

SOUTH OF PANAMA

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Sometime during the latter part of May, 1956, a very pleasant trip was just beginning—a tour which lasted two and one-half months, leading us through seven of the South American Countries.

The climate of South America is extremely diversified, though it is generally speaking, more equable than the climate of North America. The winter months were selected for our trip because of the lack of rain during this period, for many of the hinterlands are inaccessible in the wet months due to very poor road conditions.

Our journey began when I joined Doctor George Zentmyer in Key Cali, a small town on an elevated plateau, half-hidden amongst the towering mountains of Colombia, but in itself, a tableland site 3,150 feet above sea level. Cali has a brisk trade in grain and fruit and transportation connects it with Buena Ventura on Choca Bay. The climate varies materially in different sections of Colombia, but the tablelands are very pleasant. Due to limitations and our eagerness to travel on, we ventured forth to Quito, Ecuador, to spend nine very enlightening days.

Though Quito, the capital and largest city of Ecuador, is considered one of complete beauty (due to the temperate climate and location in a picturesque valley), still it is one of the most backward cities of all South America, with nearly 90% illiteracy in the rural southern districts. The most amazing sight to me was the tropical growth at elevations ranging up to 9,350 feet. The atmosphere is almost constantly clear and bracing. Coffee is grown at 8,000 feet, the highest in the world. Many small avocado plantings were checked in the suburbs of Quito, most of the fruit found there was small and purple in color. There was a lack of Anise odor in the leaves. These avocado seeds were probably brought in many years ago by the Spanish Conquistadors.

Our travel continued on through the beautiful Eborra Valley, about one hundred miles north of Quito. Traveling over the Pan-American highway one may witness the finest semi-tropical agricultural districts to be observed in Ecuador.

The Eborra Experiment Station is located in this valley of enchantment and many of our California varieties of avocados are doing extremely well at 5,000 feet elevation, such as the Fuerte, Nabal and the Itzamna. The only short crop years are those following heavy hail storms during the blooming period. Very high prices in the city markets are paid for this tasty nourishing fruit, though few are grown commercially due to the lack of interest by the ranchers.

Other ranches were checked surrounding Eborra. Here the trees were found to actually grow up to ninety feet in height, with only a small quantity of green and purple fruit.

These also were Mexican in their characteristics, but without the Anise odor. Yet here Naval oranges seem to bear fruit twelve months of the year. In this valley one will find the English walnut and pecan. Citrus, papayas, avocados and one of the finest flavored fruits I have ever tasted, called Norenhilia. For export Coca, pyrethrum, bamboo, coffee, oil, rubber, hardwoods and sheep have great possibilities.

We left the negro villages to travel on making our next headquarters in Lima, a unique and charming city. We spent eighteen full and exciting days in and about this territory. South America can well boast of the splendor of Lima, though the sky is overcast day and night, three months, during this of the year. All aircraft drop through and come out of a 700 foot ceiling of clouds several miles over the ocean.



Fig. 1. Indian Farms of Ecuador.

Boarding our plane, we took off over the Andes, flying at 19,000 feet, sucking oxygen through a tube and arriving at Cuzco. Cuzco, itself, is 11,250 feet in elevation and at one time was the capital of all the oldest Inca cities in South America. Many of the Inca walls still stand and are used in the present buildings of this city. The Inca Indians are a sad lot at this time. At one time, the Incas were highly developed in agriculture and fruit raising. They maintained considerable commerce, manufactured clothing and implements; promoted mining and had a substantial architecture. After the Spanish conquest religion was brought to the Incas and the Spaniards took everything else away. There are over fifty ruins of Indian cities within forty miles of Cuzco. The Temple of Machupijchu, sixty miles away, is reached by gas-buggy which is drawn on tracks. This railroad has many switch-backs and is extremely scenic. We were very fortunate in the day selected for our trip to the Temple, the climate was clear and beautiful. The Temple itself, is built on a steep mountain, with approximately a 1,200 foot drop on three sides into the river. The slopes for miles around were all terraced for agriculture and water is imported from the higher mountains, miles away. These terraces are

approximately six feet in width, having a drop of about the same distance between each terrace. Several selections of wild avocados were found along these terraces and were no doubt eaten by the Indians. It is claimed that the Irish potato was discovered in this region by the Spaniards.

Another trip over the Andes by car lead us into Chincima Valley. Carlos Bohl, our host on this trip, is in charge of forty-two agricultural stations in widely separated locations in Peru. This district produces most of the coffee and semi-tropical fruits grown in this country. The road leads through the great copper mining district and goes three hundred fifty miles from the ocean at sea-level to 15,700 feet in elevation, down again into the head-waters of the Amazon River with an elevation in the town of San Ramon of 2,500 feet. All of the produce is trucked out of the valley over some of the worst roads this writer has ever experienced. You can imagine the condition of some of the fruit when it finally reaches its destination in Lima, after being brought out of the hills on burros and the backs of men, then carried from ten to fourteen hours over rough roads. This is the fringe of the jungle. Most of the land is leased to farmers by large land-holders who make their homes in Lima and seldom see their holdings. The most progressive agriculturalists are Italians and Germans.

A good many avocados were found growing wild here in the jungle. Most of the avocado groves were infected with root-rot and the varieties were of the West Indian type, and of course not suitable for our needs in California.

Carlos Fowles, head of the Agricultural Station here, is doing a fine job advising ranchers and improving their practice in farming.

The Andes were crossed seven times in all, and I was impressed each time by the terracing for agricultural crops up to the snow line. These terraces were established by the Incas and are still in use. They are well engineered and irrigated. The next flight took us to Santiago, Chile, where we were met by the Homer Chapmans of Riverside, who were stationed here for a year. Chile is well named for this time of the year. The climate is supposed to be much the same as Southern California, but we found the days to be much cooler.

The people in general were some of the finest we met in South America. They were progressive and freedom-loving; there were over forty different political parties, and there is apparently small chance of future dictatorship.

The district north of Santiago reminds one of the Ventura, Santa Barbara area. The crops are comparable including some plantings of Southern California avocado varieties. The production of Fuerte is excellent, and Cherimoyas are grown commercially in the La Cruz-Quillota district. Here again, root-rot was found over much of the area irrigated by the Mapocho River.

Inflation has raised the price of farm land to \$1,000.00 per acre, and the people are satisfied with 3% on their investment to protect their money against any future inflation.

South of Santiago there is a great and wondrous valley, comparable to the San Joaquin in California, except the rivers run across the valley and not along its length. Many of the crops found here are the same including grapes, nuts, citrus, cotton, etc. Some avocados are grown here also. Most of the trees observed were seedlings, both green

and purple, with the Mexican type appearance. Some interesting types of citrus were also observed, especially a Chilean seedling harvested in and during the same season as our valencias. The fruit of this Chilean seedling is equal in size to, or larger than the Navels grown in Chile, and the quality is good. The handling of most of the fruit is rather primitive, lemons washed by hand for export, etc.

The climate ranges from the tropical in the north to the cold region in the south. Much of the coast has a climate similar to California, with average temperatures in low altitudes at 65° in the north and 40° and less in the south. Rainfall is most abundant in the southern third of Chile, where it reaches about 200 inches a year in places, and decreases toward the north where the coast has less than eight inches and parts of the interior are practically rainless.

This Central section has had two very cold winters, and many indications of frost injury were observed. The nights dropped to 28° several times while we were in Chile. No frost protection is used except in a very few groves.

There seemed to be more middle-class farmers in Chile than in most South American countries. These people seem to be very happy. The German-Italian farmers are especially interested in more modern methods of farming. They are very eager for any type of information that might improve their present methods.

Chile, I believe, is the most progressive country on the west coast of South America, due to a more stabilized government and without dictatorship, nor complete control by the wealthier class of people. Most of the land is held in large estates by the wealthy classes and about half of the people of Chile are engaged in agricultural pursuits.

Once again, we were on our way. This time our flight took two and one-half hours, high above the Andes to Buenos Aires. This sight is one never to be forgotten. While on our flight we passed very close to the volcanic peak of Aconcagua, the highest mountain in South America, over 23,910 feet. This same trip by car or train will take at least two whole days. The very modern airport is twenty-five miles out of the city with a good freeway connecting it with Buenos Aires.

Many indications of the overthrow of Peron are still in evidence in and around Buenos Aires. Bullet holes in the palace, bomb repairs, etc. Most of the people contacted talked of the greatness of the country "before Peron." Now all streets, terminals and cities named for Peron and Eva, have been changed. Buenos Aires is an important city of South America, and has one of the most important trade centers south of the Equator. It enjoys a large ocean commerce. The city itself has a European atmosphere—quite delightful!

Most of the avocados and citrus are grown in the Northwestern part of Argentina. The avocados do not arrive in the best of condition as they must be shipped by rail through very hot weather for three days without refrigeration. Some fruit is grown on the Delta between Uruguay and Parana Rivers.

The people live almost entirely on meat and use very little fruit and vegetables. The price of fresh fruit is high. The avocados found here are of the West Indian type. There are over one million acres of poplar trees on the Delta planted for pulp. These trees are planted two feet by four feet and are harvested in about seven years after planting.

Paper is very scarce here in South America: One seldom sees shopping bags or paper boxes and, this is one consolation, you don't see paper littered all over the countryside as we do in California.

Buenos Aires is a great country for the future—the population is around eighteen million, and can support three hundred million with ease. At present the practice is to use the virgin land as long as it is productive, then move on to new lands. Practically all of the pampas land could be irrigated for there is plenty of water.

Our next flight took us to Montevideo, Uruguay, a forty-five minute hop. Uruguay is the smallest country of South America, yet apparently is the most stabilized of all the countries we had the pleasure of visiting. Their money exchange is stable, and the general appearance of the country shows prosperity. Montevideo is on a small peninsula. It has a fine climate due to a well sheltered harbor, and, as a whole, the city is one of the best built and most modern in all South America. The export and import trade is very important since its location is at the most convenient point for river navigation on the Uruguay and Parana Rivers.

We spent some time visiting the fruit and vegetable growing areas, less than fifty miles from Montevideo. The roads were good, and most of the ranches were well kept. Citrus, grapes and deciduous fruits are grown, and trucked into the markets in the city. No avocados are grown commercially. Why, I don't know, as the climatic conditions appear favorable. Uruguay has a mild and healthful climate even though it has an abundance of rain. The thermometer seldom falls below 33° F. and along the shores rarely rises above 85°. The only avocados on the markets are imported from Brazil, and retailed for approximately one dollar per fruit!

I had the pleasure of meeting over three hundred Americans living in Uruguay, at the United States Ambassador's Fourth of July party. I might state at this point that the United States Embassies—of all countries visited—gave us a great deal of information and were very courteous in all respects.

We continued on to Sao Paulo, Brazil. It is situated on a plain near the source of the Rio Tiete, a tributary of the Rio Paranaiba. This country is noted for its fertility, (coffee production) and has fine forests and deposits of precious metals and gems. Sao Paulo is the fastest growing city in the world, and now the largest in South America. It boasts of new buildings and apartments all over the place—this construction of buildings has not stopped in the last twenty-five years. Most of the buildings are of cement or brick construction, with practically no steel reinforcements. They run up to thirty-four floors in height, and all are very modern in appearance. Oddly enough, they are without heat and fire-escapes!

Sao Paulo has by far the greatest amount of industries in South America due to cheap electrical energy. Huge lakes have been formed around the city by building low dams. The water pumped about one hundred feet, and drops directly into the Atlantic, 2,300 feet below.

There is very little poverty in this city due to a minimum wage of fifty dollars per month. This does not hold true, however, in the farming areas where eighty cents per day is still the prevailing wage.

The Port of Santos, thirty-eight miles and 2,300 feet below Sao Paulo, ships more tonnage than any other port in South America. The cities are connected by an excellent two-way road system. The roads wind around and under each other, then pass through many tunnels on this thirty-eight-mile grade. This harbor takes care of most of the coffee export plus many other industrial and mineral produced in this region. It is said that forty per-cent of Brazil's business is handled through Sao Paulo.

A very interesting trip was made into the Campinas, Piracicabs and Lemira districts. This was the great citrus district of Brazil before "Quick Decline" destroyed all but the ten per cent of the oranges which were on sweet-root stock. There are large new plantings on sweet-root stock, many are just coming into bearing. The groves with production at present are paying off handsomely, with scarcely enough fruit for home consumption.

We stopped at the Citrus Experiment Station in this district which proved to be quite interesting. There are over two hundred and twenty different varieties of citrus in production. This is just one of fifteen agricultural stations financed by the State of Sao Paulo. Their interest is great in the future of agriculture. Farming has developed most extensively in the southeastern part. Here in the State of Sao Paulo other products grown include potatoes, beans, yams, vegetables and Paraguay Tea. California avocado varieties do not do well on the east coast, the scab will injure both fruit and foliage, and production is not heavy. Guatemalan type seedlings have been selected that are almost immune to the scab disease, and are good producers. The Brazilians like a sweet fruit; in fact, the avocado is used as a dessert with sugar, hence, the Guatemalan-West-Indian cross is the favorite avocado. There is a good deal of new avocado planting in this area. The Dierberger Nursery and grove alone, has 5,000 acres including 2,000 acres of fruit trees and over 200,000 avocado seedlings to tip graft in 1956.

The Ranches or "Fazendas" as they are called here, are large and diversified. Brazil has vast and largely unexploited wealth, yet Brazil has not taken a foremost position among the nations in the output of its manufacturing and farming enterprises, chiefly, for the reason that it is not densely populated, and consequently lacks a large supply of skilled labor and cheap capital. However, the vast natural resources and a determined government policy in this direction have in the past generation brought about considerable advances. Food processing has become the largest industry. For instance, one 5,000 acre Japanese Frazenda included in their crops, avocado, citrus, coffee, cattle, cotton, deciduous fruit, walnuts and many row crops. Frost was unknown until 1955. The area before this freeze was heavily planted to unshaded coffee which was destroyed by the frost. It is now heavily planted to sugar cane.

Real Estate values are very high. Farm land prices run about \$1,200 per acre due to inflation. Values have increased 1,000 percent in the past five years. Large parcels of land are not farmed but are held for speculation purposes.

The agriculture and mining district of Bela Horizonte (two hours by air, north of Rio) was checked where some wild avocados were found. This city of one-half million people is only fifty-eight years old, and I believe we met all the twenty American families in the two days we spent in this district and Oro Prade.

The flight from Rio to Caracas over the great Amazon Basin takes eleven hours—a super de-luxe flight—made at night. It's surprising how much one can see, however, with a full moon. The Caracas elevation is 2,400 feet. The city is not the only thing high—most of the food is imported, and is terrific in price—a hamburger at eighty cents is accepted. This is the Country of Americans—Venezuela. Over 30,000 of our countrymen work and live in this land of oil production. Most everything including food is imported. It is not out of the way to find canned meat on the menu in the better restaurants of Caracas at \$4.00 to \$5.00 per dinner. The farming area is limited due to the very steep slopes and the lack of roads south of the mountains. The rain-forest is well worth seeing—it's about one hundred miles west of Caracas. Many rare species of birds and plants are to be found here. Some wild avocados were also checked in this area. The commercial plantings of avocados are scarce and the fruit is very high on the market.

The Point-4 Program is doing a wonderful job in all sections of South America. The money we are spending on technical aid is not wasteful. The people, generally speaking, appreciate this assistance, and are friendly toward the Americans. We were very fortunate having the privilege of being invited into the private homes in most of the countries, and having the transportation and guidance furnished without cost.

Some sixty varieties of wild and domestic avocados were collected on this trip. I was looking particularly, for the much needed new commercial variety; but this was not found. I only hope that a good root-stock, resistant to Phytophthora root-rot will be found in the collection brought home.