

# ANDEAN AMERICA: SOME ASPECTS OF HUMAN MIGRATION AND SETTLEMENT

By Raymond E. Crist

ALL too few of the many travelers who visit the glittering capital cities of Andean America have time to glimpse the people in their tiny homes in the country or in the rural villages, as they go about their everyday tasks of making a living on their small farms or in their shops. Most of the people of Andean America still live in the fertile intermontane valleys, the soil of which is made up of volcanic ash or rich alluvium. The Andean sierra has a population density, in its inhabited parts, at least ten times that of the forested lands to the east. Agricultural activities there consist of raising such high-elevation crops as wheat, barley, quinoa, and potatoes; pastoralism is practiced in the high wind-swept areas above the zone of crops; mining operations and home industries help the population eke out a precarious living.

The great differential in population densities of the sierra and the *montaña*, or hot lowlands to the east, would seem to be great enough to build up a demographic head of steam, as it were, sufficient to induce the migration, by the thousands, of sierra dwellers to the *montaña*. Only now is man lowering the hurdles or even taking down completely the roadblocks that he himself—often without knowing it—had raised, or caused to be built. Today many of these people of the Andes are on the march; they are moving toward new frontiers. The pressure of population on the agricultural resources of both the mountainsides and the fertile valleys is very great. There is no room for expansion farther up the mountainsides, so the surplus population tends to overflow the traditional settled areas and to “drain off” from the cold country down to the warmer foothills or to the hot lowlands. This process of migration accelerates with the years.

This paper will be mainly concerned with certain motivations and aspects of settlement of those who are venturing into the virgin country to the south and east of the great wall of the Andean Cordillera, from Venezuela through Colombia and Ecuador, to Peru and Bolivia.

VENEZUELA—After the Wars of Independence the former slaves and the poor and landless had neither the tech-

niques nor the experience to take over and operate the ruined haciendas. They fled to the villages and towns, where they eked out a precarious livelihood and where they were fairly safe from the marauding revolutionary bands that continued to devastate the country for nearly a century. But now that roads are being built, the wealthy cattle rancher or rice farmer does not have to live in the city; with little time and trouble he can drive to town and return in his car, jeep, or truck. His existence has ceased to be one long frustrated sigh for city life, because he can now afford to have installed on his own ranch some of the conveniences of urban living, such as electric or gasoline lights, running water, and sanitary facilities. The stream of rural migrants to the urban areas, evident for a century and in flood stage during the past two decades, may begin to recede when life in the country becomes materially more rewarding and psychically more satisfying.

Movements of population between the mountains and foothills and the plains are not new in the Llanos-Andes border area. In the latter half of the nineteenth century—indeed, up to a generation ago—there was a mountainward movement, due mainly to political unrest. Another reason was the prevalence of disease, particularly malaria and a virulent form of fever known as *la económica* because it killed its victims so fast they did not have time to call a doctor. People who could do so left the lower-lying hot country for the relatively disease-free mountains. However, a sustained health campaign, the influence of which is felt in the remotest parts of the country, has been a boon to the area. Twenty-five years ago, Barinas and its vicinity were spoken of as a most unhealthy place, but today malaria is practically unknown. The war against mosquitoes has destroyed the carriers of infection, and the widespread use of quinine is another factor. Further, few people nowadays suffer from tropical ulcers or yaws or from the unsightly skin disease, also caused by a spirochete, known as “carare” or “carate”. The incidence of diseases such as amoebic dysentery and typhoid fever has greatly lessened as pure drinking water has been provided for villages. Most ranchers now have drilled wells that supply uncontaminated water; formerly water for household use was dipped out of the nearest pond or stream. Tropical anemia due to hookworm infestation is on the decline since the wearing of shoes has become more widespread. Infant mortality has decreased.

As public-health measures were introduced, and particularly as the campaign against the mosquito became felt

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in the rapid decrease in malaria, mountaineers again began to descend from their steep, rocky, and infertile fields to the richer lands in the foothills and on the plains. The movement is often carried out in two stages. Residents at elevations of 8000 feet or more move into unoccupied farmland at 4000-6000 feet, and those living at the lower elevations move into the Front Ranges or even into the Llanos. Hamlets or small towns at intermediate elevations, such as Boconó, Calderas, Altamira, and Barinitas, with their tributary agricultural areas, lose population to the Llanos at the same time that they receive migrants from the higher Andes.

The construction of highways and the institution of bus services have promoted geographical mobility. The Mérida-Barinas highway serves as a convenient corridor for migrants from Las Piedras or Pueblo Llano, or even from San Rafael and Mucuchíes on the other side of the mountains, who settle near Altamira or Barinitas. Here they raise corn, yuca, dasheens, and lentils for home use and coffee for market; they also keep a few chickens and fatten a hog or two. They are able to compete successfully with farmers already living in that zone, who frequently find it advantageous to move to the lower foothills or into the Llanos.

On the Barinas-Ciudad Bolivia section of the piedmont, in spite of the poor road and the lack of bridges, small settlements have come into being—La Yuca, for example—where formerly no one lived, and places such as Curbatí, Corozo, and Paguey, which at one time consisted of only a house or two, are now hamlets of 15 or 20 families. And the people are prosperous, in contrast with the poverty both in the mountains and in the foothills a generation ago. It is fairly easy to hack out clearings in the gallery forests along the rivers and in a few months get a crop of corn to fatten hogs, which can be shipped to market by truck and sold on the hoof. The forested, or partly forested, areas that have transportation facilities are the first to be cleared and settled; for example, the sector between the Santo Domingo River at Barinas and the Caparo River, a hundred miles to the southeast, is practically uninhabited. Settlement in this zone is primarily dependent on the construction of all-weather highways.

The valleys of the Santo Domingo and Boconó Rivers are areas of dispersed settlement par excellence. Here the life zones depend on altitude, number of hours of sunshine, angle of slope, soil properties, and so on, and hence interpenetrate in such a way as to produce a highly complex agricultural landscape. The physiognomy of the cultural landscape is further complicated by the fact that the inhabitants live dispersed in the countryside and work fragmented holdings of different kinds of soils, in many cases in different climatic zones. For example, corn and beans will be grown around a house, potatoes on a plot a thousand feet or more higher, and cooking bananas several thousand feet lower. Seemingly minor physical factors affect the altitudinal dispersal of fields and crops. One man reported that it was too cold and windy (*ventea mucho*) around his house for bananas.

THE federal government is spending millions of bolivars in a kind of agricultural "Operation Bootstrap"—some 65 million in one area alone, the Turen woodlands near Acarigua. Numerous official studies have been made in the Turen area. The original plan was for farmers of plots of eight to ten

acres to grow the traditional corn, rice, and beans. But it takes enormous quantities of these crops to pay for the services and machinery that must be bought or rented from the government. In addition, the farmers were prohibited from working outside during their off season, with resulting loss of time and underemployment, and they were handicapped by having to pay for roads, hospitals, churches, airstrips, and so on, which in many communities are paid for by federal and religious agencies and from which local farmers benefit without direct contribution.

The government land allotment plan has now been modified to permit farmers to work plots of 80 to 100 acres. Such units require large capital investment, but profits are correspondingly large when big money crops are raised, such as rice, tobacco, and cotton. Rice production is currently a bonanza: the difference between the price the government is paying for rice imports and that at which it is selling the grain in the domestic market goes as a subsidy to the local producer. Easy credit enables farmers to increase production rapidly, since it facilitates the introduction of the most modern techniques. However, as soon as domestic production has filled the national demand, the era of huge profits will be over, for the Venezuelan surplus cannot compete in the world market with rice from low-cost countries such as Brazil, Ecuador, and British Guiana.

Since Venezuela is consuming three to four times the amount of sugar it did 15 years ago, the cultivation of sugar cane has become exceedingly profitable. As a result, Cuban capital has been attracted and is being invested in certain parts of the country.

The natural resources of this great transition zone between the Llanos and the Andes are being more intensively utilized every year. The grasslands, naturally suited to grazing, are being improved, in some places to produce more beef per unit of land and in others to produce rice. Cattle are more and more being taken to market by truck instead of on the hoof. Vast stretches of open savanna, such as that between the Canagua and Curbatí Rivers, unproductive 25 years ago, are now fenced and support thriving herds of cattle, with a high percentage of zebu blood. In other areas dry rice is grown, particularly in the permeable sandy soil at the foot of the Front Ranges. There is enough precipitation during the wet season to produce rice without irrigation, and the mature crop is easily harvested during the dry season. Hundreds of hectares of dry rice (*secano*) can be seen along the Acarigua-Barinas highway in areas that formerly produced nothing, or at most a few head of rangy cattle. Turen, in the state of Portuguesa, is the largest of the 21 farming centers created by the Instituto Agrario: 86,450 acres are under cultivation. In 1954, Turen had almost 26,000 acres in rice, with a production of 30,000 metric tons.

The completion of the Barinas-Santa Barbara-San Cristóbal road, along the piedmont alluvial plain, will do much to open up to settlement this vast, little-known, and sparsely inhabited sector of the country. The great Guarico dam will make it possible to irrigate hundreds of thousands of acres, where large-scale, market-oriented agriculture will be practised.

COLOMBIA—All over the world there seems to be a rural exodus, a kind of tidal wave of human beings leaving

the land for urban agglomerations, large or small, that grow by accretion. However, a reversal of this process is taking place in various parts of eastern Colombia, particularly in the transition belt between the vast plains of alluvial deposition and the massive Andean wall. To be sure, many of the settlers entering this zone have been pushed off the land, either from large estates or from plots too small to support a family. However, many in this wave of migrants were former urban dwellers, men who have made their living as artisans or as industrial workers. It can become so difficult to make a living in urban agglomerations that they cease to grow by accretion—indeed they may, and do, supply the recruits for pioneer fringe settlements. The pioneer settlers are to a great extent mountaineers, rural or urban, who hail from those regions of cold, rugged terrain where competition for jobs is extremely keen and the struggle for mere survival is grim.

In order to pinpoint this colonization and to hoist it out of the realm of mere statistics, detailed notes were taken on one pioneer family that might be considered typical. Tiberio Valderama Gallo is an Antioqueño who, with his wife and family, is working out his salvation as a pioneer in the foothill area south of Sogamoso. As a young man, still a bachelor, he left his native province for the Chocó, where he worked as a mechanic, or at any work he could find, in connection with a mining enterprise. He saved little money but saw some of the country. In 1935, at age 25, he married Maria Sanchez, age 18, who had had some experience as a nurse. Then for eight years he worked as a carpenter in the province of Antioquia and the cities of Zipaquirá and Sogamoso. His memories of the backbreaking, soul-depressing labor were still vivid. He kept longing to get out of this treadmill into something where he would be independent.

While his family stayed in a one-room hut, he crossed the mountains to a plot of ground he was to clear, near Cupiagua. He had nothing, but *nothing*, he insisted, and this meant just that. For the first two weeks he lived on cooking bananas, boiled or baked, mixed with salt—these and nothing else. He planted small patches of corn, of bananas, and of yuca. Meanwhile, his wife and children were living on a diet barely able to hold body and soul together. When a temporary shelter was built on the clearing, she sold her stockings and ironing board to get enough to hire a pack mule on which to load her few belongings. Then she set out on foot for the clearing. The night she arrived they experienced the worst storm of her life and spent the whole night in fear and trembling. The roof held, and it was clear on the morrow, and both she and her husband said that, in spite of storms, they were so glad to be here at the edge of the forest where one is independent. The dominant motive behind the move was the unquenchable desire for independence. He was determined to go forward, to migrate without looking back. He knew that he had burned his bridges behind him and that it was on the frontier where he must make his living. To be sure, he might send his family away to be educated, but he would carve out of this wilderness the land that would support him and his family. He was here *para siempre* (forever) he said, but he mused awhile before adding, unless he found another area of colonization in a sector with a somewhat milder climate. He has given some thought to settlement possibilities in that sector of the mountain front between

San Martín and Florencia, one of the most attractive areas yet to be settled in the whole country.

His wife Maria is just as determined to be independent as is her husband. Fortunately she enjoys good health and can work 14 to 16 hours a day. She now has excellent help in her two oldest daughters, who are up early and do a lot of the cooking, but while they were still small their mother did all the cooking, sewing, mending, bathing of children, and so on. Further, she did not hesitate when her husband was away from home or busy at other tasks to do the work herself in the small plots where yuca, plantains, and corn are grown, and to carry the produce home on her back.

By February 1945 everyone was sick with intestinal upsets and malaria, but Tiberio had to go out, alternately shivering with chills and burning with fever, into the dark forest and the rocky grassy hills to hunt for game. It was the only protective food available. The whole family is aware of the importance to health of citrus fruits, and parents and children alike consumed quantities of lemons from several old trees near the house that were bearing while I was there. For months it was impossible to get protein, except by hunting. There was no neighbor near enough from whom he might have obtained pork or beef. It was then that he became most keenly aware of the importance of an adequate diet to fortify the human body against the onslaught of disease. Everyone became infected with malaria when the mosquitoes got bad in the dry season, but he was able to send for plasmoquin through a friend and thus cure the sick.

The first year he cleared 1½ hectares of land during off time from his job on the road where he earned 1.80 pesos a day. With that money he could buy the barest essentials in Boquerón. By the end of the second year he had cleared 8 hectares of land, had bought a milk cow for 65 pesos, and had several pigs and 40 chickens. By 1949 he had built a house and had acquired 6 cows and 8 calves, 3 hogs and a sizable flock of chickens. Then came civil war, which rapidly created a social and political climate infinitely more difficult to cope with than the natural environment.

The scourge of the subsistence farmer or the pioneer in so many parts of Latin America has been the recurrent revolution or actual civil war. Colombia has been spared this curse for over two generations, but the hatred between conservatives and liberals had merely been smoldering, and in 1948 it was to burst into flame and destroy many thriving villages and prosperous farmsteads. Almost the entire valley on the eastern side of the Andes, south of Sogamoso, was devastated as the bands of conservatives, the government forces, hunted down and destroyed the liberals, giving no quarter. Many people hid out in the forest with little shelter, almost no food, and in constant danger of being ambushed and destroyed. Their tales of living like hunted animals were heart-rending in the extreme. Others returned to the cities, where life and limb were more secure than in the villages or in the open countryside. It became unsafe in this sector even for a conservative Antioqueño, because as the fighting continued and the lust for blood increased in intensity government forces were apt to shoot first and inquire into political affiliations afterward.

By the time the civil war was over Tiberio was again in desperate financial circumstances, leading a precarious existence in his struggle to support a growing family with wages

lagging far behind soaring costs. By 1953 he was anxious either to return to his former holdings or to go somewhere else where settlement was active. His old farm was not for sale, and he had no money with which to buy it, so he was glad to enter into an agreement with the owner of 80 hectares of land, and harvest crops on the halves.

He came out again in '53 to build a shelter and get his food crops—corn, yuca, and plantains—planted. He arranged a 4-year contract with the owner of the land. Everything produced on the farm, not including what is consumed by the family, is on the halves. However, one-third of the value of permanent improvements on the farm, such as coffee bushes and improved pastures, belong to the renter. He already had 20 acres or so of pastures cleared and has about five times that amount to clear. It is slow work because he and his brother-in-law, without money to hire men, must do it alone. Coffee will be planted next year. He talked the language of a poet and seer as he described the dense forest which he must first dominate in order that, a few years hence, fine, sleek cows could pasture where now grow only an impenetrable tangled mass of trees and vines and shrubs.

He has come out to his land without any previous knowledge of soils, rainfall conditions, or other physical factors he must cope with. He is experimenting steadily in his kitchen garden to find out what food crops will do best. He grows onions, lettuce, tomatoes, cabbage, squash, carrots, and other vegetables. Use is made of cow manure gathered in the nearby, recently cleared pasture. Around the house 40 mango trees are just coming up from seeds. This is the type of farmer who would and could benefit from technical assistance, preferably on a county agent basis. However, Colombians, like Latin Americans generally, have learned the hard way to distrust those who proffer assistance. Before farmers will be receptive to a technical aid program, even one of, by, and for Colombians, they would have to be convinced that it was really to their interest to cooperate. This might prove to be a formidable task.

Further, the Antioqueño has the tradition of individual initiative and of economic independence behind him. He has made his living at his trade or on his little plot of land and has unbounded confidence in his capacity to continue to earn his living at his own trade or on his own land. He has not, like the Santandereano, been tied to the land in debt bondage till he has lost the capacity to strike out on his own. He still has the will and the optimism to migrate, in the hope of finding something better. The Antioqueño is a rugged, hard-working realist, intent upon achieving his own independence, without government aid in any form.

THE highway between Bogotá and Villavicencio was completed between the years 1932 and 1936, and in many sectors of the great grassy plains intensified rice growing was substituted for the extensive grazing of rangy steers.

There is now a good gravel road from Villavicencio to Puerto López on the Meta River. When I first took this trip out over the Llanos in 1941, there was only an occasional adobe-walled, thatch-roofed hut, and the grass was grazed by a few scrawny steers. In 1960, I was surprised to see vast fields of rice, with rice barns nearby, alternating with lush, sown pastures, in which sleek, fat, pure-blooded cattle browse, usually Zebu cattle. Rice is milled in Villavicencio for ship-

ment to Bogotá, while fat steers are taken to market in trucks. They are not driven to market as they were formerly, during which treks they lost much weight.

Only a generation ago, Puerto López consisted of a few houses. Now it is rapidly growing and has lost its former unkempt, neglected look. It is a port of call for large river steamers. These are the changes induced by the construction of roads. The cost of road construction is very little compared to the potential wealth that roads are able to tap, and the human resources they are able to valorize, as it were. This little river town is receiving from the mountain sectors of the country settlers who are fleeing political violence, which, during the past decade or more, has had the effect of breaking up many formerly settled communities, some of whose inhabitants migrated to the cities in search of a livelihood and protection, while others fled to the unsettled areas in the mountains or in the eastern plains of the country.

One such refugee, living some ten miles up the Meta River from Puerto López, was from Tolima, where he had been able barely to scratch out a living from his tiny plot. Murders of farmers in his vicinity became so common that he feared for his life and moved to town, but he had no skills and could find no way of making a living. He was finally able to get a ride in a cattle truck returning to Puerto López from Bogotá. From there he went up-river in a dug-out canoe, with his wife and children, and began to grow a crop of corn at the edge of the river. He is at present a subsistence farmer, to be sure, but one that might correctly be referred to as a subsistence farmer in transition, because as soon as there is a market and he can produce a surplus he will be interested in entering a money economy by supplying that market: surplus corn, a fattened hog, a few chickens, papayas, or a bunch of cooking bananas. M. Rodriguez had as helper a Huitoto Indian girl, who was learning Spanish and in general taking on the ways of the sedentary agriculturist. Thus this was a case of a subsistence farmer in transition using the labor of an Indian girl in process of acculturation. Her children will probably be better adapted to hot country farming than either she or members of the Rodriguez family are at present.

The road from Florencia, another town in the hot country at the eastern foot of the Andes, has been extended on as far as Montañita, the head of navigation, where bags of yuca, corn, rice, and plantains, along with fattened hogs, chickens, exotic birds, sewing machines, suitcases, and household effects are transferred from dugouts to trucks for shipment to Florencia, Neiva, or even Bogotá. Some canoes are loaded entirely with huge planks of mahogany and tropical cedar. The dugouts are no longer paddled by hand. Every one of them has a little outboard motor attached to it, and this means a relatively cheap and rapid means of transport for both goods and passengers. The head of canoe navigation of these rivers running from the eastern Andes into the Llanos is now, thanks to the internal combustion motor, easily reached by people living fifty miles or more out on the plains. When canoes had to be paddled by hand the settler had to live within ten or fifteen miles of the head of navigation. One settler on the Río Pescado, twenty-five airline miles downstream from the head of navigation, brought two immense hogs, fattened on corn and yuca, to be loaded on the truck and marketed in Florencia. It would have been impossible

to transport them by dugout canoe when the trip was measured in days instead of hours.

ECUADOR—Much of the territory east of the Andes once claimed by Ecuador has been lost to other claimants, with the result that new lands in the hot country to the west have been opened up to give the native a window on the Pacific. Apart from the few thousand settlers who have come from the highlands, only wild, nomadic Indian tribes inhabit the immemorial forests of the Oriente, and they continue to resist the outside world even today as they resisted the armies of the Incas and the Spaniards, and later the cruelty of the slavers and the greed of the rubber gatherers and explorers searching for gold or quinine. Missionaries have been able to maintain a few spiritual outposts or fortresses. The largest Indian tribe is that of the Jívaros, who still go well-armed with blow guns, spears, and rifles. Among their best known customs, and one that has been markedly effective in preventing intrusion of even the most hardy strangers, is head-hunting, with the object of shrinking the heads of their slain enemies to keep as trophies.

Not a few of the highland settlers, notably two or three thousand from Cuenca, imbued with a desire for adventure, or merely tired of trying to live on the pittance to be earned making Panama, or jipijapa hats, have come to the Oriente to wash gold, mainly in the Méndez area. Here, in spite of very hard work, they seldom make more than a bare living, but they are noticeably better off than they were in the uplands.

A logical project for the government would be the completion of the road from Quito to Papallacta, into the Quijos Valley, then via a pass just south of the inactive volcano of Sumaco on to Payamino, which is on a navigable stream that flows into the Napo River. At present the road runs to just beyond Papallacta, and it is not in good condition; only heavy trucks make the trip, carrying lumber, sugar, and some fruit from the Quijos Valley. The countryside around Sumaco is for many miles covered with a deep layer of volcanic ash and is extremely fertile; the soil should be ideal for coffee. If it were linked with Quito by a good road, and if land were made available for small farmers, this could be a rich area indeed.

Whenever the problem of a more equal distribution of land has been attacked, or merely aired, those in power have given the stereotyped reply: there's plenty of land in the Oriente for those who want it. This attitude has justified the great landholders in keeping unproductive thousands of acres both in the uplands and in the warm coastal region. Actually, of course, before settlers can move into the Oriente a reasonable network of roads is needed. So far, despite a fever of road building or improvement from the mountain centers of Quito, Latacunga, Ambato, Cuenca, and Loja, road money has been spent in a rather haphazard manner, more often for the benefit of absentee landowners than of the nation as a whole, and almost never for the benefit of the Oriente.

PERU—For a number of years Peru has actively carried out a program of building access roads into the Oriente, and since the present President of the Republic, Señor Belaunde-Terry has long been interested in that area, there is every

reason to believe that the road building program will be stepped up.

The tropical forested lowlands lying east of the Andes comprise about 60 percent of the national territory (they are larger than the state of Texas), yet only about 1.2 million people live there. Exploitation of forest products, such as hardwoods, tannin, and oil nuts, remains the principal economic activity, though the skins of wild animals and some tropical fruits are exported in small quantities.

The vast area east of the Andes, variously known as the *oriente*, the *montaña*, or the *selva*, which encompasses the foothills and some parts of the Amazon flood plain, is potentially rich in natural resources, but the settlement of tropical forest areas requires experience and skills which the Andean Indian does not have. Further, the illiterate Indian, almost invariably without capital, rarely has a chance to buy suitably located land at official prices, because of the activities of speculators. However, long-range national—or better still, international—planning undoubtedly could solve most of the problems of opening up the tropical areas suitable for cultivation, such problems as diseases, illiteracy, language barriers, lack of capital and roads and markets.

The large-scale shifting of rural population from agricultural activities to industrial ones in the Andes, and migration to the tropical lands to the east, would go a long way toward alleviating the poverty of the Andean Indian. The economic motive for migration is important, to be sure, but it is often reinforced by other factors: in conversation with the proprietor of a tiny shop in Tingo Maria, in the Oriente of Peru, I learned that he had been born in the high, cold, mountain-rimmed plateau country near Huancayo; he had been miserably poor and had had to work long hours from earliest childhood, when he was always ill-clothed and had often felt the pangs of hunger. He ran away from home, he did odd jobs, he worked in the mines at Cerro de Pasco, and finally reached Tingo Maria aboard a truck loaded with merchandise for Pucallpa.

Once at the edge of the forest, he built his own one-room, thatch-roofed home at the edge of town, and kept his little store in the front third of it. He did a little bit of carpentry work on the side and seemed happy and contented with his lot. I asked him if he had ever gone back to the sierra, and he said that he had done so once, but that he would never go again, and for two reasons. He held up two fingers and looked at me very seriously as he said this. There was a pause just long enough for the proper effect, and I was all attention, for I felt that I was about to discover some fundamental reasons either for a person to migrate in the first place, or for his becoming a permanent settler once he had made the original move, or both. And then, speaking very slowly, he said: "Reason number 1, fleas; reason number 2, lice". He smiled faintly, thoughtfully shook his head up and down, saying "yes, yes", as he saw the questioning look of amazement on my face. He went on to say that when one was used to those creatures from one's earliest days, they were simply taken for granted like the cold mountain air, but that once one had got accustomed to the amenities of life in a warm climate, it was simply impossible even to think of putting up with life in the mountains again.

BOLIVIA—The towering Cordillera Real northeast of La

Paz has for centuries been a mighty barrier to migration from the Altiplano to the warm foothills and plains beyond. The road from La Paz to the Yungas climbs to a pass more than 15,000 feet high and drops 14,000 feet to the Beni lowlands in a distance of fifty miles. Settlers have been attracted to the valleys of the Yungas, the intermediate belt between the high Cordillera and the Great Plains to the east, first by the lure of gold, rubber, and cinchona, then by the possibility of producing coca, coffee, and sugar. In recent years there has been a small but steady trek of settlers into the hot country, where they engage in small-scale general farming.

The airplane has been a great boon to this rugged country and the airfreighting of beef from the Río Beni area in the jungles of northern Bolivia to La Paz on the Altiplano has proved a profitable venture for many years. La Paz airport has the distinction of being the highest commercial airport in the world, but its altitude—13,358 feet—means that it is not really suitable for light aircraft; a few are flown in the lowlands, to the east of the Andes, where aircraft have been used for over twenty years, directly supplanting the previous means of transport which, beyond the railheads, was normally mule and canoe—and oxcart. Even before World War II, planes had reduced to a matter of an hour or two journeys in this jungle country that had previously taken months. Only in the past two decades has the country become enough aware of the importance of highways to go about building them. The nation was always plagued by the lack of funds.

There is a new "jeepable" road from Cochabamba eastward across the Andes to the Chapare River, where many settlers from the densely populated mountain valley are hacking farms out of the wilderness. There is a veritable real estate boom along the road between Villa Tunari on the Espiritu Santo River and Puerto San Francisco on the Chiripipi River.

One of the significant roads in the country is that which connects Cochabamba and its densely populated valley to Santa Cruz. Leaving Cochabamba, the road goes through a stern, even melancholy country, with high rugged mountains on either side, destitute of trees, yet here and there adorned with tiny grain fields, plastered precariously on steep, forbidding slopes. These vast sierras are mottled with varicolored metamorphics, granites, and sandstones which have eroded into weird shapes—resembling medieval battlements, the backbones of gargantuan dinosaurs, or things equally bizarre; they push their snow-capped summits into the dark-blue sky. Yet deep down in the valleys is seen the verdant line where the irrigating stream makes it possible for the garden to gain the upper hand in its struggle against the desert. Almost halfway between Cochabamba and Santa Cruz, along a sector called La Siberia, resembling some of the wilder landscapes on Japanese screens, ascending, warm moisture-laden air currents from the east are pushed across the mountain crest and yield enough precipitation to support a dense stand of cloud forest for a kilometer or more down-slope on the leeward side.

Except for the timber resources of La Siberia and the recent settlements near Valle Grande, the Cochabamba-Santa Cruz highway runs through a poor, almost deserted section. To be sure, truckloads of sugar, lumber, cattle for slaughter, and so on, reach the highlands over this highway, but it is, nevertheless, in many respects like a road connecting two oases that

does not now have, or ever will have, feeder roads to it. Cochabamba itself would probably be better served by a road, or roads, leading into the hot country close at hand, to the northeast, than by the roundabout route east to Santa Cruz. A road north and west from Santa Cruz, through Warnes, Montero, and Buena Vista, has already been constructed as far as the Yapacaní River, and should be linked up directly with Cochabamba.

The building of railroads revolutionized the economy of the country, for the export of minerals from the highlands facilitated the importing of foreign agricultural products of higher quality and at lower prices than the domestic produce. Hence it was not profitable to extend the railroads to the eastern lowlands, and Santa Cruz could not but suffer from economic stagnation, for it ceased to be an outpost of the west, yet it was not incorporated into any other system; it lived on in the heart of the continent in a state of splendid isolation but also in a state of suspended animation.

Further, the nation was in many respects "Balkanized." Santa Cruz, for instance, imposed local taxes of from 2 to 5 per cent on most goods leaving or entering the area. Thus, the isolation and stagnation from which the Bolivian Oriente suffered until recently were due as much to man-made economic barriers as to physical remoteness or inaccessibility.

The Revolution of 1952 was not just another in the long series of "palace" revolutions, for at that time power passed into the hands of the Indian masses. Very shortly thereafter agrarian reforms were initiated, the three leading tin mining companies were nationalized, and the army was disbanded, to be replaced by peasants' and miners' militias. It was proposed to encourage the domestic production of foodstuffs and other agricultural raw materials, and the Santa Cruz area was looked upon as most likely to achieve the rapid increase in agricultural production. The farmers precariously living on the tiny plots—the *minifundia* in the exhausted lands of the over-populated highlands—as well as the miners discharged as a result of the decline in the tin mining industry were to be encouraged to migrate to Santa Cruz, to the East.

The new government felt that agrarian reform was the *sine qua non* in the development of the nation and acted accordingly: from August, 1953, to December, 1959, no fewer than 46,857 titles to land, amounting to 613,753 hectares, were granted to some 36,603 heads of families. Beginning in July, 1960, the National Council of Agrarian Reform decided to award 20,000 additional land titles and in that same month distributed 56,872 hectares in plots averaging 10 to 12 hectares. The Santa Cruz area was looked upon as the most likely sector in which to achieve a rapid increase in the domestic production of foodstuffs and other agricultural raw materials. By 1962 the various centers of colonization under the government agency Acción Andina, military authorities, or private persons amounted to more than 2500 families in the Santa Cruz area. Moreover, some 2000 families reached the Chapare sector, by using the new "jeepable" road from the Cochabamba Valley.

The agricultural *status quo* is being altered as a result of immigration. Settlements are made up of Bolivians and foreigners: soldiers mustered out of service, former mine workers from Potosí and Oruro, and Quechua peasants who formerly migrated to the sugar plantations of northern Argentina as harvest laborers. It is reported that the resistance

to migration of the highland Indian womenfolk is a major obstacle to lowland colonization. South Italians, Mennonites of Volga-German stock, Japanese and Okinawans, from their respective colonies, mingle in the shops and markets with both highland and lowland Indians and mestizos. A comparative study of these several colonies would throw much light on the various cultural and physical factors that favor, or militate against, successful settlement in the tropics.<sup>1</sup>

A word of warning: Mere access to land for the landless will not of itself win the revolution of rising expectations. Settlers and colonists can anchor themselves more successfully on the land if they are provided with security of tenure to land, with credit, modern techniques and agricultural equipment, with marketing and transport facilities, and with education and public health measures. Bootstrap operations in Andean America, as in emerging nations around the world, should of necessity be multifaceted.

Although yuca and bananas, corn, rice, and sugar cane have been successfully grown for centuries in the Santa Cruz area with very primitive methods, under a system of forest fallow, the rotation of fields may have to give way to the rotation of crops. Agriculture in the Bolivian Oriente in general may in the future see peanuts and soybeans, as well as animal husbandry, incorporated into the crop rotation. And such innovations will certainly demand financial incentives on the part of the government, such as guaranteed prices and tariff protection. New colonists in the Santa Cruz area have introduced ideas of cooperative organization that will certainly break up the static frontier that has for so long separated the European-dominated island of agriculturalists from the extensive cattle ranches and from the farming and hunting communities of small-plot agriculturalists and savage Indians.

The actual manpower and the potential hydroelectric power in the Andes are great assets, if properly utilized. In the overcrowded sierra rural areas, industrialization is the only outlet available at present for labor from the ranks of the underemployed, of those who cannot or will not migrate. Studies are indicated which would point the way to educating and gainfully employing this labor in those industries suitable for location in the Andes, once ways of financing them have been found. At the same time, a great national effort should be made to intensify both the industrialization and the migration to new lands, no matter what sacrifices are necessary in the form of subsidies and higher costs to the consumer, in order to make possible for the Andean Indian a level of living to which human beings are justified in aspiring.

**GENERAL OBSERVATIONS AND CONCLUSIONS**—The small scale independent farmer simply cannot bring the full weight of modern technology to bear on the problem of producing food, fats, oils, fibers, rubber, medicine, and lumber, which is modern agriculture's job. Wherever the new methods of scientific technology are being applied to farming, there are huge surpluses, a veritable cornucopia of tropical plenty, of bananas, palm products, coffee, cacao, pineapples, and so on.

Agricultural surpluses are a major source of the investment capital necessary to finance the development of the less developed countries; but small holdings do not seem to attract the enlightened management or the capital required for

the modern equipment, fertilizers, pesticides, marketing, and so on, necessary to produce agricultural surpluses; hence, if governments adopt policies of land fragmentation that make agriculture less, rather than more, efficient, they invite economic stagnation, or worse. Attempts at large scale agriculture—e.g. around the Guarico dam in Venezuela, or on the lands of Turnavista in eastern Peru—may be unsuccessful unless rapid and cheap transportation are available to get the products to a market with purchasing power, at present existent only in very large urban centers, or unless the areas themselves acquire a population that develops its own industry. But until then, for today and for the immediate future, although the small farmer may seem to be an anachronism, there is ample room for him in the regional and national economies.

The tragedy of these tropical lowlands is the tragedy of a frontier zone that by its very own nature is not yet able to live a life of its own, somewhat like the U.S. Middle West a century ago. As long as the Middle West led a kind of colonial existence vis-a-vis the eastern seaboard, it could not work out its own regional salvation. Once it was settled by an industrious, agricultural people, and was criss-crossed with railroads and motor roads for intraregional as well as interregional trade, it could and did develop its own complementary industrial society. With the introduction of adequate roads and transportation facilities, education and public health measures, and permanent rather than nomadic agriculture, by a vigorous and hard-working people, the eastern lowlands of Andean South America, the montaña, may indeed experience an evolution similar in many respects to that of the U.S. Middle West during the first half of the nineteenth century.

The stronger the central government of countries, the more attention is paid to frontier zones. The governments of the Andean countries are increasingly placing emphasis upon the settling of their peripheral sectors. Roads have been built during times of peace as well as times of war; whatever the reason, they make possible the opening up of rich territories that cannot but help make the nations richer and stronger. Further, this is the new "melting pot". These migrants are no longer thought of as belonging to different races; they no longer think of themselves as belonging only to isolated regions where they were born. Their horizons have broadened to include the whole nation, not merely a region; they think of themselves as Spanish-speaking Venezuelans, or Colombians, or Ecuadorians, or Peruvians, or Bolivians.

The Andean countries are rapidly leaving the pre-industrial era behind as they are actually industrializing. There has been an economic nationalism, if you will, in which capital and profits are increasingly invested in national industries and businesses. If anything, the formation of capital has lagged behind the availability of natural and human resources. Human resources tend to march to the industrialization centers faster than they can be employed, as was indeed the case in England a century and a half ago.

At the same time, mass migration to the cities creates a growing demand for food stuffs of all kinds. With an expanding agricultural frontier—physical and technological—to meet this demand, living conditions in rural areas will certainly improve, and it is to be hoped that ever more people will be content to engage in farming. Thus, workers con-

tentedly anchored to the land, will be available to a gradually stabilizing urban population. With education and vocational training, this great wave of available manpower will be put to work to change the face of Andean America and the tropical lowlands to the east.

In his doctoral dissertation, Professor Hegen arrives at conclusions for Colombia, Ecuador and Peru that are indeed valid for all of Andean America:

"An exploitative economy, limited to the utilization of non-renewable resources, does not open up a tropical forest land such as the Upper Amazon Basin. Man, engaged in this type of economy, is interested only in penetrating to specific sites, and not in spatial spread. Only the land itself, the soil and its potential productivity, challenges—and even forces—man to provide access to regions, to create circulation, and to establish through a road network a real spread. One may look upon exploitative man as a parasite—or as an epiphyte—while man utilizing the land becomes an integral part, even a partner, of nature.

One cannot overlook the influence which different political, economic and social systems have exerted upon the movement of people, goods, and ideas—in short, the influence upon a functional circulatory system in space. The circulatory systems of the empires of different epochs are clear expressions of the cultural framework under which they existed. The roads of the Incas, built for the rapid dispatch of royal messengers and the swift transmission of intelligence, were also used for the organized mass movement of armies, workers, and settlers; whereas the roads after the Spanish conquest were utilized largely for the transportation of goods. Only now, when in the process of democratization, man has become equally important with the shipment of raw materials, when he has become the concern of, rather than merely statistics for, bureaucrats; only now—to repeat—do the roads of the Andean countries conquer space, do they advance the cultural frontier into neglected, at times even forgotten, regions.

The Upper Amazon Basin was such a neglected region. The physical environment doubtlessly barred man from easy access. The steep eastern drop of the Andes, the all but impenetrable forests, and the endless rains certainly were effective barriers for the conquest of the Oriente. However man overcame an equally difficult barrier in the west and in the north. Bogotá was no easier to reach from Cartagena, only 40 years ago, than was Mocoa from Bogotá. As early as a century ago Ecuador had opened 14 permanent routes from the Sierra to the coast, and only six into the Oriente. Some of these routes from Ibarra and Quito traversed the steep western slopes of the Andes and the rain forest of the northern coastal lowlands—a no less difficult landscape than was encountered east of Ibarra and Quito. Not more than six open routes into the Oriente exist today. Only one of them is a highway.

The governments of the liberated Andean countries were for a

long time burdened with the heritage of colonial Spain, a heritage, which did not allow them to think of—much less administer the vast areas beyond the eastern rim of the mountains, where some mines, some missions, and some isolated settlements were the last outposts of Columbia, Ecuador, and Peru. The land in the east was indeed *terra incognita*. But throughout the centuries, the Selva was also the goal of people who found and hacked out the routes into the forests, who blazed the trails to navigable rivers, and who settled in the isolation of this great no-man's land.

The vastness of the Oriente is no more a refuge for daring individuals. Today, the forest lands of the east must of necessity be utilized by the Andean nations, if they are to survive. The Selva should be transformed into *Lebensraum*, into living space. Bogotá, Quito, and Lima will more and more become radiating centers of material and non-material culture, instead of remaining control centers of the *status quo*. The land-hungry people are crying to be guided into new lands.

If the roads of Peru, Ecuador, and Colombia are only spokes of a controlling hub, they will drain the masses of the Andean subsistence farmers into the slums of the cities. If the roads will radiate out from the cultural core into new land, they will become unifying bonds of growing nations. The Andean nations still consist of agricultural societies. Social and political changes, therefore, still take place within the framework of such societies. The melting pots of the agricultural Andean countries are the newly opened lands in the east.

Mere penetration in the past did not conquer the Selva, nor will it be done by a few widely spaced access routes. The cultural landscape, a product of the advancing cultural frontier, will be permanently established only when a road network enables spatial spread. The road is the supreme tool of man in space. When man has created a mature system of circulation, the road itself will become an integral part of the *Lebensraum*, tying forgotten regions to the old heartlands, making man feel at home in his new cultural environment, and keeping him at peace with his fellows in their newly achieved prosperity.

The highways into the Upper Amazon Basin are indeed roads to a veritable El Dorado, to cultivated lands, to managed forests. But their most valuable role may be that of continuing to be highways of hope, beckoning millions of Andean people—under governments of, by, and for the people—to come with their modern techniques to inherit their Promised Land."<sup>2</sup>

#### NOTES

1. Crist, Raymond E., "Bolivians Trek Eastward", *Las Americas*, April, 1963, pp. 33-38.
2. Hegen, Edmund Eduard, *Highways into the Upper Amazon Basin—A Study of Trans-Andean Roads in Southern Colombia, Ecuador, and Northern Peru*, University of Florida, June, 1962. (Doctoral Dissertation)

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