

FMF-5
Amazônia: The Rubber Cycle

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Mr. Richard H. Nolte
Institute of Current World Affairs
New York, New York 10017

Dear Mr. Nolte:

"Ruim e lamentável"---
mean and deplorable.

Paulo, the caboclo in Rondônia, spoke of the life of a seringueiro, a rubber-gatherer. He was our woodsman at the tin mine, and was glad to leave behind his 20 years as seringueiro in Amazonas. Small, wiry and Indian, his answers to my questions about his previous life were terse but charged with feeling.

"Ruim e lamentável---
I lived alone, deep in the forest. I cut my own trail, minha estrada. It has 132 trees, and I went each morning at sunrise to bleed them. The trail made a big circle through the forest, and I got back about noon to my tapirí. In the afternoon I walked the trail again to collect the milk.

"When I got back to my hut, I built a fire with palm nuts to smoke the 'milk'. It was night before I finished making the balls of rubber.

"If I did well, I went each month to the patrão. Sometimes he paid me for the rubber I brought him. Sometimes he said he had no money and I would have to wait. Sometimes I stayed at the camp until he paid me. Sometimes I went back to my tapirí and never got my money.

"We all had malaria and there was a pharmacy at the camp. So when we got there, we went to buy medicine. But it usually didn't have any. There was no doctor. I know others who returned to



ABOVE. A seringueiro in his tapirí smokes the raw latex over an open fire in order to coagulate it into large balls.

their estradas, sick, and died alone in the jungle. Foi uma vida ruim e lamentável."

Paulo began as a seringueiro in 1942. He thus was a "soldier" in The Rubber War. Amazônia takes great pride in its contribution to the Allied cause during World War II when the area was mobilized to supply the vital product no longer available from the Orient. Those war years brought a resurgent prosperity and reinforced the ever-present euphoria about natural rubber's power to transform Amazônia into an El Dorado.

But latex from the Hevea brasiliensis has been the narcotic of the great basin, creating illusions of grandeur while the fundamental social and economic well-being is neglected. When the boom ends, as it has twice, suddenly, deep depression sets in.

The first spree was a prolonged exhilaration building up from the original exportation in 1827 to the apogee in 1910. Goodyear developed the process of vulcanization in 1837; in 1843 the first steamboat opened up the waterways of Amazônia. The Industrial Revolution and especially the invention of the automobile created an eager market for the product.

Though other species give a latex of some commercial value, it is the Hevea brasiliensis which bleeds the white liquid of highest quality. The tree is native only to Amazônia and, at that, only to the forests south of the Amazon River---along the upper reaches of the Juruá, Purus, Madeira, Tapajós, Xingú and Tocantins. The promise of wealth drained from this tree served as magnet to draw people of the world into the inhospitable tropics.

The key cities---Belém and Manaus---became Towers of Babel, echoing English, French, German, Italian, Arabic. But it was the Portuguese of Northeast Brazil which dominated. In 1850 the population of Amazônia began to swell with men and families from Pernambuco, Paraíba, Rio Grande do Norte and Ceará. Pulling them into the tropical forest was the dream of wealth; pushing them from their homes was the deep poverty wrought by drought. In 1877 the interior of the Northeast lay parched and barren; 19,910 nordestinos undertook the imigração por fome, the flight from starvation. From that year until 1900, some 158,000 flagelados flooded into Belém to make their way up the river, penetrating westward as far as territory claimed by Bolivia. In total a conservative estimate says 300,000 populated the area; Celso Furtado, Brazilian economist, claims 500,000 came from the Northeast.

An ad hoc system of integrating these immigrants developed. In Belém and Manaus were the casas aviadoras, the central stores which bought and shipped the crude rubber and also sold the provisions to sustain the forest operation. Directed to a seringal, the area of extraction, the immigrant bought third class passage on a river boat. With people crammed in like cattle, sometimes below the water line, epidemics such as smallpox often swept the boat.

Arriving at the seringal, the newcomer found a camp clustered with a few thatch structures, dominated by the barracão which served as trading post and often home for the patrão. The patrão held title to the seringal and ruled it like a feudal baron. His word was final and his power absolute. He could punish, expel, deny---in short, he controlled the lives of the men on his seringal, which was likely to encompass hundreds of square miles, with 1000 to 2000 trails for cutting the rubber trees.

Knowing nothing of the forest nor of the technique to extract the latex, the novice was apprenticed to an experienced seringueiro. Later, perhaps with the help of a native woodsman, he laid out his own trail, often located several days' journey from the camp. Sometimes he lived alone, or with another seringueiro, or he took in an Indian woman. His work in the forest left him no time to cultivate a crop or maintain a house.

After the day's collection was completed, the most difficult job began---smoking the latex to coagulate it in large transportable balls. Within a cone-shaped pot he built a fire, preferably using the nuts of the Uricuri palm because their acid vapors speeded the thickening of the liquid. He slowly poured the latex onto a long stick which he turned constantly over the fire as it collected thin layers of dark brown gum.

Because he had no time to cultivate his own crops, the seringueiro depended almost wholly on provisions purchased at the barracão. The great distances, the difficulty of transport, and the store's monopoly led to very high prices. The seringueiro bought the cheapest foods---mandioca, rice and beans. Malnutrition, beriberi and high susceptibility to malaria and other diseases were, therefore, the common fate.

Since rain spoils the latex which collects in open cups on the trees, the seringueiro could work only about half of the year. During the off season, he depended upon advances from the company store. Indebted from year to year, he often could not produce enough to pay back what he had borrowed and became enslaved to the barracão and its patrão.

It is with some argument that I have written this description in the past tense. Except for the conditions of river passage, all could apply, to a greater or lesser extent, to the conditions of the seringueiro and seringal today. Paulo's words, "mean and deplorable", referred to a situation he left only five years ago.

But, of course, all that rubber wrought in the area was not harsh. For the first time in the four centuries since Brazil's discovery, Amazônia gained a sense of national integration. Its boundaries were defined with the purchase of Acre from Bolivia in 1903; the conquest of this far western territory is accredited to the migrants from the Northeast.

An aristocracy was created, bringing culture to the area and fomenting the two major urban centers which dominate until today: Belém and Manaus.

Manáus at the apogee of the rubber boom was rival to the cities of Europe. In 1910 world market prices were at an all time high, bringing in over \$125 million for Amazônia's export. Manáus, in the heart of the tropical rainforest, was the major beneficiary. In that year, its 50,000 population enjoyed efficient systems of telephones, electricity, and garbage collection. Fifteen miles of tracks carried trolleys which clanged into the elegant Praça do Comercio in front of the austere Cathedral; this soigné plaza was graced with large trees, flowers and lawns surrounding a fountain of arabesque cherubs, product of a foundry in Scotland. Along the main avenue, Eduardo Ribeiro, the elite frequented the elegant and expensive French restaurant or promenaded in gloves and hat, tie and jacket.

Up the street on the crest of the hill is the pièce de résistance: the famous Opera House of Manáus. Built at the then-astronomical cost of \$2 million, from 1891-1896, it is a showcase of European luxuries--- Venetian glass chandeliers, Carrara marble, wrought iron filigree from Paris, voluptuous murals, gilded balustrades and padded chairs of royal velour. White tie and tails, satin and egret plumes were the dress of the day. Artists came by ship from Europe, sometimes traveling months for a performance of a few days.

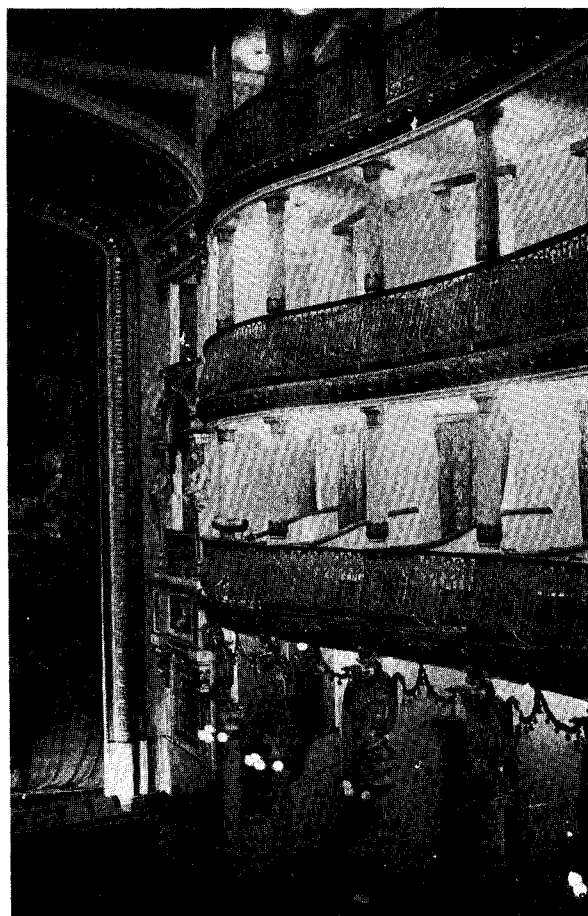
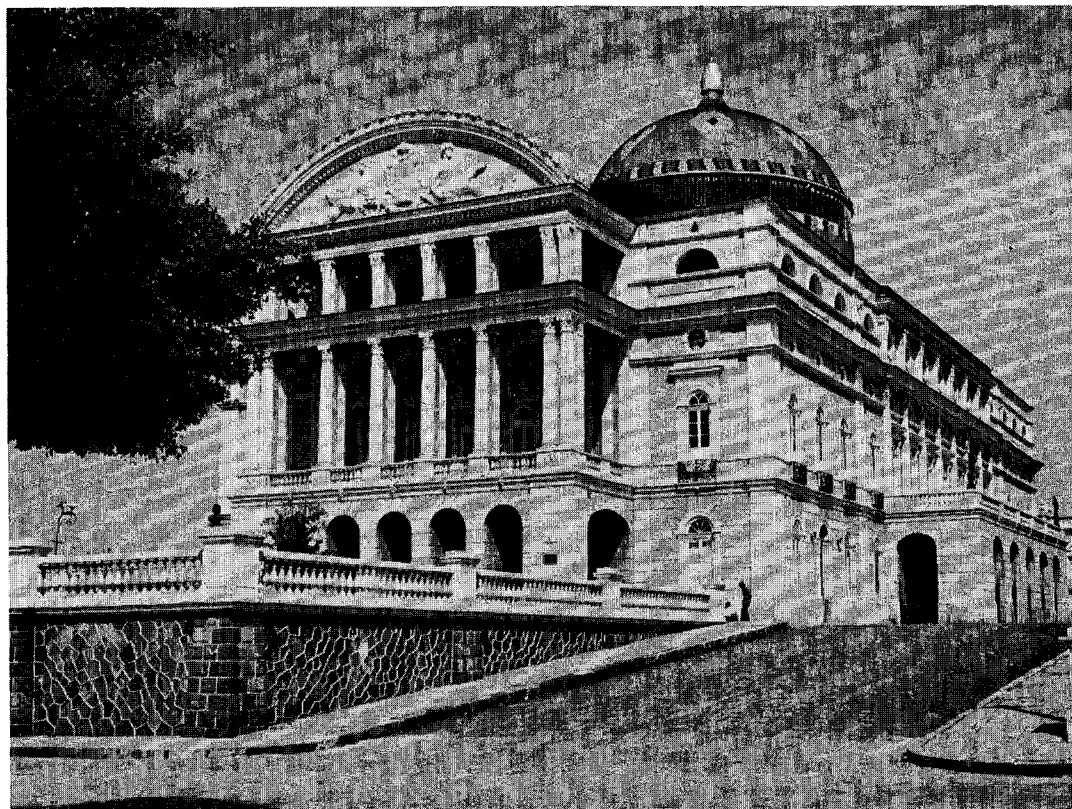
The city subsisted on imports. Its own energies consumed by rubber exploitation, even beans and rice were brought in by river-boat, along with champagne and cognac, cigars and whiskey, perfume and bonbons. Monopolizing the world's rubber supply, Amazônia had pushed the price up to \$2.90 per lb. in 1910 and exported 38,574 T. In February of that year, at the First Commercial, Industrial and Agricultural Conference of Amazonas, a speaker exuded the confidence of the times:

"The superiority of this country as producer of rubber is guaranteed for a long time due to the exceptional quality of its product and the possibility of increasing, indefinitely, the production of its forests."

In May the price began to slip. The decline quickened, never to reverse. By 1912, with a larger production than in 1910--- 42,286 T.---Amazon rubber brought only \$80 million, 2/3's of the 1910 earnings.

The high-cost production of Amazônia could no longer be foisted on the world market. A competitor had appeared in the Orient--- growing Hevea brasiliensis from seeds taken from their native habitat in 1876, nurtured in Kew Gardens and transported to Ceylon for cultivation in plantations. In 1900, only four tons came from Asia; by 1912, 28000 T. By 1915, the Orient supplied 67.6% of the world market.

TO THE RIGHT. The Opera House in Manáus.



From ebullience Amazônia passed to self-analysis. In 1912 a superb program of regional development was formulated and promulgated as Law No. 2-542-A by the national congress. It called for cash bonuses and tax exemptions for efficient rubber producers, industries to process the latex in the region, improved transport facilities, stimulation and organization of immigration, measures to improve health and nutrition, etc. It was a progressive, thorough plan to revitalize the area; it was never put into effect.

Amazônia still essentially disbelieved that it could be outstripped by the low production costs of the Asian plantations. In 1917, the 1st Secretary of the Commercial Association of Pará spoke before its members:

"There are, outside of this group, those who are less perspicacious and consider it strange that a region where the rubber tree is native, where---as they believe---it constitutes the most abundant element in our forests, that it would be necessary to cultivate it. But to all of us here present, such an idea, far from seeming strange, deserves wholehearted applause because we are all convinced that this is the most effective means---perhaps the only one---to arm ourselves against our powerful competitors in the Orient."

But the existence of the native tree in the forest continued to block a program to rationalize production by means of plantations. As an agronomist in Belém said:

"In Amazônia, paradoxically, the rubber tree itself has been the major enemy of the rubber tree."

Plans were formulated, speeches were made, and nothing was done. Price and production continued to sag, reaching the nadir in 1932 when only 6,224 T. were produced, earning a scant 3% of the 1910 income.

There was, however, one significant attempt during those years to establish a major rubber plantation. Challenged by the British control of rubber out of Asia, Henry Ford mustered his vast wealth and will to impose mass production on the jungle. The State of Amazonas refused his request for a land grant, but Pará obliged in 1928 with a concession of a million hectares.

Fordlândia came into being, 15 hours by boat up the Tapajós on some of the best soils of the whole basin. Cost was no concern and the plantation was mounted as a modern city with neat, clean homes for the seringueiros, churches, schools, hospitals, etc. Optimism was high, and 1,600,000 rubber trees were planted. It was merely a matter of waiting the seven or eight years until they produced.

Then the blight struck. The leaves withered and fell, and no remedy could be found. The fungus (Dothidela Ulei) raced through the trees and turned the plantation into desolation.

Ford retrenched and renegotiated with the Pará government, trading a fourth of Fordlândia for Belterra down the Tapajós near Santarém. This

TO THE RIGHT.
The trunk of an
Hevea brasiliensis
with latex seeping
along the indicated cut.



time, much care was given to the selection of the trees and to the development of a fungus-resistant variety. And for the second time a massive planting---2,500,000---was undertaken.

The Ford Company held Fordlândia and Belterra through World War II, turning them over to the Brazilian Government for a token payment in 1946. Henry Ford's expectation of mass, cheap production was never realized, and the battle with the South American leaf disease was never won. Those opposed to the plantation system for rubber take Ford's experience as argument that it can't be done.

For a brief three years, 1942-1945, Amazônia enjoyed a resurgence reminiscent of the first decade of the century. The United States, losing the Asian supply, suddenly turned full attention southward to meet its rubber needs. With the Treaty of Washington in 1942, the U.S. poured in 40% of the capital necessary to create the Credit Bank of Rubber (Banco de Crédito da Borracha) which guaranteed an artificially high price in order to stimulate production. The Rubber Reserve Co. was set up to provide the needs of the producers, and organs were created to attract immigration---another 30,000 Northeasterners responded to the call. Thus, The Rubber War was waged. Prosperity came once more to Amazônia, but it ended as quickly as it started. The United States no longer buys any Amazonian rubber.

After the war, conditions within Brazil changed. It was becoming an industrialized country in response to strong stimuli by Presidents Getúlio Vargas and Juscelino Kubitschek. Manufacturing complexes developed in the south, and Brazil is now one of the world's major producers of automobiles. Amazônia's rubber provides only about a third of the country's needs.

Ironically, to help fill its consumption, Brazil is now manufacturing synthetic rubber, one plant in Rio, another in Recife. Opinions

continue to conflict as to what measures should be taken in regard to natural rubber. It is the same imbroglio which has prevailed since 1910. To expand the production of natural rubber? To rationalize it through plantations? To undertake the major expenditures necessary to make it a modern industry?

The situation of natural rubber today was summarized by the economist Samuel Benchimol when I talked with him in Manaus:

"Rubber in the Amazon forest is a handicraft industry. It cannot survive in the era of modern rational production."

Because methods are so primitive, the ratio of manpower to production puts natural rubber at a great disadvantage. The average annual production in Amazônia is 30,000 T.---involving 50,000 rubber-gatherers. In contrast, the Petrobrás synthetic plant employs 300 workers to produce 40,000 T.

Besides the inefficiency of trees in the forest---widely scattered in isolation---the process of smoking the latex is highly wasteful of manhours and product. Alfonso Wisniewski, director of the Agricultural Research Institute in Belém, estimated that a seringueiro could triple or quadruple his production if he didn't have to spend so much time on the tedious smoking operation. Furthermore, the acid fumes are highly toxic and are yet another factor contributing to the bad health of the workers. The crude method of coalescence contaminates the latex with an assortment of impurities, as much as 20% of the volume, thus burdening the transport costs and necessitating an intermediate step of washing and treating to raise the rubber to commercial value.

It is also doubtful if Amazônia could ever achieve the high yield common to the rubber trees of the Orient. The struggle to control and overcome the leaf fungus forces a constant compromise in the selection of tree stock---not only productivity is the criterion, but also resistance. In addition, climatic and edaphic factors favor the Asian production.

The research and experiments begun by the Ford Company to combat the disease have been continued at Belterra, now under the auspices of the Ministry of Agriculture. On this plantation, a constant grafting and selecting of new trees strives to establish a disease-free variety.

Although Belterra is located only some 40 miles from Santarém, the dirt road is so deeply rutted that it is a three-hour drive. In the rainy season it is impassable. Tourists in Santarém, at the juncture of the Tapajós and the Amazonas, are few and far between---let alone in Belterra. Therefore, it is necessary to make special arrangements for transportation, the most appropriate vehicle being a Willys Rural. Besides the driver, I was accompanied by a city councilman who just went along for the free ride, and by an auto mechanic whose skills proved useful twice during the day---once when we hit three disparate holes simultaneously with such a wrench that the axle broke.

Belterra is hardly prepared to offer tours, but fortunately the

chief agronomist was at the headquarters and generously spent four hours driving me around in his jeep in order to see the various operations: Francisco Silva Chagas, He was raised in Pernambuco and graduated from the agronomy school in Recife. He is a cattleman and, admittedly, is little excited about the promise of rubber. We, therefore, went first to the barns where a new breed of milk cow is being developed---the Jerdhi---five parts Jersey for the milk production, three parts Red-Sindhi (Indian Zebu) for resistance to disease, ticks, heat, etc. Experiments with artificial pastures---especially elephant and braquiária grass---are also major interests at Belterra. Some 2000 head are now grazing on the extensive forage lands, and Sr. Francisco said that Fordlândia was completely devoted to cattle now, the rubber trees reverting to wilderness. The objective is to provide Santarém, a city of some 20,000, with fresh milk; it now imports all its milk in the form of canned powder.

Regardless of its increasing emphasis on cattle, Belterra is planting 20,000 rubber trees per year. Cultivated on cleared land in a grid pattern, the seringueiras form an orchard which is also utilized for food crops during the first years of tree growth. When the stage of production is reached, the latex is collected by the workers who carry it to deposit stations where the liquid is mixed with a preservative. Later in the day, it is picked up by tank truck and taken to the central depository where it is further treated. The

BELOW. The Belterra plantation. On the left, the rows of Hevea brasiliensis on cleared land. On the right, the chief agronomist adjusts the latex receptacle on the trunk of a rubber tree.



primitive smoking process over an open fire is thus eliminated.

Belterra's centrifugal unit for coagulating the latex had broken down a couple of months before. Therefore, a backlog of several hundred tons of liquid rubber was accumulating, for which there was no market. To allow this handicap to continue for such a time implies considerable indifference or incapacity at a top level. Outside the plantation, I heard several remarks about the politics which permeate the operation, including "featherbedding" the staff with ill-trained personnel. In any case, the Belterra director and his assistants were pessimistic about the future of Amazonian rubber, due to the competition of synthetic rubber and of the importation from Southeast Asia which is cheaper regardless of shipping costs.

Belterra is financed by the Brazilian government, operating at a considerable loss. Another official entity, Pro-Hévea, headquartered in Belém, is dedicated completely to an attempt to maintain and rationalize the production of natural rubber. Restructured only last year from ETA-54, it springs from an organization whose success in bolstering natural rubber was limited. Pro-Hévea has its own experimental station about two-hours' drive from Belém where young trees are being cultivated for transplant purposes. The agronomist at the station demonstrated for me, in much detail, the grafting procedure which each tree must undergo in order to acquire resistance to the South American leaf blight. The end product is a tree with roots of the native Hevea brasiliensis and a trunk and crown of the Asian Hevea. To achieve this hybrid, a bud node is cut from the trunk of a healthy Asian specimen. A careful incision is made on the lower trunk of a one-year old Hevea brasiliensis and the sliver bearing the node is inserted within this incision, beneath the thin bark of the Brazilian variety. If the graft is successful, the tree sprouts a second trunk from the Asian stock, and the first one--the Brazilian--is cut off, creating a fungus-resistant hybrid ready for outplanting to commercial plantations.

It is the goal of the Pro-Hévea to have 47 demonstration plots established by the end of this year and 211 by 1971. Scattered throughout Amazonia, the greatest number will be in Acre, and the hope is that their example will stimulate private enterprisers to undertake their own cultivations. Pro-Hévea will provide the trees and technical assistance and procure financial support for the planter through the Credit Bank of Amazonia.

As best as I could ascertain, Pro-Hévea is the one operation sincerely and exclusively dedicated to the salvation of natural rubber in Amazonia. The necessity of such an operation is stated in its own report:

"It must be said that in these last years the technical process for making synthetic rubber has been perfected to such a degree as to equal natural rubber, and it is our conviction that there is little time left before the total collapse of our native seringais."

After lengthy talks with Pro-Hévea's director and with the chief agronomist who accompanied me to the experimental station, I gathered certain impressions regarding the likelihood of success for the organization's program:

1) With a goal of rationalizing an astonishingly primitive industry scattered over an area of some two million square miles, Pro-Hévea has a staff of five technicians: two in the Belém headquarters, one at the experimental station, one in Manaus and one in Acre. The chief agronomist, one of the five, is on loan from the Ministry of Agriculture and has received hints that he will soon be pulled from Pro-Hévea for a job with subsistence crops. Since heveaculture is specialized and there are approximately 150 agronomists trained in tropical agriculture in all Brazil, the struggle to find and retain capable men is critical.

2) Government salaries are low and living conditions difficult in Amazônia. Therefore, the majority of trained men choose to take jobs with private industry in the south of the country. I did not learn the salary of the chief agronomist, but he did tell me that his per diem when he travels for Pro-Hévea is Cr.\$10,000---\$3.70. If he goes by jeep, the driver receives a per diem of Cr.\$6,000---\$2.25. Therefore, the two of them take hammocks, sleep in the forest, and buy and prepare their own food.

3) It takes two years to grow and graft the rubber tree so that it is ready to be planted commercially. Pro-Hévea will bear the cost---technical staff and physical plant---of this non-productive period and then will sell the trees for Cr.\$50---a fraction of a cent which will not pay for the paper involved in the negotiation.

4) There is as yet no assurance that the Credit Bank of Amazônia will cooperate in providing the loans necessary for the plantations. The agronomist has been questioned closely by several potential planters ---"O Banco da garantia?"---"Can we be sure of the Bank's support?" The agronomist said sadly to me, "I tell them 'yes'. But I do not like to lie, and we really have no proof."

5) The policy of the federal government seems uncertain. On the one hand, they create Pro-Hévea and then, when in May a meeting was called of the National Council for the Promotion of Rubber, no representative of Pro Hévea was invited.

At the ministry level there is much talk about the importance of natural rubber for the purposes of "national security" and "the integration of Amazônia". It is viewed as more of a social and political matter, than economic. Social, because of the thousands of seringueiros who know nothing else than collecting latex and would be helpless if the industry collapsed. Political, because Brazil is highly sensitive to foreign incursions in the Amazon. It fears even for the territorial integrity of the area and suspects that if there is a population drain from such peripheries as Acre, the vacuum will result in a Bolivian or Peruvian take-over. Furthermore, there is now "a great awakening of the Brazilian conscience" to the duty of the rest of the country to develop and integrate Amazônia.

Regardless of the presidential speeches and the official visits exalting the new interest in Amazônia, two recent government moves represent set-backs to the natural rubber industry. On the one hand, the 1952 decree of President Getúlio Vargas has been rescinded; it demanded that all foreign companies manufacturing rubber products in Brazil had to reinvest 20% of their profits in rubber plantations. Goodyear is already moving to liquidate its plantation of some 3000 acres of trees, just outside Belém.

Secondly, the monopsony controlled by the Credit Bank of Amazônia has recently been broken by government action. Since World War II, the Bank---an official organ---has set the price for rubber and guaranteed it by being the only authorized purchaser. This has served to keep the price of Brazilian rubber higher than the Oriental production, and it has also supported the industry in Amazônia which otherwise could not operate at a profit. The guaranteed price has now been eliminated and rubber is sold by competitive bidding. Although this move is very recent, the effects are already being felt in the distant and isolated seringais.

The Pro-Hévea agronomist had just returned from Acre. He said the streets of the capital, Rio Branco, were cluttered with destitute seringueiros who were fleeing the interior which no longer provided a livelihood. In the day, they beg. At night, they sleep on the sidewalks.

I said, "Surely the government cannot allow them to starve in the streets."

He replied, "The government ought not allow them to starve in the streets." And I knew by the tone and expression that it would be so.

Sincerely yours,



Frances M. Foland

Historical data, p. 4: E. Bradford Burns, Manáus, 1910.

Illustration, p. 1: Arthur Cezar Ferreira Reis, O Seringal e O Seringueiro.

Photos: FMF

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