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HEALTH AMONG THE YANOMAMI INDIANS IN BRAZIL

Preliminary medical report; survey and vaccination done during December 1980 to February 1981, funded by IWGIA with FUNAI's authorization number 054/80.

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São Paulo, January 19, 1982.

INDEX

Introduction	1
Cronogram	3
Map	5
Anti measles vaccination	7
Measles	9
Malaria	10
Onchocerciasis	12
Tuberculosis	14
Other diseases	16
Infrastructure	19
Final considerations	21

INTRODUCTION

Since its foundation in 1979, CCPY (The Commission for the Creation of the Yanomami Park) has had as its principal objective the creation of a structure within the Yanomami Indigenous Park would become viable.

At the same time, the Commission has kept in continuous touch with those events which have occurred in the area, gathering data with respect to those facts which have altered the living conditions of the Yanomami people; notably those affecting health, as they are people who frequently suffered heavy epidemics. Such epidemics have had as their most important effects depopulation and desorganization of the tribal structure.

In this context the Commission, in 1979, while delivering its proposals for the creation of the Yanomami Indigenous Park, solicited from FUNAI the initiation of a vaccination program.

ARC (Anthropology Resource Center), a center for documentation in Boston, Mass., USA, asked IWGIA (International Workgroup for Indigenous Affairs), in the name of Professor Helge Kleivan, of the University of Copenhagen and also director of IWGIA, a non-religious and apolitical organization, to sound out possibilities of IWGI channeling resources toward a health and vaccination program.

Professor Helge Kleivan, in December of 1979, visited São Paulo and contacted CCPY through its coordinator Claudia Andujar to offer support. Both, together with Professor João Paulo Botelho Vieira Filho and Dr. Rubens Belluzzo Brando, sought the help of Professor Roberto Baruzzi, of the São Paulo Medical School (EPM), who considered positive the idea of collaborating in a health program, evidently depending on the agreement of FUNAI.

Professor Helge Kleivan, one month later, communicated that the necessary funds were at disposal of CCPY (about US\$ 15,000 for one year's funding) through the Norwegian Foreign Ministry.

At the beginning of 1980 EPM's group together with CCPY, sought to organize a meeting in São Paulo. It was an attempt to unite government organs, missionaries and researchers in social and biological areas that had experience working among the Yanomami, for the elaboration of a health plan that could assure better survival conditions to this highly vulnerable group. As the participation of so many different persons became inviable, another approach was chosen. The alternative to the above mentioned plans was the formation of a small team that visited the missions and FUNAI posts among the Yanomami, for examination "in loco" of the health conditions of the Indians and to collect the necessary data for a health program. The team also would vaccinate in some accessible areas, where immunization was supposed to be low-level. After the trip, the team would present a report on data collected and an evaluation of the situation to the responsible agencies.

This team was made up by the Public Health specialists Rubens B. Brando, from the Botucatu Medical Faculty and Francisco V. Pascalichio from the Medical School of São Paulo, both physicians with great experience in Indian areas, together with the coordinator of CCPY, Claudia Andujar.

Authorization to enter the indigenous area was given by FUNAI in December 5, 1980, almost one year after IWGIA had confirmed the funding of the program to CCPY, and less than two months after the team's formal request to FUNAI.

A CRONOGRAM OF THE EXPEDITION

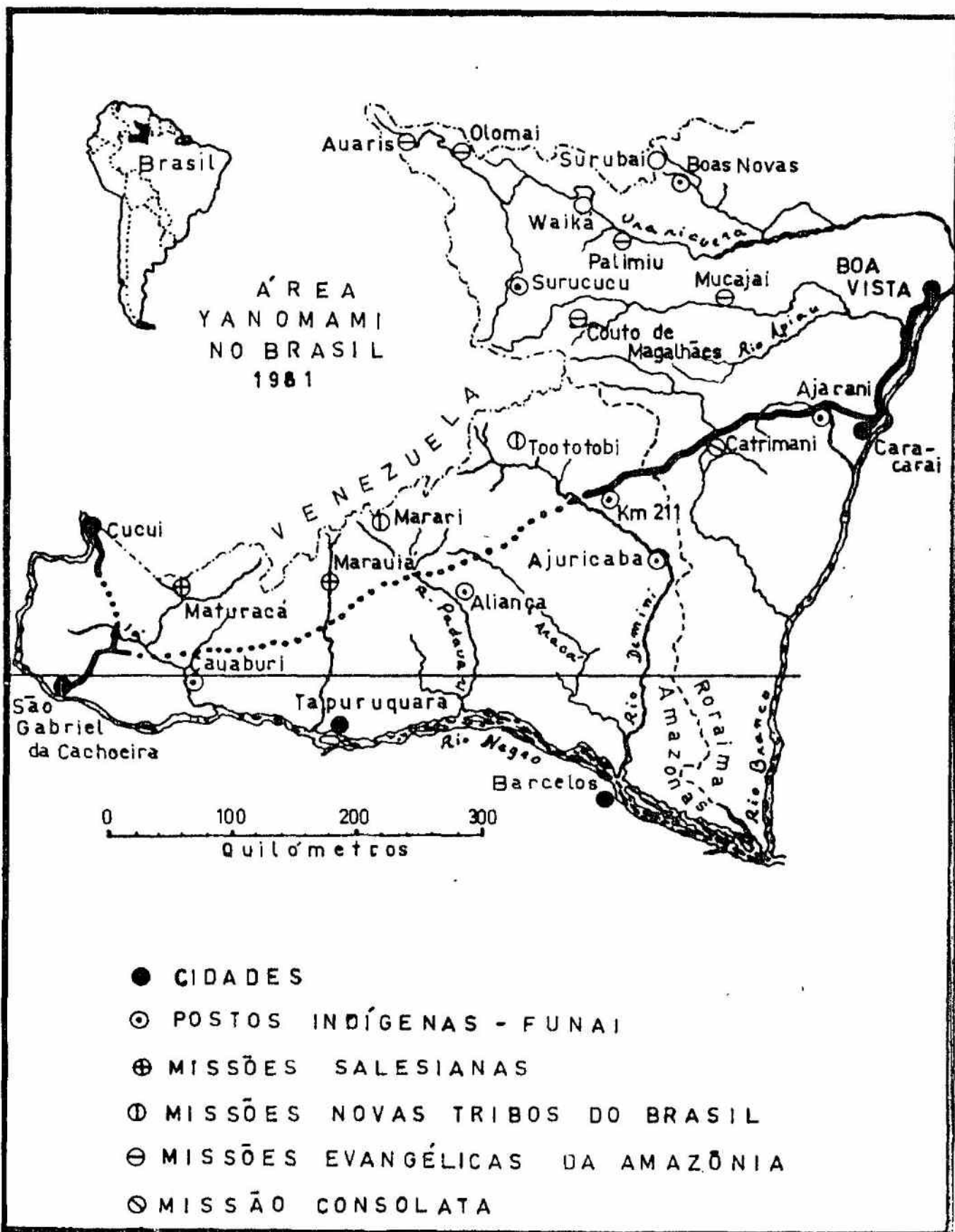
<u>ROUTE</u>	<u>DATE</u>	<u>TIME</u>	<u>MEANS</u>
São Paulo-Brasília	14th Dec. 1980	1:15m	Commercial flight
Brasília-Manaus	16th Dec. 1980	2:30m	Commercial flight
Manaus-Boa Vista	18th Dec. 1980	50m	Commercial flight
Boa Vista-Ajarani	20th Dec. 1980	3:00h	FUNAI jeep
Ajarani-Catrimani	22en Dec. 1980	2:00h	Catrimani kombi & truck
Catrimani-Boa Vista	26th Dec. 1980	6:00h	Catrimani truck & VW
Boa Vista-Boas Novas	30th Dec. 1980	1:50m	Air Taxi
Boas Novas-Boa Vista	9th Jan. 1981	1:10m	Air Taxi
Boa Vista-Marari	13th Jan. 1981	2:10m	Asas do Socorro aircraft
Marari-Toototobi	16th Jan. 1981	40m	Asas do Socorro aircraft
Toototobi-Marari	19th Jan. 1981	40m	Asas do Socorro aircraft
Marari-Boa Vista	19th Jan. 1981	2:30m	Asas do Socorro aircraft
Boa Vista-Surucucu	24th Jan. 1981	1:10m	FAB aircraft
Surucucu-Boa Vista	29th Jan. 1981	1:35m	FAB aircraft
Boa Vista-Mucajai	30th Jan. 1981	50m	Asas do Socorro aircraft
Mucajai-Auaris	3rd Feb. 1981	1:40m	Asas do Socorro aircraft
Auaris-Olomai*	3rd Feb. 1981	10m	Asas do Socorro aircraft
Auaris-Olomai-Palimiu	6th Feb. 1981	1:10m	Asas do Socorro aircraft
Palimiu-Boa Vista	7th Feb. 1981	1:15m	Asas do Socorro aircraft
Boa Vista-Manaus**	10th Feb. 1981	50m	Commercial flight
Manaus-São Gabriel	12th Feb. 1981	50m	Commercial flight
Maturacã-Frente Sul	16th Feb. 1981	9:00h	Maturacã motorboat
Frente Sul-São Gabriel	17th Feb. 1981	1:30m	IBEC jeep
São Gabriel-Manaus***	19th Feb. 1981	3:20m	Commercial flight
Manaus-Barcelos	24th Feb. 1981	1:30m	Commercial flight
Barcelos-Tupuruquara	24th Feb. 1981	21:00h	Outboard motorboard

<u>ROUTE</u>	<u>DATE</u>	<u>TIME</u>	<u>MEANS</u>
Tapuruquara-Apuĩ	25th Feb. 1981	8:00h	Outboard motorboard
Apuĩ-Tapuruquara	26th Feb. 1981	10:00h	Outboard motorboard
Tapuruquara-Marauiã	28th Feb. 1981	16:00h	Outboard motorboard
Marauiã-Paquima	2en Mar. 1981	2:00h	on foot (round trip 4:00h)
Marauiã-Tapuruquara	4th Mar. 1981	15:00h	Outboard motorboard
Tapuruquara-Manaus	5th Mar. 1981	72:00h	Diesel oil tanker
Manaus-Boa Vista	13th Mar. 1981	50m	Commercial flight
Boa Vista-Catrimani	17th Mar. 1981	6:00h	Taxi, Kombi, truck
Catrimani-Boa Vista	19th Mar. 1981	6:00h	Truck, Kombi
Boa Vista-São Paulo	25th Mar. 1981	5:50m	Commercial flight

* Pascalichio went to Olomai while Andujar and Brando stayed in Auaris.

** Pascalichio returned to São Paulo.

*** Brando returned to São Paulo.



FOREWORD

Besides the medical assistance and orientation that we could give during the trip, it was considered very important to collaborate with the responsible organs providing vaccinations. Data on the immunization levels among the Yanomami are scarce, and as an isolated population inhabiting barely accessible areas, they present high vulnerability to contagious diseases and few chances to be protected by vaccines.

As an illness causing one of the highest death rates among isolated tribal populations, supposedly prevented by a single dose of vaccine, measles was considered a priority during the expedition. On six occasions we collaborated in anti-measles vaccination, and from 789 people we collected a blood drop from the digital pulp for future serological studies on the efficiency of the previous vaccinations. Measles in indigenous populations already vaccinated (1) has been reported, and through immunological tests still proceeding, we are trying to evaluate the Yanomami protection against this disease.

(1) Xavante, 1960; Diauarum, 1978; Cinta Larga, 1980.

ANTI-MEASLES VACCINATION

During our expedition, anti-measles vaccinations were given to 600 indians in the following areas:

BOAS NOVAS - About 10 years ago Ernesto Migliazza was in charge of a Baptist mission in this area. There live almost 200 indians divided in 9 villages along the Coimin and Uraricaã rivers. FUNAI has recently maintained an employee near the Boas Novas landing strip and intends to install a post, but for the time being even a radio is unavaiable. The indians from this region exchange gold and diamonds with nearby prospectors, acquiring outboard motors. So, through the indian's motorized canoes we reached 3 villages inoculating 86 Yanomami with anti-measles vaccine.

MARARI - A New Tribes mission provides assistance to the 274 indians living in a very large nearby communal house. Half of this population received anti-measles vaccine in 1974, and during our visit, despite on influenza outbreak, we decided to increase the coverage in this area. According to the missionaries, the population was already recovering from the epidemics and we could take the chance of applying vaccine and training the missionaries, and together we applied 132 doses of anti-measles vaccine.

SURUCUCU - Nearly half of the Yanomami population in Brazil inhabits this mountainous region. From 1966 to 1977 MEVA tried to settle a post there, and FUNAI has been present since the missionaries left. This surely is the region where immunization programs are most pressing. We applied 133 doses (anti-measles vaccine) to one of the many groups from this area. Later on we

found out that part of this very group already had been vaccinated by the missionaries. This lack of documentation adds to the difficulty of identification of the isolated attended indians. Months after, in July and October, with a helicopter, FUNAI carried out some vaccinations in this region, but we still lack complete data from these campaigns.

OLOMAI - A landing strip was recently opened in this area, and a MEVA missionary from time to time visits the Yanomami living there. Brando and Andujar worked in Auaris, while Pascalichio and the missionary went to Olomai and applied 111 doses of anti-measles vaccine to the groups living closer to the landing strip.

MARAUÍÁ and APUÍ - The lab technician of FUNAI who accompanied Claudia Andujar to the Salesian Mission of the Marauíá river applied an additional 95 doses against measles there, and followed this up with 47 more in Apuí, another village along the Marauíá river.

PRINCIPAL DISEASES

MEASLES

As one of the most contagious diseases existing, measles, when strikes among virgin-soil populations causes a well known dramatic impact. The whole population is affected at the same time, and village life collapses. Men stop hunting, women stop gathering, cooking or making fire, children cannot be fed.

When it happens among mountain tribes, as the Yanomami, where the sources of water might be at difficult access, the situation is even worse.

Undernourished, dehydrated and depressed, they are a ripe field for other diseases. Pneumonic complications are frequent and death-rates may exceed 50%. Trying to study the history of measles among the Yanomami, we collected the following data:

MEASLES OUTBREAKS IN BRAZIL

<u>YEAR</u>	<u>AREA</u>	<u>DEATH TOLL</u>	<u>MEANS OF INTRODUCTION</u>	<u>SOURCE OF DATA</u>
1959	Waikā MEVA Post	2	Prospector from Venezuela	MEWA
1963	NOT	SPECIFIED		James Neel Amer. J. Epid. 91. 1970
1967	Mucajā Toototobi	1 12	Daughter of a missionary infected in Manaus	James Neel Amer. J. Epid. 91. 1970
1970	Boas Novas	4	Unknown	Local population
1974	Catrimani	7	Civil servant working on the BR-210 highway	Alcida Ramos AER/IWGIA/SI Doc. 37, 1979
1975	Maturacā	40	workers of the landing strip	Local population F. Bezerra - FUNAI
1977	Lobo D'Almada	67	Indian infected in Boa Vista hospital	"Folha de S. Paulo" 18.5.77 - "Veja" 25.5.77 - Consolata
1981	Maitā	10	Indian infected in Boa Vista	MEWA and FUNAI

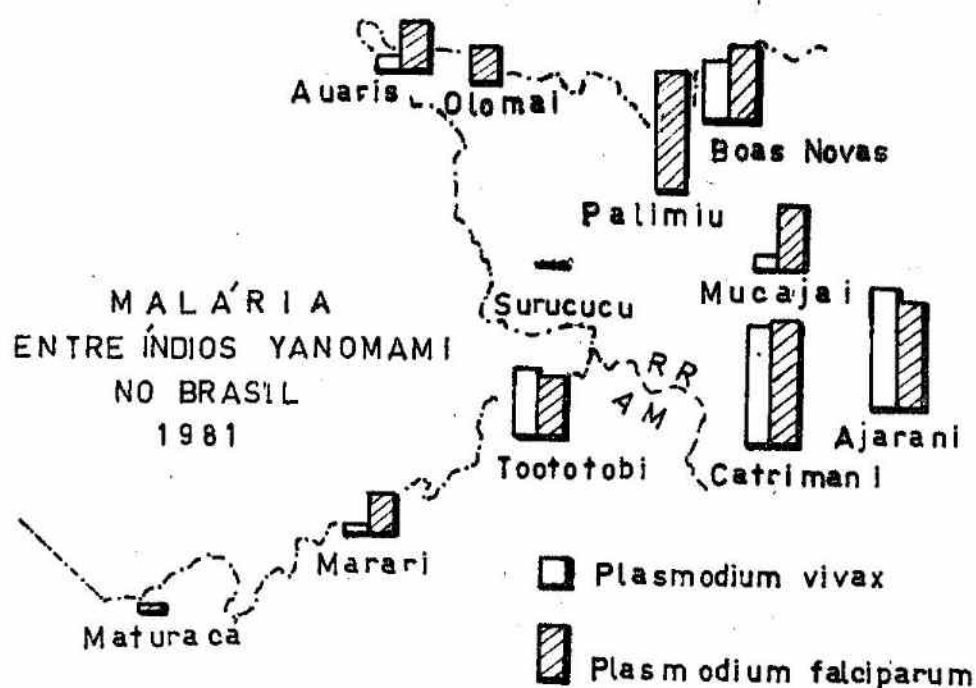
MALARIA

"Malaria is found throughout the Amazon River Basin, as the most important cause of death. The high death rate in that region, as well as the poor organic condition of the majority of its inhabitants, are data in which this disease represents the most important element."

These words of Carlos Chagas were written in 1913, but still bear some truth.

To the Yanomami, malaria presents extra problems concerning the classic control methods. The indian's great mobility, and the style and fragil material of their dwellings, favour the exophagism and exophilism of the vector, and impairs the efficiency of residual inseticide spraying.

For better understanding of the distribution and gravity of malaria among the Yanomami, besides data obtained at the local and regional level, we took blood samples from the digital pulp of 789 persons, for later dosage of antibodies. As a result of this soroepidemiological survey, still being analyzed, we are able to present the table below:



PRESEÇA DE ANTICORPOS CONTRA PLASMODIUM ATRAVÉS DE REAÇÃO DE IMUNOFLORESCÊNCIA INDIRETA PELA SUCEN - SP

Área	Número de amostras	Anticorpos p/ vivax		Antic. p/ falciparum		Negativas	
		Nº	%	Nº	%	Nº	%
AJARANI	37	30	81.08	27	72.97	5	13.51
CATRIMANI	60	46	76.66	48	80.00	8	13.33
BOAS NOVAS	49	19	38.77	24	48.97	22	44.89
MUCAJAI	107	7	6.54	44	41.12	61	57.00
PALIMIUI	43	-	-	33	76.74	10	23.25
OLOMAI	40	-	-	9	22.50	31	77.50
AUARIS	87	4	4.59	26	29.88	56	64.36
SURUCUCU	91	-	-	1	1.09	90	98.90
TOOTOTOBÍ	94	40	42.55	36	38.29	38	40.42
MARARI	121	6	4.95	36	29.75	83	68.59
MATURACA'	60	-	-	2	3.33	58	96.66
TOTAL	789	152	19.26	286	36.24	462	58.55

ONCHOCERCIASIS

In Africa this disease constitutes a severe public health problem, since it causes blindness to thousands of persons, and motivates emigration from the rich soil along the rivers where the vector exists.

In Brazil it was described for the first time in 1967 and appears to occur only among the Yanomami and those others that live among them.

The low rate of sight injuries in Brazil, when compared with Africa, has been attributed to the recent introduction of the disease, for which the existing medicines present important side effects.

The control of the vector (Simulium Amazonicum) is very difficult, so, as time passes, the situation will probably worsen.

The distribution might widen and the proportion of ocular lesions might increase.

The following table shows some results from a few of the researches conducted on onchocerciasis in Brazil:

PESQUISAS SOBRE ONCOCERCOSE
ENTRE ÍNDIOS YANOMAMI NO BRASIL

SINOPSE DE RESULTADOS

Área	Nº de pacientes examinados	% de biópsias positivas	% de lesões oculares	% biópsias pos. mais nódulos	média de filárias por biópsia	Autor
TOOTOTOBÍ	91	62.0	3.2	10.9	-	Morais, 1974
	61	60.6	5.6	29.7	14.2	Rassi, 1976
	96	86.5	68.3(a)	37.5	4	Sucam, 1976
SURUCUCU	57	47.3	3.5	8.7	-	Morais, 1974
	54	24.1	-	15.3	6	Rassi, 1976
AUARIS	102	24.5	5.6	2.9	10.2	Rassi, 1976
	102	12.7	-	-	-	Sucam, 1976
MUCAJAI	77	10.3	1.9	-	-	Belfort, 1979
CATRIMANI	71	49.2	2.8	-	-	Belfort, 1979

(a) inclui lesões oculares não atribuíveis à oncocercose

TUBERCULOSIS

Although still non-existent in the majority of the Yanomami areas, tuberculosis, when present, can be extremely severe.

In Maturacá we observed four cases with the bacillus present in the spittle, among other cases with suggestive clinical signs. The problem is that no treatment is available in this region: at the mission the priest has an obsolete conception of health; in São Gabriel the hospital director refuses patients with tuberculosis; in the hospitals of distant Manaus the indians often feel so unadjusted that they flee. FUNAI intends to build an "Indian House" in São Gabriel where they could be lodged while on treatment.

On the other hand, in Mucajai, where about 30 cases already have been diagnosed, the missionaries, by training indian monitors, have assured treatment in the village itself.

In Palimiú and Ajarani there have also been verified occurrences of the disease, probably also reaching groups in the area of Boas Novas, the area where gold prospection is done.

Intradermic BCG vaccine has reached a high level in some areas.

In the upper Rio Negro region and in Surucucus it's very low.

Even if BCG immunization programs and the detection of new cases were intensified we can expect a worsening of the situation concerning the incidence of tuberculosis among the Yanomami, because proper treatments are seldom concluded and in all probability the disease will spread.

GANGLIONAR
TUBERCULOSIS



PULMONARY
TUBERCULOSIS



OTHER DISEASES

Two cases of SELVATIC YELLOW FEVER reported a few years ago in the Territory of Roraima came from the Mucajaí River, so the disease exists in the region. Yanomami groups around the Mucajai mission received anti-yellow-fever vaccines in 1971 and 1978. Some groups near the Catrimani and Palimiū missions were also vaccinated against yellow fever.

AMERICAN LEISHMANIASIS is also endemic in the region. We observed 3 cases with characteristic active lesions in the Surucucus region and a woman in Palimiū, had her nasal pyramid destroyed by the disease. Othe cases in other areas have been reported by the missionaries.

ANCYLOSTOMIASIS and ASCARIDIASIS, among other intestinal infestations, are quite frequently found at high levels. When associated with malnutrition, they may result in dramatic cases.

AMEBIASIS and Bacilar Dysentery are also quite frequent. In some areas, they may contribute to the high mortality rate.



UNDERNOURISHED BOY WITH
CHRONIC DIARRHEA PROBABLY
CAUSED BY AMEBAS.

VIRAL HEPATITIS broke out in 1980 in Marari provoking a few deaths. In February we examined a girl there with large ascitis, who unavoidably died shortly after. (see cover's photograph)

WHOOPIING COUGH had occurred in 1967 in Toototobi, and in 1968 in Mucajai. This year the disease appeared in most of the Yanomami areas, causing high mortality rate.

INFLUENZA is becoming a common illness although its percentage of bacterial complications (pneumonia) continues above the ones found among caucasians.

Ectoparasites as TUNGA PENETRANS and PEDICULUS CAPITIS are very common, the first sometimes causing deformation of the toes.

OPHIDIC ACCIDENTS are sporadic. We observed an important sequel in Palimiū and heard of two missionary families which lost children after snake bites. At the end of the trip, a young boy of the Catrimani region, after having suffered a jararaca bite, had to have a leg amputated, having been brought to São Paulo for the fitting of a prosthetic device.

These are the main observed diseases affecting the Yanomami Indians. For some of them we have vaccines, for others, an efficient treatment. In both cases, an infrastructure is necessary that would allow us to obtain information from the area and deliver the medical supplies needed, to which the indians have a right. (Convention n° 107 of the International Work Organization General Conference, Geneva 26.6.1957; Decree n° 58.824, on 14.7.1966 and Law n° 6001, on 19.12.1973 from the Brazilian legislation)

It is very important to observe that the Indian's health is in a very fragil equilibrium, which tends to break down as contact with national society increases. The Yanomami contact situation was described by Claudia Andujar in a specific report.

INFRASTRUCTURE EXISTING AMONG THE YANOMAMI IN BRAZIL

The interdenominational, fundamentalists protestant missions are the institutions with the largest number of posts among the Yanomami. Believing in personal salvation through Christ, the missionaries of MEVA and New Tribes Mission have a similar working approach, based on the alphabetization of the Indians aimed toward the gospel. Usually they are able to provide basic health attention. Their out-clinics keep individual medical records from nearby groups, that are occasionally vaccinated. Residual insecticide against the malaria vector is often sprayed and in some areas the missionaries are trying to spread sanitary education through-out their area of influence.

The Catholics are represented by the Order of Consolata, with the Catrimani mission, and by the Salesians, who keep two mission posts in the Upper "Rio Negro" region. The former seeks to respect the traditional customs of the Indians, avoiding proselytism as a basic aim. The other, combating collective living and maintaining rigid educational programs, have been blamed for cultural descharacterization of the indian population.

As far as health assistance is concerned, Consolata missionaries are much better prepared, keeping a satisfactory standard of immunization. At the Salesians mission of Maturacá, we could not find a single record on health assistance and the sanitary conditions of the nearby villages were very poor.

As organs of the Government, the FUNAI posts are more subject to changes of a politico-administrative nature and present oscillations, brought about basically by personnel rotation and periods during which activities may be suspended. Often, as a result of the strategy of area control, such posts are found relatively far from the villages. This situation linked to the fact that few of the civil servants speak Yanomami, causes a lack of consistent case recording, making difficult an evaluation of the steps taken toward sanitation.

FUNAI, as the legal tutor of the indian, also seeks to assure more specialized health assistance. This is done through the Flying Health Teams (EVS) and through cooperation with other health services, thereby completing the local assistance. The two teams of 6 persons based in Boa Vista (EVS) must cover an area with more than 30,000 indians and the only team based in São Gabriel da Cachoeira must surely encounter great difficulty in working, either through the general health condition of the population or in the existing infrastructure.

FINAL CONSIDERATIONS

According to the data collected, we consider of immediate importance the definition of an epidemiological vigilance system, with regular information sent from the posts to a centralized nucleus able to carry out routine programs of vaccinations, as well as to provide emergency health care and orientation to local personnel.

The control of some diseases such as malaria, tuberculosis and onchocerciasis, should be discussed with the concerned health organs from the Ministry of Health, researchers, missionaries and FUNAI staff. We consider necessary specific programs with periodic evaluation.

From our point of view, the existing infrastructure must be improved and increased, as has been requested by FUNAI's Regional Delegates.

We believe that all such tactics, indispensable to minimize the pernicious effects that our contact inevitable causes to the Yanomami, will only have the desired efficiency if accompanied by a harmonious integration of all the involved persons and institutions.

Our contribution has been an attempt to gather the data required for health programs among the Yanomami.

More detailed data and more specific conclusions will be stated in the final report, presently being elaborated.

* * *

Photos by Brando.
Some of them are of deceased
indians. As a respect to the
Yanomami culture, we are con-
cerned that their relatives
do not get hold of the above
mentioned images. Thank you.