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Fire, broadax and fever relieve: southeastern Brazil and the boost toward the agrarian frontiers in early 19th century[1]

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Abstract
In the beginning of the 19th century, discussions about malaria by some physicians and authorities who had acted in many Atlantic regions showed the idea that deforestation would impact positively on sanitation in Brazil. This was related to a boost — unknown until then — toward the agrarian frontiers at the expense of traditional forests and strongly marked by the rural endemics. It all happened in a time marked by the growth of the Brazilian free population, by the internalization of sugarcane farms — especially in São Paulo — by the coffee expansion, by the increase of agrarian frontier as a survival strategy for poverty, by the suppression of regulations for the settlements on vacant slots in 1822, and by the Atlantic recession in the second quarter of the 19th century. The dissemination of this conception can be evaluated based on data about migration to the agrarian frontier and the impact of malaria among free people.
Keywords: malaria in southeastern Brazil; agrarian history; environmental history.

Ferro, fogo e alívio das febres: o sudeste brasileiro e o impulso na direção da fronteira no início do século XIX

Resumo
No início do século XIX, as discussões sobre a malária feitas por alguns médicos e várias autoridades com histórico de atuação em diversas regiões do Atlântico manifestavam a concepção de que o desmatamento teria implicações positivas para o saneamento. Isso se ligava a um avanço até então desconhecido na direção da apropriação da terra na fronteira agrária, a expensas de matas tradicionais, tendo esse avanço sido fortemente marcado pelo impacto das endemias rurais. Tudo se passava numa época marcada por crescimento da população livre brasileira, pela interiorização da lavoura canavieira, especialmente em São Paulo, pela expansão cafeeira, pelo avanço da fronteira agrária também como estratégia de sobrevivência para a pobreza, pela supressão da regulação da ocupação de baldios em 1822 e pelo enfrentamento da recessão atlântica do segundo quarto do século XIX. Avalia-se a difusão da concepção por meio de dados sobre migrações para a fronteira agrária e sobre o impacto da malária entre os livres.
Palavras-chave: malária no sudeste brasileiro; história agrária; história ambiental.

Hierro, fuego y alivio de las fiebres: el sureste de Brasil y el empuje hacia la frontera a principios del siglo XIX

Resumen
A principios del siglo XIX, las discusiones sobre la malaria hechas por algunos médicos y diversas autoridades con un historial de trabajo en distintas regiones del Atlántico manifestaban la noción de que la deforestación tendría consecuencias positivas para el saneamiento. Eso se relacionó con un avance hasta entonces desconocido hacia la apropiación de tierras en la frontera agraria, a costa de bosques tradicionales. El avance se caracterizó fuertemente por el impacto de las endemias rurales. Todo estaba ocurriendo en un momento de crecimiento de la población brasileña libre, de la internalización de las plantaciones de caña de azúcar, especialmente en São Paulo, de la expansión de la producción de café, del avance de la frontera agraria también como una estrategia de supervivencia a la pobreza, de la eliminación de la regulación de la ocupación de vacantes en 1822 y del combate a la recesión atlántica en el segundo cuarto del siglo XIX. Evaluamos la difusión de esa noción por intermedio de los datos sobre la migración hacia la frontera agraria y sobre el impacto de la malaria entre los hombres libres.
Palabras clave: la malaria en el sureste de Brasil; historia agraria; historia ambiental.

Le fer, le feu et le soulagement de la fièvre: le Sud-Est du Brésil et l'élan vers la frontière agraire au début du XIXe siècle

Résumé
Au début du XIXe siècle, les discussions sur le paludisme par certain médecins et diverses autorités qui avaient agi dans diverses régions de l'océan atlantique ont manifesté l'idée du déboisement comme un facteur positif pour l'assainissement. Ce concept était lié à une avancée, jusque-là totalement inconnu, vers l'appropriation privée des terres dans la frontière agraire aux dépens des forêts, mais fortement marquée par les endémies rurales. Tout cela est arrivé à une époque oú la population libre était à forte croissance en raison de l'intériorisation de l'agro-industrie de la canne, en particulier dans l'État de São Paulo, du fait de l'expansion du café, de l'élan vers la frontière agraire comme moyen de survie à la pauvreté, de la suppression des réglages pour l'occupacion des terrains vagues dans 1822, et de la récession atlantique à la fin du XIXe siècle. Nous évaluons la diffusion de cette conception sur la base des données relatives à la migration vers la frontière agraire et à l'impact du paludisme sur les libres.
Mots clés: paludisme au Sud-Est du Brésil; histoire agraire; histoire de l'environnement.

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The main goal of this article is to add some research findings about agrarian and disease history to the analysis of the relation established with environment in the early 19th-century Brazil. José Augusto Pádua summed up fittingly the savants' expectations about the Brazilian natural resources at the end of the 18th and beginning of 19th century. A first line of thinking was based on the disqualification of the natural world, or on indifference towards it. A second line of thinking would attribute greatness to the environment, but consider excessive exuberance would hamper human development. A third view would judge assaults on the natural world as unavoidable on the way to progress, and a fourth perception would be associated with romanticism, when people would praise the environment only for abstract and rhetoric issues, without giving much attention to effective devastation. The positions summarized in this schema, which were majority facing the pioneer preservationism detected by Pádua, may be related to movements of agrarian history in the period.[2]

The frontiers

The agrarian frontier was rapidly expanding in Brazil in the period studied, causing deforestation. This situation was affected by the "agricultural renaissance"[3] and by the agrarian expansion in the end of the 18th century,[4] but also by the economic upswing in 1808–1810. It is hard to establish when exactly this last move started to retract, cause it may have survived to the downwards movement in 1814, suggested by the analyses based on the idea of long waves. There seemed to be a relative detachment between the internal level of activities and external product prices, as the products would have maintained exportation values and warmed up the level of activities when staking, especially at that time, on sugar quantity.[5] The stimulus to agrarian growth was influenced by the increasing arrival of Africans, which grew steadily until 1828–1829.[6] The long recession of the second fourth of the 19th century could have discouraged this boost, but it was experienced in the Brazilian southeast with the expansion of coffee production and the boost to initiate new production units, which was dictated by the interruption in the distribution of sesmarias in 1822, which gave way to land possessions.

Dean reminds us that coffee, a cultivation that required much more mobility than sugar cane — despite its durability — at the time, enhanced the interiorization of Brazilian Agriculture.[7] Also, sugar cane cultivation began to expand to upland areas in the beginning of the 19th century. This activity encouraged

[2]José Augusto Pádua, *Um sopro de destruição*, Rio de Janeiro, Jorge Zahar, 2004, p. 27-28.
[3]Caio Prado Júnior, *História econômica do Brasil*, 12. ed., São Paulo, Brasiliense, 1970, p. 79 *et seq*.
[4]Arno Wehling, "O fomentismo português no final do século XVIII: doutrinas, mecanismos e exemplificações", *Revista do Instituto Histórico e Geográfico Brasileiro*, vol. 316, Rio de Janeiro, 1977, p. 170-277.
[5]João Luís Ribeiro Fragoso, *Homens de grossa aventura*, Rio de Janeiro, Arquivo Nacional, 1992, p. 113; 131 *et seq*.
[6]Manolo Florentino, *Em costas negras*, São Paulo, Companhia das Letras, 1997, p. 46.
[7]Warren Dean, *A ferro e fogo*, São Paulo, Companhia das Letras, 1996.

forest preservation aimed at fuel,[8] besides not demanding the mobility required by coffee cultivation at the time, as its path was more for expansion than for transfers. On the other hand, its path was not that stable, and drastic changes started happening as the second half of the century approached But coffee expansion was furthered by the process of estate formation and by the financial chains established around sugar cane cultivation, ant this process gave way to new waves of deforestation: in Campinas, Piracicaba, Limeira, and Rio Claro, to mention few examples related to the themes addressed here, the decadent sugar cane was replaced by the ascent coffee culture around 1850. The perception of the Brazilian environment was therefore affected by this expansive boost.

Jungles and swamps

The matter of diseases had contradictory views related to the Brazilian environment. Until 1849, Brazil was safe from the 19th century's pandemics, which brought up an image of amenity and health. Conversely, this view was less positive when it came to endemics. Although not predominantly, in Brazil there was the idea that malaria was related to the proximity to forests. Teixeira, for instance, supports that, before discussions in microbiology about the "paulista fevers" in the end of the 19th century, there were no doubts about the prevalence of malaria, which could be recognized by "a miasma of swamp, emanations from forests and marshes".[9] The supporters of putrefaction would find decaying organic matter in swamps as much as in forests. Forests were seen by many as an obstacle to sanitation because they reduced winds. Those who would blame it on the soil fertility or on living beings also thought the agriculture could redirect the potential to the products, not the miasmas.

As is well known, the fear of wetlands was predominant — and it could be right. However, there were contradictory manifestations that put the blame on other types of environmental arrangements. This position, despite not being disseminated, is important for the purposes of this paper, for it manifested in the way people rationalized deforestation in the end of the 18th and beginning of the following century. This idea was more shared by professionals other than physicians, especially among agents who had acted before in many regions of the Atlantic and, therefore, had lived in different environments with plagues. Besides that — and although paradoxical — these views were intensified by perspectives of the late 19th century, as we will mention in the end of this paper.

A very direct articulation between agrarian expansion, devastation and sanitation was seen in Campos dos Goytacazes, which started growing as sugar producer. Manoel Martins do Couto Reis, military engineer well-known among Fluminense authorities, performed an extensive economic and demographic

[8]Marcus J. M. de Carvalho, "O outro lado da Independência: quilombos, negros e pardos em Pernambuco (Brazil), 1817–23", *Luso-Brazilian review*, vol. 43, n. 1, Madison, 2006, p. 3.
[9]Luiz Antonio Teixeira, "As febres paulistas da Sociedade de Medicina e Cirurgia de São Paulo: uma controvérsia entre porta-vozes de diferentes saberes", *História, ciências, saúde – Manguinhos*, vol. 11, suplemento, Rio de Janeiro, 2004, p. 46.

survey by order of the judge Luiz de Vasconcellos e Souza,[10] and it allows us to think of him as a member of the group of proposers of the enlightened advancement of agriculture.[11] Reis attributed a natural origin to the air corruption, and expected to reduce it with economic use of space.

> The Sertões do Moriahe were once awful and pestiferous; because their unused landmass, the high groves embracing them, the extensive wetlands and even the lack of fire and other occurrences that could freely shake and burst the heavy laden air would naturally bring consequences. But as soon as men full of interest in making use of the lands and started the terror, causing the loss of many lives, and started settling farms on the so-called Sertões, lighting fires, unveiling the forest and purifying the air, which became less heavy; however, they improved very little and gained the reputation of the most harmful.[12]

It creates a densification of the air that could be the result of the presence of wetlands and forests. In *Memorias de Santa Cruz* (in English, "Santa Cruz memories"), Couto Reis went back to this matter when reporting the works performed by the Company of Jesus. The use of land for cattle raising and the subsequent deforestation led to the reduction of woods and depression of their palustrine character. The problem in Santa Cruz were the "brejaes", which would "once stalled, occupy most of a land that was desert, plain, useless and impenetrable until then". The solution would have been to cultivate "the most favorable parts and, reducing them to seed, to exhaust little by little the remaining 'humidities'". They intended to "treat the problems of nature with art", to transform "the deformity of a huge wetland into a plain field". For him, the plans of the Jesuits, unperformed due to their expulsion, were correct after all: putting "slaves to work on the wetlands of S. João Grande, reducing grazing"; this would have kept the "rotten emanations" from reaching Rio de Janeiro.[13]

One could actually say, in Southeastern Brazil, that livestock would have more potential than agriculture to save the environment. In 1819 they would write, in Campos, that the first land owners of the region — cattle raisers — would systematically clear the rivers, regulating the volume of water of the lagoon Feia. The successive "farmers", however, would not do it and, therefore, would create swamps, a neglect that was only corrected by the intervention of authorities.[14]

Before that, Antonio Manoel de Mello Castro Mendonça, governor of São Paulo in the turning of the 18th to the 19th century, mixed swamps and forests

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[10]Márcio de Sousa Soares, *A remissão do cativeiro*, Rio de Janeiro, Apicuri, 2009, cap. 1; Sheila de Castro Faria, *A Colônia em movimento*, Rio de Janeiro, Nova Fronteira, 1998, p. 361.

[11]Beatriz Piccolotto Siqueira Bueno, "Do borrão às aguadas: os engenheiros militares e a representação da capitania de São Paulo", *Anais do Museu Paulista*, vol. 17, n. 2, São Paulo, 2009.

[12]Manoel Martinz do Couto Reys, *Descripção geographica, pulitica e cronographica do districto dos Campos Goiatacaz*, Rio de Janeiro, APERJ, 1997, p. 37.

[13]*Idem*, "Memorias de Santa Cruz", *Revista trimensal de Historia e Geographia ou Jornal do Instituto Historico e Geographico Brazileiro*, tomo V, n. 18, Rio de Janeiro, 1863, p. 144; 146-147.

[14]Anonymous, *Memoria topographica e historica sobre os Campos dos Goitacazes*, Rio de Janeiro, Impressão Régia, 1819, p. 11-12.

to explain insalubrity, and he and his immediate ascendants had noble military career and had background in ultramarine possessions experienced as pestilential.[15] As for miasmas, "many countries that were once epidemic are now healthy, as the clearing of wetlands made air circulation easier and extinguished the swamps".[16] The view comprised deforestation, air circulation and desiccation, and swamps extinction.

In Brazil there was the idea that malaria was related to the proximity to forests

The German travelers Spix and Martius are said to have been of great influence on contemporary Brazilian savants. If it is true, may have noticed that, when it came to Amazônia, the naturalists would refer to the river Japurá region emphasizing its lowland, humid and windless position, and also realizing these were results of the vegetation density; it all would give way to miasmas and vegetable and mineral substances to dissolve in the water, causing endemics.[17] The winds were also emphasized, although without reference to desiccation.

Just like Couto Reis, Raimundo José da Cunha Matos has military background and geographical interest, although he was no engineer. In his book *Itinerário do Rio de Janeiro ao Pará e Maranhão,* some pieces show that he found sources of insalubrities in the forests. In 1823, for instance, he put the deaths due to the flood and recession of rio São Francisco down to its "malignity atmosphere". This Portuguese officer, with large *santomista* experience and incorporating central positions of the Brazilian bureaucracy[18] lamented that, despite these deaths, "Man's hand only did a small sanitation benefit until now".[19] When crossing the river São Francisco to the river Paranaíba, he wrote that he found "many people suffering from tertian and raging fevers", which were probably related to the fact that they lived in "low and wetlands, close to rivers and stream margins, and to the forests"; part of the blame was put on the "rotten smells from the decomposing vegetables and animals".[20] It's the triumphalism we already addressed here.

[15]Pablo Oller Mont Serrath, *Dilemas & conflitos na São Paulo restaurada*: formação e consolidação da agricultura exportadora (1765-1802), Dissertação de mestrado, Universidade de São Paulo, São Paulo, 2007, p. 58-59.
[16]Antonio Manuel de Mello Castro e Mendonça, "Memória econômico política da capitania de S. Paulo", *Anais do Museu Paulista*, tomo XV, São Paulo, 1961, p. 101.
[17]Jean Luiz Neves Abreu, "Contribuições à Geografia Médica na viagem de Spix e Martius", *Hygeia*, vol. 3, n. 5, Uberlândia, 2007, p. 4.
[18]José Augusto Pádua, *Um sopro de destruição*, Rio de Janeiro, Jorge Zahar, 2004, p. 70-71; 178-179.
[19]Raimundo José da Cunha Matos, *Itinerario do Rio de Janeiro ao Pará e Maranhão, pelas províncias de Minas Geraes e Goiaz*, vol. I, Rio de Janeiro, Typ. Imperial e Constitucional de J. Villeneuve, 1836, p. 72.
[20]*Idem, Ibidem,* p. 98.

It is well known that Cunha Matos supported the evaluations that connected malaria with stagnant water.[21] Not to mention the connection between forests and the disease, which would make plausible the slash clearing — also put on spot by the connection swamps-malaria —, there is also the fact that the obsessive coherence was not the main defect of these people. Accordingly, the position of triumphalism was not considered absolutely and definitively opposed to a stance which is preservationist in a way.[22] In fact, instead of solving contradictions and hesitations, it is quite more interesting to draw attention to the fear motivating them: Matos pointed many spots of the province of Goiás, in early 1820, as the "most insalubrious of the universe".[23] An eloquent hyperbole.

He did not hide his sanitary beliefs either: "no one more than myself has lived in insalubrious countries",[24] he wrote, as a military would. With regard to his routes on the north of Goiás, he reported "abandon" as he saw absence of agriculture and industry, very little cattle raising and a generalized misery in his "philosophical trips purely aimed at military purposes".[25]

A famous physician with extensive experience in Atlantic rain forest also associated forests to insalubrity. José Pinto de Azeredo, who graduated at Edinbourgh and Leiden and acted in Rio de Janeiro and Luanda,[26] asserted that vegetation in cities was a good thing, but that many big problems would result from spatial concentration of trees.

> It is important that the trees are well spread, because forests and woods are more likely to be malefic than benefic, as they hold an impure and harmful air, with the decomposition of leaves that fall, keeping the entrance of light and the ebb and flow of winds, and also containing countless animals that infest the atmosphere.[27]

Many times, what came after deforestation was considered remedial. Throughout the 19th century, coffee, despite its bad reputation related to tuberculosis ended up scoring because of malaria. Reinhold Teuscher, a German physician who worked with slaves in the farms of Cantagalo, Rio de Janeiro, in the 1840s and 1850s, warned about several endemics, but was very cautious about malaria, judging the few cases of intermittent fever he detected as "imported", that is, not caused by local conditions.[28]

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[21] Raimundo José da Cunha Matos, *Itinerario do Rio de Janeiro ao Pará e Maranhão, pelas províncias de Minas Geraes e Goiaz*, vol. I, Rio de Janeiro, Typ. Imperial e Constitucional de J. Villeneuve, 1836, p. 74-75.
[22] *Idem, Ibidem,* p. 131; José Augusto Pádua, *Um sopro de destruição*, Rio de Janeiro, Jorge Zahar, 2004, p. 70-71.
[23] Raimundo José da Cunha Matos, *op. cit.,* p. 134.
[24] *Idem, Ibidem,* p. 140.
[25] *Idem, Ibidem,* p. 223-224.
[26] Manuel Serrano Pinto *et al.*, "O médico brasileiro José Pinto de Azeredo (1766?-1810) e o exame químico da atmosfera do Rio de Janeiro", *História, ciências, saúde – Manguinhos*, vol. 12, n. 3, Rio de Janeiro, 2005.
[27] José Pinto de Azeredo, *Ensaios sobre algumas enfermidades d'Angola, dedicados ao Serenissimo Senhor D. João Principe do Brazil*, Lisboa, Regia Officina Typographica, 1799, p. 42.
[28] Teuscher *apud* Robert Edgar Conrad, *Children of God's fire*, 3. ed., Philadelphia, University Park, Pennsylvania State University Press, 2006, p. 90-91.

Later on, still disseminating an important expression of the period concerned, the Municipality of Resende responded to a survey by the National Library, in 1886, about the conditions of the some 800 Brazilian municipalities (although only 120 of them participated). As to the matter of "health" the councilors stated that because the "soil was dry" and the "temperature was regular", there were no endemic diseases. The diseases arising from strange places and achieve endemic status do not develop with intensity".[29]

The case of Azeredo draws the attention to the impact of Atlantic experiences when defining this type of prophylaxis. About the African initiatives by the Portuguese, João Pedro Marques consideres that, until 1860, one of the mechanisms suggested best to avoid malaria was the clearing of forest areas.[30] The idea was ancient, having been spread in São Tomé in the 17th century: while discussing the impact of "sugarcane farms", a Portuguese pilot taught that, without wind, mosquitoes would multiply around the communities run by such farms along with woods, in order to ensure firewood supplies.

Insalubrity would then vanish around the settlements, because if woods were to disappear, mosquitoes would disappear too.[31] The association of mosquitoes with malaria was not common back then, but if the clearings could effectively stop them from multiplying, one could actually wonder whether this mosquito-disease relation was true, even if the chain of events were not reconstructed.

Besides *anopheles* not being identified as plasmodium vectors, the association between the presence of insects and stagnant water was not necessarily referred to on a constant basis. However, the idea of environments desiccation as the result of deforestation was widely spread, and even shared in Europe since the 18th century.[32]

This idea might have been implied in the proposals of deforestation as a factor to reduce the frequency of mosquitoes. Humboldt welcomed the clearing of the Amazonia forest because he considered that the disturbances caused by the mosquitoes would diminish when "mankind" changed the "soil surface" and, therefore, the "atmosphere". The "old trees of the forest" would

[29]Gilberto Vilar Carvalho (ed.), "Projeto de um dicionário geográfico do Brasil – I parte", *Anais da Biblioteca Nacional*, vol. 110, Rio de Janeiro, 1990, p. 147.

[30]João Pedro Marques, *Os sons do silêncio*, Lisboa, ICS, 1999, p. 382.

[31]Luís de Albuquerque (ed.), *A Ilha de São Tomé nos séculos XV e XVI.* Navegação de Lisboa à Ilha de São Tomé, written by a Portuguese pilot – various documents about Ilha de São Tomé (séc. XV), Lisboa, Alfa, 1989, p. 26.

[32]Richard H. Grove, "A historical review of early institutional and conservationist responses to fears of artificially induced global climate change: the deforestation-desiccation discourse, 1500-1860", *Chemosphere*, vol. 29, n. 5, Cambridge, 1994. José Bonifácio wrote frequently about desiccation, although he thought it would potentialize the fevers instead of reducing them: "Where do the maleficent fevers of the open and hot fields of Portugal come from, if not from the lack of woods and the current water feeding them? Without forests, how would the smell of ponds be absorbed?" José Bonifácio de Andrada e Silva, *Memoria sobre a necessidade e utilidades do plantio de novos bosques em Portugal*, Rio de Janeiro, Fundação Brasileira para a Conservação da Natureza, 1977 (fac-símile da 1ª ed., Lisboa, Typographia da Academia Real das Sciencias, 1815), p. 13.

then disappear, taking the mosquitoes with them.[33] This type of consideration appearing in a piece of text with significant traits of preservationism is relevant:[34] it is no bad to add incoherence to the mix of fear, accumulation (or survival) strategy, and impossibility of knowledge addressed in this paper. The idea had its roots in colonial management. According to Marcelo Almeida Oliveira, in Porto Seguro, end of the 18th century, a judge who would incentive the creation of cities and would project them, considered that deforestation around the settlements would allow ventilation and keep dangerous animals and mosquitoes away.[35]

Enlightened physicians and Atlantic experiences

The image of the naturalistic traveler is fundamental to understand the 18th century, but the model of physician in the Iberian Americas, according to Steven Palmer, was that of wise men individually pursuing clinical studies and naturalist knowledge based on their practice, without many movements.[36]

In the beginning of the 19th century, illustrated physicians in the contemporary Colombia rejected scholastic influences, putting all their expectations on clinical practice as opposed to speculations; but this practice was related to the fixity of schools, which would not allow the proximity to a medical geography, even rudimentary.[37] This fixity did not match the fear of forests. However, in the course of the 19th century, a new clinical type would appear in the European colonial world, associated with the progressive adoption of neo-Hippocratic principles and with the emphasis given to military doctors to the detriment of naturalistic travelers; the importance of a dynamic Medicine increased tuned in to environmental factors, together with the physicians of urban centers and to specific species naturalistic investigators and/or drug collectors.[38] This was due to the establishment of military careers marked by circulation in Atlantic areas and, after 1830, in the Mediterranean Africa. Many of the positions studied were due to the circulation itself rather than to the function of physician or military officer.

[33]Nicia Vilela Luz, *A Amazônia para os negros americanos*, Rio de Janeiro, Saga, 1968, p. 38.
[34]José Augusto Pádua, *Um sopro de destruição*, Rio de Janeiro, Jorge Zahar, 2004, p. 133.
[35]Marcelo Almeida Oliveira, "As roças brasileiras, do período colonial à atualidade: caracterização história e formal de uma categoria tipológica", *Varia Historia*, vol. 28, n. 48, Belo Horizonte, 2012, p. 756.
[36]Steven Palmer, "Beginnings of Cuban bacteriology: Juan Santos Fernández, medical research, and the search for scientific sovereignity, 1880–1920", *Hispanic American Historical Review*, vol. 91, n. 3, Durham, 2011, p. 448.
[37]David Sowell, "Contending medical ideologies and state formation: the nineteenth-century origins of medical pluralism in contemporary Colombia", *Bulletin of the History of Medicine*, vol. 77, n. 4, Baltimore, 2003, p. 909.
[38]Dilma Fátima Avellar Cabral da Costa, *Entre ideias e ações*: lepra, medicina e políticas públicas de saúde no Brasil (1894-1934), PhD thesis, Universidade Federal Fluminense, Niterói, 2007, p. 100; Rosa Helena S. G. de Morais, "A geografia médica e as expedições francesas para o Brasil: uma descrição da estação naval do Brasil e do Prata (1868-1870)", *História, ciências, saúde – Manguinhos*, vol. 14, n. 1, Rio de Janeiro, 2007, p. 55.

The results of the medical model change may have led to a revaluation of the perceptions about malaria, as mentioned; the reading of the writers from the time of deforestation in the period of Brazilian independence could be enlightening about those performing it. In the crossfire of these transitions, in places where Portuguese doctors acted, they would emphasize that the roots of infections were wetland vegetation rather than ponds: a "special wild plants, characteristic of wetlands" would cause them.[39]

Humboldt welcomed the deforestation of the Amazonia forest because he considered that the disturbances caused by mosquitoes would diminish after "mankind" had changed the "soil surface"

Those who believed in putrefaction as cause of diseases reacted to this development confirming its diffusion. One of them, in early 19th century, rejected the suspicion that the growing of certain types of grass could cause fever, judging it diffused. Nepple, always sticking to swamps and putrefaction, when rejecting the hypothesis, ended up showing it was common. He wrote that "in Bresse, you are usually persuaded, even among doctors", that the growing of *anthoxantum odoratum* was "one of the most active causes of intermittent fever".[40] The use of the expression "even among doctors" shows that this belief was more common among other groups of people.

The intensity of this concern in Portugal provides clues on its presence in other periods. The critics of the 20th century say that this supposition is contradictory: "the genesis of the [malaria] infectious agent simply required a fertile and unused soil, according to some, including Collin". Intermittent fever would be the result of "the underutilization of soil fertility".[41] It seemed that deforestation could actually generate miasmas by leaving underused a fertile soil,[42] but one could not deny that agriculture was to exhaust this deadly characteristic of fertility.

Colonial experience was important for the shaping of this conception. In São Tomé or in Cabo Verde, references to sanitation potential of

[39]Matheus Augusto Ribeiro de Sampaio, *Prophylaxia da infecção palustre*, Porto, Imprensa Portugueza, 1872, p. 14-15.
[40]P. Frédéric Nepple, *Essai sur le fièvres rémittentes et intermittentes des pays marécageux tempérés*, Paris, Gabon, Librairie, et J.-B. Baillière, 1828, p. 149-150.
[41]Joaquim Condillac Pinto, *Estudo sobre a etiologia e a prophylaxia da malaria*, Porto, Officinas do "Comercio do Porto", 1904, p. 42.
[42]Matheus Augusto Ribeiro de Sampaio, *Prophylaxia da infecção palustre*, Porto, Imprensa Portugueza, 1872, p. 20.

deforestation were straight. In1871, the non use of some fields was still seen as harmful. Manuel Ferreira Ribeiro would write that the causes of insalubrities in Cabo Verde "were found on unused soils":

> Another cause of insalubrities is the underutilization of a big portion of the soil in the island. Unused fertile lands are usually unhealthy and potentially harmful. It is related to the rising of humus and the quantity and quality of vegetation.

Besides that, dense forests would hide fallen trees, in putrefaction, and it could worsen the cases of fever when they started the clearings.[43] This takes us back to the Brazilian borders.

Poor free people and forests on the agrarian frontiers

Glances about the relation between common people and the equation forests-fevers are obtained when we recall they participated in their way in the agrarian boost at that time, as the poor people also settled down on the agrarian frontiers. Therefore, the sudden legitimation of the advance to the forests somehow made reference to the fact that the Brazilian free population was growing more consistently. Besides the slave trade having reached its historical apex (in the 1820s), more important was the expansion of the free population, which started a process of endogenous growth.[44] It all equals to stating that the frontiers reproduced the huge social inequality of the rest of the society; the hierarchy of the free people was added to the differences between them and the slaves.

The advance of occupation in the western part of the São Paulo province indicates an impetus to the agrarian frontiers in the first half of the 19th century, and they were very close to ancient centers back then. The West is therefore a good example. The purpose is to identify the intensity and diversity of migration processes, also looking at the standard features of settlements. For this purpose, we rely on censuses taken at Piracicaba in 1828 (then called Constituição) and at Limeira in the middle of the 1840s

Piracicaba covered an area, in 1828, that would hold eight municipalities of São Paulo in 1872. In the 1820s, its extension trespassed 6 thousand km2 and held 5.262 free people and 3.235 slaves. The portion of what would become the municipality of Limeira was supposedly small in this group, but the village in the 1840s — already split from Piracicaba then — held 1.577 slaves and 3.703 free people. This was an expression of the Brazilian demographic movement to the frontiers. This expansion to vacant lands was not only due to movements of agroexportation, but also to an impetus rooted on the activities of the free poor people, which

[43]Manuel Ferreira Ribeiro, *Relatorio ácerca do serviço de saude pública na província de S. Thomé e Principe no anno de 1869*, Lisboa, Imprensa Nacional, 1871, p. 128-130.
[44]Maria Luiza Marcílio, "A população do Brasil em perspectiva histórica", *In*: Iraci del Nero da Costa (org.), *Brasil*: história econômica e demográfica, São Paulo, Instituto de Pesquisas Econômicas, 1986, p. 23-24.

can be seen in Table 1. Limeira will be addressed more closely here, using lower quality data from Piracicaba after those from Limeira in order to contextualize the latter.

Table 1. Migrants and people born in Limeira, according to place of birth, age and color/social condition indicators (*ca.* 1845)

Born	Households headed by Whites with slaves			Households headed by Whites without slaves			Households headed by free Blacks and Mulattos		
	Residents aged			Residents aged			Residents aged		
	Up to 19 years	20 to 29 years	30 years or more	Up to 19 years	20 to 29 years	30 years or more	Up to 19 years	20 to 29 years	30 years or more
In Limeira (%)	70.3	15.8	0.6	73.7	4.7	0.1	70.4	4.7	1.2
Within 100 km (%)	22.9	64.5	55.5	16.8	55.9	44.8	19.9	46.9	40.5
Within 101 a 200 km (%)	5.4	15.8	37.0	8.4	36.7	51.7	9.1	42.2	46.4
Within 201 a 500 km (%)	1.4	1.3	3.8	0.5	1.4	1.6	0.6	4.7	9.5
Within more than 500 km (%)	–	2.6	3.1	0.6	1.3	1.8	–	1.5	2.4
Total (%)	100	100	100	100	100	100	100	100	100
Absolute numbers	353	76	157	1.583	485	689	176	64	84

Source: *Arquivo Público do Estado de São Paulo, Maços de população,* Piracicaba, w/d.

Only children and young people were typically born in Limeira. Although the municipality was located 150 km from São Paulo, it seemed rather empty 30 years before the census in question. Migration brought people born within a 200 km radius, starting from the center of the village. Paying attention to the age of participants of the census, it is suspected that these last places were still providing migrants in the 1840s, for one third of the people in their 20s kept being recorded as born there.

The attraction on rural poverty could be expressed by the colors attributed to the free people, which could even indicate their social position. The poor people probably came from much more distant places than the well-off (Table 1). Among the Whites aging 20–29 in Limeira around 1840, the predominance of people born in areas within 100 km of the city was relevant. When it came to the free Blacks, this prevalence was less marked. People in their 20s came in bigger groups from places 100 to 200 km distant.

There were also differences among people aged 30 or more. Those who came from places within a 100 km radius of Limeira accounted for more than half of the population in the case of families with slaves. Among families with free Blacks and of Whites without slaves, the modal range was 101 to 200 km. However, the fact that the impetus to migrate was stronger among members of families of Whites without slaves should not go unnoticed.

The idea that the poverty had to migrate from distant spots is consistent with a range of survival and autonomy strategies. For the well-off, the proximity to their birth place and Limeira points a continuity of businesses they or their families had in both, the origin and the destination. In land ownership studies, it is common to read that the most ancient areas of settlement watched their properties diminish successively, even without economic decay because of divisions and heritages, as the properties of slave owners in new spots were comparatively huge.[45]

The identification of procedures for Piracicaba in 1828 is problematic, but it is important to pay attention to the case, so the situation in Limeira does not look isolated. Records of the two first "companhias de ordenanças" (which could be translated "ordinance companies") — which held a significant parcel of the local sugarcane farms — do not bring many data about people's place of birth. As to the other commissions, there is only information about the heads of households. Therefore, one should compare these data with those of Limeira 20 years later. The matter of Limeira is that enumerators in the 1840s neglected the division of residences, so people whose origin is considered in Table 2, regarding Limeira, are the probable household heads.

Table 2. Percentage of chiefs and probable household heads in Piracicaba (1828) and Limeira (*ca.* 1845) according to social status indicators

Born	1828: chiefs in Piracicaba (3rd and 5th companies)			*ca.* 1845: potential chiefs in Limeira		
	Members of families with slaves	Families with White chiefs without slaves	Descendents from "forros" (mulattos, pardos and free Blacks)	Members of families with slaves	Families with White chiefs without slaves	Descendents from "forros" (mulattos, pardos and free Blacks)
Locally	15.6	11.6	23.4	1.7	1.4	2.2
Within 100 km	36.7	22.7	36.4	56.9	50.6	44.0
Within 101 to 200 km	37.6	62.5	37.4	32.7	43.4	41.7
Within 201 to 500 km	5.5	1.8	2.8	2.6	2.1	8.8
Within more than 500 km	4.6	1.4	-	6.1	2.5	3.3
Total	100	100	100	100	100	100
Absolute numbers	109	216	107	116	583	91
Participation (%) in total "chefes de fogo" s according to places	25.2	50.0	24.8	14.7	73.8	11.5

Sources: Arquivo Público do Estado de São Paulo, Maços de população – Piracicaba, s/d; Arquivo Público do Estado de São Paulo, Maços de população – Piracicaba, 1828.

[45] Alice Piffer Canabrava, *História econômica*: estudos e pesquisas, São Paulo, Hucitec; Editora da Unesp; ABPHE, 2005, p. 210-215.

The household heads born in Piracicaba were more common than in Limeira, and this also applied to Mullatos, Pardos and Blacks; it was all the fruit of bigger population in antiquity. In Limeira, regarding Pardo and Black chiefs, more than half of them had been born more than 100 km distant from where they settled. In Piracicaba, in 1828, the situation was more common among the Whites without slaves. The relative importance of the heads of households born more than 100 km distant from their settlement was comparable in both places and for all groups, trespassing two-fifths.

The considerable presence of rural poverty sure did not eliminate the greatness of enterprises on the frontiers, whose expansion was driven by well-off slave raiders. The decisive findings by Alice Canabrava and Francisco Vidal Luna & Herbert Klein must not be put aside. According to Canabrava, the agricultural lands possessed by slave owners in Piracicaba in 1818 were quite larger than those owned by landlords from ancient areas of the West such as Itu.[46] According to Luna and Klein, in the West there was a clear increase in the size of slave possession during the advance to the region, which shows that the frontiers were increasingly taken by huge sugarcane farms.[47] But the problem with the near-deserted Brazil of that time was the receptivity of the same expansive frontier to the poverty. The issue was what the migration peasants expected to find in the new lands.[48]

Fever in the agrarian frontiers

To acknowledge aspects of insalubrities on the agrarian frontier helps understand the intense risk of malaria that people experienced back then. Few years of death records have been examined in two neighborhoods, as the places and periods were selected according to the availability of information about causes of death imagined by the priests

There are data available about a short period of Rio Claro. Around 1840, this sugarcane area belonging to Piracicaba, presented data about the transition to extensive coffee plantations that were difficult to analyze.[49] In any case, it was an expansive area where many people came to settle down. There is also information about Mogi Guaçu. In the first half of the 19th century, the economy of the area was not too booming, being

[46]Alice Piffer Canabrava, *História econômica*: estudos e pesquisas, São Paulo, Hucitec; Editora da Unesp; ABPHE, 2005, p. 210.
[47]Francisco Vidal Luna; Herbert S. Klein, *Evolução da sociedade e economia escravista de São Paulo, de 1750 a 1850*, São Paulo, Edusp, 2005, p. 62-66.
[48]See also Hebe Mattos, *Das cores do silêncio*, Rio de Janeiro, Arquivo Nacional, 1995 e Márcia Maria Menendes Motta, *Nas fronteiras do poder*, Rio de Janeiro, Vício de Leitura; Arquivo Público do Estado do Rio de Janeiro, 1998.
[49]Warren Dean, *Rio Claro*, São Paulo, Paz e Terra, 1977. It's difficult to determine data because coffee started being cultivated inside the sugarcane plantations.

linked to the passage to other areas at the west of the province and to food production. After that, however, coffee farms started being established and attracting new inhabitants in the period in question.[50] We repeat the procedure of taking the years which had the impact of fevers to analyze (1856–1869).

Table 3. Incidence of causes of death that could be assimilated as or mistaken for malaria (Rio Claro and Mogi Guaçu, 1839–1869)

	Number of deaths	Number of cases similar to malaria
Rio Claro, 1839–1841		
Free people, 1–14 years	124	27
Free people, 15–49 years	60	20
Free people, 50 years or +	29	3
Slaves, 1–14 years	35	4
Slaves, 15–49 years	20	5
Slaves, 50 years or +	4	1
Mogi Guaçu, 1856–1869		
Free people, 1–14 years	200	48
Free people, 15–49 years	200	33
Free people, 50 years or +	127	24
Slaves, 1–14 years	29	5
Slaves, 15–49 anos	52	3
Slaves, 50 years or +	23	4

Notes: (a) data about death cases involving children less than 1 year old were not included, for the fevers were not common at this age and part of the records had no definition of cause; (b) wide age ranges are justifiable by problems found in the records that led us to define the situations based on the context; (c) similar to malaria: fever, "febre malina", *"febre amalinada"*, or malignant fever, malina, *"febre podre"*, or putrid fever, (might been referred to as maculo or typhoid), maleita, sezões and pernicious fever.
Sources: Cúria Diocesana de Piracicaba, Óbitos – São João Batista do Rio Claro – 01 – ago/1830–set/1842; Cúria Diocesana de São João da Boa Vista de Mogi Guaçu, Nossa Senhora da Conceição de Mogi Guaçu – Óbitos de brancos, libertos e cativos, 1855–1877.

Data about slaves, especially the number of children buried at the time, show that the accuracy of data notation must be taken into account, mainly when it comes to the free people. The proneness to death of free people at ages where this risk would be almost inexistent in other circumstances was clearly catastrophic. The case of Mogi Guaçu is terrifying: the population of the West of São Paulo, in the 19th century, was composed of less people aging 15 to 49 years than children aging 1 to 14 years;[51] however, the recorded number of deaths among adults was equal to that among

[50]Manuel Eufrásio de Azevedo Marques, *Província de São Paulo*, vol. 2, Belo Horizonte, Itatiaia; São Paulo, Edusp, 1980, p. 121-122.
[51]Public archive of São Paulo State, Maços de população – Piracicaba, s/d; Public file of São Paulo State, Maços de população – Piracicaba, 1828.

children, as the adults in Mogi Guaçu were prone to mortality rates that would decimate younger populations throughout Brazil. Was the inaccurate recording of children obits too frequent? Would migrants be heading to "butcheries"?[52] Both things are probably true.

Malaria, or typhoid fever, was clearly the cause of many obits that were technically unexpected. As to free adults, malaria and similar diseases were the cause of one in six deaths in Mogi Guaçu and one in three deaths in Rio Claro. The incidence among adult slaves was lower, but the sad fate of captive children was not so different from that of free children. This information is consistent with the idea of immunity of captive people because they were descendants of people who lived in endemic areas, where malaria would select people and affect a high and dangerous portion of children.

The incidence of fevers was very high and affected people at ages where death was supposed to be a very distant idea. Besides that, it must have been clear to the free people that the problem was not their life conditions because, even though theirs was better than that of slaves, these were less attacked by specific diseases — heavier burdens awaited them, though.

The "sylvophobia" we refer to here must have been diffuse despite the inconsistency and incongruence of its manifestations. But an indirect measure of its intensity is easily found on a study that aimed to attribute systematicity to the expectations of deforestation as a factor ensuring sanitation.

Sylvophobia as a system: Léon Colin

The relation between malaria and forests did not sound entirely absurd for much of the 19th century, even though it was not preponderant. The work by Léon Colin, dating from 1870, helps contextualize these expectations, because this was a work rather posterior to the period in question and quite close to the ideas mentioned here which was part of the efforts to control endemics among French soldiers in the Mediterranean and the Americas; it was also intellectually closer to the last effective definition of the disease.

Committed to building a vision about malaria that was more rooted on the soil than on swamps, he searched the literature from past centuries, and it is relevant that the physicians of Illustration were not so frequently found in his references. Therefore, one can have a glimpse of the spreading of this idea that resulted in deforestation as a means of controlling malaria 50 years before his work. In his view, the problem was the

[52]The impact of the fevers in Mogi Guaçu encouraged d'Alincourt, in 1825, to use the expression "butchery" when referring to the subject. See also Luiz d'Alincourt, "Memoria sobre a viagem do Porto de Santos à cidade de Cuyabá", *Anais do Museu Paulista*, tomo XIV, 1950, p. 290.

conjunction of unused lands, groves and wetlands, but not only the latter, as the recurrent category of "insalubrities" of the time led to believe.

Along with putrefaction, malaria was said to originate from living pathogens or from the potential do creating them. These beliefs ended up leading Charles Louis Alphonse Laveran to the discovery of plasmodia, a finding Colin would have a close and strained relationship to, as he was the one who read the 1880 report at the Medical Academy. Our purpose here was not to track the contribution of these conceptions for the definition of malaria epidemiology; our main aim was to focus on the

The problem with the near-deserted Brazil of that time was the receptivity of this expansive frontier to poverty

"dissemination" of the beliefs about the unused growing potential of the lands, which condemned woods and forests.

According to Léon Colin, the expression "land-based intoxication" was more convincing than "wetland infection" to refer to malaria, because the swamps were one of the means of spreading the "toxicity of soils". In "torrid climates, the germs of infection come from the soil". He did not deny that putrefaction could release miasmas, but preferred to deal with this connection in a particular way, avoiding the overestimation of its role. In a global scale, he suggested that malaria resulted less from swamps and wetlands and more from unused or underused fertile soils, especially if they were subjected to coverage by less permeable clay layers; the more the soil was covered with organic waste, the bigger the risks, especially near the Equator.[53]

His proposal of disconnecting surface waters and malaria and his belief that soil cultivation could help sanitation seemed so pacific, that he even manifested favorably to a proposal by the Florence Congress to introduce sugarcane and cotton cultivation with the promise of extinguishing telluric emanations. Clearly showing his fear of the soils and his triumphalistic vision about the impact of humans in nature, he believed that "the most general and absolute principle" to be followed by inhabitants of areas prone to malaria — such as Caribbean, Mexico, Brazil and Italy — was to live in the most crowded urban centers.[54] This was relevant to the development of his line of thinking: once the cities concentrated

[53] Léon Colin, *Traité des fièvres intermittentes*, Paris, J. B. Baillière et Fils, 1870, p. VII; 8; 175; 217. Author's translation.
[54] *Idem, Ibidem*, p. 472; 483; 508-9. Author's translation.

wastes and debris, the absence of intermittent fevers would prove its connection with phenomena other than putrefaction.

Therefore, he states that the "soil potential" could be mitigated in order to fight malaria, which complied with the perceptions that led Argelia through Mexico and the United States to be intermittent fever free, although it decimated their surroundings. Although he believed agglomeration could boost diseases like typhoid, he looked kindly at opinions such as "proximity to forests" increasing the risk of intermittent fevers.[55]

He even used the expression "telluric fevers" and explain it as the result of "a visible and palpable principle, living or not", but present in the soils, which made possible to fight the "fever causer" on the soil itself. It is clear that he was right on the passage to the microbiological conception of malaria, but he was obsessed with the soils and insisted on the diversity based on the "intimate nature of the fever", which could even be related to the conjunction of agents of several natures, from the above-mentioned "fever germ" to the "telluric poison".[56] Despite Colin's contiguity facing the discovery of the effective transmission mechanisms, he would still put himself inconsistently far away from the effective principle that would be later on discovered by Laveran.

The "soil potential" would have morbid effects when not "conveniently directed" to an "appropriate vegetation, and consequently to cultivation", because this would have a strong capability of "sanitation". Although he was double-edged about this issue, because in certain moments he treated forests and plantations as "safe barriers against malaria",[57] this enthusiasm about vegetation sites would not last much: shortly after he would state that the biggest trees concentrated miasmas because they stand still and because of the shade they produce; the miasmas, inversely, would disappear in contact with moving air and sun light. Colin also reinterpreted his way the notes by James Lind about Jamaica in the 18th century: sailors who would cut down trees to repair their vessels in the warm seasons of the year were rapidly affected by "delirious fevers". For Colin, this was the result of exposition to emanations from the soil, which could prove that the forests did not exhaust their potential to produce fevers; they actually stored it.[58] It is true that the alleged risk appeared at the time of cut-downs, but that did not mean that they were not supposed to happen; it showed that the risk was actually stored among the trees.

Besides that, desiccation of swamps (not purely their presence, as alleged) could be harmful because the soil would then be exposed to human activity. He stated that there were lands that showed to be inoffensive only when flooded, because the water would keep the summer

[55]Léon Colin, *Traité des fièvres intermittentes*, Paris, J. B. Baillière et Fils, 1870, p. 77-83; 95. Author's translation..
[56]*Idem, Ibidem,* p. 359; 362-363. Author's translation.
[57]*Idem, Ibidem,* p. VIII; 15; 70; 491. Author's translation.
[58]*Idem, Ibidem,* p. 77; 244. Author's translation.

heat from interacting with the muddy soil. He apparently hesitated in putting aside the swamps: even where they seemed to act against the fevers, there was the need for replacing them by settlements and plantations to exhaust the soil's potential. The swamps were not responsible

It is true that Dean lead us to think in secondary forests. But it depended on the demographic density of the areas created by deforestation

for the aggravation qualified as "pernicious effects"; the fault was on the "telluric influence", which increased the "bilious character" of the fever.[59]

For Colin, intermittent fevers resulted from lack of vegetation rather than the exuberance of wetlands. Although he did not deny the relevance of emanations from vegetable putrefaction in the ponds, he considered this as an isolated case and decided to give attention to places such as the African Sahel, full of fever, too dry and very fertile. Alluvial soils most required agriculture in order to have their risk reduced.[60] Similar arguments could allay people anxious for expanding settlements: if certain soils produced emanations, even when subjected to agriculture, this was due to an incomplete agrarian activity — besides not exhausting their potential entirely, the fertility would be exposed. Add to this the information that the soils would "need the heat to achieve its toxic action", pointing to tropical fecundity as responsible for problems. The lands of these places were too humid and rich and produced strong emanations in contact with the heat. Giving them agrarian utility was a must.[61]

The eagerness to stop the fevers could even lead to a reform of slavery. Colin lamented that in French Guyana the end of captivity had caused an agrarian retraction and, therefore, fevers proliferation.[62] This analysis was based on Laure — from the navy — which shows that the colonial experience stimulated this perception among French physicians. Laure defended that inadequate soil and vegetation, more than swamps, would create miasmas that caused intermittent fevers. He named such emanations "vegetable miasmas". Unused soil fertility was the source of the problem: "the fecundity features are precisely the cause of fevers",

[59]Léon Colin, *Traité des fièvres intermittentes*, Paris, J. B. Baillière et Fils, 1870, p. 253; 329; 464; 470-472. Author's translation.
[60]*Idem, Ibidem,* p. 14; 17-18; 102.
[61]*Idem, Ibidem,* p. 20-23; 178. Author's translation.
[62]*Idem, Ibidem,* p. 41.

so it was "the sad compensation of the vegetation richness and energy". The "last source" of these elements would be "the vegetable miasmas reacting to humus as yeast".[63]

In Colin's work, it is possible to monitor the preceding diffusion of ideas like these, when one can identify a selective reading. He recognized the influence by Maillot — whose selfdefinition was relevant: an erratic military physician — and he gave much attention to intermittent fevers reported in places without wetlands.[64] Along with some references to Giovanni Maria Lancisi, who judged deforestation as useful for Roman's health in early 18th century, at the north of the city, insisted that his evaluation about soil exposition to elements without vegetation as enough to cover it had been proposed by Francesco Puccinotti, when he addressed fevers in Rome in 1819–1821, besides attributing to James Ranald J. Martin (1810s) some ideas related to telluric features causing fevers.[65]

He approved Giovanni Battista Doni and Bernardino Ramazzini's perception, both in the Italy of the 17th century, who stated that the increase in population would protect people from malaria and took seriously the views about fevers related to wetlands by Mathieu François Maxence Audouard in the beginning of the 1820s and by Raymond Faure in the following decade. He strongly approved the initiative by Pio VII in 1802 of demanding plantations in the surroundings of Rome aiming at sanitation, which would also motivate gran-dukes of Toscana to sponsor an expansion of the sector. In the end, the colonial and military origins of these perceptions were clear: his conception about the relation between spleen hypertrophy and "palustre cachexia" in temperate and warm regions was partly formulated because of "navy fellows's" insistence. He also judge the advances in the knowledge about fever as result of Argel's conquer.[66]

Final considerations

The linking between fear of fevers and boost to deforestation do not change the picture shown by Pádua to describe the perceptions about Brazilian natural world back then. However, it shows a little about the intensity and diffusion of these attitudes, and also about the wide dissemination of ideas born from countryside and non-European Atlantic experiences, mainly in the African and Caribbean coasts. As we saw, the fear of malaria was shown to be an additional stimulus to the agrarian

[63] Jules Laure, *Considérations pratiques sur les maladies de la Guyane et des pays marécageux situés entre les tropiques*, Paris, Victor Masson, 1859, p. 2-3; 7-11. Author's translation.
[64] F. C. Maillot, *Traité des fièvres ou irritations cérébro-spinales intermittentes d'après les observations recueillies en France, en Corse et en Afrique*, Paris, J.-B. Bailliere; Librairie de l'Académie Royale de Médecine, 1836, p. XI; 275 *et seq*. Author's translation.
[65] Léon Colin, *Traité des fièvres intermittentes*, Paris, J. B. Baillière et Fils, 1870, p. 47, 66, 73, 177.
[66] *Idem, Ibidem,* p. 78; 93; 182; 356; 363-364; 487.

boost, which was reinforced by the fact that it could also be crucial for the poorest sectors of the Brazilian population.

It is true that Dean lead us to think in secondary forests and, therefore, reforestation processes. But this, obviously, depended, among other things, on the demographic density of the areas created by deforestation and the relative safety regarding the fact that the places aimed at food production in the 18th century's Brazil had a population density relatively higher than that of agroexportation areas. It is important to point out the density of Jacareí, Vale do Paraíba, where the production of foodstuffs was predominant; around 1835, the population was almost twice the number of people living in Bananal, which was on the way to becoming the major coffee producer of Vale Paulista (some 20 and 10 inhabitants per km², respectively).[67] It is always possible to make use of the counterfactual exercise of thinking about an intensification of agriculture. But besides being counterfactual, it would mean not knowing what was written here about the inequality built and intensified by the settlements on vacant plots. It was the less capitalized people who would make population density higher.

The Atlantic dimension that underlies such expectations regarding sanitation and deforestation deserves attention. From the militaries in the 1800 to the French doctors in the 19th century, together with militarized noblemen, the movements along the Atlantic coast have somehow been linked to the forest-malaria equation. Experiences in areas with plagues and without wetlands — or relatively dry — have been related to this fact. the Portuguese walked around places way before the 19th century. Although these places were not surrounded by forests, they were not wet either, which may have led some people to reject the connection between swamps and malaria, giving way to the views addressed in this paper. It is hardly surprising, then, that the military position of many of the people involved in deforestation had some attention.

There were too many things converging to the assault to the forests. The population was growing substantially, coffee plantation was in expansion, sugarcane was also growing, at least until 1840, in São Paulo province (and also Rio de Janeiro), the frontier was seen as a strategy for survival to poverty, the regulation of settlements (sesmarias) had been censored in 1822, there was the need to face the Atlantic recession of the second half of the 19th century, and sugar producers, besides stepping in to the countryside, started favoring production and volume in order to occupy vacant plots left behind by the Caribbean instead of emphasizing limited quantities of high quality sugar. Part of the contemporary discussions

[67]Alice Piffer Canabrava, *História econômica*: estudos e pesquisas, São Paulo, Hucitec; Editora da Unesp; ABPHE, 2005, p. 210-215; Daniel Pedro Müller, *Ensaio d'um quadro estatístico da província de São Paulo*, 3. ed., São Paulo, Governo do Estado, 1978, p. 132-135 e José Flávio Motta, *Corpos escravos, vontades livres*, São Paulo, Annablume; Fapesp, 1999.

crowned it all with the perception that deforestation could impact positively on people survival, a particularly delicate matter. The fire and the sword — or the axes — would steal the show in the time of the country's independence, and this would not be the last time that preservation and survival conflicted — truly or mistakenly.