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WHITE SETTLEMENT IN COSTA RICA*

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IN the rapidly accumulating literature on settlement of the tropics by the white man one country, which stands out as a classic example of such settlement, has been conspicuously overlooked—Costa Rica.[1] Yet in this little Central American state of less than 20,000 square miles a preponderantly white population has flourished; in the course of 400 years a little band of Spanish immigrants has increased to a community of more than 400,000 white inhabitants, about 70 per cent of the entire population of the state. By far the larger number of these white Costa Ricans live on their own plots of land, which are worked by the members of their families, and grow, in addition to food for their own needs, a few cash crops, chiefly coffee. Each has some cattle and his own team and occasionally a riding horse and lives in a small cottage in the center of his holding. *In Costa Rica we have a native-born white population of small farmers.*

Social and economic differences are relatively negligible—at least they are smaller than in any other part of Latin America. The non-white inhabitants live predominantly in the lowlands; the whites are concentrated in the central highlands, where they form the core of both culture and population. This physical separation of races leaves the highland districts virtually free of racial problems. Racial, economic, and social solidarity has given the country its relatively peaceful political development, its economic progress, and its relatively high level of intellectual life. It is significant that the white population of Costa Rica has created this community, deeply rooted in the tropical earth.

In view of this proved success of colonization of a tropical land by a preponderantly white population, one naturally asks: How much

*I am under a great obligation to Elizabeth Clark Pelzer for her translation of this paper.

[1] A noteworthy exception is the recent work by A. Grenfell Price: White Settlers in the Tropics, *Amer. Geogr. Soc. Special Publ. No. 23*, 1939.

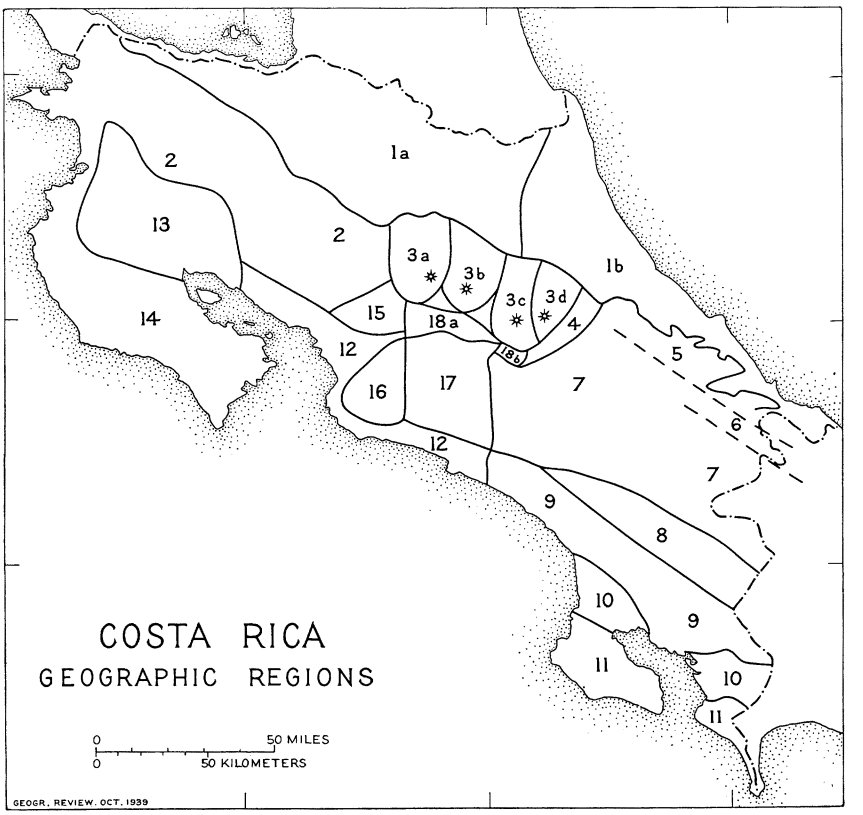


FIG. 1—Geographic regions of Costa Rica. The regions are briefly described thus:

Atlantic Coastal Plain (1). In form triangular fronting the central highlands, the less accessible part 1a, the more accessible, 1b. Behind the low coast are slough-like *esteros* and farther inland extensive swamps. The higher-lying land, mostly of Quaternary deposits, drains north to the Río San Juan and east to the Atlantic Ocean.

Pacific Coastal Plain (12). Much more varied than Atlantic Plain. The two main alluvial plains, the lowlands of the Río Tempisque (13) and the lower courses of the Diquis (the Osa Valley) and the Coto (10), are not on the coast but in a tectonic depression bordered by a zone of uplift reaching 1000 meters in the Nicoya Peninsula (14) and the peninsulas of Burica and Osa (11).

Cordillera de Guanacaste (2). Elongated range forming northwestern end of central highland with average elevation of about 1000 meters. Composed of rocks geologically young (Tertiary volcanic) but morphologically old as indicated by smooth, uniform relief. Surmounted at wide intervals by volcanoes of moderate height (Orosi 1541 m.) and strongly eroded.

Cordillera de Talamanca (7). Central of three parallel ranges forming southeastern end of central highland. Elevations of 2000 to 3800 meters. In contrast to Cordillera de Guanacaste, composed largely of rocks geologically old (Archean granites) but morphologically young, as indicated by strong relief. Only one volcano, Laguna Cerrada (3040 m.) in the northwest corner, discovered to date.

Valle de Sipurio (6) *and Valle de Diquis* (8). Of the two synclines bordering the Cordillera de Talamanca the northern, the Valle de Sipurio, is only faintly discernible on the maps while the southern, the Valle de Diquis, is clearly identifiable. The latter, a long, wide basin deepest in middle section (about 200 m. elevation), rises gently to the east, more sharply to the west, to about 1000 meters.

Pacific Coast Range (9). Bordering these synclines are northwest-southeast-running ridges, constituting the Pacific Coast Range (Cordillera Brunquena) averaging 1000 to 1700 meters, composed of folded Tertiary limestones.

Atlantic Coast Range (5). Identified in such peaks as Cerro Matama (1375 m.) and Cerros Sinosri (949 m.). Little known because of dense forest cover. Possibly not of constructional but of erosional origin.

Cordillera Central (3). Middle range of the central highland. Runs northwest-southeast like other two cordilleras but located some 30 kilometers north of line of their crests. Composed of four volcanoes with bases connected, but crests separate: Poás (3a), 2780 meters; Barba (3b), 2829; Irazu (3c), 3452;

FIG. 2—Locational map of Costa Rica.

Turrialba (3d), 3421. Since each consists of a number of merged craters and since they have emitted lava rather than tufa, they do not exhibit steep, smooth cones like other Central American volcanoes, but have elongated slopes which, in the south, drop off gradually to the Meseta Central Occidental.

Meseta Central (18). Like the Valle de Diquis an interior basin although not synclinal but probably a fault basin and lying much higher and consequently much more dissected by streams. Consists less of alluvials than of volcanic material to which is due the great fertility of its rich soils. Divided into two sections, the larger of which is the Meseta Central Occidental (18a). Not known whether the clearly recognizable terraces are lacustrine or represent uplifted plain of volcanic material later cut by stream erosion. Drainage to the Pacific through the deep valley of the Tarcoles. The Meseta Central Oriental (18b), much the smaller, drains by the Reventazón to the Atlantic.

Valley of the Río Reventazón (4). Valley deep-cut and well-terraced in its middle sections. Undoubtedly of tectonic origin in section where it divides the Cordillera Central and Cordillera de Talamanca. Main entrance from Atlantic to Meseta Central.

Cerros de Candelaria (17). Mountains south of the Meseta Central Occidental, now recognized as separate region because of geological and geographical uniformity, composed of Cerros de Carpintera, Escasú, Tablazo, and Bustamente, consisting of Tertiary sediments (sandstones, quartzites, limestone, and volcanic tufa). Only Cerros de Escasú have a core of Archean rock. In north Cerros de Escasú reach altitudes of nearly 2000 meters; in south Cerros de Bustamente rise to neighborhood of 2500 meters; La Carpintera separates two sections of the Meseta Central and connects region with Cordillera Central; region borders on Pacific in Altos de los Cotos (849 meters). Connection with Cordillera de Talamanca still not well understood.

Cerros de Turrubares (16). Highlands (1825 m.) west of Cerros de Candelaria and separated from them by Rio Pirris. Not well known scientifically, but appears to be related geologically with Coast Range rather than with Cerros de Candelaria.

Cerros de Aguacate (15). Highlands north of the Tarcoles, with central range rising to only 700 to 1000 meters and showing well defined boundary only on the side towards Meseta Central. Composed of young volcanic eruptives with gold-bearing quartz intrusives like those of the Cordillera de Guanacaste with which it merges. Distinguished geographically by its position between the Meseta Central and Gulf of Nicoya rather than by its structure.

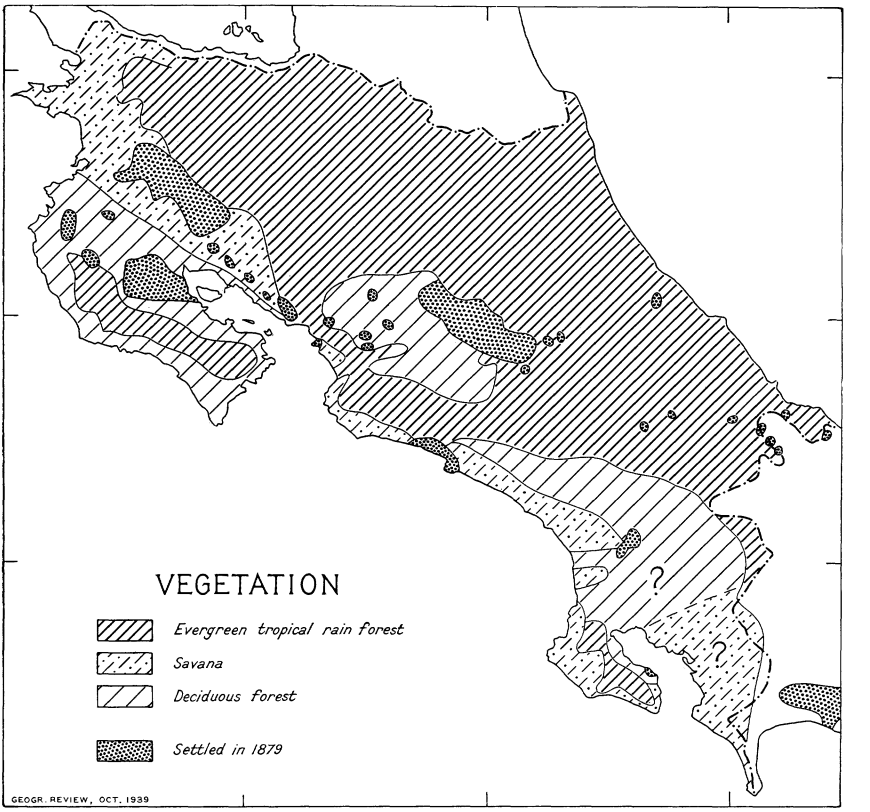


FIG. 3—Vegetation of Costa Rica (according to H. Polakowsky, see footnote 4) and settled area in 1879.

and what land is already settled in Costa Rica? How much is still available? Where does it lie? What are its natural and economic characteristics, and what is the future of settlement upon this land?

My study of these questions is essentially based on maps, statistics, and the literature, which is more abundant than one might expect from recent works of geographers on Central America. My own acquaintance with Costa Rica is limited to the country about the railway line from Limón to Puntarenas and to the Meseta Central, visited in March, 1938. The natural conditions of settlement, relief, climate, and vegetation, outlined on the accompanying maps,[2] will be treated in detail on a later occasion.

THE PROBLEM OF THE TEMPERATURE ZONES

The question of the temperature zones, however, must be discussed now. In all tropical highlands the vertical pattern of the life

[2] The base maps used are H. Pittier's "Mapa de Costa Rica," 1 : 500,000, 1903, accompanying his "Kostarika: Beiträge zur Orographie und Hydrographie," *Petermanns Mitt. Ergänzungsheft No. 175*, 1912, which shows very clearly the relief, lines of communication, and settlement distribution, and the American Geographical Society's Map of Hispanic America, 1 : 1,000,000, Sheets North C-16, Lago de Nicaragua, 1937, and North C-17, Panamá, 1928.

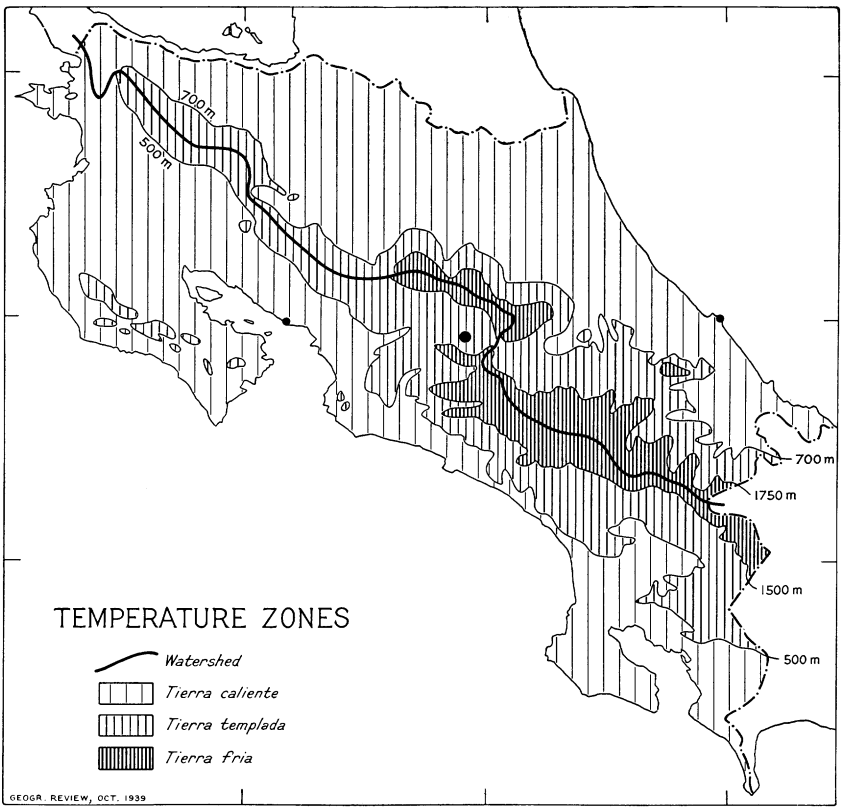


FIG. 4—Temperature zones of Costa Rica.

zones is of paramount significance to settlement and economy. Here the house of the earth has not one story but several, and the cooler and higher stories, not the hot rooms of the basement, are favored by the inhabitants. To this rule Costa Rica is not an exception; for the distinguishing physical feature of the country is the presence of a highland area flanked on both sides by coastal lowlands. The central highlands rise to altitudes of 1000 to 3000 meters and include a variety of regions (see Fig. 1). Because of the topographic variation and its relation to climatic influences, the temperature zones in Costa Rica cannot be delimited according to a set formula; rather, the zonal relations should be worked out for each region.[3] Unfortunately we lack the knowledge for such an analysis; and it might be better to eschew the problem for the time being were it not of such profound importance for the question of the settlement of a tropical land by the white man.

[3] Very little is known of the climate of Costa Rica outside the capital city, San José. We particularly need an extensive system of weather stations in the central highlands. The United Fruit Company has been keeping records on its numerous plantations in the Atlantic lowlands and within the last few years has extended the practice to the Pacific coastal plain. These records, however, are uneven and scattered and await systematic interpretation.

The classic division is, of course, the threefold one into *tierra caliente*, *tierra templada*, and *tierra fria*. The botanists especially have concerned themselves with the relation of life to these zones. However, the conclusions they have reached differ considerably, as the following figures show:

	HOFFMANN[4] (1859)	PITTIER[5] (1908)	WERCKLÉ[6] (1909)
Tierra caliente	0–900 m.	0–1000 m.	0–800 m.
Tierra templada	900–1500	1000–2600	800–1500
Tierra fria	above 1500	above 2600	above 1500

Wagner and Sapper have delimited temperature zones for the whole of Central America.

	WAGNER[7]	SAPPER[8]
Tierra caliente	0–630 m.	0–600 m.
Tierra templada	630–1460	600–1800
Tierra fria	above 1460	above 1800

There is thus a considerable range of values. However, compared with the temperature zones of other tropical highlands, the zones of Costa Rica lie remarkably low, because of its position between two oceans and the resulting insular character of the climate.

Economically, the most important boundary is that between the tierra caliente and the tierra templada, since it is the general consensus of opinion that white settlement in the tropics is possible only above this limit. However, some evidence goes to show that heavy physical labor can be undertaken by white men of Nordic origin only in the upper regions of the tierra templada and in the tierra fria. Let us now examine some specific cases in Costa Rica.

On the Atlantic slope the lowest predominantly white settlement is found at 600 meters in the valley of the Reventazón. Here is the important railway station of Turrialba, with a population of 12,000, for the most part white and actively working. Its remarkable growth in the last years must be ascribed in part to the climate. The second of the larger settlements on the Atlantic slope is Villa Quesada, in the province of Alajuela, on the northwest slope of the volcano of Poás at

[4] Cited by H. Polakowsky: Die Pflanzenwelt von Costa-Rica, *XVI. Jahresbericht Vereins für Erdkunde zu Dresden*, 1879, pp. 25–124; reference on p. 44.

[5] H. Pittier: Ensayo sobre las plantas usuales de Costa Rica, Washington, D. C., 1908, pp. 17–22.

[6] Carlos Wercklé: La subregión fitogeográfica costaricense, San José, 1909.

[7] Moriz Wagner: Naturwissenschaftliche Reisen im tropischen Amerika, Stuttgart, 1870, p. 353.

[8] Karl Sapper: Klimakunde von Mittelamerika (Handbuch der Klimatologie, Vol. 2, Part H), Berlin, 1932.

an altitude of about 1000 meters. This place, founded in about 1890, is the seat of a canton, which now has 2400 inhabitants. It is the center of a purely agricultural region stretching from the slopes of the volcano down to the plain of San Carlos. To trace the lower edge of white settlement, one would have to go to the field.

On the Pacific slope of Costa Rica there is no definable lower boundary of white settlement. It must be borne in mind, however, that the inhabitants of the provinces of Guanacaste and Puntarenas have a much stronger mixture of Indian, and even of negro, blood than the other inhabitants of Costa Rica. Nevertheless, there are a large number of white families on the great cattle haciendas in these two provinces that have kept themselves pure-blooded and are thriving. But even if we leave out of consideration this white population, which for centuries has been acclimated to the tropical lowland, the fact still remains that during the last thirty years there has been a migration from the Meseta Central down into the valley of the Diquis. Here a nearly pure white population has settled at an altitude of 400 to 600 meters. The two main settlements of this pioneer belt are El General (600 meters) and Buenos Aires (390 meters).

Thus the white or predominantly white highland population has descended on the Atlantic slope of Costa Rica to 600 meters and on the Pacific slope to 390 meters; hence we conclude that the upper limit of the tierra caliente is somewhat lower on the Pacific slope than on the Atlantic. The explanation seems to lie in the climatic differences between the slopes. The Atlantic slope is dominated by the northeast trade winds and receives a heavy rainfall throughout the year. The Pacific slope, which lies in the lee of the trades, is definitely dry in the winter and has only the summer rains brought by the southwest monsoons. The long dry season of the Pacific slope is more healthful, in spite of the fact that at the same altitude[9] the temperature of the Pacific slope is 1° or 2° C. higher than that of the Atlantic slope. But as a result of the great dryness of the air and the sea breezes, which blow all day long, the evaporation is so great that the body does not find the higher temperature so burdensome.

That these are, however, not only matters of human physiological response is proved by corresponding plant distributions. On the Atlantic slope, for example, oaks are found only above 1800 meters, whereas on the Pacific slope they reach nearly to sea level. Standley[10] observed that near Tilarán, on the Pacific slope of the Cordillera del Guanacaste, the same flora is to be found at an altitude of 500 to 750 meters that occurs near San José and Cartago at twice that altitude. He therefore opposes the purely altitudinal classification of the region as

[9] H. Pittier: Capitulos escogidos de la geografía física y prehistórica de Costa Rica, *Museo Nacl., Ser. Geogr.*, Vol. 1, Part 1, San José, 1938, p. 15.

[10] P. C. Standley: Flora of Costa Rica, Part 1, *Field Museum of Nat. Hist. Publ. 391 (Botan. Ser. Vol. 18, Part 1)*, Chicago, 1937, p. 28.

tierra caliente. He also explains the unusual character of the vegetation of Tilarán by the fact that here the northeast trade winds extend their influence across the low watershed to the Pacific slope.

This example at least shows that the problem of the temperature zones is complicated and that any attempt to delimit these zones by formula must necessarily rest on a weak basis. Yet, as has already been said, the importance of the question is such that, in spite of scruples, I have essayed a cartographical delineation of the broad distribution of the temperature zones: differences and divergences within the same slope could not be considered. The main question was: How much higher are the temperature zones on the Atlantic slope than on the Pacific?

In the literature I found only one clue—in Wagner's figures[11] for Veraguas, in the neighboring state of Panama. Wagner fixes the upper limit of the tierra caliente at 630 meters on the Atlantic slope and at 560 meters on the

[11] *Loc. cit.*

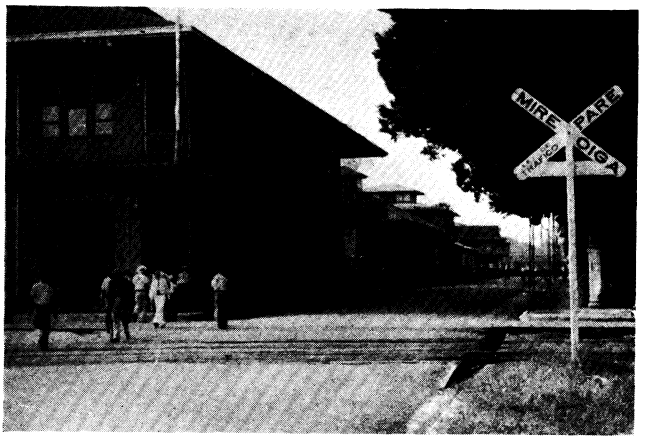


FIG. 5—Main street in Port Limón. Two-story wooden houses typical of the tierra caliente of the Caribbean area.

FIG. 6—Street in Turrialba. Most of the houses have only one story.

FIG. 7—Mission church in Orosi, upper Reventazón, founded in 1760. Shifting cultivation on slope.

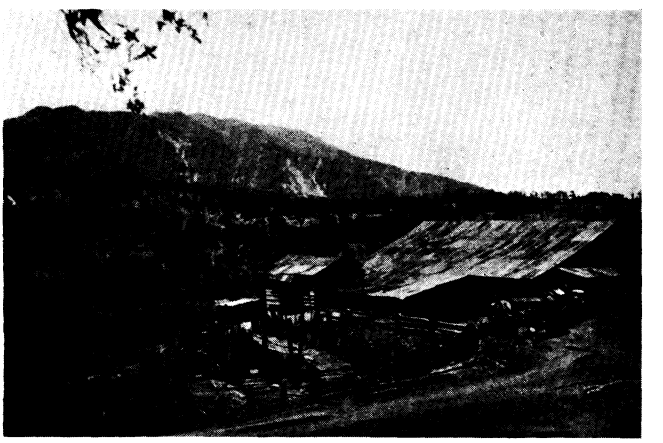


FIG. 8—Terraces of the River Reventazón below Orosi.

FIG. 9—Dairy farm at the upper edge of settlement on Turrialba. Note forested slopes of the volcano. (Commercial photograph.)

FIG. 10—The Meseta Central Oriental with the city of Cartago seen from the slope of Irazu. Cordillera de Talamanca in background.

Pacific slope. This has some measure of agreement with the actual location of the lowest white settlements in Costa Rica; i.e. 600 meters on the Atlantic slope and 390 meters in the Diquis Valley. I therefore place the upper limit of the tierra caliente on the Atlantic slope somewhat above 600 meters and on the Pacific slope somewhat below 500 meters. That I have finally chosen the 700-meter isohypse as the upper limit on the Atlantic slope and the 500-meter one on the Pacific slope is a matter of mere superficial limitation, dependent on the fact that these two isohypses have been worked out on the 1 : 1,000,000 map.

For the same reason I have fixed the upper limit of the tierra templada on the Pacific slope at 1500 meters, though it may actually lie somewhat higher, perhaps at 1600 meters. On the Atlantic slope this limit ought to be fixed at 1800 meters. As, however, this isohypse does not appear on the map, I have interpolated a line that corresponds approximately to 1750 meters.

The land above 1500 meters on the Pacific slope and above 1750 meters on the Atlantic then belongs to the tierra fria.

The map, Figure 4, shows these boundaries and the resulting areal patterns. Purely on the basis of the area of the two upper temperature zones, one would expect to find the densest white population at the latitude of 9° 30′ N. Actually this region is the most sparsely settled. Our map therefore leads to the conclusion that white men in Costa Rica have avoided the tierra fria—the zone which in Mexico, in Guatemala, and in the Andes of South America carries the largest European and Indian population. But in these lands the tierra fria has a more open vegetation, whereas in Costa Rica it is covered with dense evergreen forests (see Fig. 3). Moreover, this zone in Costa Rica is sharply dissected and has no broad valleys suitable for communication. Measured on the 1 : 1,000,000 map the areas of the zones are:

	Tierra caliente		Tierra templada		Tierra fria		Total
	Atlantic	Pacific	Atlantic	Pacific	Atlantic	Pacific	
Area (sq. km.) .	16,330	15,800	5,400	7,550	2,330	2,590	50,000
Per cent	32.7	31.5	11.0	15.0	4.6	5.2	100.0

The Course of Settlement: First Attempts

For a chronological history of settlement a unique source is open to us. This is the "Estado del clero (Diciembre de 1936)," which gives the date of establishment of all the parishes of the country from 1522 to 1936. According to the prelate Heinrich Kern of San José, to whom I am indebted for other valuable information, a parish would be established when a locality reached a population of 2000 to 3000; thus the "Estado del clero" throws light on the distribution of the population in earlier times.

The first parish on the soil of what is now Costa Rica was established in the year 1522 at Nicoya. This, however, was an Indian parish. Nicoya was the main center of the Chorotegas, or Mangues, the most numerous and advanced of the Costa Rican Indians. The first Spanish settlement was attempted on a terrace near the mouth of the Tarcoles, one of the largest rivers on the Pacific slope. This was the home of the Guetares, the only Indian tribe found on both Pacific and Atlantic slopes. The area occupied by this tribe was strikingly similar to that of the present-day settlement; and we may assume that already in Indian times there was a line of communications, approximating that of the present railway, connecting the two coasts. In 1524 "la villa de Bruselas" was founded, about ten kilometers northwest of the present Puntarenas, but two years later the settlement was abandoned. Thenceforth until the year 1560 the Spaniards made no further attempts

to penetrate from the Pacific and turned their attention to the Atlantic side of the isthmus, which had been crossed in 1529 by water by way of Lake Nicaragua and the Río San Juan. In spite of the difficulties incident to the impenetrable jungles and the hostility of the inhabitants, they established their first actual foothold here and founded "Ciudad Badajoz" and the port of San Marcos at the mouth

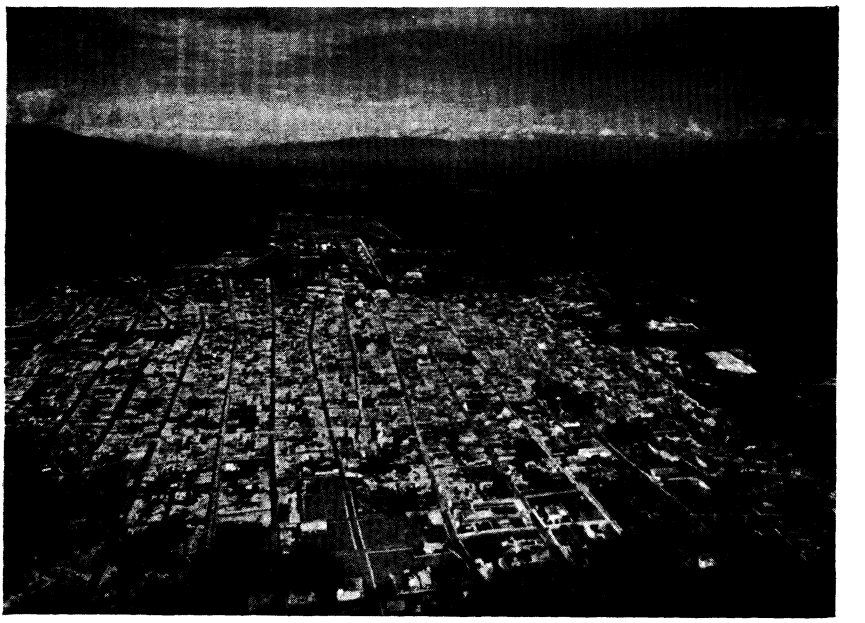


FIG. 11—Aerial view of San José on the margin of the Meseta Central Occidental. (Commercial photograph.)

of the Río Tarire (or Río Sixaola) on the Panamanian border in 1540. Three years later the "Villa de Santiago" was founded by Diego Gutiérrez above the mouth of the Río Reventazón. A "desperate resolve to plunge into the woods in pursuit of the Indians"[12] took him into the interior, but he and most of his companions met their death on the northern slope of the Cordillera de Talamanca in 1544. This ended the first attempt to penetrate the interior of Costa Rica from the Atlantic side, and the settlements along this coast were soon abandoned.

In 1560 the *Audiencia* of Guatemala, under which Costa Rica had been placed, dispatched expeditions from both the Atlantic and the Pacific coasts. The expedition from the Atlantic side miscarried; that from the Pacific, under Juan de Cavallón, succeeded. Even if we assume superior leadership, allowance must also be made for the more favorable conditions of the Pacific slope. Here "the climate was

[12] Ricardo Fernández Guardia: History of the Discovery and Conquest of Costa Rica, translated by H. W. Van Dyke, New York, 1913, p. 179.

much more benign, provisions were not so scarce and the natives more numerous and less warlike";[13] the openness of the monsoon forests and the savanas made for greater speed and more freedom of movement. Already the Pacific slope was showing itself easier of conquest; and in spite of the handicap of the much greater distance from the motherland the Pacific coast became the starting point for the development of the country.

On his first march into the interior Juan de Cavallón followed the right bank of the Río Grande de Tarcoles. He founded the port of Landecho on the east shore of the Gulf of Nicoya and the "Villa de los Reyes" near the site of what is now Orotina (210 meters). Garcimuñoz, named after his home, was established in 1561 on the Meseta Central Occidental near the Río Ciruelas at an altitude of about 700 meters. It was laid out on one of the small savanas that appear sporadically in the monsoon forests of the Meseta.

[13] *Ibid.*, p. 211.

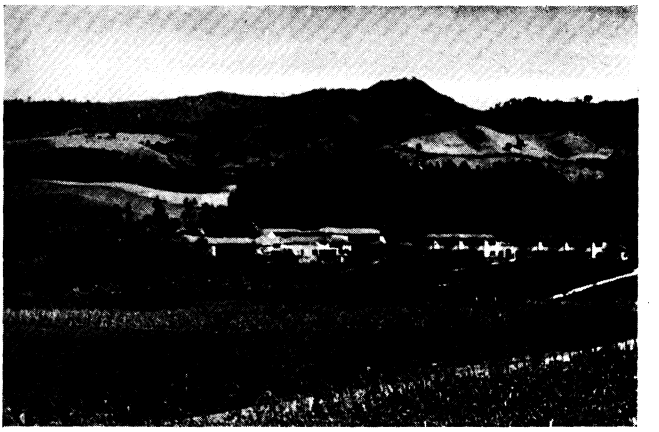


FIG. 12—Sanatorium of Duran on Irazu at a height of 2300 meters. Wheat and potatoes are cultivated nearly to the summit.

FIG. 13—Barba volcano from the south. Clouds caused by trade wind.

FIG. 14—Finca Las Esmeraldas, dairy farm on Barba at 1700 meters. Coniferous trees planted for shelter against the trade wind.

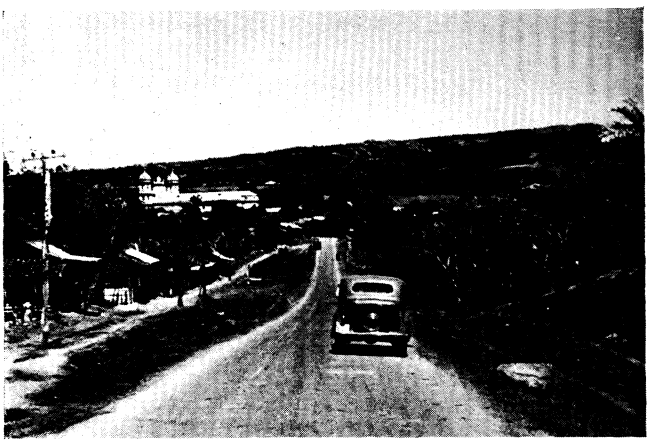


FIG. 15—Poás volcano, with heavily wooded slopes, seen from the south. In the foreground dark coffee gardens and bright sugarcane fields.

FIG. 16—The city of Naranjo at the foot of Poás embowered in coffee gardens.

FIG. 17—Attractive little homesteads in the midst of the coffee gardens.

The site had its disadvantages, however. "It was far from the localities inhabited by the Indians, the neighboring lands were very sterile and during six months of the year the city was lashed by the east winds."[14]

CARTAGO FIRST CENTER OF SETTLEMENT

In the course of his exploration Vázquez de Coronado, who succeeded Cavallón as governor, had visited the "Valle de Guarco," lying east of the main divide on the Meseta Central Oriental. To the king he reported:[15] "I have never seen a more beautiful valley, and I laid out a city between two rivers. I named the city Cartago, because this province also bears that name." The establishment of this city, which was well planned, pointed the way for the future course of settlement. Besides the healthful climate, compared by the first settlers with that of Valladolid, the abundance of water, the fertile red

[14] *Ibid.*, p. 243.

[15] July 2, 1563. Ricardo Fernández Guardia: Cartas de Juan Vázquez de Coronado, Barcelona, 1908, p. 55.

earth, and the presence of 7000 to 8000 Indians seem to have been deciding factors in the choice of the locality. Thus it is understandable that Cartago had a parish as early as 1563—the second oldest in the land.

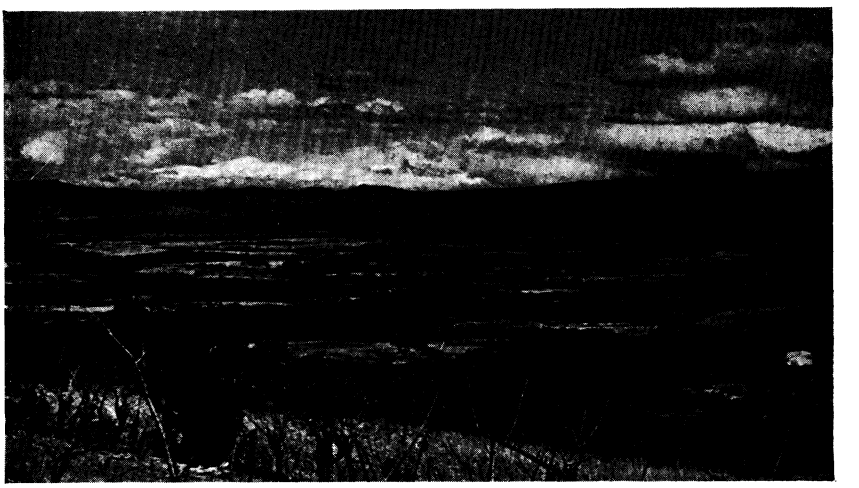
The inhabitants of Garcimuñoz begged to be transferred to Cartago, and the governor allowed them to move there after they had laid out fields of maize. The transfer took place in March, 1564, and with this the permanent settlement of Costa Rica by the Spanish was begun. Cartago lies at an altitude of 1450 meters just below the highest point of the Meseta Central Oriental at about the geometric center of the country. During the whole colonial period the center of economy and culture lay in this area, which may properly be termed the birthplace of the people of Costa Rica. In the history of colonization we have many examples of the development of a whole state from a coastal town; but nowhere else has a town lying in the interior highlands, difficult of access on every side, exerted such an influence. Costa Rica was from the very beginning a "central" land.

In 1572 there were only 55 Spanish families in all of Costa Rica: 40 in Cartago and 15 in Aranjuez, founded in the early days on a terrace of the Río Tarcoles. A century later the number and distribution of the white population were little changed. In 1676, 600 Spaniards, mestizos, and mulattoes were recorded for the neighborhood of Cartago and 100 for the neighborhood of Esparta.[16] During this entire century there was no expansion of white settlement. All parishes erected in the sixteenth and seventeenth centuries are exclusively based on the Indian population: Curridabat, Aserrí, and Barba in 1575, Turrialba in 1650, Orosi in 1656, and Pacaca (Villa de Colón) in 1675. Continuous attempts to open up the Atlantic slope of the Río Reventazón in the Talamanca region failed. These attempts were consistently unsuccessful because of the wildness of the Indians and the impenetrability of the jungle. Ricardo Fernández Guardia, to whom we are indebted for an illuminating account of the history of Talamanca,[17] expressly refers to these difficulties, and in reading his descriptions one is strongly reminded of the Araucanians, who were able to hold their own against the Spaniards for centuries in the forests of southern Chile.

Thus in the long run it was the contrast between the dense, ever wet forest and the more open, periodically dry monsoon forests and savanas that forced the Spaniards of Costa Rica more or less to turn their backs on the Atlantic slope and limit their further activity to the Pacific slope. Settlement was now directed out from Cartago westward to the Meseta Central Occidental, that is, from the watershed and the border of the tierra fria to the tierra templada—a situation

[16] Francisco Montero Barrantes: Elementos de historia de Costa Rica, [Vol. 1], San José, 1892, p. 79.

[17] Fernández Guardia, History of the Discovery and Conquest of Costa Rica, pp. 297–401.



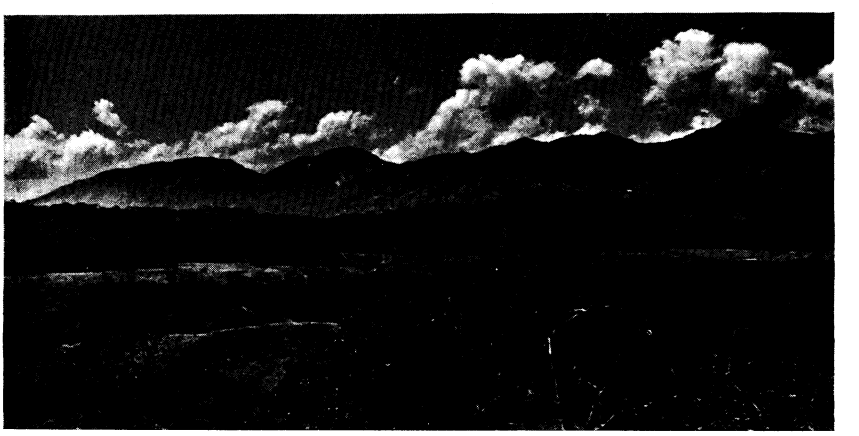


FIG. 18—View across the pass of Ochomogo which separates the Meseta Central Oriental (left) from the Meseta Central Occidental (right). In the right background spurs of the Cerros de Candelaria.

FIG. 19—Looking across the Meseta Central Occidental from south to north. Note the pattern of small holdings; the dark strips are coffee gardens.

FIG. 20—The terraces of the Tarcoles at Quebradas (316 meters). On the slopes deciduous forest, on the terraces fields and pastureland of a hacienda.

unusual in the history of tropical colonization! The flatness of the Meseta Central Occidental may have drawn the settlers as much as did the fertile red earth and the more open character of the monsoon forests. At any rate, they avoided the dense forests of the tierra fria, and these are, with the exception of the south slope of the volcanoes, still unsettled. The indigenous population, never employed in great numbers by the whites in Costa Rica, steadily decreased. This explains why the Spaniards here, who were forced to do their own labor, cleared and worked only enough land for their own needs.

FIG. 21—Puntarenas with railroad station and warehouses.

Obviously there was no opportunity for the accumulation of wealth. It was, however, the early poverty—ironical enough in a country named Costa Rica—that in the long run created the healthy social situation that exists in this state today.

SETTLEMENT IN THE MESETA CENTRAL OCCIDENTAL AND IN THE CERROS DE CANDELARIA (1706–1825)

The first settlement on the Meseta Central Occidental was made by people from Cartago.[18] It was laid out at the foot of the volcano of Barba, at an altitude of 1152 meters, a few kilometers below the Indian village of the same name. Here the parish of Heredia was established in 1706. Thirty years later another parish was established in a forest-surrounded savana between Heredia and Cartago, which was soon to surpass all others. The settlement, originally called "Villa nueva de la boca del monte del valle del Abra" because of its location on the edge of the forest, was later named San José. Today it is the capital of the country. The altitude is 1170 meters. The milder climate—compared with Cartago—the level country, the fertile red earth, especially suited to the cultivation of tobacco, steadily drew settlers, until in 1751 the population of the Valle del Abra to the Río Grande

[18] Ricardo Fernández Guardia: Cartilla histórica de Costa Rica, 6th edit., San José, 1933, p. 54.

(at Virillo) included 399 families with 2330 white inhabitants. In the same year a third parish, Guadalupe, was established five kilometers northeast of San José at an altitude of 1207 meters, and nine years later a fourth parish, Tres Ríos (now La Unión), on the farthest eastern margin of the Meseta Central Occidental at an altitude of 1330 meters. Thus in the first half of the eighteenth century the highest part of the Meseta Central Occidental was settled.

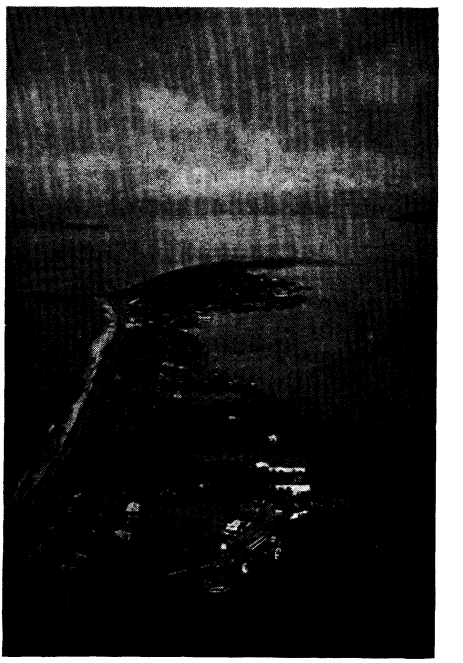


FIG. 22—Aerial view of Puntarenas. The city is situated on a long sand bar, and shipping is served by a wooden pier. (Commercial photograph.)

Toward the end of the eighteenth century two more parishes were established, in other directions. One stream of settlers moved from Heredia along the foot of the volcano westward into lower parts of the Meseta. Here Alajuela was established in 1790 at an altitude of 985 meters. Today Alajuela is the third largest town in the country. Another stream pushed out over the Meseta southward into the Cerros de Candelaria, at that time still covered with luxuriant forest, and on its northern margin Escasú was established in 1799 at an altitude of 1162 meters. But this second stream was more of a trickle, and a second parish was not established until 1825—Desamparados (1178 meters), at the foot of the Cerros de Candelaria and only a few kilometers south of the capital.

So ends the colonial period of Costa Rica, with the net result of its settlement activity the occupation of the Meseta Central Oriental, the higher (eastern and northern) parts of the Meseta Central Occidental, and the northern part of the Cerros de Candelaria. The entire colonial settlement area comprised only about 600 square kilometers, with a population generally conceded to be about 60,000. In 1835 there were 67,498 persons living on an area of about 700 square kilometers, distributed by *partidos* as follows: Cartago, 19,700; San José, 23,606; Heredia, 15,262; Alajuela, 8930. The old settlement of Cartago was already surpassed by San José, to which the capital was now transferred.

According to these figures, the population density was more than 100 persons to a square kilometer (about 260 to a square mile). This

extraordinarily high density is explained by the small acreage of the individual farms and, among other things, by the fact that the whole population crowded together around the four towns, which were themselves strung close together along the main road from Cartago to the Pacific coast. We come to the interesting conclusion that toward the end of the colonial period only about one-eightieth of the present-day area of Costa Rica had any considerable settlement; the remainder (with the exception of Guanacaste, which in colonial times belonged to Nicaragua) was practically unoccupied.

Occupation of the South Slope of the Volcanoes and the Cerros de Aguacate

With the breaking away from Spain in 1821 the 60,000 inhabitants crowded together in the interior of Costa Rica received their political freedom and an opportunity for outside contacts, which made imperative the improvement of transportation. Puntarenas had been opened as a harbor in 1814, and by this gateway the first foreigners entered, bringing with them not only products of the world market but many cultural and technical innovations. Agricultural techniques were improved, and coffee growing was introduced; this raised the previously poor peasants to a moneyed, and some even to a wealthy, status. The economic boom was reflected in an increase of population, and this in turn in expansion of the settlement area. The first new parishes filled in lacunae in the area of colonial settlement—San Juan de Tibás (1837), Alajuelita (1851), and Santo Domingo (1852), all in the neighborhood of San José.

Later expansion was into new terrain, notably westward into the Cerros de Aguacate, whose splendid forests, abundant rivers, and nearness to the main lines of travel proved attractive, especially to people from the vicinity of San José. The parishes of San Ramón, Atenas, and Palmares, which have since developed into important centers, were established between 1854 and 1865.

Contemporaneously with the settlement of the Cerros de Aguacate the slopes of the volcanoes were reclaimed by white agriculturists as is proved by the foundation of the following parishes: On Poás, Grecia (1856) at 1039 meters, Naranjo (1865) at 1059 meters, San Pedro (1870) at 1118 meters; on Barba, Santa Bárbara (1856) at 1300 meters, San Isidro (1870) at 1500 meters, San Rafael de Heredia (1886) at 1250 meters; on Irazu, San Rafael de Cartago (1867) at 1500 meters, San Isidro de Coronado (1878) at 1600 meters. Settlers also pushed into the interior and the higher regions of the Cerros de Candelaria, where they founded Santiago de Puriscal (1860) at 1130 meters and Santa María de Dota (1878) at 1600 meters.

Population figures give the following picture:

Province	1844		1864		1883	
	Number	%	Number	%	Number	%
Limón	.....	...	.....	....	1,858	1.0
Cartago	19,884	24.9	23,064	19.1	30,428	16.7
San José	25,949	32.4	37,206	30.9	56,162	30.9
Heredia	17,236	21.6	17,791	14.8	25,818	14.2
Alajuela	10,837	13.5	27,171	22.5	45,205	24.8
Puntarenas	883	1.1	4,836	4.0	7,700	4.2
Guanacaste	5,193	6.5	10,431	8.7	14,902	8.2
	79,982	100.0	120,499	100.0	182,073	100.0

The population continued to be centralized, though a new tendency had begun to make itself felt: the settling of the Atlantic—and still more of the Pacific—lowlands.

Settlement of the Pacific Lowlands

In the last year of Spanish rule Costa Rica made a notable gain of territory with the addition of the *partido* of Nicoya, the present province of Guanacaste, detached from Nicaragua. Economically and socially, however, Guanacaste, almost to the end of the nineteenth century, was more closely associated with the adjacent part of Nicaragua than with the highlands of Costa Rica, and, like Nicaragua, it has a population of preponderantly mixed blood, engaged in extensive cattle raising. At the time of the accession Guanacaste had a population estimated at some 5000. The census of 1844 gave 5193; and this plus 833 in Puntarenas made a total of 6026 for the Pacific lowlands, 7.6 per cent of the total population of Costa Rica. In 1936 the figure was 104,361, or 17.6 per cent of the total population.

In a century the increase in the Pacific lowlands was seventeenfold, whereas in the entire country it was only sevenfold! It is one of the most remarkable demographic features of this region that the population grew not at all by immigration from without, as we shall see has been the case in the Atlantic lowlands, but solely by natural increase. The relatively healthful climate of the Pacific lowlands seems to be as much responsible for this increase as does the mixed nature of the population, which is apparently better adapted to the climate. Some unpublished census statistics give the following racial composition for the year 1927 in the provinces of Guanacaste and Puntarenas:[19]

[19] C. L. Jones: Costa Rica and Civilization in the Caribbean, *Univ. of Wisconsin Studies in the Soc. Sciences and History No. 23*, Madison, 1935, p. 38.

	Whites	Mestizos	Indians	Mulattoes	Mongols	Negroes	Others	Total
Number . .	39,974	36,698	1261	1067	392	368	121	79,881
Per cent . .	50.1	45.9	1.6	1.3	0.5	0.5	0.1	100.0

The reported number of whites, however, seems to be too high. It should also be noted that the density of population here is still very low.

Another point of contrast between the Pacific and Atlantic lowlands is that the predominantly agricultural population of the former is today entirely dependent on an interior market and thus plays a distinctive part in the economic life of the country.

Settlement of the Atlantic Lowlands

In the Atlantic lowlands we meet very different conditions. This region, after abandonment of the first attempt at settlement in the sixteenth century, was ignored by the whites until almost the close of the nineteenth century. Then, however, came a rapid development from the outside, undertaken by North American capital with West Indian negro labor. Development began on the coast and pushed inward. Contemporaneously with the first opening of the Atlantic lowlands through banana cultivation came the building of the railway up the valley of the Río Reventazón to the high country. Limón was founded in about 1880; it became a parish in 1894 and today is a town of 16,500 inhabitants, very mixed racially. From Limón settlement advanced as a narrow strip along the coast southward to the border of Panama. Another strip followed the railroad to Siquirres. Here it forked, one arm embracing the east and north base of the volcano of Turrialba as far as Guápiles (300 meters, parish 1907), the other climbing the Reventazón Valley almost to Turrialba (600 meters), where it was brought up against the extreme outposts of the highland settlers. At Turrialba there is a most striking line of racial cleavage: below the town more than 90 per cent of the inhabitants are black, above more than 95 per cent are white.[20]

The population of the area under banana cultivation in Limón province has risen from 1858 (1 per cent total population of Costa Rica) in 1883 to 35,290 (nearly 6 per cent total) in 1936.

The racial composition for the year 1927 is given as:

	Negroes	Whites	Mestizos	Indians	Mulattoes	Mongols	Others	Total
Number . .	18,003	11,060	1073	1065	419	246	412	32,278
Per cent . .	55.7	34.4	3.3	3.3	1.3	0.7	1.3	100.0

[20] This observation, a matter of general comment, is noted by E. B. Branson: Some Observations on the Geography and Geology of Middle-Eastern Costa Rica, *Univ of Missouri Studies*, Vol. 3, 1928, pp. 27–72.

In contrast with the Pacific lowlands, the small number of mestizos and the large number of negroes are outstanding. The various racial elements are antagonistic, and even Costa Rica here faces the racial problem that she has heretofore happily escaped.

Changes in the population distribution of the three main divisions of Costa Rica in the last few decades are summarized in the following table:

Province		1892			1916			1936		
		Number	Per cent		Number	Per cent		Number	Per cent	
Atlantic Lowland	Limón	7,484	3.1		23,632	5.4		35,290	5.9	
Central Highland	Cartago	37,973	15.6	83.6	65,840	14.9	80.2	89,298	15.2	76.5
	San José	76,718	31.5		134,283	30.4		192,513	32.6	
	Heredia	31,611	13.0		47,101	10.7		46,460	7.8	
	Alajuela	57,203	23.5		106,763	24.2		123,940	20.9	
Pacific Lowland	Puntarenas	12,167	5.0		22,342	5.0		36,783	6.2	
	Guanacaste	20,049	8.3		41,381	9.4		67,578	11 4	
Total		243,205	100.0		441,342	100.0		591,862	100.0	

Racially also the population of the highlands is no longer as homogeneous as it was before the opening of the Atlantic lowlands. The following figures are given for the highland population in 1927:

	Whites	Mestizos	Indians	Negroes	Mulattoes	Mongols	Others	Total
Number	326,960	28,841	1871	765	637	152	193	359,419
Per cent	91.0	8.0	0.5	0.2	0.2	0.1	0.0	100.0

The figure for the whites seems to be too high and that for the mestizos too low; but even so there is no doubt of the preponderance of whites in the highland population. The negroes and mulattoes are most numerous in the capital, San José; around the north railway station they form an actual district.

The old settled area of the Meseta Central, the south slope of the volcanoes, and the Cerros de Aguacate already have a superabundant population. Like a too full reservoir, it overflows by the mountain passes to the lower country.

The Overflow of Population in the Highlands

The oldest and most important stream of settlement flowed from the Meseta Central by way of the pass of Ochomogo (1566 meters) and the old settlement area of Cartago into the valley of the Reventazón. The parish of Juan Viñas was established here in 1872 at an

FIG. 23—Bus station in Cartago. Indian women and white men.

altitude of 1000 meters, and the old mission and Indian settlement of Turrialba at 600 meters is now receiving a large influx of white settlers. The canton of Turrialba, which in 1883 had only 1068 inhabitants, now (1936) has 21,000, of whom, however, 12,000 live in the capital city of that name. The remainder are distributed in the neighboring valleys on both sides of the river, where cattle raising and the growing of coffee and sugar cane occupy broad acres. In this new country economic and social conditions are totally different from those on the Meseta Central. But the whites still undertake all physical tasks, and without doubt we have here, within the boundaries indicated on the map, a flourishing community of whites on the upper edge of the tierra caliente.

FIG. 24—A group of agricultural laborers of predominantly white race. (Commercial photograph.)

Settlement has not only penetrated the lower regions of the valley of the Reventazón but has also ascended rather high on the south slope of the volcano of Turrialba and even higher on Irazu. The parish of Pacayas, on Irazu, was established in 1908 at an altitude of 1800 meters; but the peasant population, which is primarily engaged in milk production and the growing of potatoes, at one place has reached nearly 3000 meters—within about 500 meters of the summit. Excellent highways now open up the south slope of the mountain, and in 1920 the parish and sanitarium of Duran were established at 2300 meters.

Settlement has advanced little beyond the 1500-meter pass of La Palma, between Irazu and Barba. In fact, here there has been a retreat: in 1883 Carrillo, at about 500 meters on the Atlantic side of the pass, had 223 inhabitants; today it is apparently abandoned.

Over the 1850-meter pass of El Desengaño, between the volcanoes of Barba and Poás, the movement has been more aggressive, and an automobile road leads into this pass. Settlement of the Atlantic slope dates from the 1850's. However, only Sarapiquí (Cariblanco)—about 900 meters—has risen to any significance: it had 243 inhabitants in 1883 and 788 in 1936.

Of much greater importance is the movement of settlers over the 1550-meter pass of Tapezco, west of Poás, into the lowlands of San

FIG. 25

FIG. 26

FIG. 25—Small farmer of Irazu; high nordic infusion, 42 years old, father of seven sons and three daughters, all healthy and vigorous.

FIG. 26—Small coffee farmer, white, with ox team.

Carlos. On the west slope of Poás the parish of Zarcero (1873 meters), belonging to the canton of Alfaro Ruiz, was founded in 1896 and was followed in 1912 by that of Villa Quesada (about 1000 meters) on the north side of the volcano, whose canton had 2397 inhabitants in 1936. From this point the settlements descend tonguelike to the Atlantic lowlands and thence eastward to Sarapiquí, so that the north base of Poás is almost encircled by a belt of settlements. The center, however, seems to be well within the tierra templada.

After 1910 another group of highland settlers crossed a large uninhabited stretch and settled on the Pacific slope of the Cordillera del Guanacaste; and here, at an altitude of about 500 meters, they built a thriving community at Tilarán.[21] A parish had been established by 1928, and in 1936 the canton of Tilarán had 1848 inhabitants.

With the laying of the railroad from San José to Puntarenas the low-lying southern and western parts of the Meseta Central Occidental, which had been so long avoided, began to draw settlers, and in 1928 the parish of Turrucares (634 meters), near the site of the old Garcimuñoz, was founded and in 1935 that of Ojo de Agua (833 meters).

The latest movement, and the one that will have the greatest future importance, is directed from the Meseta Central Occidental in a southerly direction. The parish of San Ignacio de Acosta was founded in 1899 (1160 meters), San Isidro de Puriscal in 1920, and San Marcos de Dota (1405 meters) in 1932. The highlands of Turrubares, heretofore pointedly ignored, now attracted settlers, as one must assume from the location of roads and the founding of San Juan de Mata (St. John of the Woods).

The mission of Boruca (466 meters) was established in the valley of the Diquis as early as 1626; but here, as in the neighboring Térraba, it was a case of forcibly settling Indians from Talamanca, who could be watched better in open country and near the road leading to Panama. The first highland settlers entered the valley of the Diquis in the 1890's, and in 1897 the parish of El General (600 meters) was established and in 1900 that of Buenos Aires (390 meters). The whole valley had 1302 inhabitants in 1883 and 9885 in 1936.

Population Distribution and Density Today

Figures 27 and 28 show the small area of Costa Rica settled at the present time. Measured on the map it amounts to only about 17,300 square kilometers, or 34.6 per cent of the total area of the country, so that 32,700 square kilometers, or 65.4 per cent, awaits development. But the expression "settled" has a vague connotation. What is the intensity of settlement? How is the population distributed within the settled area, and what is its density by region or district? Since

[21] Standley, *loc. cit.*

1864 some reasonably reliable censuses have been taken in Costa Rica in which the population is given by the smallest administrative units (cantons and districts). Unfortunately, however, no map showing the boundaries of the cantons or districts is available, so that the population cannot be indicated spatially in the usual way. On Figure 27 the number of inhabitants (in 1930) has been indicated for those places whose location is known, usually the seat of the canton. If in this way only about 45 per cent of the total population is shown, we nevertheless get a broad picture of the distribution, since the rural inhabitants are grouped around these larger settlements. Three gradations of density can be distinguished (Fig. 28):

1. Densely settled areas include both parts of the Meseta Central, the lower slopes of the volcanoes toward the Meseta Central, and the northern part of the Cerros de Aguacate. The environs of the towns of Limón, Turrialba, and Puntarenas also belong to this category.

2. Moderately settled areas include the Atlantic coast south of Limón, the valley of the Reventazón, the higher slopes of the volcanoes toward the Meseta Central, the Cerros de Candelaria, the terraces of the Río Tarcoles near its mouth, the western base of the Cordillera del Guanacaste, and the interior of the Nicoya Peninsula.

3. Very thinly settled areas include the margins of the Nicoya Peninsula, the higher parts of the Pacific slope of the Cordillera del Guanacaste, the north slopes of Poás and Barba, and the valley of the Diquis.

As measured on the map (Fig. 28) the areas of these three gradations and the percentages of the total area of the country are: densely settled, 800 square kilometers, 1.6 per cent; moderately settled, 6500, 13.0; very thinly settled, 10,000, 20.0.

In Figure 29 the different stages of settlement and the means of communication are correlated. In the densely settled areas the intercontinental railway and excellent motor roads connect the main cities. In the moderately settled areas there are wagon roads, which, in general, can be used only in the dry season. In the thinly settled and unsettled areas transportation is by mules or horses along the pack trails, most of which are so seldom used that they must be cleared with machetes.

In order to subdivide these three regions, an attempt has been made to show the population distribution according to the natural regions (Fig. 1) on the basis of the censuses of 1864, 1883, 1892, 1915, and 1936. In endeavoring to work out the approximate boundaries of the cantons valuable aid was found in Felix F. Noriega's "Diccionario geográfico de Costa Rica."[22]

The number of cantons has changed frequently since 1883, more

[22] 2nd edit., San José, 1923.

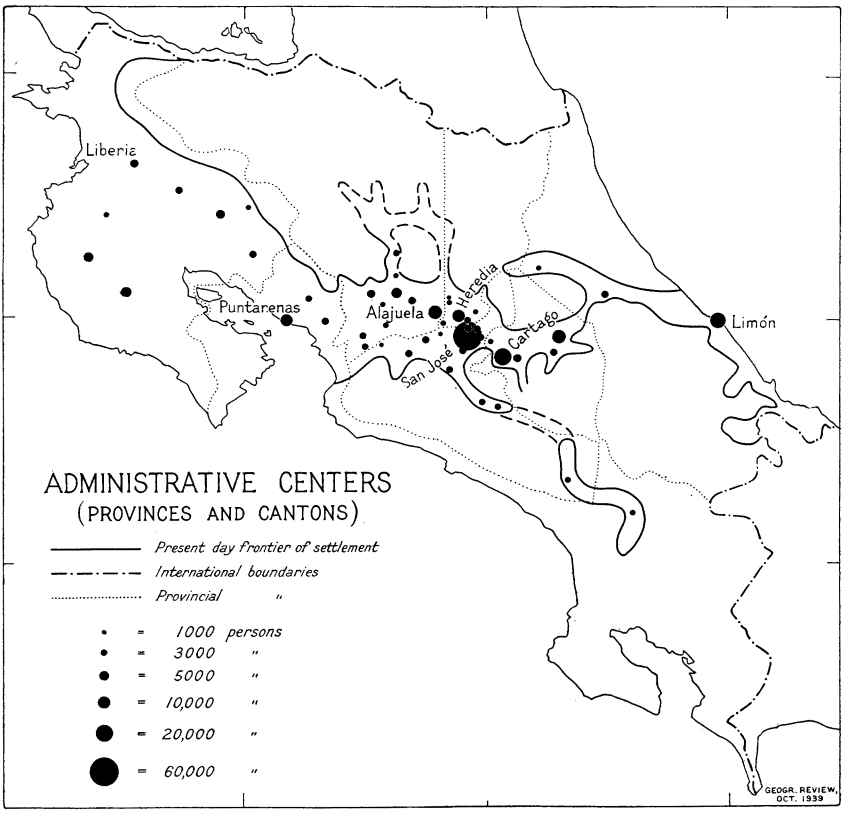


FIG. 27—Population of administrative centers in 1930. Centers of provinces are named.

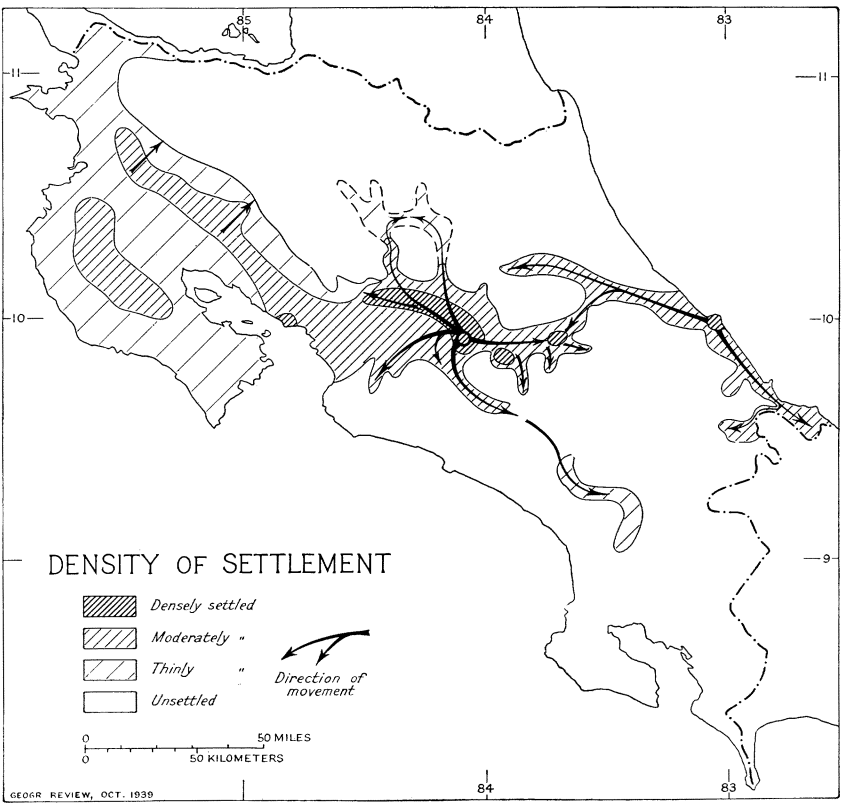


FIG. 28—Density of settlement in Costa Rica.

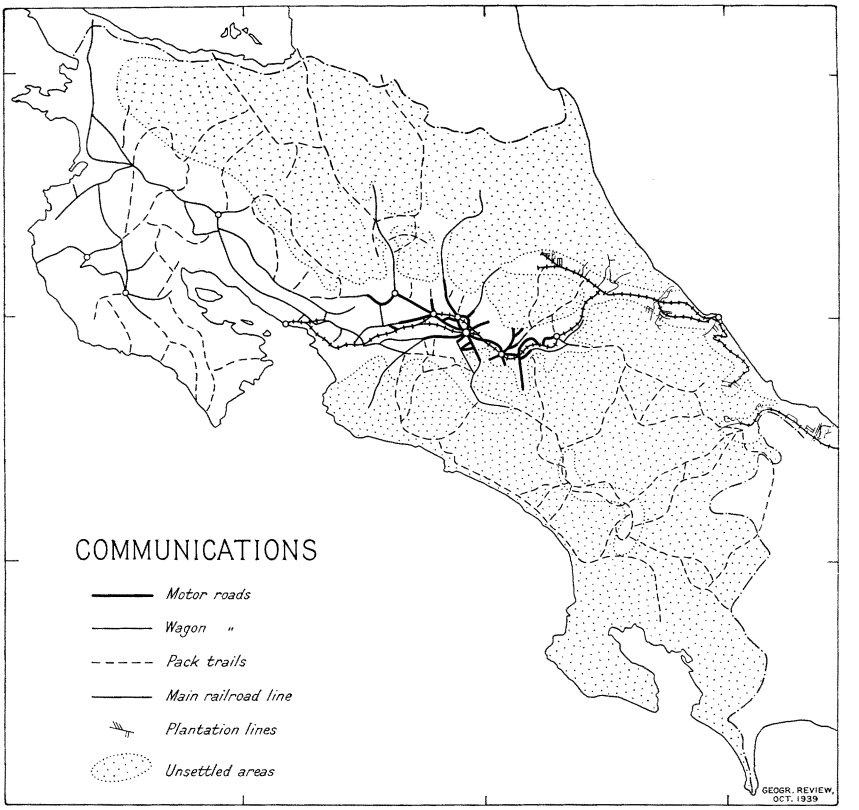


FIG. 29—Communication systems in Costa Rica. [In the legend the symbol for the main railroad lines is incomplete: it should be cross hatched to make the conventional railroad symbol.]

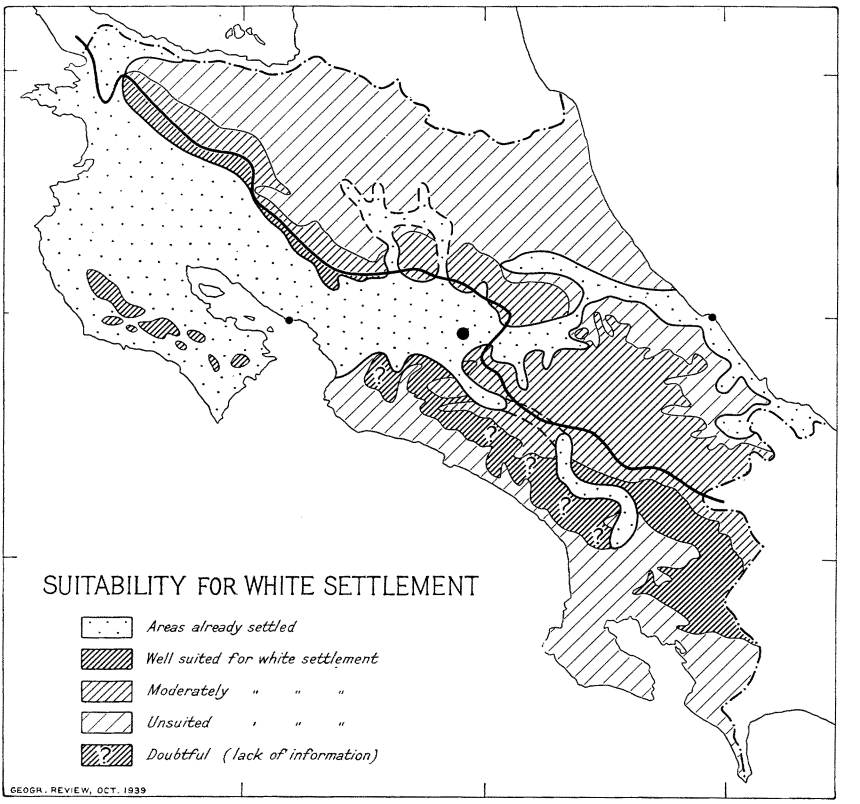


FIG. 30—Possibilities for white settlement in Costa Rica.

REGIONAL DISTRIBUTION OF THE POPULATION OF COSTA RICA*

	1864	%	1883	%	1892	%	1915	%	1936	%
Meseta Central										
Occidental	45,880	38.1	61,445	33.8	81,275	33.4	128,838	29.9	166,018	28.0
Oriental and Upper Río Reventazón	14,985	12.4	18,957	10.4	24,079	9.9	37,706	8.7	37,385	6.3
Total	60,865	50.5	80,402	44.2	105,354	43.3	166,544	38.6	203,403	34.3
South Slope of Cordillera Central										
Poás (incl. west slope)	7,034	5.8	13,436	7.4	17,348	7.1	31,308	7.3	39,725	6.7
Barba	7,197	5.9	12,226	6.7	15,124	6.2	22,626	5.3	22,246	3.7
Irazu	5,640	4.8	7,444	4.1	7,590	3.1	13,989	3.2	21,627	3.6
Turrialba	.....	....	1,258	0.6	400	0.2	3,062	0.7	5,557	1.0
Total	19,871	16.5	34,364	18.8	40,462	16.6	70,985	16.5	89,155	15.0
The Cerros										
Candelaria	12,921	10.7	22,118	12.2	29,620	12.2	53,019	12.3	74,704	12.7
Aguacate	8,230	6.8	15,662	8.6	18,906	7.8	32,996	7.7	36,181	6.2
Turrubares	.....	....	.....	....	445	0.2	897	0.2	1,584	0.3
Total	21,151	17.5	37,780	20.8	48,971	20.2	86,912	20.2	112,469	19.2
Pacific Lowlands										
Pacific slope of Cordillera del Guanacaste and Llanos of Tempisque	4,807	3.9	4,671	2.6	9,464	3.9	18,901	4.2	38,431	6.7
Nicoya Peninsula	5,624	4.7	10,310	5.7	11,856	4.9	24,217	5.7	35,042	6.0
Terraces near mouth of Río Tarcoles	5,587	4.6	9,327	5.2	13,434	5.6	25,456	5.9	36,098	6.2
Valleys of Diquis and Osa	931	0.9	1,302	0.6	1,789	0.7	3,518	1.0	9,885	1.3
Total	16,949	14.1	25,610	14.1	36,543	15.1	72,092	16.8	119,456	20.2
Atlantic Lowlands and North Slopes of Volcanoes										
Valley of Reventazón at Turrialba	1,118	0.9	1,521	0.8	3,619	1.4	6,641	1.5	23,656	4.0
Atlantic coastal plain	545	0.5	956	0.5	6,499	2.7	18,956	4.4	31,448	5.3
Base of Turrialba along the *línea vieja*	.....	....	894	0.4	985	0.4	4,800	1.2	3,842	0.6
Barba	.....	....	243	0.2	471	0.2	872	0.2	788	0.1
Poás	.....	....	303	0.2	301	0.1	2,899	0.6	7,645	1.3
Total	1,663	1.4	3,917	2.1	11,875	4.8	34,168	7.9	67,379	11.3
Grand Total	120,499		182,073		243,205		430,701		591,862	

*The percentage figures represent percentage of total population.

particularly in the highlands: districts have been elevated to the status of cantons, and the older cantons have thus lost considerably in area. For this reason the district rather than the canton has been taken as the unit in such cases. The cantons and districts are divided as they are presented in *Informe de la Dirección General de Estadística* for the year 1936. If, for example, in 1892 a district belonged to another canton than that to which it belongs today, its population for 1892 is credited to the canton to which it belongs today and at the same time is subtracted from the population of the old canton for 1892. No attempt will be made here to justify in detail the inclusion of

DENSITY OF THE POPULATION OF COSTA RICA BY SETTLED REGIONS, 1936

	AREA SQ. KM.		POPULATION	DENSITY SQ. KM.
Meseta Central Occidental				
Including cities of San José, Heredia, and Alajuela		390	166,018	425
Excluding the above cities			84,648	217
Meseta Central Oriental and	78			
Upper Río Reventazón	78			
Including cities of Cartago and Paraíso	156	156	37,385	239
Excluding Cartago and Paraíso			14,506	93
South Slope of Cordillera Central				
Poás	216		39,725	184
Barba	168		22,246	133
Irazu	246		21,627	88
Turrialba	64		5,557	86
Total	694	694	89,155	128
The Cerros				
Candelaria	595		74,704	125
Aguacate	440		36,181	82
Turrubares	155		1,584	10
Total	1,190	1,190	112,469	94
Pacific Lowlands				
Pacific slope of Cordillera del Guanacaste	1,660	}	38,431	8
Llanos of Tempisque	3,060			
Peninsula of Nicoya	4,460		35,042	8
Terraces near mouth of Río Tarcoles	1,370		36,098	26
Valleys of Diquis and Osa	720		9,885	13
Total	11,270	11,270	119,456	11
Atlantic Lowlands and North Slope of Volcanoes				
Turrialba and tributary valleys of middle Reventazón	320		23,656	74
Atlantic coastal plain	2,420		31,448	12
Base of Turrialba along *línea vieja*	250		3,842	15
North slope of Barba	150		788	5
North slope of Poás	460		7,645	16
Total	3,600	3,600	67,379	18
Grand Total	17,300	17,300	591,862	34

cantons and districts in the various regions: mistakes are unavoidable, but it is believed that the preceding table brings out the essential features of the distribution.

In 1936, 591,862 persons inhabited the entire settled area of Costa Rica. The average population density was thus 34.2 to a square kilometer of settled area and 11.8 to a square kilometer if we take into consideration the total area of the country. In detail the population density shows very marked variations.

In the Meseta Central the density is 376 to the square kilometer if the town population is included and 180 if the chief cities are omitted —a surprisingly high density for Central America. But there are wide variations even within the Meseta Central. The Meseta Central Occidental, with 425 persons to the square kilometer, is much more thickly settled than the Meseta Central Oriental, with 239 to the

square kilometer. This situation is a result of more favorable climatic and edaphic conditions as well as of better means of communication and the historical course of settlement.

The cultural landscape of the south slope of the volcanoes cannot be distinguished from that of the Meseta Central. Here the average density is 128 to the square kilometer. There are, however, great differences from northwest to southeast; that is, there is a decrease in the opposite direction to that of the course of settlement. The greater density in the northwest is dependent on the lower altitudes of the slopes of the volcanoes, which fall primarily within the climatically favorable tierra templada, whereas the slopes of Irazu and Turrialba lie more within the tierra fria. Not only the south slope of Poás but also the west slope is settled. On Poás and Barba the upper limit of settlement is at about 2500 meters, whereas on Irazu it rises to 2800 meters. In other words, all cultivable land on the south slope has already been taken, and the remaining forest must be preserved in the interest of water supply for the Meseta Central.

The Meseta Central and the south slope of the volcanoes must be considered fully settled, even overpopulated in some places. If to these we add the adjacent and next-settled *cerros*—Candelaria, with 125 persons to a square kilometer of settled area; Aguacate, with 82; and the recently opened Cerros de Turrubares, with 10—we have a total of 405,027 persons, 68.5 per cent of the total population, on an area of 2430 square kilometers, or 5 per cent of the total area, and the average density works out at 166 to the square kilometer.

The overflow from the central highlands after the 1880's created new settlement areas in the valley of the Reventazón and on or near Turrialba, where 23,658 people now live on an area of about 320 square kilometers, a density of 74 to a square kilometer. On the north side of Barba the density is very low (5 to a square kilometer); on the north side of Poás it is somewhat higher (16 to a square kilometer).

The most recent stream of migration, from the central highlands down the Pacific slope into the valleys of the Río Diquis and Osa, had resulted by 1936 in a population of 9885 on an area that has been very roughly estimated at 750 square kilometers; the average density in this newest settlement area is therefore 13 to the square kilometer. The United Fruit Company is known to be making settlements in the valley of Osa and on other parts of the Pacific coast, but no data are available.

The Pacific lowlands, sparsely settled throughout, show an average density of 11 to the square kilometer; only the terraces in the lower regions of the Río Tarcoles with the cities of Puntarenas and Esparta show a greater density—26 to the square kilometer. Similar to that of the Pacific lowlands is the density, 18 to a square kilometer, in the Atlantic lowlands, but here the settled area is small and the larger part of the land is still unoccupied.

The tables on pages 538 and 557 make it possible for us to distribute the population according to climatic zones more accurately than has previously been possible. The table follows:

	1864		1883		1892		1915		1936	
	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%	NUMBER	%
Tierra caliente:										
Atlantic part . .	1,663	1.4	3,371	1.7	11,103	4.5	30,397	7.1	58,946	9.9
Pacific part . . .	16,949	14.1	24,959	13.8	35,649	14.7	70,333	16.3	114,514	4.5
TOTAL	18,612	15.5	28,330	15.5	46,752	19.2	100,730	23.4	173,460	29.4
Tierra templada . .	99,094	82.3	147,239	80.9	187,871	77.3	314,793	73.1	397,541	67.1
Tierra fria	2,793	2.2	6,504	3.6	8,582	3.5	15,178	3.5	20,861	3.5
GRAND TOTAL . .	120,499	100.0	182,073	100.0	243,205	100.0	430,701	100.0	591,862	100.0

AREAS STILL AVAILABLE FOR WHITE SETTLEMENT

We are now in a position to consider possibilities of further white settlement in Costa Rica (Fig. 30). We may at once exclude the tierra caliente of the Atlantic slope. The tierra caliente of the Pacific slope is already largely settled by mestizos and whites, but undoubtedly there are parts suitable for settlement by fully acclimated whites—just how large an area it is difficult to say. And here a distinction must be made between native-born and foreign whites: even on the Pacific slope the tierra caliente would not be suitable for the latter.

On the tierra templada of the Atlantic slope foreign-born whites might likewise experience difficulty in acclimatization. The constant dampness of the climate, the wet fogs and high humidity, are trying, quite apart from the hardships arising from the dense forest. About 1300 square kilometers of the Cordillera del Guanacaste lie entirely within the tierra templada; they apparently have not too rugged a relief and are still densely covered with forests, and their volcanic soils should be relatively fertile. There are about 900 square kilometers of unsettled land in the tierra templada and 520 square kilometers in the tierra fria on the northern side of the Cordillera Central. The forests have been cut down along the passes leading from the highlands, the slopes seem to be very steep, and it may be assumed that the soils have been greatly washed out as a result of the high rainfall of 5000 millimeters a year. Conditions are probably similar on the Atlantic slope of the Cordillera de Talamanca, except for a poorer soil on the crystalline rocks. There are 2540 square kilometers of land available here in the tierra templada and 1550 square kilometers in the tierra fria; the great disadvantages are isolation and rugged relief.

The tierra fria of the Pacific slope of the Cordillera de Talamanca, about 1740 square kilometers, must also be graded as only moderately suitable. Here also we have the dense evergreen forests found on the Atlantic slope, which so far have stood in the way of settlement.

The best opportunities lie in the tierra templada of the Pacific slope. A narrow strip of about 750 square kilometers on the Pacific slope of the Cordillera del Guanacaste belongs to this category; it seems that not only the lowland dwellers but also the highlanders are on the point of penetrating these mountain forests.[23] (The areas in the Nicoya Peninsula are only small patches and have therefore been left out of consideration.) In the Cerros de Aguacate no large land reserves are left; the Cerros de Candelaria, however, are only partly settled, and here about 650 square kilometers of land should be available. But this region is very isolated and can be reached only in the dry season on bad roads. In the adjacent valley of the Diquis, to the south, and on its surrounding mountains to the north and east 2200 square kilometers are available. As we have already seen, the main stream of highland settlers is directed there. Transportation facilities are easier to improve from the neighboring Pacific coast than in any other of the unsettled areas, so that the valley of the Diquis seems to be particularly favorable.

The entire tierra templada in the Pacific Coast Range (Cordillera Brunquena) is unsettled, and the highlands of Turrubares are still sparsely occupied. As both areas lead toward the Pacific coast and have the advantage of more favorable means of communication, presumably settlement must have been delayed by some natural handicap—in the case of the Cordillera de Turrubares perhaps the dense evergreen forests, in the case of the Cordillera Brunquena the porous limestone. But in the absence of definite knowledge this still unoccupied area (about 1350 square kilometers in the Cordillera Brunquena and 250 square kilometers in the highlands of Turrubares) has been designated "questionably suited."

In summary, we have the following results:

	Sq. km.	Per cent Unsettled Area
Moderately suited for white settlers	8550	17.1
Well suited for white settlers	3600	7.2
Questionably suited for white settlers	1600	3.2
	13,750	27.5

[23] See p. 552 (Tilarán).