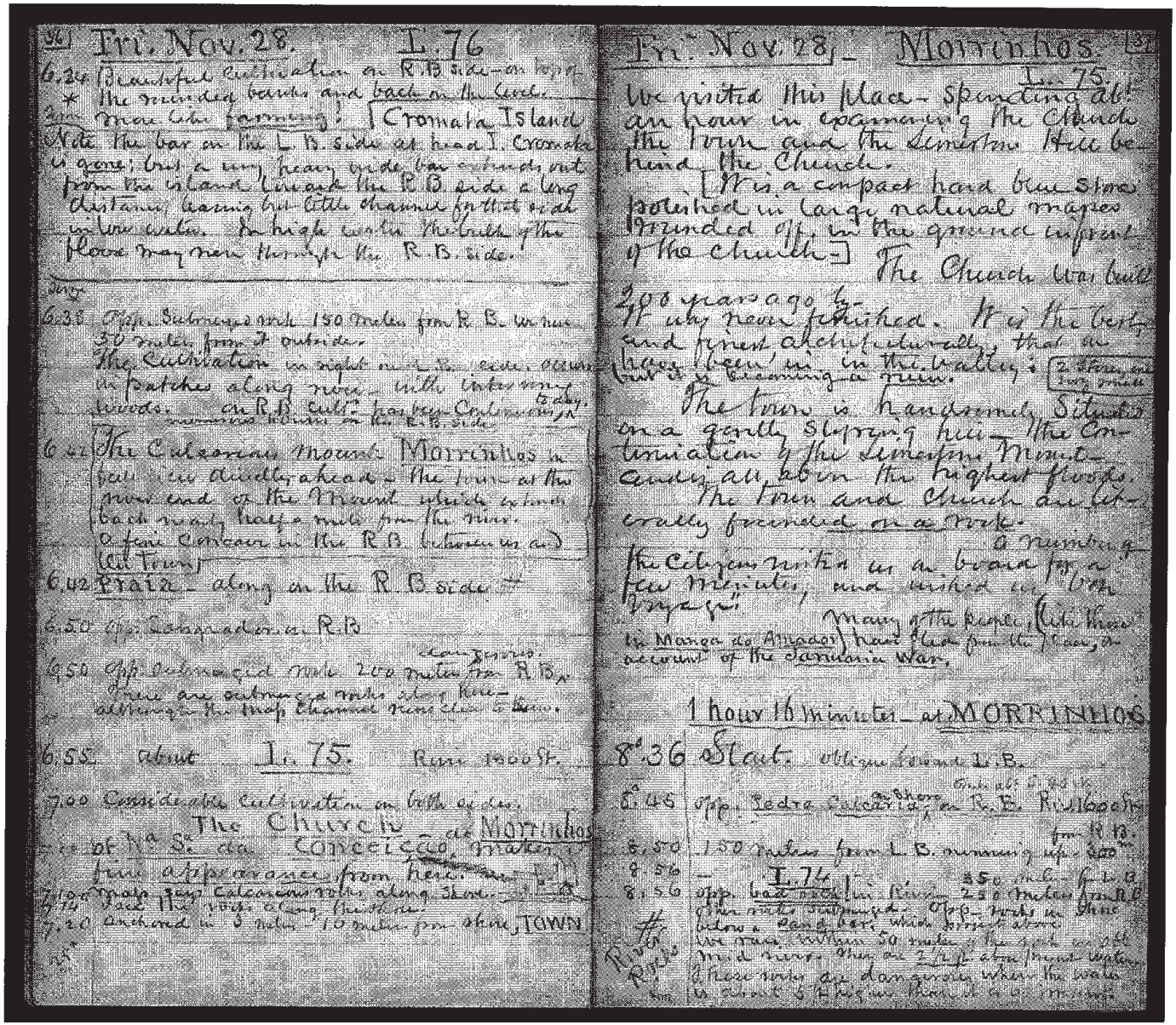
6.10 Separação d'Anta on L. B

6.12 Opp. head of island do Cromata

6.16 Opp. upper end of bar at head of island

6.17 River 2500 ft. wide - we are [illegible] gradually leaving Island Mid. River

6.22 Obliging from Mid. to R. B. River [illegible] 200 miles to R. B. we are - upper 4 6 4½



Fri. Nov. 28. I. 76

6.24 Beautiful Cultivation on R.B. side—on both sides the rounded hands and back on the Creek.

6.30 Mouth of the Jaguaribe River. Cromata Island

Note. The bar on the L.B. side at head I. Cromata is gone; but a very heavy swell breaks outwards, not from the Island towards the R.B. side a long distance, leaving but little channel for craft in the water. In high tides the bulk of the flood may run through the R.B. side.

6.38 Opp. Sabonneira rock 150 Metres from R.B. we have 30 Metres from it outwards.
The Cultivation on right on R.B. side occurs in patches along river, with intervening woods. on R.B. Cult. from here Continuously, 2 days running towards on the R.B. side.

6.42 The Cultivation mounts Morrinhos in fair on Hill ahead. The town at the river end of the Mount which extends back nearly half a mile from the river.
A fair Canoe on the R.B. (Fishermen and Traders)

6.42 Praia along on the R.B. side

6.50 Opp. Cabaçadeira on R.B.

6.50 Opp. Submerged Rock 200 Metres from R.B. (Low Springs.)
There are submerged rocks along here—
Always in the deep Channel from close to here.

6.55 About I. 75. Rise 1900 ft.

7.00 Considerable Cultivation on both sides.

The Church — de Morrinhos
of N.a S.a da Conceiçco, Matriz
from here appearances.

7.10 Praia Bay Calcareous rocks along shore.

7.14 Pass the rocks of Long Point.

7.20 Anchored in 3 Metres 10 Metres from shore. TOWN

Fri. Nov. 28. — Morrinhos. 37

I. 75.

We visited this place — spending about an hour in examining the Church the Town and the Limestone Hill behind the Church.

[It is a compact hard blue Stone polished in large natural stages Grounded off in the ground surface of the Church.]

The Church was built 200 years ago &
It was never furnished. It is the best and purest architecturally that we have seen in the Country.

The Town is handsomely Situated on a gently sloping hill — The Continuation of the Limestone Mountains all on the highest floods.

The Town and Church are beautifully grouped on a Rock.

A number of the Citizens visited us on board for a few minutes, and wished us "Good Voyage".

Many of the People (who know the Monge do Aragaõ) heard about from the Town, an account of the Jaguaribe War.

1 hour 16 minutes — at MORRINHOS

8.36 Start. Oblique towards L.B.

8.45 Opp. Pedra Calcaria on R.B. Rock about 6 Metres from the R.B.

8.50 150 Metres from L.B. running up 500 Metres.

8.56 — I. 74

8.56 Opp. bare rock in River — 250 Metres from R.B. Other rocks submerged. Opp. rocks on shore below a sandy bay, which forms a bar across, with 50 metres of the rock on the mid river. Then on 2 left atm from the water. These rocks are dangerous when the water is over 3 Metres as it is in the mornings.

Fri. Nov 28. L. 74. – 73

9.00 – Breakfast.
good, clear mrs 9.00 to 9.35.

9.35 Opp. a bar close in to R.B. Not on Map
This bar helps the navigation a little.

9.43 Opp. upper end of said bar, at the Shore R.B.

The high mountain in Virgin Gorda, seems apparently about a bar abt the mrs in New Guide East Point a league and a half or two leagues off

We are now approaching the island, to run to the L.B. side – the old Map Channel. The R.B. side abounds with sand bars and is shallow, &c – looking upstream.

9.50 Abt foot of Island da Resacca.
A bar on this (L.B.) side

9.55 L. 73 – (great vanity of this tree) Cocoanuts on L.B. side

Passed a pipsisse a beautiful tree ("Joozeiro") on top of high L.B. side. Deep Creek. Other high on this side. The Cajou fruit which I have spoken of in Brazil.

The island da Resacca has very large trees upon it. It may have once been the main land.

10.04 Opp – Resacca. 1 good long house, entered by 4 doors (4 on Map)
10.05 or a ring along Channel 3 4 miles per hour 6 miles from island, 4 knots
Water lines show water fallen recently, 1½ Metres

10.20 Rocks – only 1 foot above ground water – mid channel

10.26 opp. head of Island. The bar at head is here as on Map, on this side, and a fourth 3000 to head of
10.29 Opp. upper pt of island bar, navigable. R. 2800 ft.
The great entrance bar, extending Centrally from Opp. head of Island. Sounding 4/5 fathoms
Entire water way to the R.B. side
10.30 River above bar 2 600 & 3000 ft. wide, but narrowing up stream.
10.47 River 600 ft. Splendid River – ! both sides wooded.

Fri. Nov. 28. L. 72

10.47 – L. 72. – about

10.53 Opp. rocks along Shore – R.B. a low
10.59 Opp. a little rock – 100 metres out fr. R.B. large edge of water

10.59 Opp. Lower end of Large island on the L.B. side – which can only be the Ilda Capao. The channel appears to run on map between the head of island Resacca and this one. It runs in 33 minutes – and I should say 7/8 Leagues on map.

11.01 White rocks at water edge on R.B. Limestone rocks. These are shown on the Map.

We run between the island and R.B. in a Channel 1500 ft wide. The old map Channel is on the L.B. side of island – about 600 feet wide.

L. 71 – about

11.10 – Rocks (limestone) show at edge of water – feat.

11.15 In channel 30 fm from R.B.
Fine woods. No Cultivation.
Beautiful variety of green shades.

11.23 Opp. submerged rocks within 100 metres from R.B.

11.26 Opp. a clearing and Cabins – on island

11.26 Also opp. Lower pt of the island bar at the Shore.

[Sec. Sr. Amaranto about distances along here.]

11.32 Rocks – on R.B. side in River – 2 fm Map

11.32 Opp. head of island Capão. The large woods above; very near the shore as on Map.

11.38 Opp. upper pt. of said bar which Lies on Ground L.B., where the Channel is narrow.

11.39 River above this island bar 2000 ft. but about narrows
Clearings and Cultivation, in patches.

11.45 New tile-roofed House on L.B.
River narrows to 800 ft

11.50 Opp. a jog – and entering reach at L.B. where you see no rocks – but reach may be connected with Salida
Half a dozen Rocks here

11.53 Here are Rocks on L.B. shown on map

The same beautiful mountains ahead still a league or more off. Canoe with fishermen. Perhaps 1000 ft high –



Fri. Nov. 28. I. 70

Immediately abm there rocks now 100 ft:—

Itacaramby (Itacaranha Jmay Catcana)

Rocks at intervals, as those on L.B. all around the Concave.

Map says Pedra do Romanso

Deep Soundings 5 fathoms deep

Faz.a do Itacaramby — = 50 ft. + Haulpas

Romanso do Itacaramby.

11.58 Limestone rocks large and small shew all along there opp. here. Riv-1000 ft:

12.02 opp. up. end of limestone rocks on L.B.

12.04 Opp "Sangrador", on L.B. Heavy wood just above. (woods and liquids, bads.

We are now passing around the head cum to left in a cove

12.17 Opp. a large rock in the river, on R.B. Where it immediately widens to 2000 ft.

Here there are rocks in the Cove.

Looking ahead I get a front view of the Cutting of the river which is called Boa Cove. Our Channel is On the Concave, L.B. side.

12.19 Opp. up. pt. of said foregoing rocks. Limestone.

Here we begin to oblique from L.B. on to R.B. Forward Mid-River.

(See a bar projecting from L.B. South up, this is not on map.)

The Pilot — before I knew it — says the steamer obliques too soon. And he says by sweep the two fathoms of river rocks 1¾ 1¾ 1¾.

12.27 Near R.B. side — one side of which the rocks are shown on Hatfield's map. We should have gone all over them all before obliquing in.

12.35 We are now in good channel on R.B. above the rocks. River 2500 ft. wide

called Pedra de Togo.

(According to the water lines the river has fallen here in nearly 2 Metres since the recent freshets just covering the rocks are

12.40 We are now within Easy Hear a League of the mouth Paranhanna, or one of the

Fri. Nov. 28 J. 69.

The same Mountain — Serra Pedra do Togo, (and sketch as on page 39) / We will get to Paranhanna mouth in 1½ — a League further up the river. Steer say, about 1000 ft. high

Pico da Serra do Itacaramby

12.49 The water line 4 recent freshet here 1½ Metres — much less than it is half a mile back.

The river continues very wide 2500 ft.

12.55 Stiff clay, Steep-Slope bank deep Channel R.B. Bay is on L.B. across the river now. This bar narrows the river, and helps the depth in the Channel on R.B. side.

1.00 Cultivation on R.B. a few banana trees appear.

1.05 80 Meters out. Riv. 1600 ft. wide, bar on L.B. side 4,000

1.17 70 Meters out. Here the recent freshet has risen the water 2 Metres from the present water — How much more may fall in the river. There is a strong Current, Rowing over rate in mouth.

There is an island on map somewhere about here. It has disappeared.

1.21 River only about 600 ft. wide, & the bar on L.B.

1.27 We oblique here to right, to cross the L.B. Channel of the island. Ilha do Retiro. It appears to have enlarged since Hatfield's time.

And the R.B. Channel is much obstructed with sand bars.

Ilha do Retiro

1.26 Opp. Lower end of grassy part of Sand bar at foot of island. after a very [illegible] growth of Reeds and Cane 8 Meters high, on the bar. The island Growth; but the island is now grassy and covered thickly in cultivated. Not a large one.

1.28 Channel on this L.B. side 800 ft. to 700 ft. The L.B. side is caving away, and of late years it has been Cutting away.

1.30 Here channel is 900 ft. I. 68.

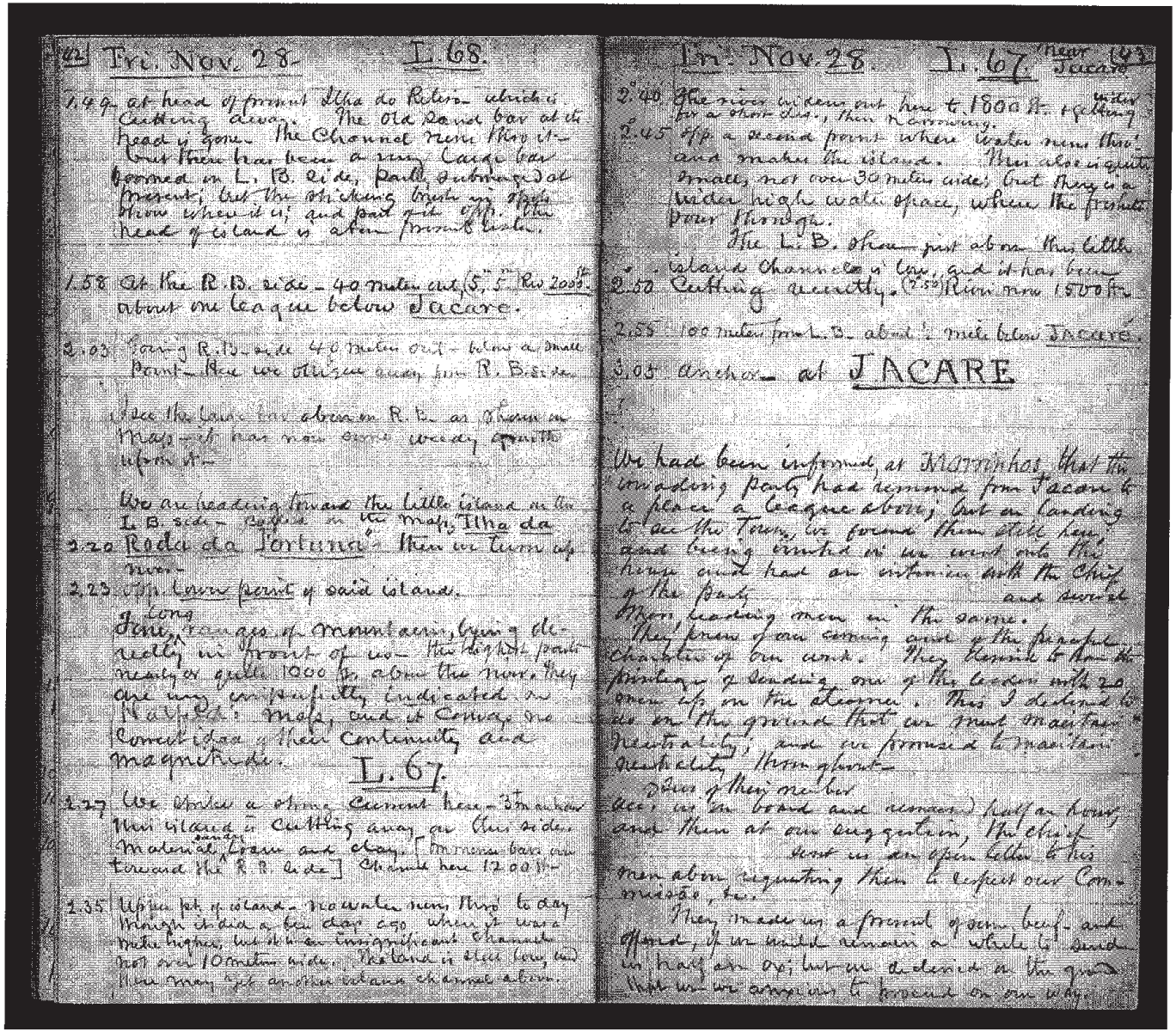
We run over to L.B. side as we approach head of island — 4-4-4-

(or as (within 10 metres)

1.49 Opp. head of Ilha do Retiro. Island is nearly all grass and cane 8 feet high for the most part. Has been cultivated.

Low sandy bar on L.B. side opp. head of island.

The Channel is now cutting round island.



Trc. Nov. 28. L. 68.

1.49 at head of present Ilha do Retiro which is Cutting away. The old Sand bar at the Head is gone. The Channel now thro it. But there has been a very Large bar formed on L. B. side, Partly, submerged at present; but the Striking breaks up Sharp where it is, and part got off. The Head of Island is often from 6 to 8.

1.58 At the R. B. side - 40 meters out, 5, 5 Rw 2000 ft. about one League below Jacare.

2.03 Going R. B. side 40 meters out - below a small Point - Here we Steer away from R. B. side.

Here the Land lies about on R. B. as shown on Map - it has now some woody appearance upon it.

We are heading toward the Little Island on the L. B. side - Called on the Map, Ilha da
2.20 Roda da Fortuna - Here we turn up river.
2.23 Off. Low point of said Island.
Long Pine ranges of Mountains, Going Directly in front of us - the highest point nearly or quite 1000 ft. above the river, they are very Conspicuously Indicated on Map of Rd. Map, and it Conveys the Correct idea of their Contenuity and magnitude.

L. 67.

2.27 We Under a strong Current here - 3 m an hour. New Island is Cutting away on this side. Material Loam and clay. [Narrow bar on towards the R. B. side] Channel here 12.00 ft.

2.35 Upon pt. of Island - now water runs this to day Though it did a few days ago when it was Much higher, but it is an insignificant Channel not over 10 Meters wide. The Land is Steep low and Here may get an other Caiman channel above.

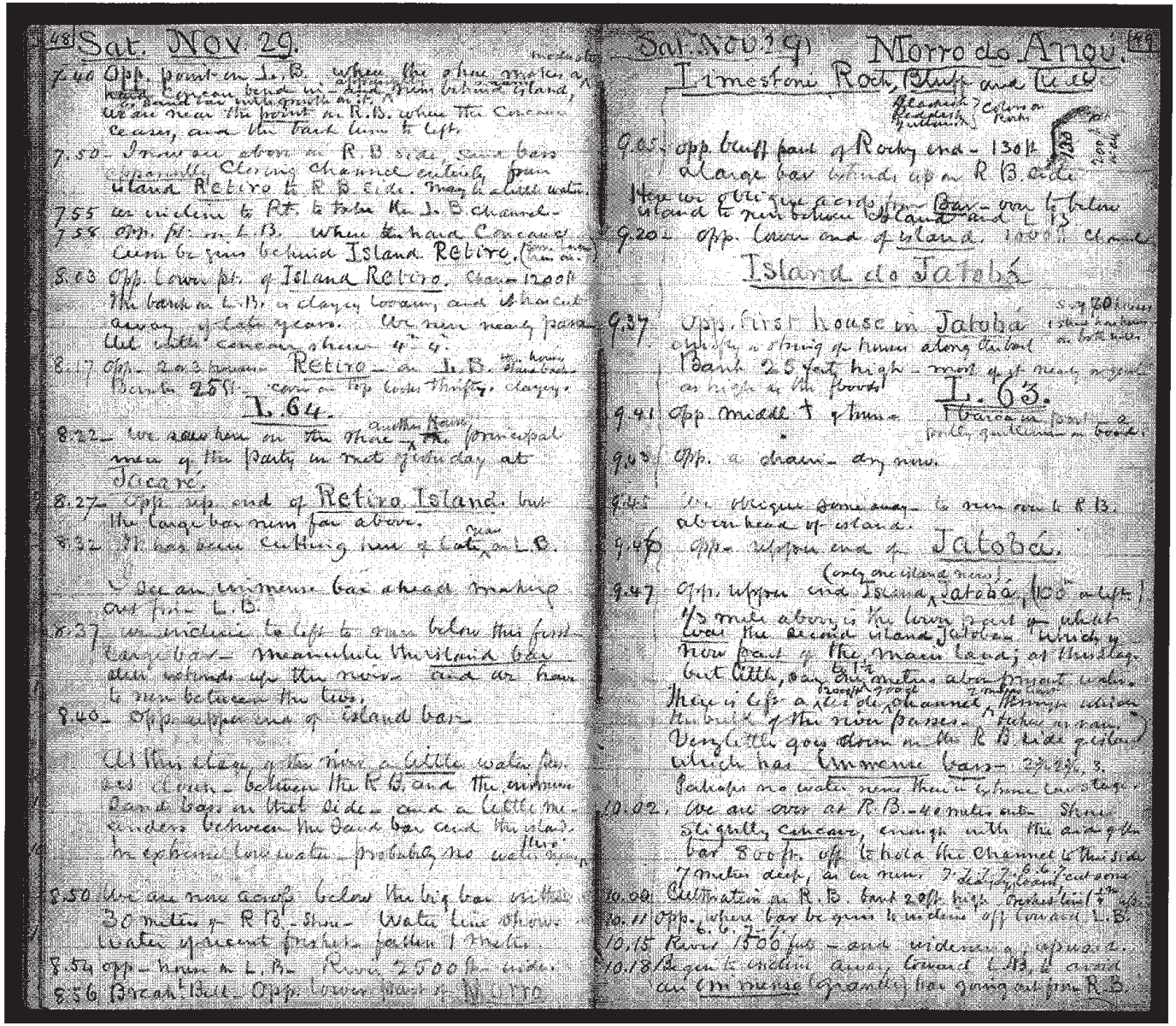
In. Nov. 28. L. 67. Near Jacare

2.40 The river is deep out here to 1800 ft. + getting Water for a short dist., then Narrowing.
2.45 Off a second point where water runs thro' and makes the island. Main shore is quite Small, not over 30 meters wide; but there is a wider high water space, where the freshets pour through.
The L. B. shore just above this Little Island Channel is low, and it has been
2.52 Cutting recently. (2.55) River now 1500 ft.
2.58 100 meters from L. B. about ½ mile below Jacare.
3.05 Anchor at JACARE

We had been informed at Manaos that the invading party had removed from Jacare to a place a League above, but on Landing to see the Town, we found them still here, and being invited in we went onto the house and had an interview with the Chief of the Party and several Moors, leading men in the same.
They knew of our coming and of the principal Character of our and. They Showed to them the Mortaga of sending one of the Leaders with 20 men up on the Steamer. This I declined to do on the ground that we must maintain Neutrality, and we promised to maintain Neutrality throughout.
Some of their members
Ages, were on board and dined) half an hour and then at our suggestion, the Chief sent us an open letter to his men above signalling them to respect our Commando, &c.
They made us a present of some beef, and offered, if we would remain a while to send us some Rum; but we declined on the ground that we were anxious to proceed on our voyage.

Fri. Nov. 28 Phenamendez 111.

Sat. Nov. 28 Jacinto 1.67



48 Sat. Nov 29.

7.40 Opp. point on L.B. where the shore ... a ... Canoe bend in ... Island, ... and low with growth on it. ... We are near the point on R.B. where the Canoe ... ceases, and the bank turns to left.

7.50 Immense above on R.B side, same bare ... Island Retiro to R.B. side. May be a little water.

7.55 We incline to Rt. to take the L.B. channel.

7.58 Opp. Pt. on L.B. Where the hard Concave ... can be seen behind Island Retiro. (from ...)

8.03 Opp. Lower pt. of Island Retiro. Chan 1200ft. The bank on L.B. is clayey loam, and is here cut away of late years. Are now nearly para... Ilet little concave shore 4th 4.

8.17 Opp. 2nd house — on L.B. The house ... Banks 25ft ... corn on Top looks thrifty. clayey.

I. 64.

8.22 We saw here on the Ithaca the principal men of the party in mat finishing at Jacaré.

8.27 Opp. upp. end of Retiro Island. but the large bar runs far above.

8.32 We have been inclining from left to R.B.

We are in immense bar ahead making out from L.B.

8.37 We incline to left to cross below this front large bar — meanwhile this second bar ... extends up the river and we have to run between the two.

8.40 Opp. upper end of Island bar.

All this stage of the river a little water passes down — between the R.B. and the immense Sand bar on that side — and a little more ... between the Sand bar and the island. No ... channel low water — probably no water ...

8.50 We are now across below the big bar with ... 30 metres of R.B. shore. Water here shows ... water of recent freshets for last 1 Metre.

8.54 opp — house on L.B. River 2500 ft wide.

8.56 Bicas Bell. Opp. lower point of Island ...

Sat. Nov 29 Morro do Anqu. 49

Limestone Rock, Cliffs and Tree

9.05 Opp. bluff point of Rocky end — 130 ft ... a large bar which ... up on R.B. side

Here we ... course ... Bar — run to below ... Island to near between Island and L.B.

9.20 Opp. lower end of Island. 1000 ft channel

Island do Jatobá

9.37 Opp. first house on Jatobá ... opposite a string of houses along the bank ... Bank 25 feet high — most of it nearly perpendicular as high as the forest.

I. 63.

9.41 Opp. middle of town — Ithaca in front ... pretty good ... on bank.

9.45 Opp. a chapel — dry now.

9.48 We ... Unique Some away — to run on L.R.B. ... at the head of island.

9.49 Opp. upper end of Jatobá.

(only one island now)

9.47 Opp. upper end Island Jatobá, 100 m left ... 1/2 mile above is the lower point on which ... was the second island Jatobá — which is now part of the main land, at this stage ... but little, 6 to 12 metres above present water. There is left a ... old channel ... which ... the bank of the river passes ... (Perhaps 200 yards wide) Very little goes down on the R.B side of island which has immense bars — 2 1/2, 2, 3, Perhaps no water now there at present low stage.

10.02 We are over at R.B. 40 metres out. Shore ... slightly concave, enough with the end of the bar 800 ft. off to hold the Channel to this side 7 metres deep, as in nine 7, 7 1/2, 7, 6 1/2 feet soundings

10.09 Cultivation on R.B. bank 20 ft. high. Forest land ... ft. up.

10.11 Opp. where bar be gun to incline off towards L.B.

10.15 River 1500 ft — and widening ... upwards.

10.18 Began to incline away towards L.B. and avoid ... (in mouse) Granite bar going out from R.B.

Sat. Nov. 29. on L. 66 Lower end below Sobradinho.

In the midst of the enormous bars of the Sobradinho — Sun Rise — 5.35

5.45 Start — and at once diverge away from L.B. bar having to the R.B. side for 2 miles or so, and then they are on the L.B. side. about when we are now the main bar on R.B. contracts the river to about 1500 ft. 4½ 4½ (100 metres deep)

A lovely morning.

5.50 Sobradinho on L.B. Short up- Pacific [illegible] war one long house and then a few, with tiled roofs. a beautiful Situation 30 ft. above river. whitish clay bank. Arches partly submerged in river. 4½

5.57 Houses on L.B. river 1200 ft. to bar on R.B. 4½ Arches of bridge

Fine channel along here! Bank 25 & 30 ft. white clay bluffs

5.59 Another house — 30 ft bank L.B. Bank above

[No people appear — war!]

6.00 opp. a handsome double thick bar on L.B.

6.05 The clay bank L.B. only 15 to 20 ft now. whitish.

6.08 Opp. 4 houses (small) and people on bank. 25 ft high a nice situation (70 metres out) Bar ahead towards the L.B. side — fast running out of water. 6.10 — Opp. head clay bluffs at the ending of the arches.

6.13 Opp. up. end of the aforesaid large bar on the R.B. side — Also Opp. Down end of the bars just now running above water on that side L.B. (500 ft)

Am glad to see that they incline away toward the R.B. 4-4- The shore is nearly straight — very slightly Concave.

6.15 Opp. a fog in the bank 5 metres wide 1 metre above present water. Possibly it represents something on map, but I cannot say what.

6.20 The bars and Isles are so different now from the map, that it is difficult to follow the map, but we have a good 4m channel near the L.B. on along here

Sat. Nov. 29. L. 65.

6.22 We are inclining away from L.B.

6.29 Another notch on L.B. upper end (Down end) according to Pilot of Lago da Cabaceiras 2¼ 2½ 2¾ 2½

We are running between two sets of bars one on L.B. one on R.B. we incline to the R.B. side. 700 to 800 ft. wide — lower end L.B. bar. The R.B. bar runs out gradually to about above

6.34 Lower up. bar on bars.

[First Mountain behind, on L.B. side]

6.37 4 ft Sobradinho bar opposite on right. slight helper the channel — 4¼ 4¾ 4½ — (6.38) 5

6.39 5. 4¾ (70 metres out from R.B.) (6.42) — 3 3 2¾

6.46 Nicolau bar 250 metres to Rt. L.B. 200 metres to Lft.

Another bar ahead — from R.B. side. The Bar on right runs up into an island, extending above Retiro

6.50 Opp. Down (visible) bar on R.B. side. 1000 ft. wide. another bar along R.B. shore — continuous

Opp. about where Sand became Island. (ad Retiro)

Very cool, (head) wind, thin morning (6.55.) cloudy, now Cloudy

6.56 Opp. up. end of bar on R.B. — 50 metres from shore. 4 to 5 ft

Another bar in sight directly ahead fills large Span of river, 3/4 1¾ 2½ 2 2 2 inclines bar R.B.

7.05 Opp. Down end of bar on Rt. Kr. 64 South.

Opp. up. end of island (Retiro) We are on the

7.09 R.B. 30 metres from shore — 3. 3. 4. 4

This R.B. shore is slightly concave here — last mile. Water must run on the L.B. side of Island Retiro

7.10 Limbs sticking up, in spots, near the shore.

On our right the river is well filled with Sand bars this side of, and above island. Chan. 800 ft. wide

7.13 Two rows within 25 metres of shore — gentle 4 5 Concave

Still finer Mountain, View behind (on L.B. side) Note the Spur

7.20 Opp. up. end of sand mid river bar — visible part

7.21 River 2000 ft. wide. Good channel 6m minimum

7.30 Run along on the R.B. side. 4½ 5 metres

7.35 There is a bar some (1500 ft) on the L.B. near mouth of the Rio Pardo, Rio [illegible]

50 Sat. Nov. 29th L. 63.

10.18 Obliquing to Rt to run below Entrance (ground) bar that pitches out from R.B. side. Width Channel at least 3/4 of the entire way inside runs.

10.22 The L.B. Sand Bar is run on as Right we are obliquing between Marks 13/4 17/4 2.2ft

10.26 2.22 Now fairly in the Channel between the head of L.B. bar and the farthest from shore of the Entrance (ground) bar from R.B.

Here at this stage narrows from 2500ft to 800

10.30 The whole run more here - 600ft at 200m for a short distance - then widens to 800 again

10.31 Pass Opp. sides ground exposed at low water

10.31 (Recent Watches here 1½ metres up.)

12.23 Opp. a high rocky Cliff ground on L.B.

10.40 L. 62.

10.40 Begin to oblique to Left, above Entrance bar [2000ft between the Bars]

Are L.B. long bar above us, on our Right as we go. (2 miles covers us obliquing thus).

10.50 Now opposite end of, and inside Entrance (Grande) bar, R.B. (and Entrance) Channel end of L.B. bar.)

1500 ft to bar on L.B. 500ft to R.B. wide Channel now 2000 ft - Narrow above to 1800

10.53 A narrow little long bar along R.B. shore opp.

10.55 R.B. to L.B. bar 1600ft - it then widens

The L.B. Sand bar running gradually to L.B. 3/4 miles higher up.

11.01 Begin to oblique towards Northern Side of Island Armagosa

on first run 3/4 miles to Reefs -

From the Curves of the Bars on R.B. side we are now on the L.B. side of the Island - (Passages comparatively narrow from the R.B. side)

11.04 Opp. considerable Entrance now, betwixt Clay at Eastern edge on R.B. Channel 1800ft to bar

11.14 Opp. Extreme Eastern end of L.B. bar.

11.15 Opp. Curves pointing to Ponta do Armagosa

On map this second 3/4 mile line runs long:

Sat. Nov. 29. on L. 62. 51

11.13 But Island on L.B. 500ft. Round W. end 1½m. Clay bank on L.B. Channel close to L.B. Gently Concave. Heavy waves on L.B.

The island Armagosa is partly Cultivated

11.27 Opp. Riacho do Cruz (Supposed) Barra da Cruz Supposed to be Rear about - Can't do not see the houses.

11.35 Opp. Riacho do Cruz - (3 Shallow Runs below 1 above same 25 yards apart)

11.35 ½ Island. Where within 200 metres of head of Island Running two Islands. Another, small Island above now in our sight - but is now only a bright Water Island as the bar runs close round to L.B. (Main Channel)

11.40 Shallow 1¾ 1¾ 1½ 1½ - 2 1¾ (Half Island) 2.2ft

Here an entrance bar projects out from the little island

11.42 At last Opp. Sth. end of I. do Armagosa

Opp. an inner Sand bar on the R.B. side now falls up the Channel on that side, as it appears by flood mark water stain from right; but on this stage of the run no water runs through.

11.42 L. 61.

[Sand bars in four runs and a long clear Entrance (2 miles) follow the eye above where the next island appears.

Opp. to where some water runs into the bar on R.B. Side it does not now run through - Bar at an Entrance stage. Ran through (2 miles in all) with the 1½ Metres present

11.56 At an inner Entrance (Mud) Island 50 Metres long, 5 Metres wide. The bar stands from 2 to 2½ miles above from water.

11.59 Now, however, we have a much larger water open on the R.B. side - Through which Currents & barometer [illegible] to 150 metres wide at least and narrowing to 50 Metres 2 or 3 Miles long

12.00 Here we are opp the mouth R.B.

Sat. Nov 29. I. 61.

Water low up recent freshet shows 1 meter up here.

12.05 Rivr. over to Lan[d] of L.B. Sand bar 1600 ft.

12.15 Above opp. Ent. up end of L.B. Sand bar. Rec Rock.

The bars ahead on Map - chiefly on R.B. side of river - Are now seen (Half-tide) Islands, Mostly each filling up that side of the river.

12.21 opp. the lower extremity of the above.

12.25 We are quite over to the L.B. side - Recent water line shows about 4 meters here. Channel 1000 ft. Bank steep, Loam, 20 ft. L.B. moderately concave - bar 1600 ft. off. Makes good channel. (Rec. W. line 1¾ M.)

12.32 - Opp. a high water (Island) (Peninsula) outlet L.B. Langrador da Cordeirinha. Perhaps Cascalho.

12.36 Recent water line 2 meters. Cattle feeding the 2 ft on the clay slope. - Bar 20 ft. to 2.5 ft. Sees a bar ahead on this L.B. side. Open

12.41 We begin to Oblique toward R.B. below the bar 5 5 5 I think the channel will be good on the Oblique. The curving river comes around here between the Half-flooded island bars on our left and the L.B. bar on our right 5. 5½ (12° 45')

12.57 3. 3. 3. 3.

I. 60.

12.56 Opp. the water outlet a R.B. side between R.B. and the Half flooded islands Sand bars. Rec W. line 2 meters wide, but 2 Canoes on Cattle wading at the edges and Cattle or none in between, low water. The actual water now is only 50 meters, Shallow, and slight current.

12.58 Our main channel now to L.B. bar = 800 to 900 ft but widening above. We are close to R.B. (30 m.) Recent W. line 1½ M.

1.05 We are now Stirring to Rt. Between islands and bar on our right and R.B. side. Bars about on the left. There is some water coming down among the sand bars. The island (607), 100 meters on our right. On the left the bars are 1500 feet off. 2½ 2½ 2½

1.09 Water line recent from 1½ M. to 1 M. On L.B. side flat sand. Here the water runs through

Sat. Nov. 29. I. 60. 63

The water will have to be at least 3 meters higher than it is now to render it safe to run thro L.B. side.

1.15 A pretty pyramidal IM[d] head, distant 400 M. Our general course now about S. 30 W.

1.18 We are now on L.B. side, the Mid river Sand bar 600 ft. from L.B. Good channel. Sandy banks one 10 ft. high. Cutting. Current small, numerous Huts, together with one Hay-pole ashore.

1.25 opp. a water channel - or head of an Island. I think it is the outlet of a dry water course, even it is also the head of an island - a high-water island.

A bar ahead (¼ mile) now projects from L.B. side.

The Mid River, and R.B. bar inclines off to and above on the R.B. shore.

1.28 We begin to oblique on act[t] bar above. The opening between the bars is 2000 ft wide, so that it may not be very deep. So little water goes down the R.B. side, however, that there may prove a good channel. 5. 5. 4½ 4½

1.32 We are running pretty near to the L.B. bar (600 to 660 meters) which from its abrupt front I judge to be the best course. 4. 4. 4.

1.34 Now on and leaving the L.B. bar on the bow, leaving us. Our present course on the R.B. side. 3¾ 3¾ 4 - 3¾ 4 - 4½ - 3 on 5 90 ft to Rt. L.B. above the sand bar 1000 ft to L.B. = 1500 ft channel.

1.38 I now see an island just ahead on our right, which I judge is the

I. 59.

Ilha do Radeador

Some, but not much water now on the L.B. side. We run to the R.B. side 5. 4½ 4 4½

1.42 Channel from R.B. to Bar, 1000 - to 1200 ft above. (Mean[s] from soundings)

1.44 Opp. Cabeca Comprida and Ilha (Supposed) I. do Radeador Bar are around the island, now on our left hand bar on the head now of Rio Preto. The L.B. is. There must be a Water course [illegible]

Sat. Nov. 29. Ch. L. 59.

1.16 Recent frontal line 1.40 on R.B. — 1000 ft to S. Bar L.B. Reen of widening above this up to Point on The Large Sand-Bar, from head of I. Rodeador runs to the said Point — ½ mile ab. Island Very good day's work, beginning approaching. The 20 ft high clay Room bank on R.B. has been Cutting — Stands in plain vertical. Beautiful Looking River above!

2.02 We oblique towards Mid Reen from R.B. and continue obliquing towards Point L.B.

2.08 Opp. upper end of Large Bar on L.B. side below Point — L.S. L.B. along here means the Side of the Island Rodeador behind — It is a High water island.

2.10 Opp. Point on L.B. a square end point 2nd Class 200 ft

2.12 Opp. Lower end of Small island on R.B. side.

2.18 Opp. Channel — when water runs down behind island Rodeador. It is nearly Closed at present stage — No low water for Gaby, no water runs through — through the Channel in foreball is 150 mts.

The Map confirms the alterations — The topography of the islands and bars is as changed.

2.22 No strong current 30 metres from L.B. This bank is very sandy on top, and cuts — dense, Emerald woods to the brink. 1000 ft to the bar.

2.26 [Lt. Ingersoll signalled BOA VISTA on R.B. 3 or 4 hours] Water line of recent frontal 1 5m ¼ here.

2.30 We appear to be opposite an Island. It may have been the Large Sand bar of Halfield's time.

Say L. 58 Lower end.

[Great numbers of canoes getting bet afternoon Evening at the landings of Ch, on a Sand. Sunday 6th day, 7 hours run.]

2.35. Pass a large bar head (not on map) projecting from L.B. we oblique to R.B. Mid bar open out a mile or more from L.B



Town of Januaria a league off — appears a League Mid side of the Mean Reen

2.44 on R.B. side — 40 metres ext. also opp. Lower end of large bar 1000 ft — water to bar about Prop. out from L.B. 1000 ft or more.

I think it must be the Island Moradeira — as on L.B.

2.55 We have been bungling on Oblique — for some minutes — in a very strong Current — Close to Shore — We see fishing below the Town.

3.06 Opp. upper end of bar on L.B. side — and a low place on the R.B. side.

3.12 4 Miles near R.B. Reen 2500 ft wide or nearly.

3.14 Begin to oblique — for the L.B. side — 2.13 1 fm 1¾ — 2. 1¾ — Large bar — ahead & from the R.B. I think this must be the Low Bar, already overlaps the upper end of Ilha da Moradeira, if it remains any thing like what it was 25 years ago.

3.25 Now on L.B. mid 60 metres 7 shoal 4.4. 2

3.27 Pedra da Garca on the Shore L.B. The second pedra we shew 2 miles further here.

Bar now on our left 2500 ft. from L.B.

3.30 Opp. Lumaca Town on L.B.

3.33 " " " "

3.39 Rock prospect (to day) 1 foot above Water

3.55 Opp. Lower end of [illegible] Island [illegible] Town — [illegible] more than a mile below Town.

See page 81

Consulado Brº.

Sir, — On board St. Providente Docks
Jamaica, Spanish Town
Con. — On League 56 — Nov 20. 1879

Dr D. Luiz Plinio d'Oliveira
Secretaria do Ministro d n
Côrte

On the 26th. inst. at Corumbatahy, (League 87) I had the honor to mail to your Excellency two letters giving accounts of my impressions upon that place.

Between Corumbatahy and Jacuacanga, 31 leagues, the navigation is good, in the main Channel, with bay, needing no work to be done by the government.

We met a freshet some hundreds of miles below here, which raises the water about two metres, in all, above low water; but for a number of days it has been falling, and in places it runs from one to one and a half metres below this freshet line; so that it is not now more than one metre above the lowest stage.

The Country has continued to improve as we have advanced. The forests are very much finer; and the Cultivation, upon the benches of land along the river has a remarkably healthy, bushy aspect, quite different from that along the lower part of the Upper Valley.

Jamaica, in the Cayen City, we have visited. We arrived here yesterday afternoon. On landing, we were informed that the "authorities" and nearly all the "people" had abandoned the place, on account of the approximated approach of an attacking party, opposed to the present Government. As forces must of the houses closed, and their owners & former occupants gone. It seems to be understood that the invading party comes into power upon the surrender of the place to day. There is nothing to prevent it

The authorities and military force have gone two and a half leagues up the river, on the opposite side, to St. da Conceição das Pedras de Maria da Cruz.

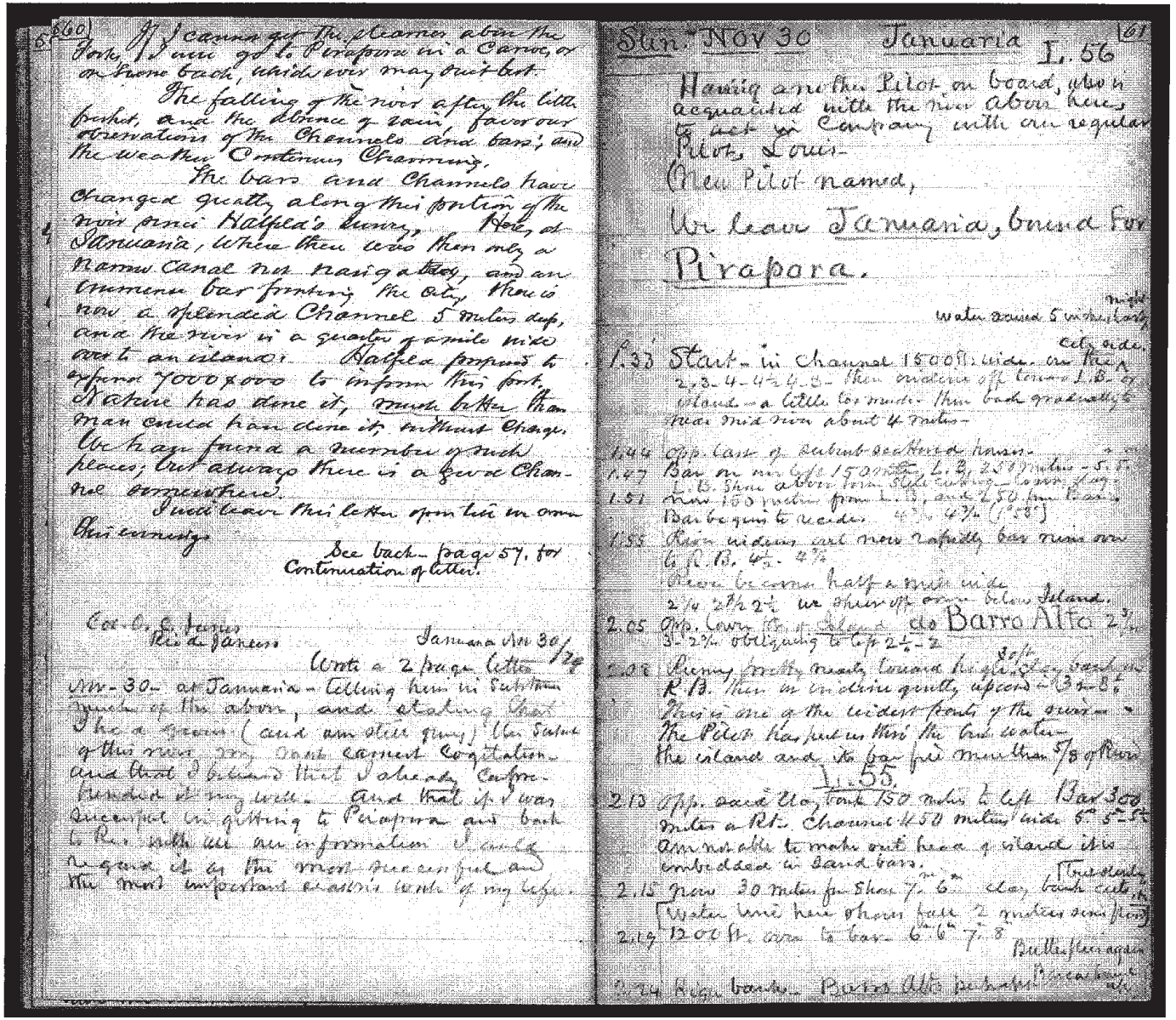
The Guard, it is said, organized in the action of some one in authority here against an independent, who thought that it was unjust, and declared war against the authorities, and proceeded to collect men and arms. It began last April, partially subsided, and was renewed some time ago.

Concerning the merits of the dispute, or the action of the authorities, I can say nothing to day, but I regret to find matters here in such an abnormal condition, as it prevents me from getting a fair idea of the place and its resources. There is none here, for the present.

On inquiring about the mails, we were told that a mail would leave for Rio de Janeiro on the 1st. of December — tomorrow, but not from here, but from the place down whether the Post Office has gone, with the "Authorities."

We have had the good fortune to find a pilot, who lives near here, who is acquainted with the rivers above here; and about mid-day we expect to start and run to "Pedras de Maria da Cruz" — which is said to be a good place for getting wood, which we will need. I hope, with one more wooding after that, to reach Cuyaba, at the Forks of the river, if the Steamer can get up.

They speak about a difficult place, at "Angicos", about 13 leagues above here; but I do not anticipate any material difficulty there, or elsewhere, up to the Forks. The swiftest current spoken by Halfeld between here and the Forks, is 2½ miles an hour; and we have already run up against 3 miles an hour. Above the Forks, 5 leagues to Cuyaba, no overhangings are given on the Trip.



(160)
Jan. If I cannot get the pleasure abon the
Jan. I will go to Pirapora in a Canoe, or
on Shore back, wind & weather may permit but.
The falling of the river after the little
freshet, and the absence of rain favor our
observations of the Channels and bars; and
the weather Continues Charming.
The bars and Channels have
changed greatly along this portion of the
river since Halfeld's survey, Hole, at
Januaria, where there were then only a
Narrow Canal for navigation, and an
immense bar forming the city there is
now a splendid Channel 5 meters deep,
and the river is a quarter of a mile wide
east of an island. Halfeld proposed to
expend 70 to 80 000 to improve this port.
Nature has done it, much better than
man could have done it, without Charge.
We have found a number of such
places; but always there is a fine Chan-
nel somewhere.
I will leave this letter open till we own
their errands.

See back- page 57. for
Continuation of Letter.

Col. C. E. Tanner
Rio de Janeiro

Januaria Nov 30/78

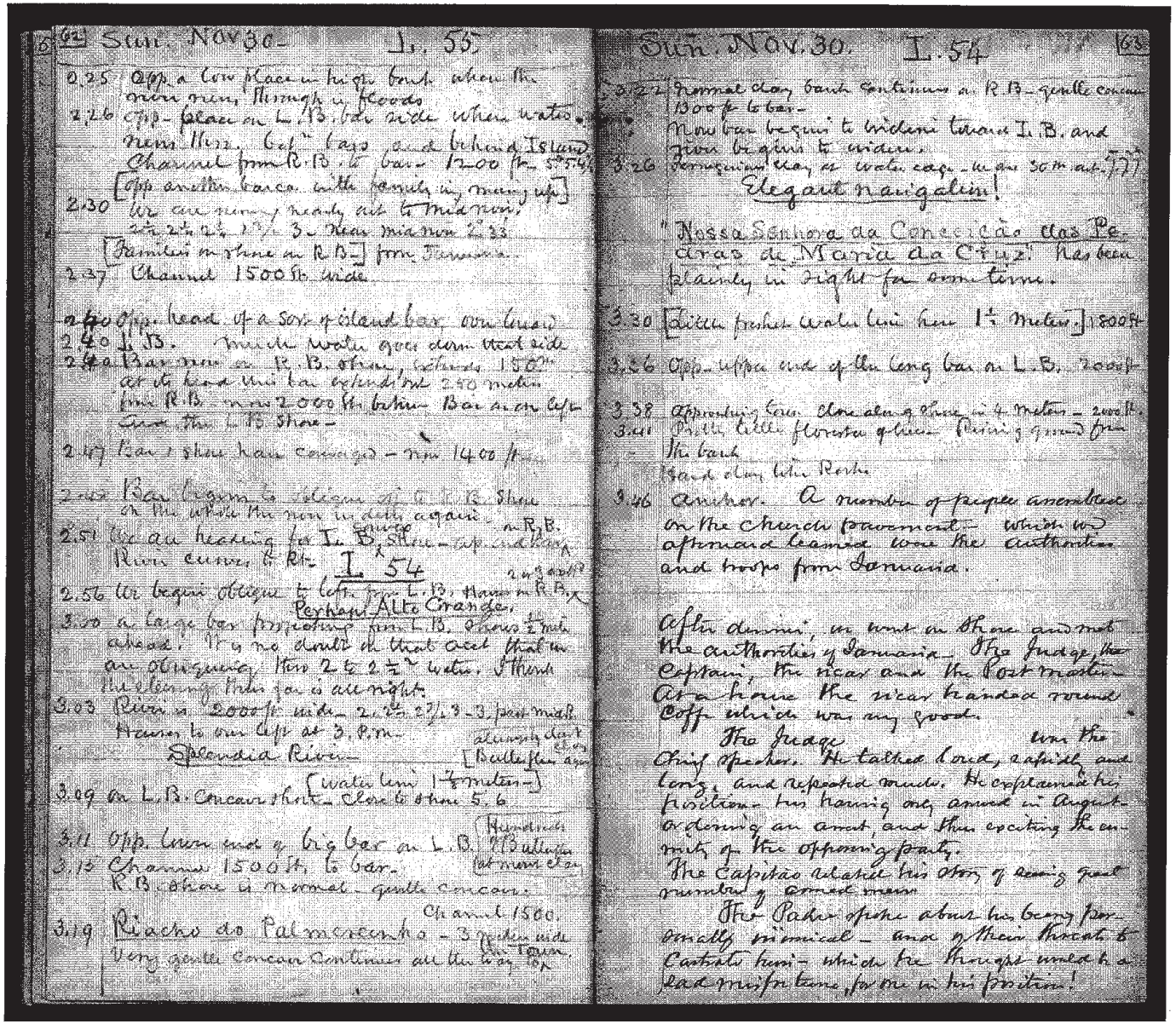
Wrote a 2 page letter
Nov. 30. at Januaria - telling him of Safe arri-
val of the above, and stating that
I had a Grand (and am still going) View Safe
of this river &c. &c. &c. Congratulation
and that I believed that I should Confer
Hundreds of my readers. And that if I was
successful in getting to Pirapora and back
to Rio with the information I could
regard it as the most successful and
the most important exploit of my life.

Sun. Nov 30 Januaria L. 56 161

Having on the Pilot on board, who is
acquainted with the river above here,
& act in Company with our regular
Pilot, Louis-
New Pilot named,
We leave Januaria, bound for
Pirapora.

Water rising 5 inches early
mgt
city side

1.33 Start - in Channel 1500ft wide. on the N
2, 3-4-4½-4-3- then moderate off town L.B. of
Island - a little too much then back gradually to
mean mid river about 4 meters -
1.44 Opp. Case of Rubim scattered houses
1.47 Bar on mr 6 to 150 meters L.B. 2½ meters - 5 ft.
L.B. Shore above from Old Landing - town [illegible]
1.51 mean 100 meters from L.B., and 2.50 from R.B.
Barbequin to Accidente 4½ 4½ (1°58')
1.55 River widens and more rapidly bar runs now
6 ft. R.B. 6½ - 4½
River becomes half a mile wide
2½ 2½ 2½ we shoot off over below Island.
2.05 Opp. Town [illegible] Island do Barro Alto 2½
3- 2½ obliquing to left 2½-2
2.08 Rising [illegible] Island high [illegible] sand on
R.B. then in [illegible] quite upcoast - 3 - 3½
Passing one of the widest points of the river -
The Pilot has passed us this the best water -
The island and its bar fill more than 5/8 of River
1.55.
2.13 Opp. sand Ilo, bank 150 meters to left Bar 300
meters a Rt. Channel 450 meters wide 6m 5m 5m
Am unable to make out head of island it is
embedded in sand bars.
2.15 Pass 30 meters from Shore 7m. 6m clay, bank cuts
Water rise here shown [illegible] 2 meters since [illegible]
2.19 1200 M. area to bar 6m 6m 7m. 8
Bella Vista again
2.24 High bank - Barro Alto [illegible]



62 Sun. NOV 30 — J. 55

2.25 Opp a Low Place in high bank where the river runs through in floods

2.26 C[illegible] — Place on L.B. bar side where water runs thro. Cef[illegible] bars and behind Island Channel from R.B. to bar — 12.00 fm — S[illegible]

[Opp another banco with family in mangrove]

2.30 We are nearly ready at 6 Mid noon,

2[illegible] 2¼ 2½ 3 — Near mid noon 2.33

[Families in shore on R.B.] from Jamaica.

2.37 Channel 1500 ft wide

2.40 Opp. head of a sort of island bar, one broad

2.40 L.B. Much water goes down that side

2.40 Bar now on R.B. shore, extends 150m at its head and bar extends 2.40 metres from R.B. — now 2000 ft. below Bar is on opp shore to the L.B. shore —

2.47 Bar & shore have changed — now 1400 ft

2.48 Bar begins to oblique off L.B. shore or the whole thing now in deep again on R.B.

2.51 We are hearing for I. B. shore — sup and bar

River curves to Rt — I 54

2.56 We begin oblique to left. from L.B., shore on R.B. Perhaps Alto Grande.

3.00 a large bar projecting from L.B. shore ½ mile ahead. It is no doubt that next that we are obliging, Now 2 & 2½ water. Thereafter keeping Mid fm is all right.

3.03 River is 2000 ft wide — 2.1/2 2½ 3 — 3 fms mark Hammocks on opp at 3 P.M. Splendid River — [Bulletflies and always dark

[Water low 1⅞ metres]

3.09 on L.B. Concave shore — Close 6 thro 5.6

3.11 Opp. town and a big bar on L.B. [Numerous] [Bulletflies

3.13 Channel 1500 ft, to bar. [At mouth of] R.B. shore is normal — gentle concave.

3.19 Riacho do Palmeirinho — 3 Mid wide Very gentle concave Continues all the way to Town. Channel 1500.

63 Sun. Nov. 30. I. 54

3.22 Normal along South Continues on R.B. — gentle concave 1300 ft to bar —

Now bar begins to widen towards L.B. and from bar also to widen.

3.26 Jerequiricoara Bay or water cape — we are 30 m out. [illegible]

Elegant navigation!

"Nossa Senhora da Conceição das Pedras de Maria da Cruz" has been blamely in sight for some time.

3.30 [Little fresher water here 1½ Metres] 1800 ft

3.36 Opp. upper end of the long bar on L.B. 2000 ft

3.38 Approaching Town close along shore in 4 metres — 2000 ft.

3.41 Pretty little flowers & trees [illegible] ground from the bank

Island along this Reach

3.46 Anchor. A number of people assembled on the Church pavement — which we afterwards learnt were the authorities and troops from Jamaica.

After dinner, we went on shore and met the authorities of Jamaica — The Judge the Captain, the vicar and the Post master — At a house the vicar handed round Coffee which was very good.

The Judge was the Chief Speaker. He talked loud, rapidly and long, and repeated much. He explained his position — his having only arrived in August — ordering an arrest, and then expecting the enmity of the opposing party.

The Capitao related his story of seeing great numbers of armed men.

The Padre spoke about his being personally ironical — and of them threatening to Castrate him — which he thought would be a sad misfortune for one in his position!

Mon Dec 1st] Nossa Senhora da da Conceição das Pedras de Maria da Cruz

This is a small place of no account, with some 20 houses - and a Church. At present the Church is a barracks for the troops.

The harbour is situated with deep water in front, and a fine, sloping hill rising above the highest floods.

There is a sort of Conglomerate rock point at the upper end of the harbor.

I should think from the Contour of the river above that this place is likely to continue to be at the Channel. There was a depth of 20 to 25 fms on 1852-53 and there is about the same now.

We made arrangements to get wood here - and on do not expect to leave till tomorrow.

=

Before our breakfast the "Authorities" make us a visit. I was in my Cabin writing, and as no one called to tell me of the visit I went on - and wrote 4 pages of letter during their visit. This put off our breakfast about an hour.

Domeierie after the Judge sent us word that a man had come from Jamaica, stating that the enemy had entered and set fire to Bolama and intended to come right on here, and that they intended to remove further up the river, and advising that we had better turn away &c &c. I took the liberty of not taking a word of the story. The Authorities are perhaps no doubt correct in it, for

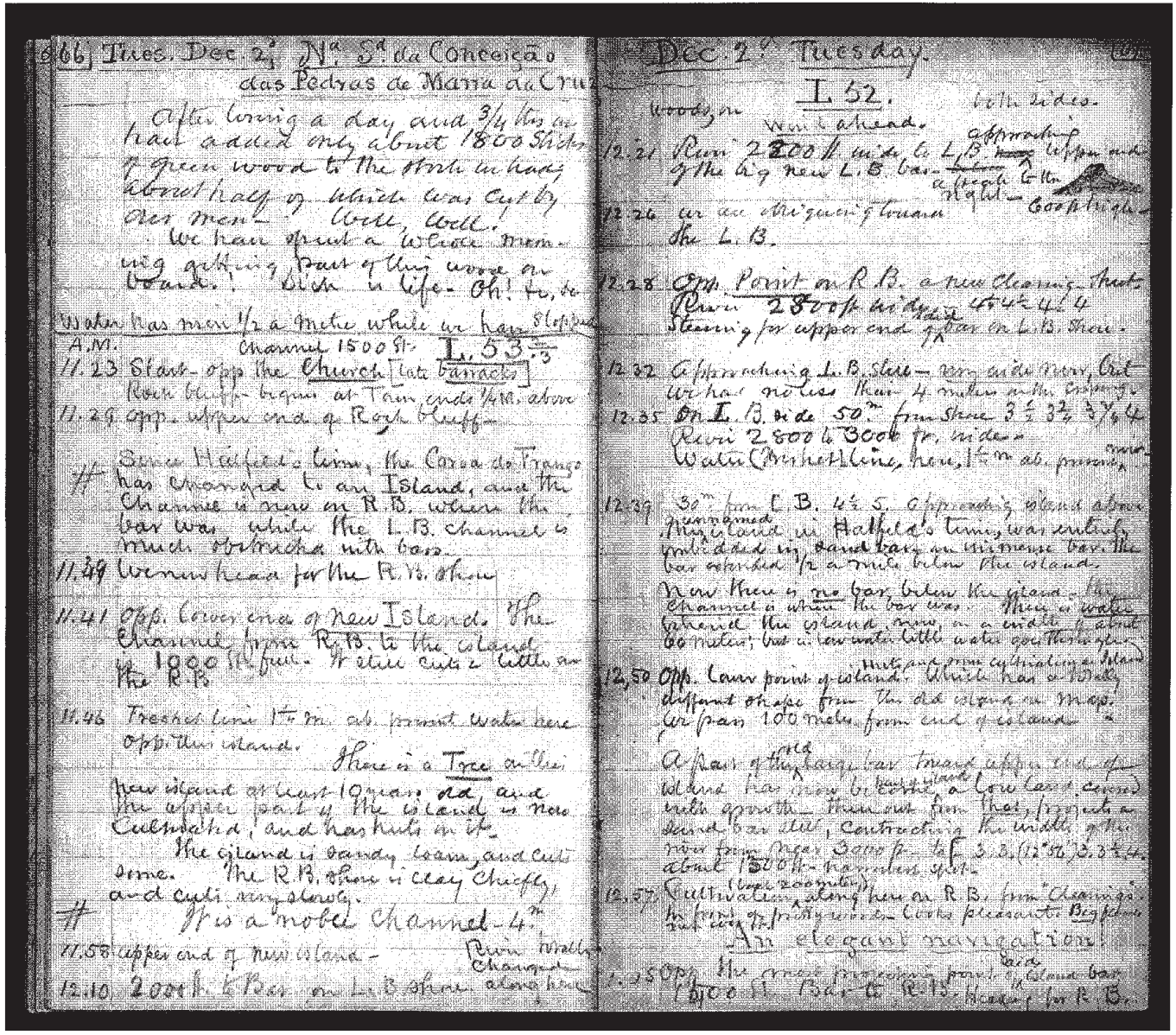
not long afterwards I was informed that they had all departed.

Previously the Judge had requested a passage in the Steamer, on his way to Farofara - to see the President of the Limba and relate the whole story to him. I declined having the Steamer placed in a position that would destroy her neutrality, and also he was informed that it had been obligatory from the beginning of her Voyage to Bolama to be so.

Now, an hour or two after this flying artillery Company had departed Comes a man from Jamaica and says that the other party entered the town, about 7 oclock this morning, peaceably, and that there was no trace of any land, and that the people were returning.

I do not yet know (though I am curious to know, how many of the terrible invading party entered. St Pecco is the Chief - the one we saw in Jacaré, and I imagine that he is Master and more shrewd, than any one or all of the "Authorities". I rate naughty enough to believe that they are a Pack of Cowards - though I know nothing of the merits or demerits of the Parties to the Controversy. I am not sure that the other Party is any braver. Having been nothing on either hand that resembled Courage.

I am curious to hear about the "200 armed men surrounding & fronting Jamaica" and "the 14 Oxen killed as entire for their food" and "20:000$000 already spent" and the resolution "to spend a 100:000$ if necessary". All interesting points. This proves to be not a good place for Wood.



866 Tues. Dec. 2. N. S. da Conceição das Pedras de Maria da Cruz

After towing a day and 3/4 this we have added only about 1800 Shds of green wood to the North cargo, about half of which was cut by Our men. Well, Well!

We have spent a whole morning getting part of this wood on board. Sich a life. Oh! fie, fie

Water has risen 1/2 a metre while we have stopped

A.M. Channel 1500 ft. L. 53.3

11.23 Stark - opp the Church [late barracks]
Rock bluffs - begins at Tam ends 1/4 M. above

11.29 opp. upper end of Rock bluff -

Since Hatfield's time, the Corea do Tronco has converted to an Island, and the Channel is now on R.B. where the bar was, while the L.B. channel is much obstructed with bars.

11.39 Low mud head for the R.B. shore

11.41 Opp. Lower end of new Island. The Channel from R.B. to the island 1000 ft. wide. A little cut a little on the R.B.

11.46 Freshet limit 1 to 1½ m. ab. present. Water here opp. the island.

There is a Tree on this new island at least 10 years old and the upper part of the island is now Cultivated, and has huts in it.

The island is sandy loam, and cuts some. The R.B. shore is clay chiefly, and cuts very slowly.

This a noted Channel - 4 m.

11.58 Upper end of new island - Rain Water Changed

12.10 2000 ft. to Bar on L.B. shore along here

Dec. 2. Tuesday.

Woods on L. 52. both sides.

Wind ahead.

12.21 Rain 2200 ft. wide to L.B. approaching upper end of the big new L.B. bar - a reach to the N.N.E. - Good Anchorage

12.26 on an obliquening course the L.B.

12.28 Opp. Point on R.B. a new Clearing - Thatch Rain 2800 ft. wide 4½ 4½ 4½ 4
Steering for upper end of bar on L.B. shore.

12.32 Approaching L.B. shore - very wide now, Cut we have no less than 4 miles in the Enseada

12.35 On L.B. side 50 m. from shore 3½ 3½ 3½ 4
Rain 2800 to 3000 ft. wide -
Water Mixed Line, here, 1 to m ab. present Mar.

12.39 30 m. from L.B. 4½ 5. Approaching Island about unnamed Mud Island in Hatfield's time, was entirely Mud & sand bar on extensive bar. The bar extended ½ a mile below the island.

Now there is no bar below the island. The Channel is where the bar was. There is water between the island, now on a middle & about 60 metres; but a few with little water on the right

12.50 Opp. Lower point of island. Mud point from cultivating a Island different shape from the old sketch on map. We pass 100 metres from end of island

A part of the big bar inward upper end of Island has now become a low Land covered with growth - Running out from that, projects a second bar also, Contracting the width of the river from about 3000 ft. to 1500 ft. about 1500 ft. - Narrowest spot -

12.57 Cultivation (Rope 200 metres) along here on R.B. from "Clearing" to front of Mary Wood - Looks pleasant. Big plantation

An elegant navigation!

1.25 Opp. the great projecting point of Island bar 1700 ft. Bar on R.B. Heavy for R.B.

Dec. 2d Tues. L. 52–51

1.10 The sand from the said island runs a long dist. up–widening the river gradually,

1.12 Opp. a low place in R. B. (100 meters from Shore) Steering now quite inward mid river.
R. B. shore has been cutting a little. The second terrace (ini water only) 1 meter above river.
Channel here 1500 ft. [a beautiful looking river ahead.]

1.19 Pilot says there are some rocks in here to our left – in our 200 meters from R. B. which appear as a serrated clay or rock.
Probably the stone at the return, back.

1.21 Channel 1600 ft to L. B. (or island) bar.

L. 51. (Head wind continues)

1.27 River 1800 ft to said bar } We are ob-
1.29 " 2000 " " " } liquing to
1.31 " 2200 " " " } the L. B.
1.34 " 2500 " " " } side.
(The river is very wide above, and has Submerged bars in mid river 2 feet from shore.)
We are now opp. a [illegible] on said bar, 10
1.39 meters deep from it – 6 or 8 meters deep.
The river is now cutting this sand pt. away.
Wetlands 1 ft. ab. low water.
River 2 000 ft. wide.

1.40 Now opp. low place – where river runs thro. And gets behind the aforesaid island when one mile (or 2d) higher.
The present prophet line is without a few inches of the top of the sand.

1.41 This is the highest upper end of that Monroe island bar, we have been running a little inward the river to avoid it.
Monroe Point above.

1.46 On L. B. S. a. 40 Meters out. [1.50 – some splendid bar on L. B.]

1.52 At Point on L. B., channel close to. [illegible]

1.52 Here Pilot obliques to left – to run below

Tues Dec 2d L. 51.

can commence bar shelving out from L. B.
On this crossing – we have as low 2½ meters – generally 2½ 2½. 2 We run about 800 ft to left of bar. Possibly a little to far down? Buoy it ? Depth. The Pilot makes nearly a bee line by it –

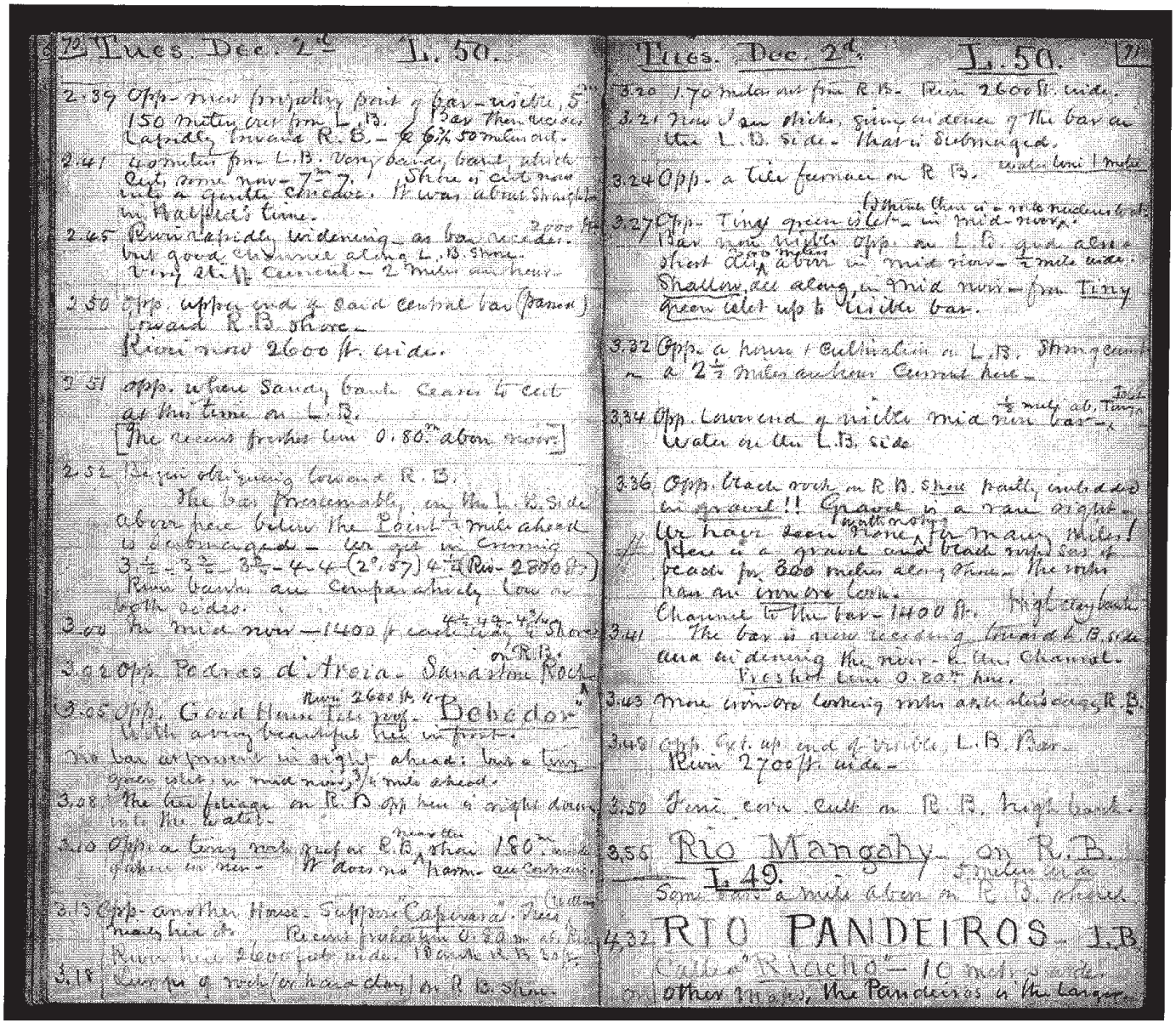
1.58 200 meters out from R. B. – 3. 3½ 4. 3½. 4
Channel between R. B. and bar. 1600 ft

[Mountains ahead, 30 or more I suppose off.]

2.02 Channel close to R. B. – 1600 ft to bar.
2.05 We are not cutting on R. B. as are 200 meters out, and 150 meters from projecting sand bar – 4 – 4 – 3
2.12 Opp. a little rock reef near and parallel to R. B. It does no harm. It helps to confine the wide river – as are 80 meters from it in 10 meters depths. Channel to bar 1500 ft.
2.15 The Channel is along where we are now running, 100 meters out in 10 meters depth. 2 Dole Cannot just here

The bar is receding towards L. B. as the river is rapidly deepening –
2.17 Still 10 m Soundings – on the clay bank –
The recent freshet line is here not more than 6 m 10 m ing River 2000 ft. wide – 150 out.
2.21 10 meters deep and stiff current – Rec 2500 ft to
2.23 bar as heading a little for mid river 5 m 5½ 10 – 5½ – 2. 24 – 6.
2.26 Opp. to low end of said bar on L. B. 3. 2. 200 meters out from R. B. – 3 – about widening Channel Mid river.
2.27 I see large bar awash river – making out from R. B. E. de – Pilot Obliquing – 2½ – 2½ – 2¾ [Some water goes between this bar and R. B.]
River here over ½ mile wide! above the L. B. bar
2.31 On the Obliques 2½ – 2½ – 2¾ – 3. 2¾

L. 50 about here – L. B.
2.37 We are obliquing an acct a Central bar [illegible]



Tues. Dec. 2d. L. 50. 7p

2.39 Opp- river fringed part of bar - visible, 5m 150 metres out from L.B. Bar then recedes. Lastly, inward R.B. - & 6¾ 50 miles out.

2.41 40 miles fm L.B. Very broad, bank, which cut, some now - 7m 7. Shore is cut now into a gentle shelve. It was about straight in Hatfield's time.

2.45 Run rapidly, widening - as bar recedes. 2000 ft but good channel along L.B. shore. Tiny islet Current - 2 miles an hour.

2.50 Opp. upper end of Sand Central bar (famous) Inward R.B. shore - River now 2600 ft. wide.

2.51 opp. where Sandy bank ceases & cut at this time on L.B. [The receiss reaches low 0.80m above river]

2.52 Begin observing towards R.B. The bar presumably on the L.B. side above here below the Point ½ mile ahead is submerged - We get no Cunning 3½ - 3½ - 3½ - 4-4 (2°.57) 4½ (Rio - 2800 ft.) River banks are comparatively low on both sides.

3.00 In mid river - 1400 ft cunning 4½ - 4¾ - 4¾ Shore on R.B.

3.02 Opp. Padres d'Areia - Sandstone Rock. River 2600 ft wide. "Bebedor"

3.05 Opp. Good House Tile roof. With a very beautiful bank in front. The bar appears right ahead: but a long Tiny green islet in mid river, ¾ mile ahead.

3.08 The bar foliage on R.B. opp has a slight dip into the water.

3.10 Opp. a long rocky reef on R.B. shore 180m wide above in river - It does no harm as Current.

3.13 Opp- another House. Supposed "Caparaó". Pass many huts &c. Receiss reaches low 0.80m at R.B. River now 2600 feet wide. 10 fathoms at R.B. 5½

3.18 Come to a rocky (or hard clay) on R.B. shore.

Tues. Dec. 2d. L. 50. 7p

3.20 1.70 miles out from R.B. River 2600 ft. wide.

3.21 Now I can strike, going in across of the bar on the L.B. side - That is submerged.

3.24 Opp- a tile furnace on R.B. Water low 1 mile

3.27 Opp- Tiny green islet - in mid-river. Bar now visible opp. on L.B. and also a short dip about 1200 metres in mid river - ½ mile wide. Shallow all along in mid river - from Tiny Green islet up to visible bar.

3.32 Opp. a house + Cultivation on L.B. Shingle on a 2½ miles another Current here -

3.34 Opp. Low end of visible mid river bar - ½ mile ab. Tiny Water on the L.B. side

3.36 Opp. Track over on R.B. shore partly imbedded in gravel!! Gravel is a rare sight - We have seen none for many miles! Now it is a great and black sight as it spreads for 300 metres along shore - The rocks here are more low.

3.41 The bar is now receding towards L.B. side and widening the river - & the Channel. Fresher here 0.80m low. High sandy bank Channel to the bar - 1400 ft.

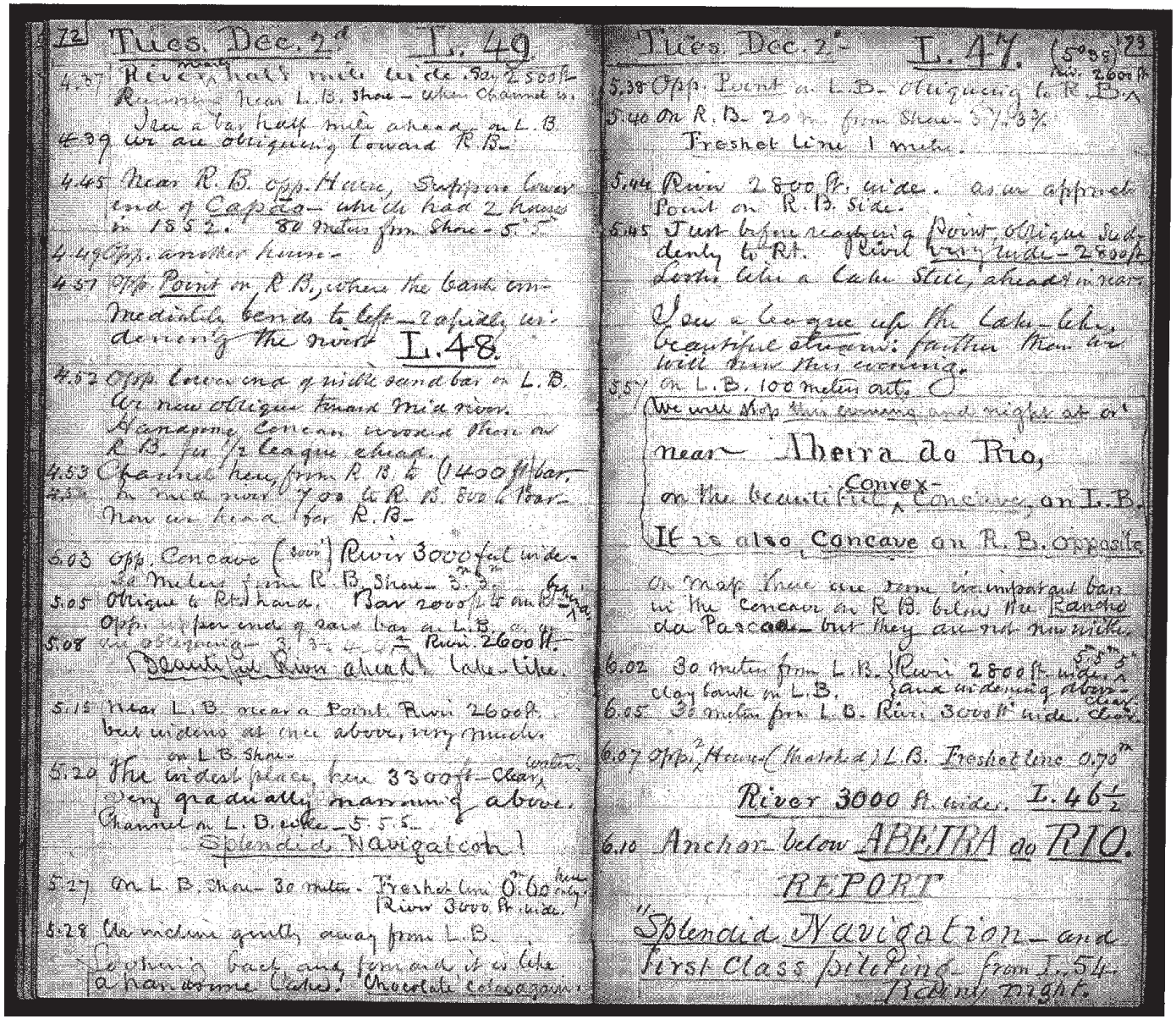
3.43 More iron ore showing now and also along R.B.

3.48 Opp. Cut up end of visible L.B. Bar. River 2700 ft. wide -

3.50 Iron ore cuts on R.B. high bank.

3.56 Rio Mangahy - on R.B. 5 miles in a Some trees a mile down on R.B. shore. L. 49.

4.32 RIO PANDEIROS - L.B. Called "Riacho" - 10 metres wide. On other maps, the Pandeiros is the Largo



12 Tues. Dec. 2d L. 49

4.37 River nearly half mile wide. Sa. 2 500 ft
Running near L.B. shore – when Channel is.
Saw a tar half mile ahead on L.B.
4.39 we are obliquing toward R.B.

4.45 Near R.B. opp. Hacienda, Steppes Lower end of Capella – which had 2 houses in 1852. 80 metres from shore – 5°.

4.49 Opp. another house –

4.57 Opp. Point on R.B., where the bank immediately bends to left – 2 rapids we're nearing the river

L.48.

5.02 Opp. Low end of wide sandbar on L.B.
Or new Obliquing toward mid river.
Hacienda Concan crowned shore on R.B. for ½ league ahead.
5.03 Examined here, from R.B. to 11400 ft Bar, in mid river 7 00 to R.B. 8 0 2 to Bar –
Now we head for R.B.

5.03 Opp. Concave (300m) Rivr 3000 feet wide. 92 Metres from R.B. Shore – 3m 3m
5.05 Oblique to Rt hand. Bar 2000 ft to mid R. 6 1/2 1 1/2
Opp. upper end of said bar on L.B. a. 9
5.08 Obliquing – 3 3 4 ± Rivr. 2600 ft –
Beautiful River ahead. Lake-like.

5.15 Near L.B. near a Point. Rivr 2600 ft. but widens at once above, very much.
on L.B. shore
5.20 The widest place, here 3300 ft – Clear, (water)
very gradually narrowing above.
Channel on L.B. side – 5 5 5 –
Splendid Navigation!

5.27 On L.B. shore – 30 metres – Freshet line 0.60 high water only
Rivr 3000 ft wide.
5.28 The widest quietly away from L.B.
Obliquing back and forward it is like a handsome Lake. Chocolate colored again.

Tues. Dec. 2d L. 47. (5°38') 23

5.38 Opp. Point on L.B. – Obliquing to R.B. Rivr 2600 ft
5.40 On R.B. 20 m. from Shore – 3°, 3°
Freshet line 1 metre.

5.44 Rivr 2800 ft. wide. as we approach Point on R.B. side.
5.45 Just before reaching Point, Oblique Suddenly to Rt. River very wide – 2800 ft.
Looks like a Lake Still, ahead in near

Saw a League up the Lake-like, beautiful stream: further than we will know this evening.
5.57 On L.B. 100 metres ants.

We will stop this evening and night at or near – Abeira do Rio,
Convex-
on the beautiful Concave, on L.B.
It is also Concave on R.B. opposite

On map there are some insignificant bars in the Concave on R.B. below the Rancho da Pascoa – but they are not now visible.

6.02 30 metres from L.B. Rivr 2800 ft. wide. 5° 5m 5°
Clay bank on L.B. and widening above.
6.05 30 metres from L.B. Rivr 3000 ft wide. Clear.
6.07 Opp. House (Marked) L.B. Freshet line 0.70m
River 3000 ft. wide. L. 46 1/2
6.10 Anchor below ABEIRA do RIO.

REPORT

"Splendid Navigation – and First Class pilotage from L. 54. Rivr 2800 ft.

74] Wed. Dec. 3. L. 46½

Near (below) Abeira do Rio.

6.55 START – After a racing night.
Water rose 0.16 = 0.52 feet (6½ in)
At once we begin to observe our course R.B.
[which is the reason we did not anchor higher
up opp. the hamlet – a few scattered houses
7.00 4. 4. 4 – as in obliques 4. 4. 4, 4
River 3000 ft. wide.
7.04 About opp. the bend of the ½ dig. house (Abeira do Rio)
or M. Grada Beninguca. as in obliques
7.07 Opp. Romano da Pascoa – on R.B. 2 houses
The soundings all the way across 4. 4. 4, 4
7.10 within 150m of R.B. receding a bit
7.13 Opp. 2 or 4 more houses on L.B. (Abeira do Rio)
Above these little settlements
[which have not grown perceptibly, woods
on both sides of the river.
7.16 River 2500 ft. wide – as 150m as fr. R.B.
7.20 Opp. Point on R.B. Riv 2000 ft. opp.
7.22 opp. an (apparent) bayou and a marshy island
close on to L.B. It may be but a narrow bend
7.25 River again wideens to 2500 ft.
7.27 The Map says "Pedra Calcarea" on L.B. opp. here
A bar shows along the L.B. though but most of it
as shown on map, is submerged. Sticks show the
7.34 Map shows Rio. do Peixe, on L.B. Hidden by
on 150m fm R.B. now. Riv. 2200 ft (on the whole)
Recent freshet Low 0.80 m. ab. present river here.
7.40 – L.46. about.
7.48 Opp "Manor Point" on R.B. Lots thin. The R.B.
has been cut by the river with a concave –
making the river in the widest spot – 3 opp ft.
We observe before we reach the Manor Point

Wed. Dec. 3. L. 46. [75

7.59 Opp. lower point of Semi-island (name) with water 170 metres wide, to L.B.
a short dis. up it is about 150 metres wide
There is a considerable volume of water
flowing through it at this time.
8.08 Opp. "Barra dos Patos" on R.B.
The sand bar – is below the mouth – on the
map it is above it.
8.11 Obliquing toward R.B. bar ab. on L.B. on
Semi-island side. At present it is an
island, some water flows behind it.
Map shows that all the water = 1857 –
then was no water flowing behind.
At the upper end the island and the
sand bar merged, and had no water.
bar on L.B
8.16 Obliquing – ready soon to R.B. River 2000 ft.
8.19 on R.B. 80 metres ab. River 2500 ft. wide – to
8.22 I see a clumpy sand bar island (2 miles) ahead
ahead – and Pilot-station toward it. River runs wide
I think he is going to L.B. side of it.
This is new, not on the map. or rather the large
bar of the map has shifted, and the channel now
runs to the island.
8.31 opp. lower lot. of new bar in appearance and size
8.33 Island is "cutting" – where the Channel shifts
You are on L.B. 400 metres and in 2 fathoms. Channel
Island is very sandy, with some clay and loam 12 ft high
Mark here – 0.56 m. River has cut
It was 2000 ft – now – 2200 – opp Point 1857
8.39 Opp. up. end of the (visible) mid river bar. Boats from
L.B. 1500 ft fm R.B. Just here is Whitcomb's
bar, separate above within 1000 ft of R.B.
we are obliquing to left
8.41 Opp. up. end of 1st island – Considerable volume
of water now flowing in – 150 metres wide below
The large bar of the map, as seen here, has
shifted – width here when it began
8.48 In Mid River. River 2500 ft wide. Pontal [illegible]

Wed. Dec. 3. Very Wide River

8.52 Obliquing fr. mid-river Channel L.B. where channel
8.55 River 3000 ft. wide. 8.09 Breakfast Bell.
9.00 Strong Current - Sandy banks Curving. Pt. of
Island 1/3 mile ahead - water on L.B. side.

9.07 Opp. Lower Pt. of Island on L.B. side
Pilar Falls at Ilha da Engenho - Map
says "Opera"

9.25 Opp. Steep Clay bank on R.B. Strong Current

9.29 Freshet Line 0.60m - River 2000 ft wide Bar
on L.B. side - or Island side.
[At Lower Pt. of this Island I could not see
whether the water behind was flowing or not.]
This Narrows lies on the map, surrounds
the Ilha Engenho ["Japera"] and extends
nearly a mile above to the L.B.
Shore, but possibly, water may be running
through behind. I must see.

9.35 Pass a large bar about (1/3 mile) from the
R.B. side - We oblique to Rt. and towards L.B.

9.40 Opp. Pt. up. end of Large (submerged) Bar on L.B.
There is a Longue of water between the bar
and L.B, but I am not sure that any
runs through at this stage of the river.

L. 43

Lower end.

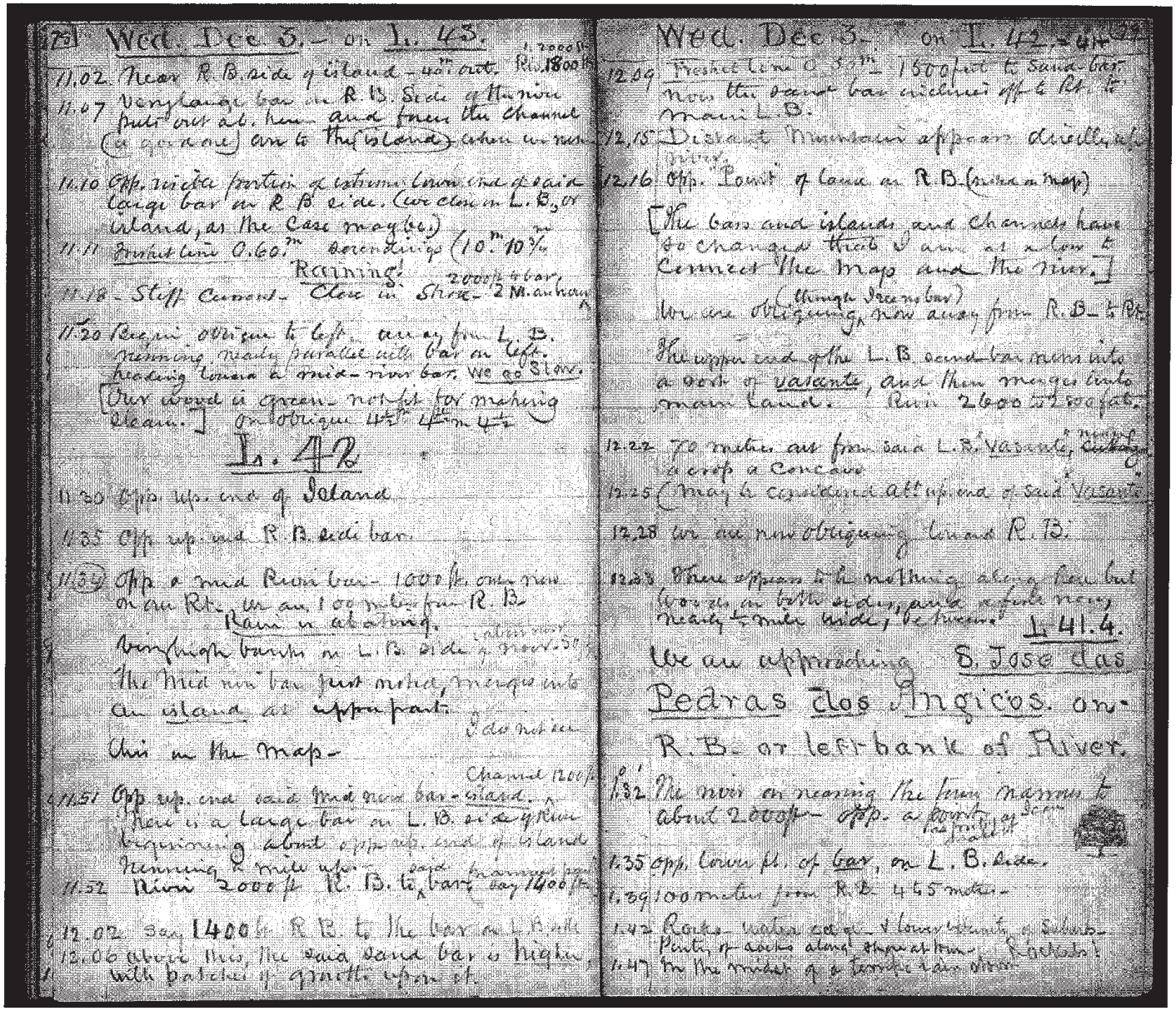
9.48 Opp. Rio Pardo - 20m wide at Mouth -
Island do Rio Pardo - on its remains
on our Left. The Channel is now on this,
L.B. side of the river - 1500 ft. wide.
9.58 on L.B. 30 metres or 4th ft. 4 - woods and trees
10.05 Opp. Lower Pt. of new Accumulation 1500 feet
the remains of Extensive Rio do Pardo or above it -

Wed. Dec. 3. Wide River

10.12 Freshet Line - 0.50m River 3000 ft wide
(1/3 mile long)
10.10 Upper end of new green Island - 1600 ft. fr. L.B.
we run 40 metres from L.B.
Heavy Rain R.B. all about 8 or 10 miles
Settlements since. Map has
a bank bar on R.B. running up ends a
breadth of a mile above up. end of new green Island
10.15 River 3000 ft. wide.

Beautiful River

10.20 Opp. Lower Pt. of Large Sand bar on R.B. with
water behind it - Wide river 3000 ft.
10.27 Map says "Penn Calcarea", on L.B. and
Pancera das Pedras, on L.B.
10.34 Opp. up. end of Large Sand bar on R.B. with
River 3000 ft. wide.
10.36 Begin Oblique fr. Left away from L.B.
Ilha dos Anjicos fourth mile above
with a submerged bar outside of it.
Channel is by the Oblique Crossing to
new reaches.
The shape of the Island is
much more oblique than the map
Very pretty, wide up the Island Channel
10.39 Opp. Lower Pt. of Island. (2500 ft.
from Pt. of Island on L.B. side across River)
Shallow on outside of Island.
10.50 Say 2000 ft - narrowest part of Island -
on R.B. side - near River.
10.52 Begin Oblique from R.B. to Pt.
A bar in the water on R.B. shows that the
normal river is considerably above its ordinary
stage. Freshet line 0.50m.
Ilha dos Anjicos Island Map gives Rio
do Bom Jesus Javarim. [Either this Island
is much smaller than the Map or the
Channel is "Cut" - 10 Sept. 1911 -



Wed. Dec 3. — on I. 43.

11.02 Near R.B. side of island — 40m ant. Rm 1800ft
11.07 Very large bar on R.B. Side of the river just ant. to it, and from the Channel (in question) on to the island, when we run
11.10 Opp. middle portion of extreme lower end of said large bar on R.B. side. (we close on L.B. or island, as the case may be.)
11.11 Frnt last line 0.60m soundings (10m 10½)
Raining! 2000ft + bar,
11.18 — Stiff Current. Close in shore — 2 M. anchor
11.20 Begin oblique to left — away from L.B. running nearly parallel with bar on left. Reading lower end mid-river bar. We go slow.
[Our wood is green — not fit for making steam.] On oblique 4½m 4th from 4th

I. 42

11.30 Opp. upper end of Island
11.33 Opp. upper end R.B. side bar
11.37 Opp. a mid River bar — 1000ft. onto river on the Rt. We are 100 meters from R.B.
Rain in abating.
Very high banks on L.B. side of river.
The mid river bar just noted, merges into an island as appears.
[I do not see this on the map —
Channel 1200ft
11.51 Opp. upper end said mid river bar — island.
Here is a large bar on L.B. side of River beginning about opp. upper end of Island running ½ mile up.
11.52 River 2000ft R.B. to bar, said bar 1400ft

12.02 Bar 1400ft R.B. to the bar on L.B. side
12.06 Above this the said sand bar is higher, with patches of gravel upon it.

Wed. Dec 3. — on I. 42, 41

12.09 Freshet time 0.5m — 1600ft to sand bar now the exact bar inclining off to Rt. to main L.B.
12.15 Distant mountains appear directly in front.
12.16 Opp. Point of Land on R.B. (mark on map)
[The bars and islands and channels have so changed that I am at a loss to connect the map and the river.]
(Change Green bar)
We are obliging, now away from R.B. to Rt.
The upper end of the L.B. sand-bar runs into a sort of vacante, and then merges into main land. River 2600 to 2800 ft.
12.22 70 metres out from said L.B. Vacante, nearly dry bar a crop a Concave
12.25 (May be considered at upper end of said Vacante
12.28 We are now obliquing toward R.B.
12.33 There appears to be nothing above here but Grass on both sides, and a fork near, nearly ½ mile wide, before us. I. 41.4.
We are approaching S. Jose das Pedras das Angicos. on R.B. or left bank of River.
1.32 The river on nearing the town narrows to about 2000ft — opp. a point of Sand
1.35 opp. lower pt. of bar, on L.B. side.
1.39 100 meters from R.B. 455 meters.
1.42 Rocks — water on L. & lower [illegible] of Salvador Penta, & rocks along shore at town
1.47 In the middle of a temporary bar above

80 Wed. Dec. 3. Angicos

1.50 - Opp. limestone bluffs - 25 ft high or more.
Splendid river front - Hundreds of people & ducks.

1.52. Opp. the 4 and Chunda Rockets!
very heavy rain storm -

1.54 Anchored - 3 boats at the landing - inside of us - Landed in the midst of the storm - crowds & hundreds of people drenched and running - a most enthusiastic reception!

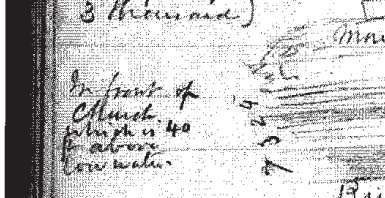
Angicos.

This is now the CIDADE São Francisco
one year ago I. 41.4 -
378 houses 3 churches & a cemetery.

We went on shore, called on the new Judge, who has been here only 8 days - The same who denied & Came with us but fortunately did not Teach Liquariça a time.

Called at the P.O. mail to leave the day after tomorrow. Mailed letter to Genl Barnard T.P.R and M.L.R - addressed to Victoria all to Engadyne Left the letters & Col. J. & the enclosure to be P. & addressed to be mailed tomorrow.

Town has now whitewashed houses than any we have seen, and a few good ones. Pop.n called 2500 - It may be so - in Burtons he gives 95 houses 1500 about. It has grown At present there are 300 or so refugees here from Jamaica - (The judge says 2 or 3 thousand)



Made arrangements to get wood here
Remain at night - now rising.

See page 81 back

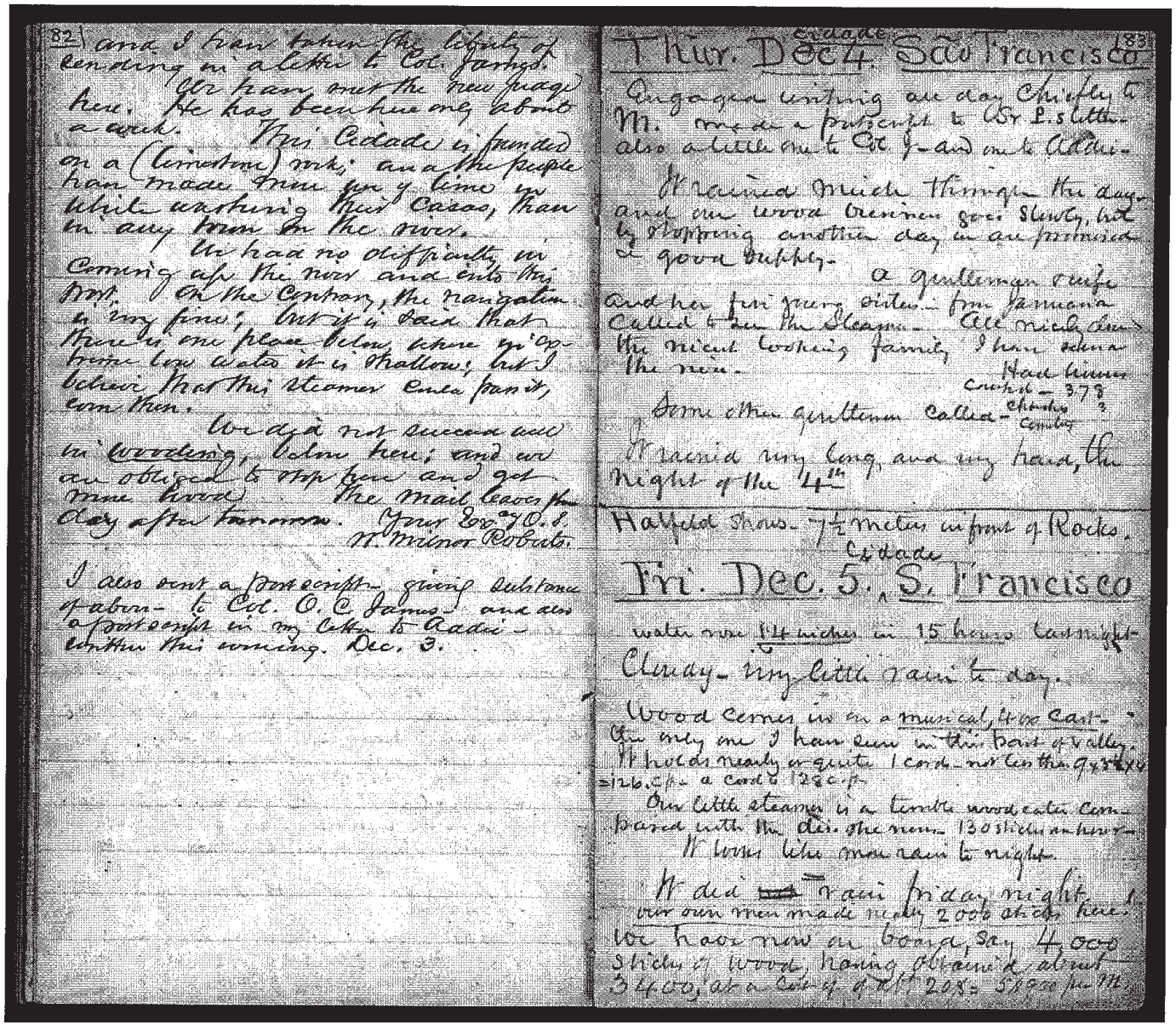
On Board Steamer "Presidente Dantas"
"Cidade São Francisco"
Formerly "S. José das Pedras das Angicos"
Dec. 3. 1879 (on League 41)

P. S. No 3.

We arrived here about 2. P. M. to day, in the midst of a terrific rain storm, China firing of rockets, welcoming the Steamer. We learn that the "Authorities" and "Militia" from Jamaica arrived here, by land, this morning. We hear also, that there are many hundreds of the people of Jamaica now in this place. Before leaving "Maria da Cruz", word came that the invading party had entered Jamaica, peacably, on Sunday evening, and that the people were returning.

We have had rain two nights in succession, and the River is rising considerably. The river is rising gradually, every day, and it is a matter of mine labor on the water. This makes a deeper Channel at this time than exists at extreme low water. The navigation is splendid at this time. I will gather all the information I can to enable me to refer the river to its lowest stage, and I hope to have it in my power to present a reliable account by this upper boat. There was more enthusiasm here in our arrival than in any other place on the river.

For reasons, I have preferred to make this an unofficial letter. Although it contains some information that will be reported in my official communications.



82
and I have taken the liberty of
sending on a letter to Col. Jarboe.
We have met the new stage
here. He has been here only about
a week. The Ciudade is founded
on a (limestone) rock, and the people
have made their way some time in
white washing their Casas, than
in any town in the river.
We had no difficulty in
coming up the river and into this
port. On the contrary, the navigation
is very fine; but it is said that
there is one place below where yr Ap-
proach too water it is shallow, but I
believe that this steamer could pass it,
even then.
We do not succeed well
in weeding, below here; and we
are obliged to stop here and get
more wood. The mail leaves
daily after tomorrow. Your Excy's O. S.
M. Milner Roberts.

I also sent a postscript giving substance
of above to Col. O. C James and also
a postscript in my letter to Gadsden
written this morning. Dec. 3.

Ciudade 183
Thur. Dec 4. San Francisco

Engaged writing and day Chiefly to
M. made a postscript to Gen L.s letter
also a little one to Col J- and one to Gadsden.

Received much through the day
and our wood business goes slowly, not
by stopping another day we are provided
a good supply.

A gentleman & wife
and her four young sisters from Jamaica
Called to see the Steamer. All much above
the usual looking family I have seen
the men.
Had dinners
Cooked — 3.7.8
Chambers 3
Combs

Some other gentlemen Called.

Received my Cane, and my hand, the
night of the 4th

Hayfield shows 7½ meters in front of Rocks.

Ciudade
Fri. Dec. 5. S. Francisco

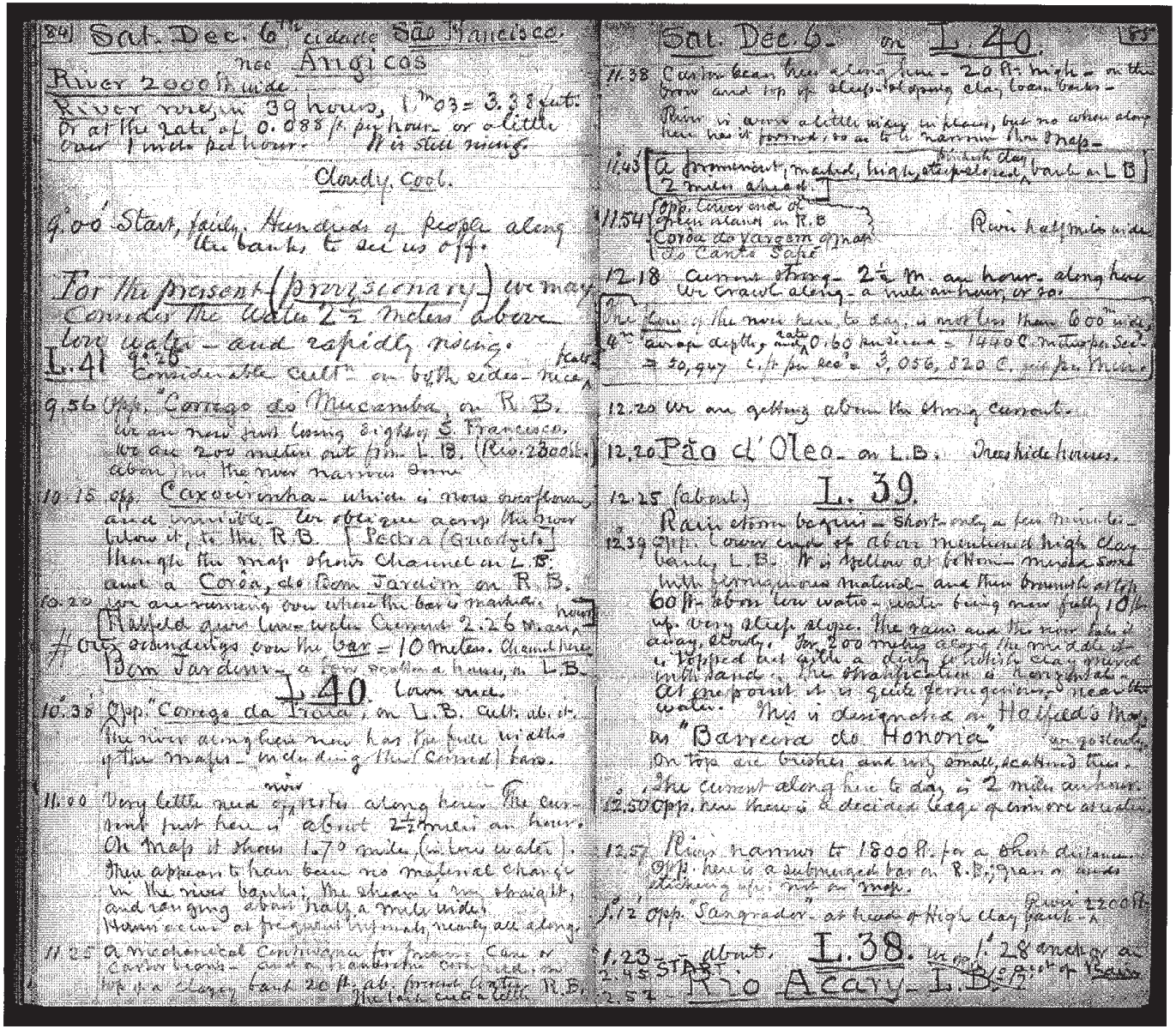
water rose 1¼ inches in 15 hours last night.

Cloudy - very little rain to day.

Wood comes in on a musical, 4 ox Cart -
the only one I have seen in this part of valley.
It holds nearly a quite 1 cord - not less than 9 x 3 x 4
= 126. C.ft - a cord is 128 C.ft.

Our little steamer is a terrible wood eater. Com-
pared with the Gen. She runs 130 Miles on her -
It loses like more than to night.

It did rain friday night.
our own men made nearly 2000 at each here.
We have now on board, say 4,000
Sticks of wood, having obtained about
3,400, at a cost of $ 1.00 = 5.00 per M.



84 Sat. Dec. 6th cidade São Francisco.
Rio Angicos
River 2000 ft wide.
River rises in 39 hours, 1.m03 = 3.38 feet.
Or at the rate of 0.088 ft. per hour. or a little over 1 metre per hour. It is still rising.

Cloudy, cool.

9.00 Start, fairly. Hundreds of people along the bank, to see us off.

For the present (provisionary) we may consider the water 2½ Meters above low water – and rapidly rising.

L. 41 9.26
9.56 Opp. "Corrego do Mucamba" on R.B. We are now just losing sight of S. Francisco. We are 202 metres out from L. 18. (Rio. 2300ft.) abom. the river narrows some
10.15 opp. Caxoeirinha – which is more conspicuous and imposing – for objects across the river than it is. The R.B. [Pedra (Quadrada)] through the map shows Channel on L.B. and a Corôa, do Pedra Jardim on R.B.
10.20 We are running over where the bar is marked. [Hatfield gave Low water Current 2.26 Mean] 10 soundings over the bar = 10 Metres. Channel here Pedra Jardim – a few scattering houses, on L.B.

L. 40 Lunch.

10.38 Opp. "Corrego da Praia", on L.B. Cult. ab. it. The river along here now has the full width of the maps – including [Bed Covered] bars.
10.40 Very little mud or water along here. The current just here is about 2½ Miles an hour. On Map it shows 1.7 miles (in low water). There appears to have been no material change in the river bed; the stream is now straight, and ranging about half a mile wide. Many sections of precipitous bluff, nearly all along.
11.25 A mechanical Contrivance for [illegible] Cane or Carnaúba leaves – [illegible] on R.B. Bluff a Clayey bank 20 ft. ab. former [illegible] Water. R.B. Mud bank and a little

Sat. Dec. 6. on L. 40. 85

11.38 Current here about 2 miles from – 20 ft. high – on the brow and top of steep-sloping clay, loam banks – River is now a little wider in places, but no other alteration has it formed, so as to "narrow" the Map –
11.43 [A prominent, marked, high, steep-pale red bank on L.B. 2 miles ahead.]
11.54 Opp. Lower end of Ilha Grande on R.B. Corôa do Vargem Grande Do Canto Sahé
12.18 Current strong – 2½ m. an hour. along here We crawl along – a mile an hour, or so.
The Low water here, to day, is not less than 600 m wide, average depth, rate 0.60 m. area = 1440 C. m. per Sec. = 50,947 c. ft per sec. = 3,056,820 C. ft per Minute.
12.20 We are getting above the strong Current.
12.20 Pão d'Olea – on L.B. Dead hide houses.
12.25 (about) L. 39.
Rain storm begins – Short – only a few minutes –
12.39 Opp. Lower end of Abaz mentioned high clay bank, L.B. It is yellow at bottom – middle sand with [illegible] material – and then brownish at top 60 ft. above low water – water being now fully 10 ft. up. very steep slope. The grass and the river bank is dead, dead. For 200 metres along the middle is topped but with a thin [illegible] clay mixed with sand. The stratification is horizontal. At one point it is quite ferruginous, near the water. This is designated on Hatfield's Map as "Barreira do Honoria" Go slowly. On top are bushes and very small, scattered trees. The current along here to day is 2 miles an hour.
12.50 Opp. here is a decided Cape of more or less elevation.
12.57 River narrows to 1800 ft. for a short distance.
Opp. here is a submerged bar on R.B. [illegible] sticking up: not on map.
1.12 Opp. "Sangrador" – at base of High clay bank. River 2200 ft.
1.23 – About. L. 38. We are 1.28 and are at Pedra
2.45 START.
2.52 – Rio Acary – L.B.

Sat. Dec 6 Near Rio Arary. Brazil Sat. Dec 6 T. 37. 57

RAIN

Sunset 4.46

Sat. Dec 6 — L. 37 — Sun. Dec 7 — L. 36 — L. 35 — L. 34 — L. 33

ORANGE TREES

Sat. Dec. 6th L. 37

Sun. Dec. 7th L. 38

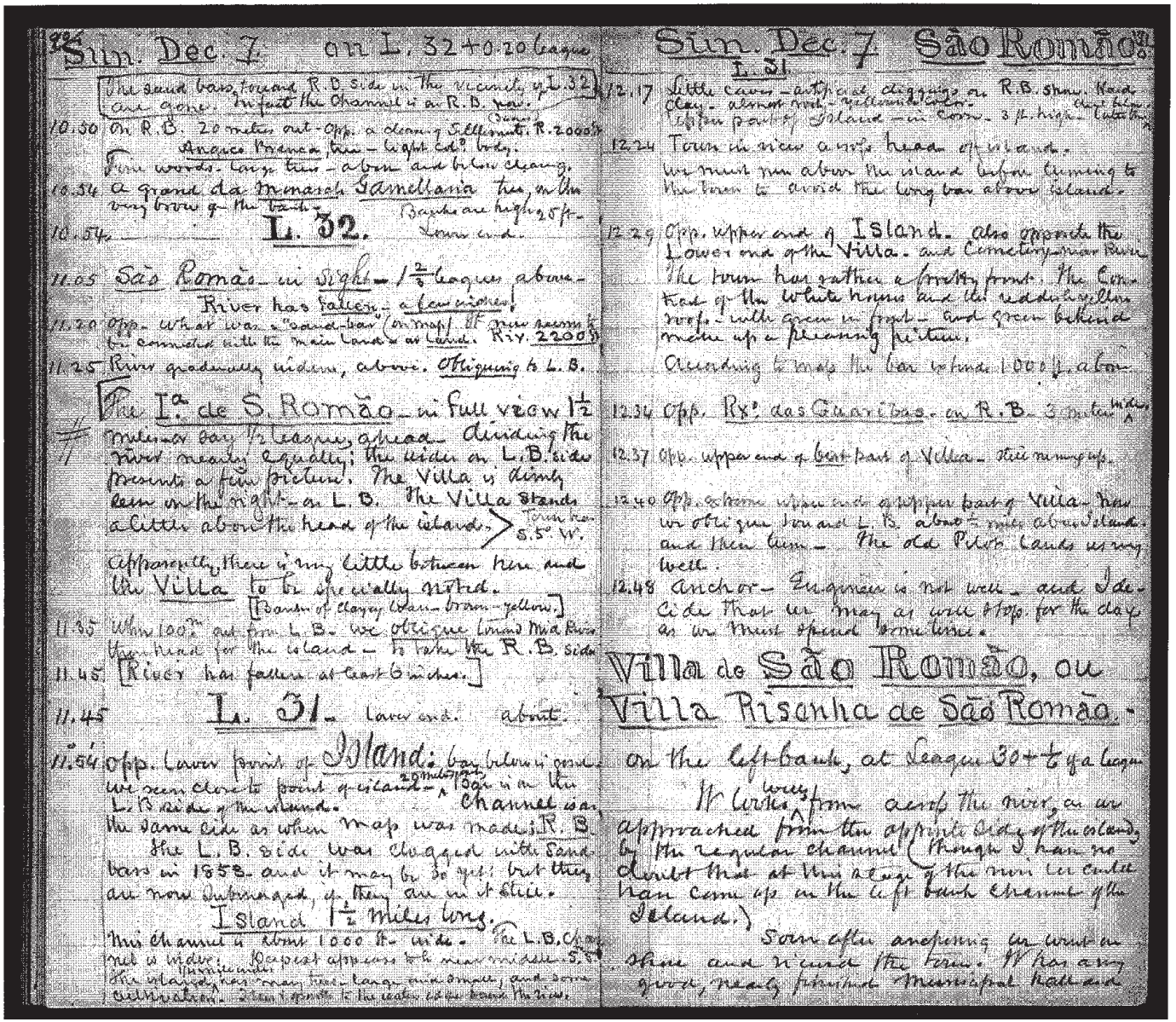
ORANGE TREES

L. 34

L. 35

L. 36

L. 33



Sun. Dec. 7 on L. 32 + 0.20 League

The sand bar, to and R.B. side in the vicinity of L. 32 has gone. In fact the Channel is on R.B. now.

10.50 On R.B. 20 metres out - Opp. a clearing & Settlement. R. 2000 ft
Araucaria Brasiliana tree - Light Cod. body.
Few words - Large trees - above and below clearing.

10.54 A grand old Monarch Sanellania tree, on the very brow of the bank.
Banks are high, 25 ft.
Low end.

L. 32.

11.05 São Romão - in Sight - 1 2/3 Leagues above -
River has fallen - a few inches!

11.20 Opp. What was a "sand-bar" (on map) if now seems to be connected with the main land & an Island. R. 1V. 2200 ft

11.25 River gradually widens, above. Obliquing to L.B.

The Ia. de S. Romão - in full view 1½ miles or say ½ Leagues, ahead - dividing the river nearly equally; the wider on L.B. side presents a fine picture. The Villa is dimly seen on the right - on L.B. The Villa stands a little above the head of the Island. From here S.S.W.

Apparently, there is very little between here and the Villa to be specially noted.
[Banks of clayey loam - brown - yellow.]

11.35 When 100 m. out from L.B. we obligue towards Mid. River then Right for the Island - To take the R.B. side

11.45 [River has fallen at least 6 inches.]

11.45 L. 31. Lower end. about.

11.54 Opp. Lower point of Island: bay before it opens we seem close to point of Island - 29 mins 12 sec. it is in the L.B. side of the Island. Channel is on the same side as when map was made: R.B.
The L.B. side was choaked with Sand bars in 1858. and it may be so yet: but they are now submerged, as they are in it still.

Island 1½ Miles long.
This Channel is about 1000 ft. wide. The L.B. Channel is wider. Deepest appears to be near middle. S.S.W.
The Island has many trees - Large ones, and some cultivation. Plain ground to the centre & on board the River.

Sun. Dec. 7 São Romão

L. 31

12.17 Little caves - artificial diggings on R.B. shows Hard Clay - almost rock - Yellowish Colour. Clear line of Clayey part of Island - in Some - 3 ft. high - Cattle

12.24 Town in view a little ahead of us and.
We must run above the Island before turning to the town to avoid the long bar above Island.

12.29 Opp. Upper end of Island. Also opposite the Lower end of the Villa. and Cemetery near River.
The town has gathered a pretty front. The Convent of the White Nuns and the red tiled Church roofs - with green in front - and green behind make up a pleasing picture.
According to map the bar is about 1000 ft. above

12.34 Opp. Rx.o das Guaribas. on R.B. 3 miles wide

12.37 Opp. upper end of lower part of Villa - still running up.

12.40 Opp. & some what upper end of upper part of Villa - have we obligue Island and L.B. about ½ mile above Island. and then turn - The old Pilot Lands us very well.

12.48 Anchor - Engineer is not well - and I decide that we may as well stop for the day as we must spread some linen.

Villa de São Romão, ou Villa Risonha de São Romão.

On the left-bank, at Leagues 30 + 1/6 of a League

We (way) came from across the river, as we approached from the opposite side of the Island, by the regular channel (though I have no doubt that at this stage of the river Ice could have come up on the left bank Channel of the Island.)

Soon after anchoring we went on shore and viewed the town. We had very good, nearly fresh meat - Municipal Rations

23 Dec 7th São Romão.

Jail built of stone and brick - which has been roofed 18 years; but is only now being finished. This was, but is not a Villa. That title was transferred to Angicos - now São Francisco.

The houses in São Romão, are mostly generally white washed, Many (as usual) Chew are many of "Wattled and daub" Pleasantly situated on elevated ground on the Rio Grande. On visiting the Church which I was surprised to hear is only 18 years old. It looks ancient enough to be the grandfather of 18 years. They showed us the wonderful figures, &c -

There was service in the Church when we arrived - which they say, proceeds as formerly read with reluctance.

On the orange trees, and banana tree bearing fruit in gardens without irrigation - below the floods. On heavy rain within an hour after one onset; and it has rained all the afternoon.

Most of our crew, including the Engineer, are afraid to stop. Mr Sabroia is a little better. I sent them both up the Cabrin with me now. My old Indian friend got well.

I cannot tell till tomorrow morning how these Chinese may affect our movements. I pray that the magnetic rain hand to night.

The river is about a ½ mile wide here.
6½ P.M.

Page 235. Vol II. Diaries

The direct Dis. bet.n Rio and Sabará, is 3° 12' 39 or 192 geog. miles, and the actual calc.n for length of railway is 276 miles.

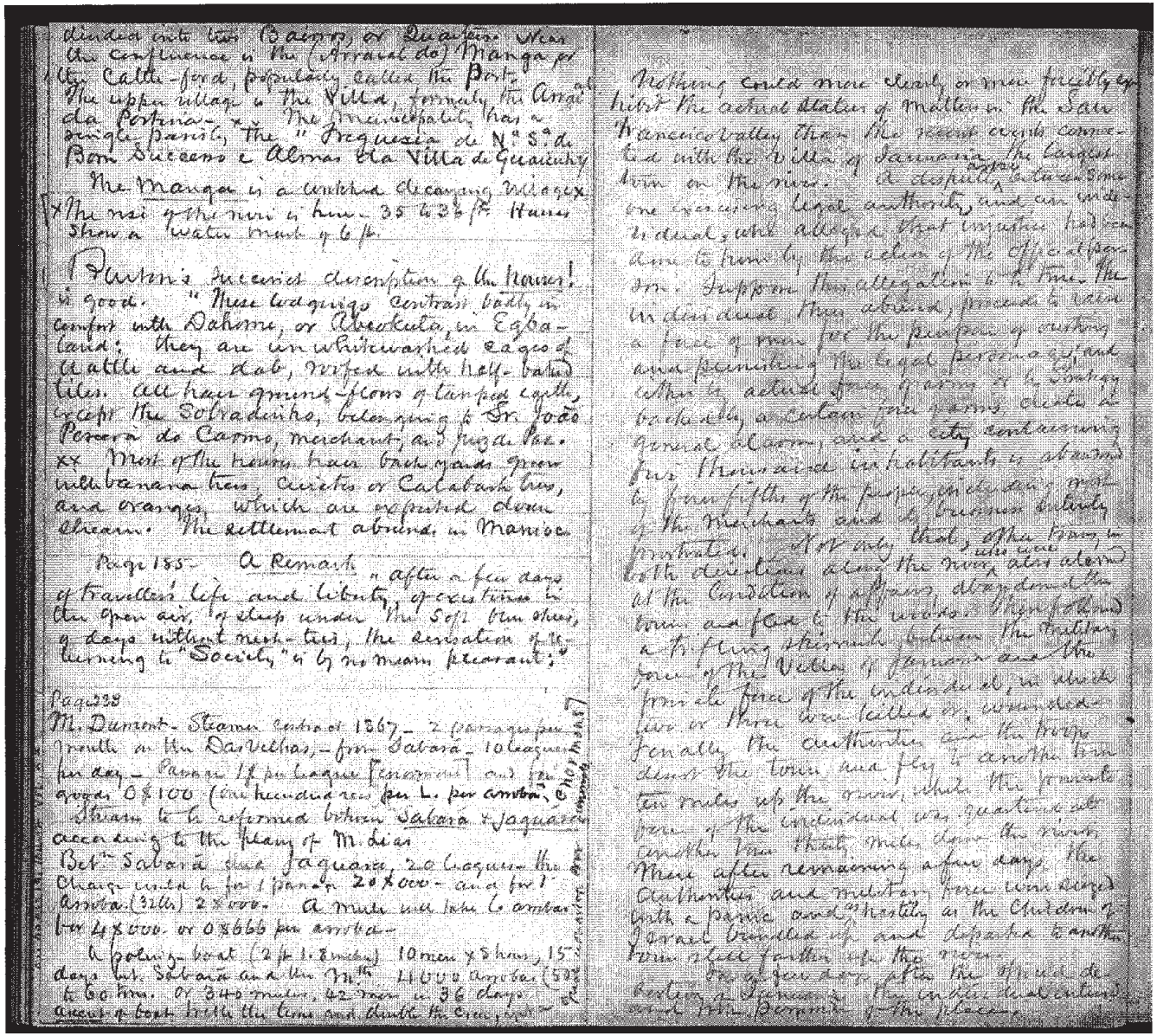
XX For steam navigation down the Rio Das Velhas 366 miles - and down the Rio de São Francisco to Villa Boa Vista 792 miles, perfectly clear, Decreasing current. Boa Vista to the Porto das Piranhas - railway or tramway 216 miles. Piranhas to mouth of S.F. 129 miles, in S. Lats. 10° 27' 4" and W. Lgth. 36° 21' 41" from Greenwich.

Sep 7 37.

Cabeça acima" going up stream.
Navegar "cabeça abaixo" - down stream.
"Travessia" or Rapids begin normally at Pirapora - some 30 leagues. Boatmen when ascending the stream under difficulties call it a "Travessa Braba".

The extreme upper part of the main São Francisco - according to Burton averaged over 1200 ft. in Plain in dena to 4800 ft. - Basin of bank 2636 ft.

XX The difficulty of service will last for years, but the vegetable & animal teeming of the magnif. avenue of the Rio das Velhas.



divided into two Bairros, or Quarters. Near the confluence of the (Igarapé do) Manga or Rio Calha-fora, popularly called the Port. The upper village is the Villa, formally the Angra da Fortuna - the municipality has a single Parish, the "Freguezia de N.S. da Bom Successo e Almas da Villa de Guaricuru

The Manga is a cachoeira decaying village. The rise of the river is here 35 to 36 ft. Hauxwell shows a water mark of 6 ft.

Pereira's succinct description of the Manaos is good. "These Indians contrast badly in comfort with Dahome, or Abeokuta, in Egba-land; they are un whitewashed cages of cattle and dab, roofed with half-baked tiles. All have ground-floors of lanpeo cajilla, except the Solradinho, belonging to Sr. João Pereira do Carmo, merchant, and Praça da Paz. xx Most of the houses have back yards grown with bananas trees, Cacoeiro or Calabash trees, and oranges, which are exported down stream. The settlement abounds in Manioca

Page 185 - A Remark "after a few days of traveller's life and liberty of existence in the open air, of sleep under the Soft Sun shine, of days without meat-taxes, the deviation of returning to "Society" is by no means precarious;"

Page 238

M. Dumont - Steamer entered 1867 - 2 paraquas per travelle in the Dardelhas, - from Sabará - 10 leagues per day - Passage 1$ per League [steerage] and for goods 0$100 (one hundred reis per L. per arroba, 15 kilos)

Steam is reformed between Sabará & Jaguara according to the Plans of M. Dias

Bet. Sabará and Jaguara, 20 Leagues the Charge rated is for 1 pass. 2$000 - and for 1 Arroba (32lb) 2$000. A mule with load is carried for 4$000 or 0$666 per arroba -

A poling-boat (2 ft 1.8 metres) 10 men x 8 hours, 15 days bet. Sabará and the Mth 11 000 Arrobas (50 to 60 tons. or 340 miles, 42 men in 36 days

Nothing could more clearly or more forcibly exhibit the actual status of matters in the San Francisco valley than the recent events connected with the Villa of Jamaica. The Caiques from the river. A despotic, lawless Sme one exercising legal authority, and an ind- ividual, who alleged that unjustice had been done to him by the action of the Officers of Gov- ment. Suppose this allegation to be true. The individual then absent, proceeds to raise a force of men for the purpose of crushing and punishing the illegal persecution and that is actual force of arms & by strategy either to seize upon the Governor & by treachery, or Coelho, the Vice Governor, or the Secretary General & Comm, and a city containing four thousand civilized inhabitants is absorbed by some fifths of the population, the Judge, the Merchants and the Governor entirely at the mercy of a few ruffians. Not only that, but the Town is divided, one part on each side of the river, and both divisions above the Confluence of the Rivers, also dominated by the Solimões. Upon the Island town and Fort & the wooded Point of Island a flying stream between the Battalion of the Police of Garrison and the force of the Undisciplined, in shirts from the force of the Indians, or, Wounded five or three men killed or, Wounded Finally the authorities and the troops desert the town and fly to the Barra ten miles up the river, while the Insurrectionists from that main depot the rivers another from that, main depot the rivers. Where after remaining a few days, the Authorities and Military force (one Regt) with a parade and "Martial as the Children of Israel Crucified up and departed to another Town a few further up the river, for a few days after the Officials and Soldiers of Jamaica & the inhabitants and the Peasants of the Interior

E-BOOK

COMISSÃO HIDRÁULICA DO IMPÉRIO:
CADERNETAS DE VIAGEM
DE MILNOR ROBERTS (1979)
VOLUME 2

Este livro foi composto no formato 21,0X29,7cm,
fonte Minion Pro (texto principal e títulos).
Em novembro de 2026.

WILLIAM MILNOR ROBERTS DEDICOU SUA VIDA AO DESENVOLVIMENTO DA ENGENHARIA NOS ESTADOS UNIDOS E NO BRASIL. ROBERTS NASCEU NA FILADÉLFIA, PENSILVÂNIA, EM 1810, FILHO DE THOMAS PASCHALL E MARY LOUISE ROBERTS. CASOU-SE DUAS VEZES: O PRIMEIRO CASAMENTO FOI EM 1837, COM ANNIE GIBSON, DA PENSILVÂNIA, COM QUEM TEVE SEIS FILHOS; DEPOIS SE CASOU COM ADELINE DEBEELEN, DE PITSBURG, COM A QUAL TEVE QUATRO FILHOS. SUA EDUCAÇÃO FOI NA FILADÉLFIA EM ESCOLAS PARTICULARES. TAMBÉM FEZ CURSO DE DESENHO ARQUITETÔNICO NA PRIMEIRA ESCOLA ESTABELECIDA PELO FRANKLIN INSTITUTE, COM O ARQUITETO JOHN HAVILAND. DEPOIS DE COMEÇAR EXERCER A PROFISSÃO DE ENGENHARIA CIVIL, CONTINUOU OS ESTUDOS, PRINCIPALMENTE EM MATEMÁTICA, DA QUAL GOSTAVA MUITO. COMEÇOU SUA VIDA PROFISSIONAL EM 1825, TRABALHANDO NO CANAL DA UNIÃO DA PENSILVÂNIA E, EM 1830, NA CONSTRUÇÃO DE FERROVIAS. SUA CARREIRA COMO ENGENHEIRO TEVE INÍCIO E CRESCIMENTO COM O MAIOR DOS AGENTES EM NOSSA CIVILIZAÇÃO MODERNA, A ENGENHARIA FERROVIÁRIA. NOS ESTADOS UNIDOS, AS CONSTRUÇÕES FERROVIÁRIAS COMEÇARAM EM 1826, NA PEDREIRA DE GRANITO CHAMADA QUINCY, ONDE CONSTRUÍRAM UM BONDE PARA O TRANSPORTE DE PEDRA DA PEDREIRA PARA A ÁGUA, A UMA DISTÂNCIA DE TRÊS OU QUATRO QUILÔMETROS. ROBERTS PARTICIPOU DE IMPORTANTES ASSOCIAÇÕES. NO BRASIL FOI SÓCIO HONORÁRIO DO CLUBE DE ENGENHARIA DO RIO DE JANEIRO, ADMITIDO NO ANO DE 1881. AS CADERNETAS QUE SE SEGUEM SE REFEREM AS ATIVIDADES DA CHI E FAZEM PARTE DO ACERVO DA UNIVERSIDADE DE MONTANA.



COMISSÃO HIDRÁULICA DO IMPÉRIO

ISBN: 978-65-83341-47-1

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Editora zarte