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THE HEALTH AND SURVIVAL OF
THE VENEZUELAN YANOAMA
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(Photo: Marcus Colchester).
THE HEALTH AND SURVIVAL OF THE VENEZUELAN YANOAMA

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Acknowledgements

The original conception for the creation of this document stemmed from a plan developed between Robin Wright of the Anthropology Resource Center and Ken Taylor of Survival International (USA) to publish an edited English version of the medical reports being produced by the Comisao pela Criacao do Parque Yanomami (CCPY) on the medical situation of the Yanoama Indians of Brazil. Not long after, it was decided to attempt to include material in this publication on the medical situation of the Yanoama in Venezuela, but it soon became clear that the entire work was becoming overlong. It was therefore decided to produce this report on the Venezuelan Yanoama independently of the Brazilian report. Although many aspects of the medical situation of the Yanoama in Brazil are not significantly different from those in Venezuela, the legal and political situation of the Yanoama in the two countries is. It is thus not inappropriate to deal with the two populations independently.

The task of carrying out the editorial work on this document fell to me long after the original effort of soliciting and collecting together the works had already been achieved by Robin Wright. My part has been limited to an attempt in the final phases of the project, to edit the various submissions, the aim being to draw together the somewhat disparate material, put together over a period from early 1982 until late 1984, in as coherent a manner as possible. I would like to thank the other authors of this collection of papers for their collaboration.

Marcus Colchester
Editor
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INTRODUCTION

It is now generally agreed that, along with land invasion, the single most important factor in the extermination of the original peoples of the Americas has been disease. In South America, the rapid disappearance of Amazonian Indians, has been inextricably linked to the spread of infectious diseases carried to the continent from the Old World (cf Kroeger and Barbira-Freedman 1982). According to one estimate, for example, of the total of 49 million thought to have inhabited South America in 1492 some 96% were eliminated in the first few decades. In all some 90 to 95 million American Indians may have become extinct in the past four hundred years (Wilbert 1972).

More recent demographic calculations have done nothing to diminish the apparent scale of this tragedy. On the contrary successive re-evaluations have tended to show that the aboriginal population of lowland South America was, if anything, higher than previously thought (Denevan 1976; May 1984).

The same health risks that destroyed the Indians of the Americas in the past now threaten the last surviving relatively uncontacted groups on the continent. In the South American lowlands east of the Andes there still remain over 1 million Indians, many of whom have still had very little contact with members of the invading societies. Of these groups, the single largest least acculturated and certainly best documented is the Yanoama.

The Yanoama.

The relative cultural homogeneity of the various Indian groups locally known as "Waika", "Guaharibo", "Shiriana", "Crichana" "Chori" etc. has been noted since the last century (Barbosa-Rodrigues 1885). The fact that all these peoples belong to a single language group was first suggested with some authority by Koch-Grunberg (1923), who collected the first word lists among the northern Yanoama. On the basis of this and other such material the languages were classified together as
"Waikan" and "Shirianan" (see Migliazza 1980 for references) and this generic unity has never been subsequently disputed, though the terms "Shirianan" and "Waikan" have been displaced from the literature because of their pejorative significances.

Beginning in the later 1950s, anthropologists began referring to the "Waika" of the Upper Orinoco as members of the Yanoama group (Zerries 1956) and shortly after Wilbert (1963:177) established this word as the generic term which included a number of related but distinct languages. Most authors have followed Wilbert's lead of using the term Yanoama to refer to the language group as a whole. An alternative generic term, Yanomama, is preferred by some but is of more recent introduction (Migliazza 1972;1980:101). The practice of using the term Yanomami as a generic term is common in the indigenist literature and has now become accepted in Brazil. However, since this term is also used to refer to a single sub-group of the Yanoama, it is rather confusing. Yanoama is adopted here following the accepted scientific practice of using the first reasonable of proposed terms.

Only one detailed comparative linguistic study of the Yanoama tongues has been carried out to date (Migliazza 1972). According to this study, the Yanoama can be divided on linguistic grounds into four sub-groups each speaking a distinct language. These languages are Sanema (better written as "sanema"), Yanam (including "ninam"), Yanomam and Yanomami (better written as "yanomami"). The existence of a possible fifth language among the "yawari pik" of the Ajarani river in Brazil has also been noted (Migliazza 1980:104n6). More recently, Migliazza (1982) has published a phylogenetic study of the Yanoama tongues which suggests that Sanema is the most divergent of the four major languages--an observation confirmed by Lizot (1974:iix), though he still prefers to consider the languages as "dialects". The existence of a large number of dialects within the four main sub-groups identified by Migliazza further complicates the picture (Migliazza 1972:17; Lizot 1974:iix-xi).

Map 1 illustrates the geographic distribution of these four languages. The boundaries between the various sub-groups are drawn primarily following Migliazza (1972; 1978) but have
The Yanoama live in over 360 settlements, averaging less than 60 inhabitants, scattered over a huge area the size of England. Photo: Marcus Colchester.
been adjusted to fit with the observations of a number of more recent studies. In particular it should be noted that the distinction between the Yanomam and the Yanomami areas is that most open to argument. Intermarriage occurs across all these linguistic "boundaries" but does not completely obscure the divisions. I have observed bilingual Yanoama in the headwaters of the Matakuni (i.e. speakers of Sanema and Yanomami) and in the Paragua (speakers of Ninam and Sanema). I have also met bilinguals in the Upper Caura area visiting from the settlement of 'arakasatili' in the Upper Uraricoera who spoke Sanema and what I guess was Yanomam.

\[
\begin{aligned}
\text{1000} & \quad \text{500} & \quad \text{0 YEARS B.P.} \\
\text{Yanomam} & \quad \text{Yanomami} & \quad \text{Yanam} & \quad \text{Sanema}
\end{aligned}
\]

(from Migliazza 1982:512).

Figure 1: Relationship of the Four Yanoama Languages.
Ethnographic background.

The Yanoama are a group of mobile foragers and cultivators that have inhabited the watershed dividing the headwaters of the Orinoco from those of the Branco and Negro for as long as historical records allow. While in many respects they are typical representatives of the culture of the Amazon region and of the Guianas, they are notably unique both in terms of their language, economy, social organisation and mythology and their physique and even blood type. Some anthropologists have considered them to be representatives of one of the first waves of Indians to populate lowland south America.

Peripheral Yanoama populations only came into sustained contact with non-Indians during the mid-19th century, yet it was not until a century later that non-Indians ventured for the first time into the heart of Yanoama territory. Today, apart from the Yanam populations of the lower Uraricoera and Paragua rivers and the Yanomam on the Perimetral Norte, sustained contact between the Yanoama and non-Indians is limited to contact with missionaries, anthropologists and medical services (see Migliazza 1972 and Colchester 1982a for historical summaries).

Present distribution and numbers

About 200 years ago all the Yanoama used to live on or near the Parima highlands that lie along the watershed on the Brazilian-Venezuelan border, north of the sources of the Orinoco. This fact is confirmed on the one hand by a detailed examination of the historical sources (Colchester 1982a:68ff) and on the other hand by a study of population movements and oral history among the Yanoama themselves (Migliazza 1964; Chagnon 1968b; 1974; Lizot 1971; Colchester 1982a; Hames 1983; Ales 1984; Saffirio n.d.).

Changes in the economic base of the Yanoama caused by the introduction of new crops and metal tools triggered rapid population increases beginning in the early 19th century (Colchester 1984a), leading to escalating levels of warfare and
### TABLE 1

**POPULATION TOTALS OF THE VENEZUELAN YANOAMA.**

<table>
<thead>
<tr>
<th>Linguistic sub-group</th>
<th>SANEMA</th>
<th>YANAM</th>
<th>YANOMAM</th>
<th>YANOMAMI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Popn.</td>
<td>2543</td>
<td>194</td>
<td>332</td>
<td>9564</td>
<td>12633</td>
</tr>
<tr>
<td>No. of villages</td>
<td>88</td>
<td>4</td>
<td>4</td>
<td>157</td>
<td>253</td>
</tr>
<tr>
<td>Mean village size</td>
<td>29</td>
<td>49</td>
<td>83</td>
<td>61</td>
<td>50</td>
</tr>
<tr>
<td>Inhabited area (km²)</td>
<td>40331</td>
<td>8963</td>
<td>1344</td>
<td>48398</td>
<td>99036</td>
</tr>
<tr>
<td>Popn. density (km²/person)</td>
<td>15.9</td>
<td>46.2</td>
<td>4.0</td>
<td>5.1</td>
<td>7.8</td>
</tr>
</tbody>
</table>

### TABLE 2

**OVERALL POPULATION TOTALS OF THE YANOAMA.**

<table>
<thead>
<tr>
<th>Linguistic sub-group</th>
<th>SANEMA</th>
<th>YANAM</th>
<th>YANOMAM</th>
<th>YANOMAMI</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Popn.</td>
<td>3262</td>
<td>856</td>
<td>5311</td>
<td>11752</td>
<td>21181</td>
</tr>
<tr>
<td>No of villages</td>
<td>101</td>
<td>27</td>
<td>64</td>
<td>171</td>
<td>363</td>
</tr>
<tr>
<td>Mean village size</td>
<td>32</td>
<td>32</td>
<td>83</td>
<td>69</td>
<td>58</td>
</tr>
<tr>
<td>Inhabited area (km²)</td>
<td>43916</td>
<td>28681</td>
<td>40630</td>
<td>78871</td>
<td>192098</td>
</tr>
<tr>
<td>Popn. density (km²/person)</td>
<td>13.5</td>
<td>33.5</td>
<td>7.7</td>
<td>6.7</td>
<td>9.1</td>
</tr>
</tbody>
</table>
the fission and dispersion of the Yanoama populations (see especially Chagnon 1974; 1977; Harris 1974; 1977; 1979; Lizot 1977; Colchester 1983b). The result has been the spread of the Yanoama over a very large area of tropical rain forest --- about 192,000 square kilometres. The locations of all the Yanoama communities known to exist are shown on Map 2.

According to the most recent estimates, there are currently some 12,500 Yanoama inhabiting Venezuela. The breakdown of these numbers is given in Table 1.

Combined with the 8,500 Yanoama estimated for Brazil (CCPY 1982:15), there appear to be approximately 21,000 Yanoama in all. A breakdown of the overall figures is given in Table 2.

**Yanoama Survival.**

In 1976 the ethnologist Jacques Lizot (1976b) drew attention to the serious predicament of the Yanomami of the Upper Orinoco, in particular focusing attention on the urgent need for medical aid among the Yanomami. Since that time a great deal has been done to help the Yanomami, not always successfully, yet their medical situation has only deteriorated.

From an early stage it became clear that, as a prerequisite to the physical survival of the Yanoama peoples, steps had to be taken to protect the Indians from uncontrolled contacts with non-Indian society. Epidemiological studies showed clearly that even the most minor viral infections could wreak havoc. Single epidemics of measles, whooping cough and other such diseases have been recorded as responsible for 20-30% mortalities in some communities (Neel et al 1970: Chagnon and Melancon 1983 and see this publication). It was in the light of this knowledge that anthropologists and others concerned for the fate of the Yanoama strongly criticised the Brazilian government's plans to drive a major highway through the Yanoama's southern territories (Brooks 1973; 1974). Despite these warnings the road went ahead, resulting in appalling health problems for the Yanoama as predicted (Ramos and Taylor 1979: CCPY 1979: Saffirio and Hames 1983). To avert these problems, first in Brazil and then, following their lead, in Venezuela, anthropologists began advocating the creation of
special areas for safeguarding the Yanoama and protecting their land rights (CCPY 1979; ARC 1981; Colchester and Fuentes 1983; Arvelo-Jimenez 1983).

Lamentably, although both governments in Venezuela and Brazil have come to recognise the reality of the problems facing the Yanoama, the Yanoama remain without definitive territorial rights. In Brazil, where the international campaign for Yanoama land rights has been waged most strongly, the government has done no more than place a temporary "interdiction" on the area and promises made in 1982 that demarcation would soon follow have proved groundless (SI 1984a). Meanwhile pressure from mining interests to open up Yanoama land has only increased (Albert 1984a, b; Colchester 1984b). In Brazil the mining lobby has waged an open campaign of propaganda against those trying to secure the Yanoama their lands (SI 1985), while some 3-4000 miners continue to operate illegally on Yanoama territory. In Venezuela in 1983, mining concessions were actually granted to a private company to prospect and exploit alluvial cassiterite in the very heart of Yanoama territory (SI 1984b, c). Fortunately these concessions were revoked following extended protest (SI 1984d) but the territorial insecurity of the Yanoama remains a real and urgent problem.

Intensification of Contact.

Whether or not the Yanoama will gain the rights to their land, that the laws in both Venezuela and Brazil acknowledge, remains open to considerable doubt. Either way contacts between the Yanoama and non-Indians are bound to accelerate not just because inevitable, illegal penetration of the area will continue to increase but because the Yanoama themselves are seeking contact with the outside world. The prime reason for this is the Yanoama's growing economic dependence on industrial goods (Lizot 1976; Colchester 1982a; 1981; 1983a; 1984a; Saffirio and Hames 1983).

Failure to recognise the Yanoama's desire to increase trade with the outside world constitutes a very real risk that may have serious consequences for the Yanoama themselves. This
is because, in the first place, denial of the actual aspirations of the Yanoama contravenes the principle of self-determination and can lead to paternalist policies regarding their future. In the second place, such a lack of recognition of the Yanoama's real interest in stepping up their trading contacts with non-Indians may mean that policy makers will underestimate the degree of interaction liable to take place between the Yanoama and non-Indians in the future. One result may be to seriously underestimate the amount of protection the Yanoama require against the inevitable acceleration in disease transmission that will accompany such contacts.

In the papers which follow an attempt is made to identify as closely as possible the medical threats that confront the Yanoama. In particular emphasis has been placed on the health problems which can be seen to be the result of contact and economic change induced by such contact.

It is important to make clear at the outset that apart from the first article which deals with the Yanoama in general terms, each of the subsequent articles focuses on the local situation of certain Yanoama sub-groups. Thus Semba discusses the role of the Venezuelan medical service among the riverine communities of the Upper Orinoco. Following that I have contributed two pieces on the medical situation of the northern Yanoama, the Sanema and Ninam, while the last piece by Ales and Chiappino discusses the situation of the much more isolated Yanomami of the Parima.

Marcus Colchester
Bananas and plantains are the staples of the central Yanoama. Peripheral groups have adopted manioc from neighbouring Indians. Photo: Catherine Ales.
THE HEALTH AND SURVIVAL OF THE YANOAMA INDIANS

by Marcus Colchester
and Richard Semba
Poor hygiene has become the cause of serious health problems among the more settled Yanoama groups. But malnutrition and parasitosis are less severe among the more mobile and traditional groups. Photo: Marcus Colchester.
Introduction.

As Chagnon (1977:146n) has pointed out, the Yanoama are biomedically one of the best studied tribal people in the world. Although the majority of these studies have been carried out mainly for academic ends, they have provided us with an impressive body of knowledge concerning the Yanoama's medical condition which can be usefully applied by those concerned for their survival.

This short article attempts to summarise the available information on the Yanoama giving emphasis to the changes that have occurred in Yanoama disease ecology as a result of contact.

Population Structure.

Census data have been collected from a number of Yanoama populations and reveal that, in spite of local variations, the Yanoama as a whole present the appearance of populations common in the developing world, which contrast strikingly with those of the developed world and other populations with stable structures like the !Kung San of the Kalahari. These contrasts can be usefully presented as a table (see Table 3).

---

**TABLE 3**

<table>
<thead>
<tr>
<th>Age cohorts. (years)</th>
<th>SANEMA (1)</th>
<th>YANOMAMI (2)</th>
<th>IKUNG SAN (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60+</td>
<td>4.4%</td>
<td>4.1%</td>
<td>9.7%</td>
</tr>
<tr>
<td>15-59</td>
<td>49.6%</td>
<td>57.9%</td>
<td>60.3%</td>
</tr>
<tr>
<td>0-14</td>
<td>45.9%</td>
<td>37.9%</td>
<td>30.0%</td>
</tr>
</tbody>
</table>

Sources: (1) Colchester 1982a; (2) Lizot 1978; (3) Lee 1979.
Such high values in the lower age cohorts are usually indicative of an expanding population, a feature that is confirmed by comparing birth and death rates (see below).

Members of the 60+ and 0-14 age cohorts are non-productive (Lizot 1978; Colchester 1982a) and depend on the 15-59 cohort for subsistence. In the Yanoama case, the relatively high level of survivorship into the 60+ cohort and the large proportion of the population in the 0-14 cohort puts a significant economic burden on the producers, such that between 66 and 100 dependents must be provided for by every 100 producers (Lizot 1978; Colchester 1982a). However the present (introduced) technology used by the Yanoama (metal axes, machetes etc.) and the low population density (0.11-0.16 capita/km²) allow producers to satisfy the subsistence requirements of the total population with ease (4-6 hours of work/producer/day).

Diet.

A number of studies have shown that Yanoama groups living away from missions have extremely satisfactory diets (Lizot 1977; 1978; Chagnon and Hames 1979; Fuentes 1980; Colchester 1982a; Saffirio and Scaglion 1982; Good 1982; Saffirio and Hames 1983). Most of the calories in their diets are provided through collecting and, especially, agriculture, while hunting provides the bulk of the quality protein and (probably) minerals. Among certain of the more isolated Yanomami groups which have less developed agricultural bases, seasonal shortfalls in agricultural produce can cause short periods of nutritional stress which, however, are usually offset by increasing the effort spent foraging (Fuentes 1980) or by visiting other villages (Lizot 1978). Temporary shortages in protein intake caused by a run of bad 'luck' hunting may be relatively common (Colchester 1982a; Good 1982; Saffirio and Scaglion 1982).

Under more traditional circumstances, such shortages tend to be offset by increasing the time spent on trek and collecting alternative foods (Colchester 1984a). Long term difficulties acquiring good hunting returns may contribute to the division or relocation of communities (Good 1982). Minor mineral
deficiencies, notably of iodine, have been recorded in some Yanoama populations but goitre is rare (Roche 1959; Riviere et al 1968). Where it occurs, it is most probably associated with the imperfect processing of manioc, a relatively new crop for the Yanoama (cf Ermans et al 1980).

Corresponding to this generally excellent diet, the Yanoama present an aspect of generally good health. Baker and Neel (1966) and Neel (1971a) performed 274 complete physical examinations of Yanomami in three villages and concluded that their health status was good. The blood pressure of the Yanomami does not regularly increase with age beyond the second decade, unlike the increase seen in Western culture; instead, the blood pressures remain remarkably low (Olivier et al 1975).

In contrast to the nutritional adequacy of most "free-living" Yanoama, those that have been artificially stabilised in the vicinity of missions often suffer serious protein deficiency. This problem is mainly a consequence of over-hunting due to the use of shot guns and the fact that hunting zones are not left unused so that the faunal populations can recover (Lizot 1976b; Hames 1980; Colchester 1981; 1982a). The problem may be aggravated by elevated levels of intestinal parasitosis common among members of the fixed group (see below).

Sex Ratios.

An unusual feature of Yanoama populations is their imbalance in sex ratios, an imbalance especially pronounced in the younger age cohorts. Table 4 illustrates this feature in a number of Yanoama populations.

These imbalances in sex ratios have been consistently explained by North American anthropologists in terms of selective female infanticide, though almost no data have been published to convincingly substantiate the suggestion (Chagnon 1968b; 1974; Neel and Chagnon 1968; Neel and Weiss 1975). Among the Xavante a similar sexual imbalance is found which is allegedly not caused by infanticide (Neel and Chagnon 1968). Lizot (1978) has asserted that, among the Yanomami, infanticide affects only 1-2% of all live births and suggests that male
births are naturally more frequent than female, a result perhaps of the high levels of consanguineity in marriages (but he presents no data to substantiate these assertions either). Recently Chagnon (Chagnon et al 1979), who first proposed the infanticide explanation, has stated that there is no certain evidence that infanticide is responsible for the skewed sex ratio among the Yanomami. Instead he has suggested that there is a biological explanation for the skewing which may be as high as 130:100 at birth. Whatever the reasons for the relative scarcity of female children, the effect on the society is an enhancement of the socio-political tensions concerning alliance (exchange of women), a feature further exaggerated by the common practice of polygyny.

---

**TABLE 4**

**SEX RATIOS**

(No. of males/100 females)

<table>
<thead>
<tr>
<th></th>
<th>WESTERN SANEMA (1)</th>
<th>EASTERN SANEMA (2)</th>
<th>YANOMAMI (3)</th>
<th>YANOAMA (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>120</td>
<td>109</td>
<td>119</td>
<td>120</td>
</tr>
<tr>
<td>1-14 years</td>
<td>132</td>
<td>154</td>
<td>139</td>
<td>134</td>
</tr>
</tbody>
</table>

Sources: (1) Colchester 1982a; (2) Ramos 1972; (3) Lizot 1978; (4) Neel and Weiss 1975.

---

**Vital Rates.**

Because the Yanoama discuss death with great reluctance and the dead even more reluctantly, acquiring data on vital rates is very difficult. Early estimates of Yanomami fertility suggested
a crude birth rate of 6.6 years/live birth (Neel and Chagnon 1968), but later estimates, made by abdominal palpation to detect pregnancies suggest that 3.2 years/live birth may be more accurate (Neel and Weiss 1975). Taking the mean age of menarche as 15 years and of menopause as 40, the mean completed fertility of Yanomami women is thus 8.2 live births. A similar figure has been obtained for the Sanema, though from a very small sample (Colchester 1982a).

Such crude birth rates are very high by any standards. Moreover there are a number of factors that serve to limit Yanoama fertility. Post-partum sex taboos are normal for both parents for 1-2 years; parasitosis may induce anaemia and amenorrhea; weaning is delayed for as long as 3 years after birth and demand feeding is the norm. All these factors probably limit the fertility of Yanoama women in the post-partum period. Given their present level of health and their peri-natal practices, it is reasonable to suppose that the Yanoama are near their maximum possible crude birth rate (Colchester 1982a:115ff).

Crude death rates are correspondingly high among the Yanoama and have changed dramatically in recent years as the populations have come into contact with occidental society.

Disease Ecology.

The Yanoama have been characterised as a "virgin soil" population, that is to say an example of an aboriginal population not exposed to the ravages of diseases evolved in dense "civilised" conurbations (Neel et al 1970). Whether this was actually true of even the Yanomami of the Upper Orinoco at that time is debatable. Today there is no doubt that the Yanoama can no longer be so described.

Nevertheless it is instructive to distinguish the diseases found among the Yanoama according to whether they were endemic during the pre-Columbian era or have been introduced more recently. As is well known, many infectious disease have only recently evolved consequent to the transition effected by certain human groups from living in small, dispersed population clusters, as the Yanoama do today, to having dense townships
and cities (Polgar 1964; Black et al 1974; Black 1975). Like many other tribal societies, the Yanoama have only recently become exposed to these outside diseases (Newman 1976).

Endemic diseases.

Of the illnesses that have almost certainly affected the Yanoama from pre-Columbian times, few would have presented them with serious risks. Minor viral infections, such as Herpes, Epstein-Barr, Cytomegalovirus and Hepatitis B, the latter allegedly transmitted through the practice of killing lice between the teeth, have probably been endemic from aboriginal times (Black 1975; Layrisse 1982) but none of these is likely to have caused much apparent morbidity; though tetanus may have posed some risk (Black et al 1974). Endemic treponeme infections are apparently harmless and are not venereally transmitted (Black et al 1974; Black 1975; UNESCO 1978). Enzootically maintained diseases may not have posed much risk either. Arboviruses (Black et al 1974) may cause temporary prostration but are rarely lethal (Wilcocks and Manson-Bahr 1972). Leishmaniasis, which occurs throughout the area, (Pifano 1973; Colchester 1982a), is maintained by monkey pools and by a number of other species, notably rodents (Pifano 1961), but as among other Amerindians is rarely serious (UNESCO 1978). Yellow fever, also maintained enzootically by monkeys (Black 1975; UNESCO 1978), certainly occurs in the Yanoama area (Neel 1971b; CCPY 1982), but Amerindians show considerable clinical immunity to it (UNESCO 1978).

At least three filarial diseases occur in the Yanoama area, transmitted by blackfly (Simulidae). One, Manssonella, is clinically negligible but another, Onchocerca volvulus, is mildly debilitating and may cause blindness. Onchocerciasis was once supposed to have been but recently introduced into the Yanoama area (Davis and Matthews 1976), but subsequent research has shown it to be endemic throughout the area (Moraes and Chaves 1974; Rassi et al 1976; 1977; 1978; Salzano and Neel 1976; Yarzabal et al 1980; Yarzabal 1981). The fact that rates of infestation are proportional to age, reaching near 100% for older people in some areas (Moraes and Chaves 1974), suggests
that the disease has been present at least since the turn of the century. Various factors, such as the large number of vector species as well as anomalies in the cytology, suggest that the disease has been present in the area much longer and may even be pre-Columbian. The morbidity is not serious but may explain a number of cases of blindness among the Yanoama. The third filarial disease noted in the Yanoama area, Dipetalonema sp., is not well known; the pathology associated with the infection is also poorly understood (Beaver et al 1976; Wilcocks and Manson-Bahr 1972).

The main significance of the heavy load of filarial parasites carried by the Yanoama may not be direct. According to Yarzabal, the peril lies in the suppression of the immune system that accompanies infestation, reducing the patient's defences to other infections (Yarzabal pers. comm.)

It is not known if rabies or trypanosomiasis (Chaga's disease) are enzootically maintained in the Yanoama area. The present knowledge of the geographical distribution of the Reduviid bug, Rhodnius prolixus, vector of trypanosomiasis, suggests that it is limited to north of the middle Orinoco (Pifano 1961), but a number of the animal reservoir species, that are known to be capable of maintaining Trypanosoma cruzi, occur in the Yanoama area (notably Dasypus, Cabassous, Pira, Didelphys, Tamandua, and Saimiri) (Wilcocks and Manson-Bahr 1972; Bucher and Schofield 1981). Though vampire bats occur in the Yanoama area it is not known if they carry rabies; fears have been expressed concerning the possible spread of this disease in the Federal Amazon Territory with increasing cattle ranching (Moreno 1978).

Intestinal Problems.

The high levels of endemicity of the above-mentioned viral infections are the result of the poor hygiene of the Amerindians. Among the Yanoama hygiene is poor even by Amazonian standards. The consequences of this lack of elementary hygiene are today seen in the extremely high levels of gut parasite infestations. Ascaris, Hymenolepis, Oxyuras, Ancylostoma, Strongiloides, Trichuris, Giardia, Entamoeba,
TABLE 5

PREVALENCE OF INTESTINAL PARASITES IN THREE YANOMAMI POPULATIONS (in percent).

<table>
<thead>
<tr>
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<th>COYOWE</th>
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<th>NIYAYOWE</th>
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Chilomastix, Endolimax and Iodamoeba have all been found in the Yanoama area (Colchester 1982a; Yarzabal pers. comm.). The Yanoama's rudimentary culinary hygiene, their carelessness concerning defaecation (especially children) and the fact that moist soils are frequently maintained near their villages due both to the proximity of primary vegetation and their banana plantations, mean that there are near optimal conditions for accelerated rates of parasite transmission (Wilcocks and Manson-Bahr 1972; Takemoto et al 1981). In children particularly, these infestations may cause bowel pain (epigastric pain), diarrhea and may even cause bowel blockage leading to death. Such high levels of gut parasites may cause severe, chronic nutritional disorders—anaemias, amenorrhea and protein deficiency (Yarzabal 1981; Wilcocks and Manson-Bahr 1972; Lowenstein 1962). The high rates of bacterial dysenteries and dysenteries caused by rotavirus, common among children, combined with these gut parasites, probably account for a majority of infant and child deaths (Lizot 1978; Colchester 1982a; Yarzabal pers. comm.; cf Lee 1979).

One of the first studies carried out on intestinal parasites in the Yanomami area of the Upper Orinoco showed the following parasite levels: Ascaris 90%, Trichuris 80%, Ancylostoma 70%, Strongyloides 10% (approx.) (Lawrence et al 1980).

A recent study carried out by Yarzabal and colleagues in the Parima area gave the results displayed in Table 5. The same study also revealed that up to 94% of the Parima Yanomami had been exposed to rotavirus. Clinical observations lead this team to ascribe approximately one third of all cases of diarrhea to rotaviral infections, one third to bacterial infections and one third to intestinal parasites (Yarzabal pers. comm.).

In 1981 the Sanema of Majaguaña were observed to suffer a dysentery caused by intestinal Trichomonas. 49 out of the community's population of 196 were seriously infected within 48 hours of the first case presenting to the clinic. Deaths were only avoided by treatment with intravenous plasma, thanks to the presence of the CRUMEI team who were on hand to deal with and identify the epidemic.
It is not clear to what extent these severe problems of parasitosis and bowel infection represent the aboriginal condition. It has been argued (Zerries 1964; Wilbert 1972; Colchester 1984a) that the Yanoama were once much more nomadic and paid much less attention to agriculture than they do today. If this is true, it may explain the Yanoama's extreme carelessness regarding personal hygiene which may have evolved in the context of a very mobile life-style which made cross-infection from infested soils and polluted drinking water much less of a risk (cf Neel 1971b). Today, with the adoption of a much more sedentary way of life based on an intensification of agriculture, the Yanoama's carefree attitude to dirt is proving maladaptive. Very similar transformations in subsistence practice and in disease ecology have been suggested as having occurred among the Waorani of Ecuador (Larrick et al 1979; Kaplan et al 1984).

Other cultural transformations induced by contact have also had a negative impact on Yanoama health. Many groups have replaced their open, airy, traditional houses with dark, smoky huts with mud-walls and sometimes tin rooves. Bronchial complaints have been aggravated. Skin infections have become common among Yanoama who have adopted Western clothing, which they do not launder. Sugar, introduced to the river dwelling Yanoama, has caused dental caries to become more common (Lizot 1976b; Donnelly et al 1977).

**Introduced Diseases.**

The major causes of death among the Yanoama as a whole are the introduced diseases that have ravaged their populations since the turn of the century (Neel et al 1970; Chagnon et al 1970). Continuing epidemics of introduced viral diseases constitute an acute threat to the survival of the Yanoama. Influenzas, parainfluenzas, measles, mumps, rubella, chicken-pox, poliomyelitis and pertussis are not maintained endemically among the Yanoama because of their dispersed settlement pattern and low population density. For this reason, the diseases, when they are transmitted to the Yanoama, either directly or indirectly through recent contact with non-Indians, result in
epidemics affecting very high proportions of the society, causing temporary failure of the subsistence economy. The resulting mortalities are very high due to the malnutrition consequent to the failure in production and especially because the debilitation leads to very high rates of broncho-pneumonial complications (Neel et al 1970; Chagnon and Melancon 1983). Death rates of as high as 30% have been recorded from single epidemics. During the road building programme in Brazil up to 90% of the population in some villages perished due to repeated epidemics of this kind (Migliazza 1978; Ramos and Taylor 1979; CCPY 1979; Saffirio and Hames 1983).

In the Upper Orinoco of south Venezuela, influenza epidemics hit a peak in 1972 to 1974 when tourism at Platanal was at its height (Lizot 1976b). In 1973, in an advertised tour, Europeans could fly from Munich to Caracas and then into the "Stone Age" Yanomami village of Maheikutoteri on the Upper Orinoco (Chagnon 1977). The impact of introduced disease was so detrimental that tourism was finally banned in 1975 by the Venezuelan government (Governor Luis Gonzales Herrera pers. comm.). (It was illegal anyway!)

Such introduced viral epidemics have had, and continue to have, very serious effects on the Yanomami as a whole besides being responsible for severe disruption to the local groups' social organisation and causing intense human suffering. Because the Yanomami are in infrequent contact with the national societies they tend to suffer repeated epidemics spaced by several years. It is possible that as the Yanomami come to increase their contacts with the outside world the severity of the epidemics will fall off, since fewer members of each group will be affected at any one time.

The real threat that these diseases pose to the Yanomami should not be underestimated, especially in the short term. In the long term the most serious threats to the Yanomami now come from the introduced persistent infections of tuberculosis and malaria. Malaria occurs in the Yanomami area in both Plasmodium vivax and P. falciparum forms (Yarzabal et al 1980). A third form, P. ovale, occurs in the Federal Amazon Territory (Yarzabal 1981) but has not been recorded among the Yanomami. It is thought that all malarias have been introduced into Amazonia
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| total adult deaths per year | 5  | 6  | 9  | 5  | 7  | 12 | 29 | 29 | 16 | 14 | 2 | 134 |

in post-Columbian times (Black 1975). James Barker, the first missionary to live with the Yanomami in the 1950s, did not encounter malaria during the early years of his work (Neel 1971a). Malaria has now spread to most of the Yanoama areas. In 1960 an estimated 10% of one population died from malaria at a time when agricultural yields were poor (Smole 1976). One estimate suggests that 45% of Yanomami deaths are the result of malaria (Chagnon 1977). Malaria, particularly the *falciparum* form, is now a major cause of death in the Upper Orinoco (Lizot 1976b). Missionary records from Mavaca show that malaria has been the chief cause of death in the last decade, accounting for 40% of all adult deaths and 38% of infant deaths (see Tables 6 and 7).

An unusual feature of the malarias in the Yanoama area is their fluctuating and epidemic nature (Ferraroni and Hayes 1977). Apparently this is due to the fact that the area does not present optimal conditions to the Anopheline mosquito vectors, whose abundance thus fluctuates considerably according to climatic conditions. Even where mosquitoes are present, the dispersed human population means that *Plasmodium* carriers and, therefore, malaria may be absent.

Tuberculosis (mainly in the glandular form) is a very serious problem among the eastern and northern Yanoama, rising to an incidence of nearly 25% among the eastern Sanema. The disease may present the most serious threat of all to Yanoama survival, as its incidence is likely to increase due both to its internal spread among the Yanoama and due to further contacts with non-Indians (Colchester 1982a).

The problems posed by tuberculosis and malaria are especially grave since prophylaxis is difficult and cure problematic. Successful cure of TB requires at least six months regular pill taking, something very difficult to institute under field conditions. Malarias are becoming increasingly resistant to drugs.

Venereal diseases have been introduced to peripheral Yanoama populations (Migliazza 1978; Ramos and Taylor 1979) but the extent of this problem has not been well documented. A common consequence of the introduction of gonorrhea to previously unaffected populations is a noticeable decline in
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fertility (cf Howell 1979). It is not known if the Yanoama are facing this problem.

Population Futures.

Since 1900 the Yanoama have undergone a doubling or quadrupling of their numbers (Neel and Weiss 1975; Lizot 1977). In the early 1970s the population as a whole was still expanding at a rate of about 0.8%/annum, giving a doubling time of about 87 years (Neel and Weiss 1975). Yanoama demography presents us with a number of anomalies, the most obvious being that the growth of what we presume was originally a small and relatively stable population has occurred simultaneous to the gradual entry into the area of serious diseases. This paradox shows important similarities to the Dobe !Kung (Howell 1979) of the Kalahari. It is most likely resolved if we accept that the Yanoama's gradual change in subsistence strategy shifted the diet away from a dependence on the products of foraging to a dependence on starchy agricultural produce, thus decreasing the duration and frequency of post-partum amenorrhea caused by extended lactation, low maternal fat stores and/or nutritional stress (Harris 1979:128; Lee 1979:325ff; Howell 1979:189ff; Handwerker 1983).

Since the early 1970s there have been such fast changes in the patterns of mortality that it is difficult to make accurate statement's about the Yanoama's future. The Yanam populations of the Paragua and Uraricaa are undeniably in decline (Migliazza 1978 and see below). The same is true of the Yanomam of the Apiau and the Catrimani areas in Brazil (Ramos and Taylor 1979). The western Sanema appear to be increasing, whereas the eastern Sanema are decreasing due the greater degree of interaction with non-Indians and to the high incidence of tuberculosis and malaria (Colchester 1982a; Villalon 1981). Among the Venezuelan Yanomami the isolated groups may still be expanding but the peripheral populations and especially those near the Upper Orinoco are almost certainly on the wane (Lizot 1976b; 1978; Colchester and Fuentes 1983).
Simulation of Yanoama population futures using computers reveals that the Yanoama population is in fact very fragile (Neel and Weiss 1975; Colchester 1982a). Crude death rates are very high and the expansiveness of their population during the last century has only been achieved by correspondingly high crude birth rates. When introduced diseases cause even slight increases in crude death rates, the populations can fall rapidly into decline and it is unlikely that the Yanoama can counter this trend by further increases in crude birth rates, which are already maximal (see above). Even if the populations survive the acute population declines caused by introduced viral infections, the long term mortality increases due to malarias and TB may threaten the Yanoama with extinction.
MEDICAL CARE AND THE SURVIVAL OF THE VENEZUELAN YANOMAMI

by Richard D. Semba
Young Yanomami dancing during a feast. Photo: Jean Chiappino.
Introduction.

During the summer of 1980 I spent five weeks with the Venezuelan Health Service in the Federal Territory of Amazonas. During this time I worked among the Yanomami of fifteen villages on the Upper Orinoco, Mavaca, Manaviche, Ocamo and Padamo rivers. Of the Venezuelan Yanomami it is these who have experienced the most contact with non-Indian society due to the relative ease of access provided by the rivers and have thus suffered the most from introduced diseases and acculturation (see Map 3). This article describes in some detail the nature of the health services working in the Upper Orinoco region, the problems encountered working among the Yanomami and the prospects for the future.

The role of the Venezuelan Health Service.

The Yanomami of Venezuela receive medical care from three services: the medicina simplificada system, the malaria service and the public health dermatological service. The Catholic and Protestant misiones also provide a modicum of informal medical aid.

Medicina simplificada is a system of rural health care which began in the Federal Territory of Amazonas as a pilot project in 1962 (Yates 1975). It consists of three tiers: health centres, medicaturas, and dispensarios. The medicina simplificada system in the Federal Territory of Amazonas has only one health centre, and this is located in the territorial capital, Puerto Ayacucho. The health centre has a staff of physicians, many beds, surgical and x-ray facilities, etc. A number of medicaturas are found throughout the territory, and these have one physician, basic medical supplies, examining rooms, and a few beds. On the most basic level are the more numerous rural dispensarios which are staffed by health auxiliaries, paramedical workers who have received four months of basic training in health care. The health auxiliaries are usually between the ages of 18 and 40 years, and, if possible, they are taken from the community in
MAP 3

YANOMAMI VILLAGES OF THE UPPER ORINOCO

[Map showing the location of Yanomami villages along the Upper Orinoco River with symbols indicating areas served by medical services and missions.]

0 20 40 kms

Area served by Medical Services

Missions
which they are to work (Yates 1975). They are responsible for
maternal and child care, immunizations, basic emergency
medicine, administration of drugs and collection of demographic
data. Any cases which are beyond the skill of the auxiliary are
referred to the supervising physician. In 1980 the Federal
Territory of Amazonas was served by one health centre, six
medicaturas and thirty-nine dispensarios (Zanbrano 1980).

Under medicina simplificada, the Yanomami are served by
one medicatura at Mavaca and four dispensarios located at
Toki-Shanamaña, Parima, Ocama, and Platanal. The medicatura
consists of an examining room, a small laboratory for the
detection of malaria, and an infirmary with a few hammocks.
The dispensarios generally have an examining room only. The
medical facilities are well stocked with antibiotics,
antihelminthics, and other drugs, and they are usually
maintained in high sanitary standards. None of the four health
auxiliaries are Yanomami; they are Yekuana (a neighbouring
tribe) or criollos. One physician staffs the medicatura at
Mavaca, and he is the only physician to serve all the Yanomami
of Venezuela. Physicians who work with the Yanomami at Mavaca
are usually medical residents from the health centre in Puerto
Ayacucho, and generally they are young and less experienced,
serving in their one year obligation to the country or seeking
revalidation of their medical licences. Most of them work at
Mavaca for only three months, and since this is not sufficient
time to learn the Yanomami language, the physicians usually
rely on another auxiliary who can speak Yanomami.

The Yanomami can receive medical care by visiting the
medicatura or dispensario or by waiting for the physician to
visit their "shabono". The physician regularly visits the
Yanomami villages on the Orinoco and its larger tributaries by
motorboat, but during the dry season sometimes the river is
impassable and "shabono" must be visited on foot. Since
laboratory facilities are lacking, except for the diagnosis of
malaria, the physician needs to rely upon a history and
physical for a diagnosis. During my visits to the Yanomami
villages, often there was not sufficient time to examine each
individual who claimed to be ill sometimes because the entire
village would claim to be ill. Drugs were often handed out in a
perfunctory or even chaotic manner to all the individuals who were demanding medicine. Oral antibiotics were sometimes dispensed indiscriminately. One health auxiliary said that the Yanomami would often feign illness in order to receive pills which they could then hoard and use at their own discretion.

<table>
<thead>
<tr>
<th>disease/condition</th>
<th>number treated</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>diarrhoea</td>
<td>114</td>
<td>26.0</td>
</tr>
<tr>
<td>influenza</td>
<td>102</td>
<td>23.2</td>
</tr>
<tr>
<td>helminthiasis</td>
<td>74</td>
<td>16.9</td>
</tr>
<tr>
<td>malaria</td>
<td>24</td>
<td>5.5</td>
</tr>
<tr>
<td>bronchitis</td>
<td>20</td>
<td>4.6</td>
</tr>
<tr>
<td>cold</td>
<td>20</td>
<td>4.6</td>
</tr>
<tr>
<td>conjunctivitis</td>
<td>16</td>
<td>3.6</td>
</tr>
<tr>
<td>mycosis</td>
<td>14</td>
<td>3.2</td>
</tr>
<tr>
<td>abscess</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>wound, injury</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>anemia</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>dermatitis</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>diptheria</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>otitis media</td>
<td>1</td>
<td>0.2</td>
</tr>
<tr>
<td>misc., pregnancy, snake bite, arrow wounds, etc.</td>
<td>47</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Total 439 100.0

From the medical records at the Mavaca medicatura, Upper Orinoco region
Injections were given with little fuss. The medical service has encountered difficulties in identification due to name taboos, and medical records are difficult to keep for individuals.

Western medicine seems to be compatible with the traditional Yanomami healing system. Sometimes while we were treating people in a village, the shamans would continue their own work healing people in the village, presumably undisturbed by our presence. The health personnel are encouraged by the health service to work as a team with the native healers rather than antagonize them (Zanbrano 1980). According to some Yanomami, white men have caused many of the new illnesses, and if the white man had not existed, these diseases would not have existed either (Biocca 1970). The white man has also brought a cure for the new diseases, and thus medicines are sought eagerly by the Yanomami. To be on the safe side, some Yanomami consult both Western medicine and traditional Yanomami healing when they are ill (Chagnon 1968b).

Diarrhoea, influenza, and helminthiasis were the three most common health problems treated in a typical month (Table 3). Other health problems included malaria, bronchitis, colds, and conjunctivitis. The high incidence of diarrhoea may indicate intestinal parasitic superinfection caused by the high buildup of parasite eggs in the soil. When the physician encounters a person who requires surgery or more intensive treatment, the Venezuelan health service will fly the patient, free of charge, from the Upper Orinoco to Puerto Ayacucho for medical care. The physician requests an airplane from the health authorities in the territorial capital by radio. In 1978 the health service flew six Yanomami to Puerto Ayacucho for treatment (Table 9).

The malaria service is responsible for the detection, control and treatment of malaria among the Yanomami. The health auxiliaries routinely take blood samples from village populations for malaria screening. Sisters at the Catholic mission at Mavaca prepare slides and diagnose cases of malaria for the malaria service. Patients with malaria are treated with multiple doses of chloroquine, primaquine, or a combination of both. Patients with chloroquine-resistant malaria are treated
TABLE 9

PATIENTS REFERRED TO PUERTO AYACUCHO IN 1978

<table>
<thead>
<tr>
<th>Patient</th>
<th>Diagnosis</th>
<th>Hospital Days</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>fractured left wrist lumbosacral trauma</td>
<td>45</td>
<td>recovered</td>
</tr>
<tr>
<td>2</td>
<td>falciparum malaria and parasitosis</td>
<td>40</td>
<td>recovered</td>
</tr>
<tr>
<td>3</td>
<td>severe anemia and parasitosis</td>
<td>20</td>
<td>recovered</td>
</tr>
<tr>
<td>4</td>
<td>arrow wounds, head and back</td>
<td>15</td>
<td>recovered</td>
</tr>
<tr>
<td>5</td>
<td>falciparum malaria</td>
<td>39</td>
<td>recovered</td>
</tr>
<tr>
<td>6</td>
<td>placental haemorrhage</td>
<td>445</td>
<td>recovered</td>
</tr>
</tbody>
</table>

with quinine in Puerto Ayacucho. Because many of the villages are visited at erratic weekly intervals or more, it is difficult to ascertain whether the patients are taking their malaria pills as prescribed. Compliance is difficult because of communication and conceptual difficulties surrounding the treatment regimen. Some of the Yanomami will stop taking their drugs when the symptoms subside, and this poses a problem for a recurrent disease like malaria. One health auxiliary informed me that he didn't give some Yanomami the full treatment regimen because they wouldn't take all the pills anyway. Since the
Yanomami numbering system is one, two and many, it makes it difficult to give precise instructions on treatment schedules. Many of the Yanomami leave their villages during the day to hunt, gather or visit other villages, and often we arrived at a village to treat malaria patients and found that half of the village was absent. Thus, malaria cases are treated, at best, in a haphazard fashion, and it is doubtful that malaria will be eliminated from the Upper Orinoco by the malaria service.

The public health dermatological service is responsible for the diagnosis, control and treatment of onchocerciasis. It should be emphasised that the form of onchocerciasis in the Federal Territory of Amazonas appears to be a milder form of the disease than its counterpart in Upper Volta or Guatemala, where the sequelae of blindness is much more common. The dermatology auxiliaries screen village populations for onchocerciasis by means of the Mazzotti test in which oral diethylcarbamazine is administered. The drug kills microfilariae of *Onchocerca volvulus*, and the dying microfilariae elicit a characteristic skin reaction. The auxiliaries then take skin samples from positive individuals for microscopic examination; observation of microfilariae in the skin confirms the diagnosis. The treatment for onchocerciasis is suramin, a highly toxic drug with many side effects. A regular series of suramin injections are given, spaced several days apart. Some of the dermatology auxiliaries were afraid to give the full dose of drug because of its known side effects, thus occasionally, an effective lethal dose for the parasite was not even administered. The dermatology service encounters the same problems as the malaria service; many Yanomami are absent from the village when they arrive to give the suramin treatment. In one village, the treatment of several people for onchocerciasis had to be terminated completely because the group abruptly moved their village; they had killed six people in the last six months and were afraid of being raided by enemies. Onchocerciasis treatment is haphazard, and it is doubtful that onchocerciasis will be eliminated from the Upper Orinoco region by the present methods.

In many instances, the members of the health service displayed a surprising ignorance of Yanomami culture. Almost
all the health workers used the term capitan to designate a single village leader. The Yanomami have a different concept of leadership in which various men are leaders without absolute power, and the imposition of western ideas of power structure have upset Yanomami social structure (Lizot 1976a; Chagnon 1977). Some Yanomami taboos have been ignored. In the middle of one pediatric examination in Bisaasiteri, the physician pulled out a monograph by Chagnon (1968b) on the people of Bisaasiteri. When confronted with photographs of Bisaasiteri people who are now dead, the entire group of mothers, children and others burst out crying and angrily threatened to kill us. It is well-known that the Yanomami have a taboo on mentioning the deceased, and to show them photographs of the dead seems to be even worse. Such an ugly incident could have been avoided with a little knowledge of Yanomami culture. The health service personnel, in general, have kind intentions but often they don't consider the consequences of seemingly generous acts.

The Yanomami and the future.

In the Upper Orinoco region, the Yanomami present an alarming picture of a tribe which is beginning to slowly decline in the face of malaria, epidemics and ethnocide. Physical survival of the Yanomami may depend upon the intervention of Western medicine. The Venezuelan health service, with seemingly good intentions, is struggling to help the Yanomami, but the ultimate objectives of the medical system are unclear. It is difficult for the health service to deliver effective medical care to a traditionally semi-nomadic tribe. It is also difficult for the Yanomami to receive effective medical care without sacrificing some of their autonomy and traditional ways of life. More "development" has taken place in the Upper Orinoco region for the health service than any other institution. Forest is cleared for airstrips, and cement buildings are constructed for the health service and associated personnel. The foundations for a small clinic have been laid in Mavaca, and with the clinic will come more planes, motorboats, houses and personnel. To the casual observer, expansion of the medical services seems like a good solution, a humanitarian
act. But the epidemiological consequences of increased human traffic in the Upper Orinoco are obvious; more avenues for the introduction of disease and more harmful acculturative influences. Also, past experience has shown us that the presence of expensive, technological, physician-intensive medical care, such as that of a clinic hospital in a tribal community, will not greatly improve the basic picture of health (McDermott et al 1972; White 1977). Many of the basic problems lie on the preventive level and do not require expensive, curative medicine.

The presence of the health service among the Yanomami is tied to a broader political development in Venezuela. In 1969, alarmed by Brazilian plans for development in neighbouring Amazonia which included the Amazon highway projects, the Venezuelan government announced LA CONQUISTA DEL SUR, a grand scheme for the development of the Federal Territory of Amazonas and the Cedeño district of neighbouring Bolivar state. The ultimate objective was to secure the south against encroachments from Brazil and Colombia, and this was to be accomplished through colonisation and settlement, extending the presence of the Venezuelan state, and exploration and exploitation of natural resources (Cordiplan 1971). Included in the plan was a proposal to improve the level of health in the Federal Territory of Amazonas. During LA CONQUISTA DEL SUR, the health service expanded greatly, especially in Yanomami territory. The government, hoping to attract settlers to the Federal Territory of Amazonas, advertised around Caracas and urged young people to seek their fortune in the south (Herman 1980). When onchocerciasis was discovered among the Yanomami of southern Venezuela in 1975, the health officials urged that a control programme be established immediately, not for the sake of the Yanomami, but rather because, as they claimed, "...if this is not done, the disease will frighten away settlers, and a sizeable portion of the Federal Territory of Amazonas will remain blocked to progress" (Rassi et al 1977). Nothing would be more detrimental to the health and well-being of the Yanomami than a flood of settlers, as demonstrated by the example of frontier expansion in the Brazilian Amazon region.
If the objective of the health service were to ensure the survival of the Yanomami as a healthy people, then several recommendations could be implemented which would increase their chance for survival. I draw upon some of my own conclusions and basic recommendations made by Brooks et al (1973), Neel (1974), Chiappino (1975), and Lightman (1977). Native land should be protected by law, in order to protect the fauna and hunting territories from frontier colonisation and exploitation. The health of the Yanomami is intimately tied to their land, and although land tenure is not a critical problem at the present moment, it is likely to be in the future. The issue of land tenure in Venezuela is ill-defined for tribal groups (Arvelo-Jimenez 1972; Coppens 1971), but this is the most critical issue which has faced the Amazonian Indians. Medical personnel who work among the Yanomami should have some basic anthropological knowledge of Yanomami culture, such as social organisation, attitudes toward health and disease, the existence of taboos, family structure and obligations, leadership etc. Physicians who work with the Yanomami should spend at least six months or preferably a year, instead of three months, in the Upper Orinoco in order to at least gain some competency in working with the Yanomami. Bilingualism should be encouraged for health personnel as well as for the Yanomami. The prohibition of tourism into the Upper Orinoco should be continued in order to reduce the amount of contagious contact. Medical personnel, missionaries, and other workers who have contact with the Yanomami should have regular physical examinations, including tuberculosis screening. Compliance with such a regulation could be enforced by the military which already routinely controls access to the Upper Orinoco. During epidemics, personnel should not be transferred between missions or health posts in order to minimise the risk of spreading disease. The main emphasis of the health service should be on preventive medicine, such as vaccinations and proper hygiene, rather than curative medicine. The Yanomami should have a larger voice in the operation of the health services in the Upper Orinoco. At present, none of the health auxiliaries are Yanomami, and this situation should be corrected. The health service is often rendered ineffective by the high rate of
absent individuals when they arrive at a village to give malaria and onchocerciasis treatments. Whether this is due to bad communication, incompatibility to Yanomami culture, indifference to the treatments, or unreliability of the health service was unclear. If certain Yanomami groups choose to depart from traditional ways of life, the health service should ensure that the Yanomami maintain good health. Basic sanitation concepts should be introduced to the Yanomami who decide to make a permanent settlement. Supplementary crops, such as maize or beans, can be introduced to sedentary groups to safeguard against any protein decrease that may accompany local overhunting. If Western clothing is adopted by some Yanomami, the health service should introduce concepts of basic hygiene concomitant with the wearing of clothing. Similarly, the use of sugar should be discouraged unless knowledge of basic dental hygiene is also introduced. Health personnel should also discourage the use of alcohol in the Upper Orinoco region. Any impetus for the Yanomami to change should come from within and the health service should make sure that any acculturation which occurs is not a brutal and unhealthy process. The Yanomami of Venezuela have not yet faced the invasion of their lands by colonists and with the help of the health service and all concerned scientists they may survive and contribute to the cultural richness of Venezuela for the coming decades.
The arrival of a STOL-equipped Cessna of the Missionary Aviation Fellowship in Majaguaña. Aeroplanes have been largely responsible for the accelerated rate of change among the Sanema. Photo: Marcus Colchester
MEDICAL AID AMONG THE VENEZUELAN SANEMA (NORTHERN YANOAMA)

by Marcus Colchester
The Sanema of Momi du uli have begun the commercial production of honey, with the assistance of Jesuit missionaries. Photo: Marcus Colchester
Situation.

There are approximately 2,600 Sanema in Venezuela, living in some 88 settlements dispersed over an area of 40,000 square kilometres -- an area about twice the size of Wales or New Jersey. The area is shared with some 1,600 Yekuana (Carib-speaking) Indians, who are more commonly known as Makiritare in Venezuela or Maiongong in Brazil.

Some 90 years ago all the Sanema inhabited the northern part of the Parima highlands, the majority of them being concentrated between the headwaters of the Ocamo and Matakuni rivers. Escalating levels of raiding between communities, exacerbated by changes in their subsistence base and an expanding population, were partly responsible for their rapid spread over a wide area. The Sanema also raided the Yekuana for women and trade goods causing them to flee their villages on the Ocamo and Matakuni. As the Yekuana withdrew, the Sanema followed in order to maintain trading and raiding contact with them since they were the Sanema's only source of industrial products.

Major hostilities between the two tribes ceased in the late 1930s after the Yekuana imposed several crushing defeats on the Sanema since their shotguns, obtained through trade with the Pemon Indians of the Gran Sabana, outclassed the Sanema's bows. Since that time the Sanema have been obliged to adopt an inferior status when trading with the Yekuana and the Yekuana have tolerated them within their territory as a source of cheap labour. Today the Sanema inhabit the whole of the area occupied by the Yekuana and some have moved even further downriver to trade directly with the national society.

The Sanema share the general epidemiological characteristics of the Yanoama as a whole (see above). There are however notable local variations in the general levels of health. Malaria and tuberculosis, for example, are rare in the western part of Sanema territory but distressingly common further east. Onchocerciasis, hyperendemic in the southern Sanema area around the headwaters of the Matakuni and Ocamo appears to be less prevalent in the Ventuari and Erebato areas. An incidence of about 17% has been recorded among the Sanema of
the Upper Ventuari river and of 23% for the more riverine Yekuana of the same area (Lopez pers. comm.).

Detailed demographic studies have not been carried out among the Sanema. Preliminary examinations of demographic profiles suggest that the western Sanema of the Ventuari and Erebato are still increasing numerically while those of the Caura are currently in decline due to epidemics and the introduced and persistent problems of malaria and tuberculosis. Further east the single Sanema community on the Paragua is in an even worse condition (see following article).

The degree of penetration of the area is slight (and see Map 4). Two Catholic missions in the area are run as economic aid projects on behalf of the Yekuana (at Sta. Maria and Cacuri) and the latter has been extended to incorporate an apiculture project, at Momi du uli, aimed at the economic development of the local Sanema (Colchester 1983c). An unsuccessful missionisation programme run by Catholics at Kanadakuni has been abandoned (see following article).

Evangelical protestant organisations run three missions in the area. The longest standing mission at Carona (Shimrarina) is currently run by descendants of the New Tribes Mission (NTM) 'family' but offers no significant medical assistance. The NTM make occasional visits to the Yekuana at Chajuraña but, similarly, provide little medical aid. The most recently founded mission at Majaguaña is the centre for an effective medical aid venture called CRUMERI (see below).

Besides the missions and the medical aid activities the only presence of the national society in the region consists of the schools which are staffed by Yekuana teachers and the hydrological stations, one of which is manned by a Yekuana for 50 weeks a year (at Tencua) the others being manned by criollos. The station at Guaña has been responsible for introducing severe viral epidemics (Villalon 1981) and degrading inter-ethnic relations, including economic and sexual exploitation (Colchester 1983a).

Medical aid among the Sanema can best be discussed under the categories of the organisations involved since there is almost no coordination of their activities.
MSAS (Ministerio de Sanidades y Asistencia Social).

There are currently no doctors permanently working among the Sanema. Between 1982 and 1983 one doctor was temporarily assigned to the Sanema area, following a series of serious epidemics in the Merevari area and allegations in the press that the government was responsible for 'genocide through neglect' (Villalon 1981). Santa Maria, a large Yekuana settlement on the Erebato, was selected as a base and a clinic (medicatura) was established there in 1982. The doctor was theoretically designated the entire Erebato and Merevari area which is inhabited by 1562 Sanema and 1026 Yekuana. The doctor was thus in theory charged with the responsibility of treating some 59% of the Venezuelan Sanema.

The reality was somewhat different. The nature of the terrain, settlement pattern and available communications meant that she was only able to reach, sporadically, 553 of these Sanema, some 35% of those in her practice or about 21% of the total population in Venezuela. The major problems were that the Sanema live widely dispersed over a huge area and communication is only possible by long treks of several days along difficult forest trails. River journeys are possible in some areas but the doctor had no outboard engine on the Merevari to extend the range of service to nearby riverine communities. More serious was the lack of a developed cold chain for servicing the immunization programme. The doctor had only a single kerosene refrigerator at the clinic for storing vaccines and for lack of any portable refrigerators was only able to extend the cold chain a maximum of 48 hours from Sta. Maria by the use of insulated cold boxes. When the missionaries were present at Carona it was possible to use this as a base since the missionaries also had a refrigerator but any extension of the immunization programme was hampered by the lack of an outboard motor.

No doctors have ever been assigned to the Upper Ventuari or Matakuni-Ocamo areas.

In spite of these serious limitations the medical work carried out by the MSAS doctor was valuable. Blanket immunization was provided against rubella and measles; oral
polio vaccine was administered to all those under 5 years; DPT (Diphtheria, Pertussis and Tetanus) shots were given to all up to six years of age, while tetanus was provided for all those over six years. BCG vaccines were given to new born babies and PPD (Purified Protein Derivative) skin tests were given to all other individuals, BCG being subsequently administered if the response to the test was negative after 48 hours (difficult to achieve in the outlying settlements for lack of a cold chain).

A worrying conclusion of the PPD testing was that many BCG vaccinated individuals did not successfully generate antibodies. This conclusion is a cause of especial concern given that tuberculosis is a major problem in the area.

This brief medical assistance provided for the Sanema, was terminated in 1983 when the single medic withdrew from practice. The vacant post has not been filled since the funding, temporarily made available by local government, has not been renewed.

The brief period of medical aid has provided us with a unique body of information on the medical situation of the Sanema, published in a government report based on the first five months of the practice (Viale 1982).

Table 10 shows the principle causes of morbidity recorded in patients reporting to the doctor for treatment. This 'top ten' accounts for over 54% of all patients' problems, including those presenting with no evident pathology.

The report further confirms the serious nature of tuberculosis in the area, mostly confined to glandular forms. The high proportion of patients with erupted neck glands may partly account for the widespread spread of the infection, which is generally considered to be non-infectious in the glandular form. About 1% of all the Indians in the area reached by the doctor were treated for active tuberculosis during the five-month period. About half these patients had suspicious pulmonary conditions that required X-ray examinations to confirm their seriousness. Also notable from the report is the absence of cases of filariasis, which tends to confirm previous indications that the focus of these diseases is further south. The absence may however be as easily explained by the clinical negligibility of the diseases.
# TABLE 10

**TEN PRINCIPAL CAUSES OF MORBIDITY**  
Erebato-Merevari area, 1982.

<table>
<thead>
<tr>
<th>PATHOLOGY</th>
<th>% of 307 cases*</th>
<th>% of all cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>CATARRH</td>
<td>50</td>
<td>27</td>
</tr>
<tr>
<td>HELMINTHIASIS</td>
<td>22</td>
<td>12</td>
</tr>
<tr>
<td>GASTROENTERITIS</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>MICOSIS</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>PIODERMITITIS</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CONJUNCTIVITIS</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>OTHER FORMS OF DYSENTERY</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>TUBERCULOSIS</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>ANAEMIA</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>LEISHMANIASIS</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

TOTAL 100% 55%

* Cases with evident pathology.

(Source: Viale 1982:16).
Also notable from this report is the absence of cases of malaria - probably a reflection of its fluctuating semi-epidemic nature. A small outbreak of chicken pox occurred during the five months and there were three cases of snakebite in the same period.

Besides the temporary presence of this doctor, State medical aid to the Sanema is limited to four small dispensaries manned by Yekuana nurses. These are trained employees of the medicina simplificada programme. The dispensaries that they run at Tencua, Cacuri, Chajuraña and Sta. Maria are often ill supplied, especially those in Bolivar State.

Inter-ethnic hostility between the Yekuana and the Sanema means that the Sanema receive little aid from these dispensaries. Not only do the Sanema show a great reluctance to accept medicines administered by the Yekuana but also, even when they do solicit treatment, they are often refused it on the grounds that since the medicines are in short supply there are not enough to spare for the Sanema. None of the Yekuana nurses nor the doctor can speak the Sanema language a factor which makes diagnosis difficult and giving instructions for treatment problematic and even hazardous.

FUNDAVAI (Fundacion Venezolana para Ayudar los Indigenas).

This flying doctor and economic aid organisation owns a sophisticated bimotor 'plane which has the capacity to land on most of the strips in the area with the exception of Majaguaña, Carona and the new strip on the Upper Erebato. However, the service provided by this charity is very sporadic. Most flights are associated with the economic development projects at Cacuri and Sta. Maria. Apart from occasionally flying patients to and from hospitals the aid provided by FUNDAVAI to the Sanema is negligible.

CRUMEI (Cruzada Medica Evangelica Indigenista)

CRUMEI initiated its activities among the Sanema in 1975 simultaneous to the opening of the mission at Majaguaña, run by
ADIÉL (Asociación de Iglesias Evangelicas Libres), a Venezuelan protestant organisation.

Beginning in 1979, three visits per year were programmed and commencing in 1982 this has been expanded to 6 visits per year. The CRUMEI team visits Majaguaña, Chajuraña, Carona, Kanadakuni and Guaña in the STOL-equipped Cessnas flown by the Missionary Aviation Fellowship (Alas de Socorro), a north-American organisation that also supplies the NTM missions. From Guaña the team is also able to visit the settlement of Codonia using the canoe and engine of the hydrology station. Commencing in late 1983 the team also plans to start using the new Upper Erebato strip thus extending the service to a further 100 Sanema.

CRUMEI visits are brief and intensive. The teams work over extended weekends during time off from their regular practice in the industrial north and they operate free of charge. The range of drugs, expertise and dedication far exceeds that provided by the MSAS personnel but the programme lacks efficient documentation (as does the MSAS programme).

<table>
<thead>
<tr>
<th>Year</th>
<th>Medical examinations</th>
<th>Dental examinations</th>
<th>Tooth extractions</th>
<th>Fillings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>384</td>
<td>267</td>
<td>399</td>
<td>--</td>
</tr>
<tr>
<td>1980</td>
<td>604</td>
<td>365</td>
<td>530</td>
<td>--</td>
</tr>
<tr>
<td>1981</td>
<td>513</td>
<td>310</td>
<td>265</td>
<td>3</td>
</tr>
</tbody>
</table>

Since 1982, CRUMEI has belatedly begun an immunisation programme against tuberculosis, polio and measles. Unfortunately, their lack of documentation meant that they
frequently duplicated the work of the MSAS programme, though this is no longer a problem now that the MSAS operations in the area are in abeyance.

Besides CRUMEN, the mission at Majaguaña also runs an efficient dispensary and ADIEL plan to open another of these by the new Upper Erebato strip. The Majaguaña dispensary is open for 8-10 months of the year. The beneficial results of the programme are already evident in the demographic profile of the community due to the dramatic reduction in infant mortalities achieved mainly by anti-helminthics, vitamin treatments and anti-biotic courses (Colchester 1982a). The mission hopes to have Sanema trained in the medicina simplificada programme by the end of the 1980s.

The Sanema in the face of medical change

The Sanema's response to medical treatment is very variable. In areas where they have had little or no contact with outsiders they are extremely suspicious and doubtful of the value of modern medicines. This reflects more on their evaluation of the practitioner than of the medicine itself.

In other areas, nearer to the contact zones, where the Sanema have considerable experience of outsiders and medical treatment, their attitude to modern medicines is much more positive. Sanema frequently visit missions in order to get treatment for their ailments. Indeed, gaining access to modern medicines is a reason often given by the Sanema to explain why they collaborate in the setting up of missions in their territories.

Epidemics are still a major cause of concern to the Sanema and rumour concerning new epidemics is, after rumour of raiding, the most common reason that the Sanema will temporarily abandon their settlements. Even at the missions where immunisation is offered, rumour of epidemics is a frequent reason, or perhaps excuse, given by the Sanema for returning to the forests to hunt and gather. In other settlements, rumour of epidemics can cause real panic, a response that seems quite unwarranted until one has witnessed the shattering effects epidemics can have on communities.
As Ales and Chiappino note in more detail below in the case of the Yanomami, medical treatment has not proved necessarily competitive with, or destructive of, traditional curing practice. However this is largely because the Sanema remain ignorant of western explanations of sickness and cure and thus rationalise both introduced disease and cure in their own traditional terms.

Nonetheless the access of serious epidemic diseases to the Sanema area has notably modified their concepts of disease etiology. Because they have quickly and correctly associated these new diseases with non-Sanema, they now ascribe many illnesses to evil spirits which have the form of 'foreigners' (Colchester 1982a:481-538). The Sanema attribute most illness to the infringement of complex dietary restrictions, whereby sickness is perceived as being caused by the vengeful spirits of animals killed in hunting etc. Such explanations do not readily fit the Sanema's experience of mass epidemics which often cause many members of a community to fall sick, and even die, simultaneously. These mass illnesses the Sanema ascribe to the practice of sorcery either by other Sanema or 'foreigners'. Epidemics are thus directly responsible for heightened inter-community tensions both among Sanema and between the Sanema and their neighbours. Raiding of communities supposedly responsible for epidemics is an occasional consequence (cf Chagnon 1968b). Another consequence of the changing disease ecology is the peopling of the Sanema's conceptual universe with increasing numbers 'foreign', and therefore unpredictable, spirits - the odo'osha of the Yekuana, the kanaima of the Pemon.

Just what the long term consequences of the changes in disease ecology and cure may be is hard to guess. It will probably depend, to a large extent, on numerous other factors such as the success of the bilingual education programme and the future of missionary work among the Sanema. Although there are many other factors that may explain the already evident erosion of traditional curing beliefs and practice among the peripheral Sanema, the demoralisation of Sanema shamans in the face of mass mortalities and the insensitive ethnocentrism of medical officials and missionaries may be one of the main
reasons. It is certainly possible that medical change may be one of the major acculturative forces responsible for the decline of traditional Sanema life (cf Kloos 1971).
Sanema of the Upper Erebato engaged in ritual dialogue. Downstream groups have begun to abandon their traditional mythology and rituals. Photo: Marcus Colchester.
THE VENEZUELAN NINAM (NORTH EASTERN YANOAMA):

THEIR HEALTH AND SURVIVAL

by Marcus Colchester*

*This report is based on a brief field project carried out with funding from the Fundacion La Salle de Ciencias Naturales, Caracas, and is a summary of part of a report submitted on behalf of the Fundacion La Salle to the Corporacion Venezolana de Guayana, entitled "Notas Sobre la Situacion Actual de los Indigenas del Rio Paragua", June 1983.
The Ninam village of Kawaimaken is highly underpopulated and still recovering from the severe epidemic of 1982. Photo: Marcus Colchester.
Situation and historical perspective.

The Ninam (1) constitute the least documented ethnic group in all Venezuela. So far as I have been able to determine, not a single publication has been devoted to this group, although brief reports on the area occasionally mention their existence as "Shidishanos", "Waikas" etc. or, lately and mistakenly, as "Sanema". However, the Ninam of Brazil have been better documented, notably in the works of Ernesto Migliazza (1964). According to his comparative linguistic studies (1972), the Ninam speak a dialect of the language he calls Yanam which constitutes one of four Yanoama languages and includes the Ninam of the Paragua and the Uraricaa, the Yanam of the Mucujai and the Yawarib ('yawari pik' - opossum people) of the Ajarani river (Migliazza 1978; Ramos and Taylor 1979). Being on the eastern edge of the Yanoama area and thus in close contact with both other Indian groups and non-Indians, the Yanam are the most acculturated and physically reduced of all the Yanoama sub-groups. The Venezuelan Ninam form no exception.

The Ninam first appear in the historical record in 1838 (Schomburgk 1841) already showing traits suggestive of contact with non-Yanoama groups, such as cassava and hot pepper cultivation. They had moved down out of the Parima area not long before (Migliazza 1964) and had begun to contact the Uruak Indians and, probably, other (now extinct) Carib groups of the Uraricoera like the Sapara, Marakana and Wayumara. The successive reports of Sievers (1887), Koch-Grunberg (1979), Rice (1928), Armellada and Matallana (1942), Montoya (1958) and Migliazza (1964; 1970) show them gradually expanding northwards and eastwards, moving into the Upper Paragua near the turn of the century. After a period of hostility with the Uruak, they began a process of gradual cultural fusion with this vanishing group so that today, in Venezuela, the two groups are barely distinguishable (Colchester 1982d).

The Uruak (also known as the Arutani and Awake and variants) are first recorded by Gama Lobo d'Almada (1861) as inhabiting the area just south west of the present site of Boa Vista. According to the last survivors of this tribe still living in Venezuela, they fled from this area due to raiding,
probably associated with the nefarious trade in slaves then intense in the Branco-Negro region (Hemming 1977). In 1882, Sievers noted them to have been engaged in hostilities with the Marakana and they began to move further north. The Marakana were in turn successively displaced south and west into the headwaters of the Mucajai by raiding "Shiriana" (Ninam) (Sievers 1887; Koch-Grunberg 1979; Rice 1928) whence they vanish from the historical record (Colchester 1982a). Today the Venezuelan Uruak are reduced to only 8 individuals, all intermarried with Ninam and living in villages in which Ninam is the only commonly spoken tongue. Since the Uruak language is no longer actively spoken, the group is effectively extinct. Migliazza (1980) notes a handful of Uruak on the Uraricaca, also intermarried with Ninam.

In the late 1950's, the continuing gold and diamond rushes on the lower Paragua river in Venezuela began to bring the Ninam into direct contact with the outside world (though they had been trading artefacts with Brazilians since the time of Koch-Grunberg and Migliazza (1980) mentions that the Ninam of the Uraricaca had been contacting Brazilians on farms). Miners from Brazil began ascending the Uraricaca to reach the gold fields on the lower Paragua and later the Karun. The mining culminated in a "bulla" ('rush') in the very centre of the Venezuelan Ninam area on the Paramichi tributary in the mid-1960's, when veritable townships began to be established on the Paramichi and subsequently on the Uraricaca at Surupai.

Apparently there was a "wild west" atmosphere in these temporary towns, since there was a total absence of government authority. Flung from scrabbling poverty to fabulous wealth in a few lucky weeks, the miners drew in a substantial floating population of liquor merchants, storekeepers, prostitutes and gun-runners, that only began to move away again in the mid-seventies, gradually led elsewhere by other "bullas" on the Caroni river in the Pemon Indian area and later at Guañamo, among the Panare.

The establishment of the Paramichi-Surupai traverse, created the major route for the illegal import of the cheap Brazilian shotguns into Venezuela that are still the common hunting weapon of the Pemon, Yekuana and Sanema Indians, spread
far and wide along the Indian trade routes. But shotguns were not the only firearms coming into the area. At the high point of the diamond "bomba" ('boom' or 'killing') on the Paramichi, gun slinging became habitual. When they weren't womanising, drinking or working, the miners would sit about oiling their revolvers. In the evenings they would get drunk and have shoot-outs. There were a number of fatalities.

The effects of such a society imposed in the middle of the Ninam and Uruak were shattering. Economically and sexually exploited, the Indians were also exposed to a host of new diseases and subjected to the abrasive ethnocentrism of the 'garimpeiros' and 'mineros', to whom the Indians were a lower species of being.

Direct penetration of the Venezuelan Ninam area by miners is now very sporadic but persists. Several criollos of the lower Paragua have the reputation for having made small fortunes, exploiting the Ninam's ignorance of both the value of their labour and the goods they received as payment and of the value of gold and diamonds. However, the Ninam remain keenly interested in mining. Recent estimates suggest that there are still thousands of Brazilian garimpeiros working in the gold fields on the Uaráica at Santa Rosa and Uratanim (Henman 1982; Colchester 1984b) and these fields continue to be visited by Ninam from Venezuela eager for employment in the mining camps.

Today the remnants of the Ninam in Venezuela live in four villages on the Paragua, incorporating the last survivors of the Uruak, a few Sape Indians and three Sanema from the Caura. Including these others they now total 194 members.

Population Trends and Epidemics.

There are no reliable estimates of the Venezuelan Ninam population prior to the census carried out in 1983 (2), and there are even fewer figures relating to the Uruak (3). Migliazza (1978) noted a population loss of 25 per cent among the Brazilian Ninam between 1963 and 1978 (but see note 2) and there are good reasons for believing that the Venezuelan Ninam suffered worse from the mining than those in Brazil, since they
had no medical assistance and had had less previous experience of occidental viral epidemics.

The Venezuelan Ninam recall the first epidemics as occurring in the 1950's, notably of whooping cough and some kind of measles or chicken pox. They claim to have suffered repeated epidemics in the subsequent years. The Venezuelan malaria control service records high levels of malaria in past years in the Upper Paragua. The very meagre number of age estimates made in the census reveal a waisted population pyramid, suggestive of high infant mortalities in the early 1960's, which corresponds to the era of the miners' "bulla" in the Paramichi.

In 1981 a measles epidemic entered the Upper Paragua, probably from the Sanema area of the Upper Caura (Viale pers. comm.), causing approximately 41 deaths among the Ninam-Uruak and 6 other deaths among the Pemon of the Karun. The severity of the epidemics triggered a belated concern by the local health authorities and a doctor was sent in to deal with the epidemic. Reaching the Ninam she discovered them to be in a state of shock, their economy paralysed and thus beginning to suffer from lack of food and drink. 32 of the 111 individuals that she contacted were suffering severe dehydration and/or bronchopneumonial complications and required emergency treatment, ranging from hospitalisation by helicopter to treatment with intravenous plasma. Infants were given rehydration fluid by nasal drip and when the tubing ran out the doctor resorted to using cardiac catheters with their needles removed. The Ninam say "if she had not come we would have all died". In spite of this emergency medical assistance, the Venezuelan Ninam suffered an overall 20 per cent population loss in the single epidemic.

Following this shocking revelation of the total absence of a health programme among the Indians of Bolivar State (epidemics also ravaged the Sanema, Pemon and Panare Indians the same year), four indigenist medics were recruited to work in the area (owing to the extreme disinclination of Venezuelan medics for working in the "interior", they were all foreigners).
<table>
<thead>
<tr>
<th>PARASITE SPECIES</th>
<th>INFESTATION %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascaris lumbricoides</td>
<td>60</td>
</tr>
<tr>
<td>Amoeba coli++</td>
<td>26</td>
</tr>
<tr>
<td>Ancylostoma</td>
<td>20</td>
</tr>
<tr>
<td>Giardia lamblia</td>
<td>19</td>
</tr>
<tr>
<td>Triconoma hominis</td>
<td>10</td>
</tr>
<tr>
<td>Chilomastix mesnili</td>
<td>4</td>
</tr>
<tr>
<td>Himenolepis nana</td>
<td>4</td>
</tr>
<tr>
<td>Trichuris trichiura</td>
<td>4</td>
</tr>
<tr>
<td>Amoeba hystolytica++</td>
<td>3</td>
</tr>
<tr>
<td>Necator</td>
<td>3</td>
</tr>
<tr>
<td>Trichocephalus</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>156% (+)</strong></td>
</tr>
</tbody>
</table>

+ Total exceeds 100% because of polyparasitism.
++ sic. (*Entamoeba* sp.)
Thus during 1982 the most accessible Indians of the Paragua were, for the first time, given medical assistance including a vaccination programme (identical to that administered to the Sanema, see previous article) and following this period, a report was prepared on the programme and the Indians' state of health (Viale 1982). This report on the Paragua Indians (the data also include Pemon and Yekuana as well as the Ninam) revealed that 24 per cent of the Indians were suffering tuberculosis. Between 2.4 per cent and 9 per cent of the Indians were clinical cases requiring treatment.

The report stressed, like many previous medical studies (Wilcocks and Manson-Bahr 1972), that the vulnerability of the Indians to tuberculosis was closely related to their nutritional condition. When the patients became malnourished, they were much more likely to manifest symptoms of serious TB. Viale noted (contrary to the local criollo opinion that the Indians all fall ill because they are lazy, have a poor diet and are in contact with "dangerous lianas"), that when healthy, the Indians were well fed with fish, game and garden products. In reality, the reasons that the Indians are malnourished are more complex.

The report noted the high levels of parasitosis in the area. A study of 186 stool specimens from members of the Pemon community of La Periquera revealed the following levels of infestation (Table 12). Similarly, a tabulation of the 11 principle causes of morbidity of patients treated during the first five months of the medical aid programme reveals that 52% of these are closely related to malnutrition (Table 13). The general disease ecology of the Indians can be summarised in a diagram (see Figure 3).

Since the end of 1982, the Indians of the Paragua river are again without medical attention. The only doctor in the area, who provides medical services to the criollo population of La Paragua and outlying farms, is unable to visit even the local Indian villages because he has no river transport (Martinez.H. pers. comm.). Nor are there any dispensaries or nurses of the medicina simplificada programme the entire length of the river.
## TABLE 13

**11 PRINCIPAL CAUSES OF MORBIDITY (*)**  
(Rio Paragua--1982)

<table>
<thead>
<tr>
<th>PATHOLOGY</th>
<th>% of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helminthiasis</td>
<td>31</td>
</tr>
<tr>
<td>Catarrh</td>
<td>17</td>
</tr>
<tr>
<td>Anaemia</td>
<td>12</td>
</tr>
<tr>
<td>Micosis</td>
<td>10</td>
</tr>
<tr>
<td>Piodermititis</td>
<td>10</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>8</td>
</tr>
<tr>
<td>Dysentery (other forms)</td>
<td>6</td>
</tr>
<tr>
<td>Gastroenteritis</td>
<td>2</td>
</tr>
<tr>
<td>Dehydration</td>
<td>2</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>1</td>
</tr>
<tr>
<td>Leishmaniasis</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

* Source Viale 1982(23):73.
FIGURE 2: POPULATION PYRAMID OF THE NINAM IN TWO COMMUNITIES OF THE UPPER PARAGUA (KAWAIMAKEN and KOSOIBA)

FIGURE 3: VICIOUS CYCLES OF HEALTH DECLINE IN CONTACTED INDIGENOUS POPULATIONS

- Introduced persistent malaria
- Paratosis
- Endemic Filariasis
- Tuberculosis
- Dysentry
- Unhealthy Population
- Disrupted Economy
- Malnutrition
- Weakened Immune Response
- Bronchopneumonia complications
- Viral Epidemics (Flue, Measles, Rubella, Chicken-Pox, Pertussis etc.)
- Contact with Non-Indians
- Death
It thus transpires that Indian villages only two hours in a motorised canoe from a medical centre, can be suffering severe health problems. Such was the extreme case of the single Sanema community on the Paragua river, which I visited in June 1983.

These Sanema are the last remnants of an unsuccessful attempt to establish a catholic mission at Kanadakuni on the middle Merenvar (upper Caura). The mission was founded in 1965 and at its peak incorporated some 150 Sanema and as many Yekuana. The mission suffered major health problems due in part to the very frequent visits from outsiders but also because of a rising incidence of tuberculosis.

Tuberculosis originally entered the Merenvar in the mid 1950s when the mining booms of the lower Paragua and Caroni rivers attracted Yekuana into the area from their settlements on the Caura. The circumstances by which they contracted the disease constituted a classic text book example.

"Tuberculosis...has been associated with the transition from a rural, pastoral life to an urban, industrial life, in which people from remote country areas living on adequate diets migrate for social and financial reasons to cities where they find work in mines and factories, and live in private uncontrolled dwellings where cheap carbohydrate food is the rule...In these cheap shanty-town lodgings a healthy immigrant from pastoral life can within a few months become a moribund, malnourished skeleton infected with amoebiasis, venereal diseases and TB...which is likely to kill him"

(Wilcocks and Manson-Bahr 1972:448).

Brought back from the mining camps to the Indians' home communities, the disease spread slowly among the Yekuana but with frightening rapidity among the Sanema once they were brought into close contact with the Yekuana at the new mission. The alarming levels of mortality experienced by the Sanema at the mission may have been compounded by the fact that the Indians were given hand outs of rice and thus neglected their traditional subsistence tasks. Increasing levels of parasitosis
due to the greater sedentariness of the populations at the mission may have further reduced the Sanema's resistance. According to the missionary himself, several hundred of the Sanema of the Merevari died as a result of these health problems (Barandiaran pers. comm.) before the mission was eventually closed in 1974.

Most of those that survived the Kanadakuni mission experiment soon abandoned it. As the Sanema recall: "the mountains were very angry there". A small group of 25 individuals were however relocated by the missionary far from their traditional territory to the Serra Imataca, about 500 kilometres to the east near the mouth of the Orinoco. However it was not long before the Sanema, isolated from all contact with others of their tribe and still suffering severe health problems (one woman died there of tuberculosis), asked to be returned to their homelands. For unknown reasons they were instead established near 'El Casabe', the mining town on the Paragua from where all their health problems stemmed.

For four years the Sanema on the Paragua received financial aid from the Ministerio de Fronteras, enough to maintain their encampment and provide them with store-bought foods. During all this time these Sanema continued to neglect their basic subsistence and continued to suffer severe health problems. In spite of their small numbers seven of them died in as many years while a further three found their own way back to the Caura river to the east.

When I reached the village I noted several indications of malnutrition, probably associated with parasitosis (pale, wispy hair, swollen stomachs, pallid complexion, etc.); five individuals had readily palpable swollen glands from TB, one of whom was in an eruptive (infectious) condition; four individuals were absent, hospitalised in Ciudad Bolivar, and one girl lay dying in her hammock with an uterine haemorrhage due to a spontaneous abortion five months previously. She had a fever ranging from 38 to 39.5 degrees, her uterus was infected causing her intense pain, she was not eating. Her husband said he did not have sufficient money to take her to hospital -- the community does not possess an outboard engine.
Once we reached hospital, I discovered that two of the four cases already there were recovering from severe bronchopneumonial problems. The other two were suffering the late stages of TB. The consultant admitted their prognosis was very poor (one young boy had a suspected rupture of the gut, and in spite of being in a skeletal condition, had a grossly inflated abdomen; he was in too week a condition to be operated on). Although the blood group of virtually all the Indians of Venezuela is O+ there was no such blood available to treat the 15 year old girl I had brought in. The hospital had no sheets.

Conclusions.

In sum, the material, though sparse and somewhat anecdotal, makes plain that the Yanoama of the Paragua (Ninam and Sanema) are in a critical condition and urgently require medical assistance. There are presently no medical services provided to the Indians even though both the local government and the leading functionaries of the Ministry of Health are fully aware of the problems, both due to the epidemics of 1981 and the medical report submitted by Viale (1982). Indigenists have previously accused the local government of practising "genocide through neglect" (Villalon 1981); given the current situation, it is hard to deny this accusation.

Footnotes

(1) The autodenomination of the Venezuelan Ninam is ninam pik. They also call themselves shirian pik (cf Migliazza 1964). In certain contexts the word ninam is rendered ŋanam.

(2) Migliazza (1964) estimated the overall Ninam population of the Uraricacaa and Paragua rivers at about 200 in 1964, distributed in 10 'bands'. Recently (Migliazza 1980) he has republished this figure. However in 1978 Migliazza suggested that the Ninam had suffered a 25% population loss in the years 1963-1978, from "just over 200 to 140". In fact there appear to be some 420 Ninam distributed along the Uraracacaa (CCPY 1982) and Paragua rivers.

(3) Migliazza (1970) noted 6 Uruak communities on the Paragua in 1970. Recently he has stated that in 1963 there were 37 remaining Uruak in all (Migliazza 1980).
MEDICAL AID, SHAMANISM AND ACCULTURATION

AMONG THE YANOMAMI OF VENEZUELA

by Catherine Ales
and Jean Chiappino
Yanomami shaman with assistants carrying out a cure during a feast. Photo: Catherine Ales.
Introduction

The need to safeguard the Yanomami's physical wellbeing by organising a health care plan is now generally recognised and, during the last decade, various programs in Venezuela have been undertaken in this direction. However, the importance of preserving the cultural integrity of these communities is not unanimously acknowledged and it is worrying to note that certain projects, while claiming to do this, proceed as if Yanomami culture had no value at all.

Our intention here is not to reaffirm the humanitarian principle of the right to health, this being the undeniable prerequisite to any discussion on this subject. What we want to stress, however, is that this principle can in no way justify so-called "health projects" that violate it in ethical terms. By bringing out the ambiguous relationship between medical aid and non-medical motives, we want to draw attention to the fact that, in the situations described here, health care is never dissociated from the participation and intervention of intermediaries whose methods undermine the code of medical ethics and which, above all, hamper efficient treatment.

Recognising the right to health care by no means justifies condoning questionable practices that do not respect humanitarian principles. The specific example of the Yanomami's contact with the outside world over the past decade shows how the medical system set up by national organisations has been nearly invalidated by its infiltration with alien, non-medical elements. If no attention is given to the preconditions laid down by some agents in exchange for their involvement in carrying out the health programme, it could be hastily assumed that the programs themselves are ill-conceived or inadequate. In fact, it would be wrong to assert that, in recent years, health care among the Yanomami of Venezuela has just been poorly organised. Quite apart from the specific difficulties posed by certain pathogens, by ecological and geographical conditions and by Yanomami culture, health problems are complicated by the way medical aid is manipulated in a power struggle to control Yanomami education.
MAP 6

YANOMAMI VILLAGES OF THE CENTRAL PARIMA IN VENEZUELA
Health and Health Care among the Yanomami

As noted in the other submissions to this document there is no single pattern of health and disease constant throughout all Yanoama territory. Access to the whole of the Venezuelan Yanomami area in the Upper Orinoco is controlled and the number of people in contact with the Indians is restricted. For the moment, their territory has not been reached by the economic expansion of the national society and therefore remains fairly isolated. Technically, before any outsider can enter or stay in the region, he must obtain permission from both the Office of Indian Affairs, which is under the auspices of the Ministry of Education, and from the Governor of the Federal Territory of Amazonia (T.F.A.). The army is responsible for checking anyone entering Indian territory by river or by air (this covers most of the T.F.A.).

Permanent settlers in Yanomami territory number well under one hundred and are clustered around six religious missions. They are almost exclusively devoted to helping and educating the Yanomami. The situation of the Venezuelan Yanomami is thus very different from that of other Yanoama subgroups.

Over the years, as they became better established and extended their activities, the missions took charge of medical aid. Later on, public health services developed and gradually medical outposts and rural dispensaries were founded alongside mission infirmaries. In July 1982, the cornerstone was laid in Parima B (see Map 6) for a permanent centre for a multidisciplinary research program into onchocerciasis.

Medical Aid and the Power of Medicine

Medical aid in Yanomami territory is dispensed within the framework of the mission centres and, despite the present development both in personnel and funds of public health services (see Semba this volume), it remains closely linked to and dependent on missionary participation. Nursing positions are held by qualified staff who are also missionaries. When there is no nurse permanently assigned or when he is on leave, missionaries takes over. Thus, in the absence of medical or lay
authority, the missions play a permanent role in health care, not only intervening in the diagnosis of cases but also influencing the motive underlying consultations.

Health, an undeniably sensitive humanitarian issue, can become the implicit stakes for which personal political struggles are waged. This is what the missions are doing when they transform medical care into an instrument of power to further strengthen their position among the Yanomami. This exploitation of medical power operates on several levels, as:

1) a means of justifying their existence and showing the institutions and individuals who give them moral and financial support how beneficial mission activities are;

2) a means of justifying, to national and government organisations, their presence and the validity of their work in the field;

3) a means of justifying their presence to the Yanomami and showing them how beneficial mission activities are.

Providing medical care is a privileged way of communicating with the Indians.

One of the main reasons the Indians have for coming to mission centres is to seek medical care. The infirmary or dispensary is a pretext used by Indians from neighbouring communities for frequent visits and a good motive to enter the area for those living further away. For example, in Parima B, the distribution of medicine is often the only link between the Indians and the mission.

Conversely, carrying out health care is one of the most frequent reasons given by missionaries for visiting communal houses and isolated communities. Medical aid, more than schooling or evangelism, constitutes the most permanent relationship with nearby groups and maintains contact with peripheral ones. The Indians' demand for medicine and care is strengthened by the fact that these are the only goods and services outsiders are likely to provide on a regular basis.
This two-way movement creates a form of dependence which favours deculturation.

The missionaries boast to the Yanomami about the aid they provide and how devoted they are to them, with the intention of making the Indians feel indebted. The Yanomami show gratitude only with time and for permanently repeated daily help. It is not surprising, therefore, that, since gaining gratitude is the first step toward exerting influence, the missions bitterly dispute the giving of aid by outsiders. Being influential also requires being respected and this, in turn, implies being strong. The effectiveness of medicine, like that of Western technology (planes, machines, etc.) is proof of white strength. As both advocate and instrument of strength, therefore, medical aid is invested with enormous power.

**Medical Aid and the Struggle for Power**

Competition in the field to deal with serious cases or the evacuation of the sick or wounded reveals how important possessing this power can be. Each party tries to outdo the other in expressing its good intentions and offering to help. Such rivalry dramatically exaggerates health problems without necessarily solving them and the Yanomami are left to bear the consequences. A characteristic example of this situation is a sick person's being evacuated when hospitalisation is not justifiable from a purely medical point of view. In practice, medical care is anything but disinterested and is neither absolute (care for care's sake) nor ethical.

Two examples will suffice to illustrate how each mission seeks to monopolise influence while rejecting any project it cannot control and manipulate. When, in the normal course of events, following contacts made by missions, official services take charge of medical care and develop the necessary infrastructures, the missionaries are the first to denounce the detrimental effects of the acculturation produced by such activities.

In Mavaca, for instance, a program to open a hospital and set up a rural medical and malariology centre to serve as headquarters for the doctor responsible for the Yanomami zone
had to be abandoned, after a bitter struggle for power with the local Salesian mission, and the services and the doctor were transferred to La Esmeralda, further down the Orinoco at the extreme fringe of Yanomami territory.

The battle for influence, evident in the Parima medical project, will probably end the same way. To understand how the present situation evolved, it is necessary to go back to 1968. At that time, New Tribes missionaries, forced out by the Catholics, abandoned their centres on the fairly accessible banks of the Upper Orinoco (in Platanal and Mavaca) and penetrated into the region of Yanomami territory that cannot be reached by river. Here they settled in Parima B, near an airstrip left behind by Brazilians who had mistakenly thought they were in their own country. In 1974, another mission was set up further south in Koyowe and attracted the neighbouring communities. From time to time, some of the missionaries from Parima B went to set up a temporary base in the zone called Parima A. Elsewhere in the highlands, the Yanomami have been made to clear airstrips which, although not used for permanent missions, make visiting easier.

Since becoming well established, the Parima mission has remained the only mission centre and focal point for the Yanomami in the area, especially for those in Parima A who are frequently visited and encouraged to come to the mission on the pretext of receiving medical care. This pretext is used by Yanomami without any real problems to come and go between the two zones more often than normal social needs would require.

The dispensary belonging to the mission is approved by the medicina simplificada programme which provides medicine and pays a full-time nurse. The nurse, a Ye'kuana Indian educated by the evangelists, considers himself and is considered in Parima B as first and foremost a missionary and only next as a practising nurse. Until 1982, the dispensary had no radio and any evacuation of a sick or wounded patient was carried out by the light aircraft of the Missionary Aviation Fellowship, "Alas de Socorro", which is normally used to transport missionaries' families, friends, visitors, food and fuel. Therefore, from 1968 to 1980 when we arrived in the field, the mission centre
was the only point of contact with the outside world for a large number of the Yanomami of the central Parima.

From 1978 on, however, there has been a growing awareness, at the national level, of the kind of influence the New Tribes Mission is exerting on the Venezuelan Indians. Among other things, these missions have been accused of perpetrating cultural genocide (spiritual terrorism, denial of ancestral and mythological values, cultural denigration) and the majority of public opinion has called for their expulsion. It was in this context that in 1982, on the basis of a study dealing with onchocerciasis, the construction of buildings independent from the mission was begun in order to house the governor's administration, the malariology service and the General Health Commission. The initiation of the Parima medical project effectively put an end to the isolation (already broken by us) in which the most important evangelical mission in Yanomami territory had reigned supreme.

This attempt undertaken by official organisations to make medical aid independent of the missions, met with certain problems in the early stages, since the missions intervened and, at one level or another, influenced the course of operations. The medical project at first relied heavily on the mission. Not being in a favourable position to oppose the project directly, the mission manipulated the situation to enhance its own prestige in the eyes of the Yanomami, and it used the government's display of technology (big planes) and wealth (abundant cargoes of food and goods) to its own advantage. Just as it appropriated the technological and economic strength of Western society (as it has always done for its own ends), the mission took credit for all the positive results of the public health program. It controlled all the activities in the field since the public staff lacked the necessary logistics and were unfamiliar with Yanomami culture and language.

The other problem is that posed by personnel and other outsiders settling in a pioneer zone and thus increasing and diversifying contacts with native society. On the one hand, this disrupts the mission's hegemony over the Indians, but on the other, it hastens deculturation. By their very scope, such
activities are traumatizing for the Yanomami and can only give them a complex of inferiority or cultural ineffectiveness. The arrival of new personnel brings with it the well known consequences of contact: economic exploitation, environmental degradation (especially the depletion of game due to the use of shotguns and nocturnal hunting with lamps), prostitution, alcoholism etc. Obviously, these effects are not intended by the project planners but, as they are inevitably linked to the presence of the program personnel, the missionaries have a good argument for discrediting the program itself.

To sum up the situation, there are either isolated missions in little-visited pioneer zones that have the monopoly of influence over the Yanomami (still the case of Koyowe, hard to reach by both river and air - it has a very short runway - and Koshirowe and until 1980, that of Parima) or missions that have gradually become less influential because of nearby lay installations and the more or less frequent visits of various outsiders (Platanal, Mavaca and Ocamo). At this point, we might be tempted to distinguish between Catholic Missions and New Tribes Missions, thinking that choice or doctrine has made the former more open than the latter. The contrast between the two kinds of missions, however, has more to do with when they were founded and how accessible they are. All missions, whatever their denomination, tend to practise ostracism. In both instances (Mavaca and Parima), the missionaries were determined to retain their monopoly of influence over the Indians as a means of domination and, therefore, opposed the establishment of lay services. But they are in a paradoxical position for, by initiating contact with the Yanomami, they themselves have opened the way to the further development and the intensification of the very contacts that they so defiantly oppose.

We have seen how, in the field, struggles for local power go on behind the facade of health care, taking priority over this and thus jeopardizing efficient medical treatment. Instead of benefitting from cooperation, therapy is penalized by competition between different groups, each striving to better its own position. Solutions other than a power hierarchy must be sought and tried in order to break the deadlock. There
is a need to stop thinking of development in terms of multiplying the number of contact centres, transferring equipment and funding huge programs. There are other ways to bring medical aid to the Yanomami, ways based on less ambitious, more reasonable projects that are in harmony with the real needs of the region, ways that do not precipitate deculturation and all its negative effects, and what is more important, ways that do not define relationships with the Yanomami in terms of domination.

**Medicine and Shamanism**

Any program aiming to deal with health problems according to Western medical logic constitutes, for the Yanomami, a complement to their own curing system which is based mainly on shamanism. Western medicine, as a means of curing, is in no way contradictory to shamanic curing and the two can function side by side without any difficulty as long as those applying modern techniques are not opposed to traditional medicine and agree to incorporate their practices into the pre-existing context. But most of the time, public health staff and the missionaries try to impose modern scientific rationality to the detriment of shamanism which they malign as "brujeria" ("black magic") or scorn as a collection of satanical beliefs.

Shamanism, in its attempt to control existence, is not fundamentally resistant to either medicine or medication, as long as it retains control over the rationale behind the use of curing techniques and consequently the value they will bring. Although divergent in their thinking, the two medical systems are not incompatible and could complement each other. Except for minor ailments that the Yanomami do not treat through shamanism, Western medicine has been observed as a support to shamanic therapy. Medical treatment is not therefore necessarily an alternative or replacement for shamanism but may function as a contribution to it. However, the Yanomami do not conceive of this "contribution" of new means (doctors and medicines) merely in terms of the practical benefits they bring. The way the two medical systems relate cannot be
satisfactorily described as being "complementary" because this notion retains the distinction between them.

For the Yanomami do not accept the recently introduced tools of modern medicine, its goods and services, as individual methods distinct from their own medical system. The qualities of any new method are modelled according to their own pre-existing conceptual system, so that it fits into the internal logic of their system of curing.

There are, for example, some Yanomami who have been treated in hospital in Puerto Ayacucho or in Caracas and who, even many months or years after returning home, claim they have not been cured. This is explained by the fact that the treatment they received had not been integrated into their system of thought and was not therefore generally comprehensible. There are also cases where patients have defiantly refused treatment, because the conditions under which it was to be applied have been imposed from outside, even though the same treatment has otherwise been accepted during a shamanic session when it was not presented as a substitute for the shaman's performance.

In the Yanomami system of thought, the power attributed to a medicine or to a doctor is not the same as that which we ascribe to treatment. In the Yanomami way of thinking the potential force of the treatment can either benefit them or turn against them to the advantage of the means itself or of those who manipulate it. The use of borrowed methods thus implies real risks, that must be carefully controlled to ensure that they work to the good of the group and not to its detriment.

The double-edged force that the Yanomami attribute to these new medical techniques, is reinforced by the careful way we consider and use them and also suggests to the Yanomami that they are strong and are able to act on others, thus justifying the Indians' interest in these methods and their desire to control them. This desire is legitimate since these means are ones that have been introduced into their society and imposed on them. The community's attempt to control medicine forms part of its attempt at self-preservation. By influencing the way
these methods are used, the community transforms the doctor into an instrument over which it exerts control.

The consensus of the group to which a patient belongs is necessary before any act of curing, whatever its nature, can be carried out. Therefore, even if this goes unnoticed by an outside observer, every person who agrees to be treated or to go to a dispensary must first obtain his group's consent. The community's acceptance of the care given to one of its members represents the collective dimension of therapy, which implies recognition of, belief in, and control over the practitioner's activities.

By taking an active role the community obliges a foreign doctor to function as a shaman; that is, it asks him to become an agent in the group's service. In other words, he must not only combat the cause of a disease but also provide a myth explaining it, using terms corresponding to the collective tradition. There are several points that need to be considered here. First, the two societies have different conceptions regarding an individual's body and the notion of a "person". In Western medicine a distinction is made between what is physical and what is psychological. The Yanomami however do not view the body as separated from the "soul". In their terms, illness is seen not only as disharmony within the body but also as disharmony with world order.

Furthermore, each of these two therapies is characterised by a different rationality and a different concept of effectiveness. Modern medicine develops a rationality that is mainly scientific and it works according to the forces of objective effectiveness, whereas traditional medicine develops a rationality that is mainly magico-religious and it works according to the forces of symbolic effectiveness.

Secondly, the social dimension of disease and the way it is interpreted by every society must be considered. Among the Yanomami, asking help from a medical practitioner always goes beyond the strictly individual medical context of biophysiological disorders, for the representation of disease and treatment are part of the group's overall system of thought. The traditional medical system, through the social relationships it invokes, does not function separately from
other elements that structure social reality (chiefly kinship, religion, politics, etc.).

Another essential difference between the two systems is apparent in their concepts of the causes of sickness. The logic of medical science is to some extent distinct from the overall belief system of Western society, while the logic of Yanomami curing is integral to their overall system of belief. In both systems of thought, misfortune, illness or symptoms are produced by an agent which has a characteristic way of acting. But to the Yanomami, this agent also has an origin and a will of its own.

In Yanomami society, the cause of illness is not generally considered as natural, rather illness is thought of as an aggression committed by an external agent that may be a human being, a natural being or a supernatural being. Each individual case is interpreted in terms of how he relates to his group’s history and to world order. The illness is then perceived individually as an aggression due to the intervention of an outside will and considered collectively as the result of an attack on a member of the group. The physical changes in a sick person are reflected concurrently at both individual and social levels. The biological disorder, by affecting the group’s integrity, is conceived as a disorder afflicting the entire group as a whole, a disorder to which the shaman must respond. The patient and those close to him ask the group for cure. The group acts through the intervention of the institution of shamanism, by asking its representatives - the shamans - to re-establish order; that is, to name the malevolent agent and his methods and either extract the ill from within the body or restore the stolen soul. In this way, the shaman demonstrates the society's ability to face aggression and overcome it. The goal of the shamanic performance is to separate the cause (the origin of misfortune) from the society and banish it "elsewhere". In this sense, shamanism is an important factor in social cohesion.

A doctor practising modern medicine among the Yanomami, even though he becomes familiar with their system of belief and gains the acceptance of the group, cannot, for all that, change himself into a shaman and fulfill the type of demand that goes
beyond one for purely medical care. At best, he can only provide a mechanistic sort of explanation of what he decides and does, but not a magico-religious explanation able to improve the well-being of both the collectivity and the individual. Just as he should not impose the principles of Western medicine taken as an exact science, as truth, it is not up to him to "integrate" (as they would have it or "adapt", as we see it) the concrete aspects of his practice into the collective representation of disease and its associated practices. This (according to our system) is to be taken care of by shamanism which provides a suitable setting for defining the place of what is rational within what is real, and it is precisely in this area that the two systems can be articulated.

If this possible complementarity of the two systems is rejected and our system substituted completely for theirs, the Yanomami will be obliged to accept the principles of modern medicine. The system of thought that makes their traditional world view coherent will thus be challenged and their ideological order, changed. This is the point where the activities of the missionaries come into play. When they use scientific rationality, it is to dismantle native beliefs and values in order to replace them with the new doctrines the missions preach. By adamantly proclaiming the unconditional worthlessness of the Yanomami concept of disease (like the ineffectiveness of witchcraft charms) as well as the total invalidity of their principles of healings (like the ineffectiveness of the shaman's incantations and gestures), the missionaries seek to deprive the rationality and effectiveness inherent in Yanomami society of all possible credibility. As a result, the isolation into which a sick person is plunged is no longer compensated for by group support or collective explanations. The attempt to provide a solution of another order, a solution foreign to Yanomami society, only intensifies this isolation and gives rise to considerable anguish.

If it is to be humane and respect their cultural values, health care among the Yanomami must be carried out, not in opposition to but in cooperation with the shamans. Shamanism furnishes both additional care and awareness, which modern medicine cannot provide, and a form of rationality which modern
medicine can neither develop or merge with. These two domains should be avoided as they are the focus of the missionaries' efforts to divorce the Yanomami from their traditional system of beliefs.

In conclusion, if a case is treated by doctors, this does not exclude its also being treated and interpreted by shamans. The way missionaries use the scientific rationality of medicine to eliminate Yanomami values and to destroy Yanomami beliefs violates both the principle of medical effectiveness and the code of medical ethics. Emphasis should be given to the positive aspects of the group itself taking charge of health problems by means of shamanism. This collective responsibility illustrates the real vitality of a society in which shamanism is a basic institution. As such, shamanism cannot be opposed or morally condemned without, on the one hand, individuals being upset and experiencing psychological emptiness and, on the other, the whole society suffering the 'anomie' inherent in deculturation. Medicine and health care should aim neither to make people dependent nor to destroy the spiritual and social vitality of native groups. On the contrary, they should work to preserve both the individual and the society and culture to which he belongs.

Conclusion

What we hope to have shown here is that in a transcultural context, medical aid must be medical and not a conglomeration of various kinds of assistance. It must also remain independent, relying solely on its own means. Treating emergencies is only one particular aspect of medical aid and, a fortiori, a domain that should be dealt with exclusively by doctors. However, in such transcultural situations, we believe that the more anthropological awareness medical professionals possess, the better prepared they will be to respond to the needs and demands of both individuals and societies.

One of the positive aspects that should be pointed out concerning modern medical practice among the Yanomami, is a growing awareness that national doctors show of the problems of medicine in the field. Some of the doctors responsible for the
Yanomami's health realise how tremendously important it is to be receptive in their work and what a real obstacle the contact situation can be to practising medicine according to the rules set up by and for our society. Field experience stimulates their interest in issues of intercultural communication and it is at this level that collaboration between doctors treating the Yanomami and ethnologists is essential. The ethnological approach makes it possible to become familiar with native medical concepts and practices and to better understand their effectiveness and rationality. By taking the ethnological dimension into account, doctors can adapt their practice to satisfy Yanomami medical needs and demands.

More generally, ethnologists should participate in the formulation of health care schemes. They should not only be consulted before any services are set up but also be able to intervene during the course of programs to consider problems and propose solutions, making health care workers more conscious of traditional curing systems and how they fit into the general logic of Yanomami society. This kind of knowledge could help the outsiders who have the power to intervene grasp the importance of understanding native society in order to genuinely respect Yanomami values. In this way, it would be possible to offer the Indians, confronted with two worlds, an alternative that does not impose Western medicine to the exclusion of their traditional curing system, but one that leaves room for cultural synthesis. The form such a synthesis might take would not, thus, be based solely on our choices alone, and it might initiate a dialogue with the Indians themselves.

If medical aid among the Yanomami is to be envisaged in terms of cooperation with them, it must correspond exactly to their needs. Ever since it has been recognised that all peoples have the same right to health, programs of medical aid have multiplied over the past decade based on the principle that all peoples should therefore have the same kind of health care. Efforts to adjust aid to local realities have resulted in a number of simplified medical projects. The World Health Organisation is presently investigating why such programs have nearly everywhere failed to meet their goals. The problems
encountered are similar to those we have described here. On the one hand, the degree to which treatment can be adapted to local conditions is limited by the scientific standards modern medicine has set up and, at the same time, its acceptance is hampered by problems arising from the disrespect of traditional values and by the influence wielded by local health workers, even when they are natives. On the other hand, we must take into account the limits of medical techniques in dealing with certain diseases or types of demands.

Medical aid needs to be considered on the basis of its practice. Medical aid should no longer be conceived solely in theoretical terms, since its benefit to native groups depends on its free acceptance by the group concerned. This implies that medical practice while it has to remain logical, does not need to be absolutely determined before its application in the field. The human side of aid should be allowed to temper certain precepts of medical science so that groups, as opposed to individuals, are not placed in the paradoxical position of having to choose between life and reasons for living. In other words, medical care among the Yanomami must evolve and expand, allowing the doctor to undertake medical action alongside the Yanomami for whom medical reality is defined in terms of shamanism and group participation. The doctor's intervention, if deemed medically necessary, must fit into a course of curing whose meaning, he must admit, will escape him as an outsider. This is not asking too much in order for the group to accept his involvement and for his treatment to be effective. The aim of medicine is not to assimilate social groups but to be assimilated by them. Adjusting the practical aims of health care to local conditions is the most direct way to help native groups appreciate our solidarity with them.
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