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The travels and botanical collections
of Eugène Langlassé in Mexico and Colombia, 1898-1899

by

Rogers McVAUGH

In the year 1898 a young Frenchman, Eugène LANGASSÉ, who had already made something of a reputation as a botanical and horticultural collector in the Orient, was sent to Mexico to study "the agricultural resources of the State [of Michoacán] and the neighboring State of Guerrero, and to collect there both dry and living plants". His sponsor in this venture was Marc MICHELI¹, the celebrated botanist and horticulturist of Geneva. A co-sponsor was Paul MIRABAUD (of the banking firm of Mirabaud & C^{ie}, Paris), the President of the Compagnie d'Inguarán, which was a French mining company with interests in the vicinity of Inguarán, Michoacán. Langassé was commissioned by the Compagnie d'Inguarán to conduct for them a survey of the "mineral resources of the States of Michoacán and Guerrero, and in particular of the region of Inguarán".

The present paper deals with Langassé's botanical work, and does not attempt to summarize or evaluate his work for the Compagnie d'Inguarán. His reports on the mineral resources of Michoacán and Guerrero were embodied in a number of detailed and interesting letters to M. Mirabaud, and copies of these letters have been made available to me by Dr. Baehni, from the files of Marc Micheli. Many of the reports, although primarily geological, contain much valuable information about the collector's itineraries and so have been of much use in the preparation of the following account of his botanical work.

In the preparation of this account I have received generous aid from Dr. Donald D. Brand of the University of Texas, who has supplied me with many data relative to the geographical literature of Mexico.

¹ MICHELI, Marc (1844-1902). For a sketch of his life and work, see André, E., in *Revue Horticole* 74 : 342-344 (port.) (1902).

I am also grateful to Monsieur E. Mirabaud, of the firm of Mirabaud & C^{ie}, for information about the Compagnie d'Inguarán and for permission to use Langlassé's map of the region around Inguarán. I am especially indebted to Dr. Charles Baehni, Director of the Conservatoire et Jardin Botaniques, Geneva, who has been most helpful in searching the files and records in his care, and who has generously loaned, for my study, a large series of manuscript notes, maps, and letters of Langlassé.

Part I. A brief biographical sketch.

Most of the material in the two following paragraphs is taken from an article by Micheli¹, entitled "Eugène Langlassé et son voyage au Mexique", or from data which were very generously furnished to me by Dr. C.G.G.J. van Steenis from the forthcoming first volume of the *Flora Malesiana*.

Langlassé was the son of a gardener who lived near Paris. The date of his birth is unknown to me, but Micheli tells us that "when hardly thirty years of age he had already made . . . a trip . . . to Cochinchina and a second . . . in the same region and in North Borneo". He seems to have returned to France from this second trip about the middle of the year 1895, which would put the year of his birth about 1864 or 1865.

The first trip to Cochinchina, according to Micheli, was made for M. Godefroy-Lebeuf, of Paris, a horticulturist who was much interested in ornamental and other economically important plants from tropical regions. The date of this trip I do not know. The second expedition, which Langlassé is said to have undertaken independently ("pour son propre compte"), may have begun early in 1894. He seems to have travelled by way of Ceylon and Singapore. He worked in Borneo and on Singapore Island and the nearby mainland from May until mid-September of this year. From about October 15, 1894, until January 1895, he was in the Philippines. The herbarium specimens collected in the Orient, comprising 600 numbers more or less, are deposited in the great herbaria at Paris and Geneva.

Presumably Langlassé returned to France in the spring or early summer of 1895, for at about this time he began the publication of a series of short articles in the *Revue Horticole*. Most of these articles are no more than one or two pages, each having to do with some feature of the vegetation or horticultural practice in Malaysia. The series continued until September, 1897, a few months before the beginning of the trip to Mexico.

¹ *Revue Hort.* 72 : 414-415 (1 Aug. 1900).

Early in February, 1898, Langassé left France on the steamer "La Normandie". His destination was Inguarán, the center of the copper-mining area in which his sponsors were interested. He seems to have reached Inguarán about the first of March, after some days' travel by mule trail from the rail-head at Patzcuaro, about 80 kilometers to the north. For about two months he made his headquarters here, on the property held by the Compagnie d'Inguarán; his own map of this area is reproduced as Figure 1.

On April 26 the collector left Inguarán for La Orilla, in the delta of the Balsas, which he reached May 5. May 16-24 he undertook a trip along the coast to the westward, visiting a number of mines located along the "torrents" in the lower hills. After a few more days spent in the vicinity of the delta of the Balsas he passed several weeks in exploration of the hills and the lower country of the right (west) bank of the Balsas, in what is now Michoacán. (At the time of his visit the boundary between Michoacán and Guerrero, at the Pacific Ocean, was the Río Nexpa, at approximate longitude $102^{\circ}47'$ W. From the Río Nexpa (or Nihispa) the boundary ran northeasterly to the Río Balsas at a point just below its great bend to the south).

The explorations of the "right bank" occupied the last two weeks in June and most of the first week of July. July 6 found Langassé in the hills in the vicinity of El Carrizal, whence he set out across the "terres chaudes", the lowlands of the Río Balsas, toward La Unión, Guerrero, which he reached sometime after the middle of July. He passed the next four weeks at various localities in the coastal plain between La Unión and Zihuatanejo; during this period he was incapacitated for several days by an attack of fever. About August 19 he began the first of many trips to the "Sierra"; during the succeeding nine months he collected up and down the valleys of the seaward slopes of the Sierra Madre del Sur along most of the passable trails between the Río de la Unión and Chilpancingo. His practice was to ascend the Sierra by one route, often along a stream-valley, collecting as he went, then to descend if possible by another route. His own map of his wanderings between La Unión and Petatlán is reproduced as Figure 2.

By the middle of May, 1899, Langassé had almost finished his collecting in Mexico. On May 20 he sent from Iguala a shipment of dried plants including numbers up to 1027. He returned to Chilpancingo, then set out about June 1 for Inguarán, by way of what he called the "versant oriental", the landward slopes of the Sierra Madre. He apparently reached Inguarán early in July, with a small collection (about 40 numbers) of herbarium material. He reached Mexico City July 10, having shipped enroute, from Patzcuaro, the remainder of the dried plants ending with number 1067.

Langassé and his backers had been looking for a region which he

might profitably explore after finishing his work in Guerrero, and they acceded promptly to a suggestion made in June 1899 by Edouard ANDRÉ, the French horticulturist who had made extensive South American explorations almost a quarter-century before. André's suggestion was that Langlassé take a boat from Panama to the little port of Tumaco, in southwestern Colombia, and from there explore the valley of the Río Micay or that of the Río Mira. One of the reasons for the choice of Tumaco as a base was the presence of a French consul there.

In accordance with these plans, the collector left Mexico City July 16 (or 19?). On reaching Iguala he found coach service suspended because of roads washed out by rain; it was accordingly necessary for him to undertake a 7-day trip on horseback to Acapulco, which he reached about July 25. He left for Panama on the 28th, on the packet "San Juan", arriving at his destination the 10th of August. He found another boat leaving Panama for Tumaco on the 15th, and finally reached that place on the 19th.

Tumaco was extremely isolated. Mail came by way of Panama on a fortnightly boat, and Bogotá was three weeks away by courier. Apparently André had been in error in supposing that a French consul was stationed at Tumaco, for Langlassé found it necessary to arrange for funds through the Chilean consul at Barbacoas, and he was much hindered during his whole stay in Colombia because of delays in receiving his funds from France.

Because of this initial lack of money and because of the extreme isolation of Micay, which André had recommended as a base of explorations, Langlassé began his work in Colombia by a trip to Barbacoas, thence to Altaquer (as he said, "distant de Barbacoas d'une vingtaine de lieues"). From Altaquer he explored the mountains to the southwest, at elevations between 1400 and 1700 meters, not far from the Ecuadorean boundary. In these mountains he collected a number of seeds and living plants. His letter to Micheli, written from Tumaco on September 14, about 4 days after his return from Barbacoas, lists 33 living plants which are being shipped by way of Panama; these are mostly orchids, aroids, and bromeliads, with a few ferns.

The long-awaited funds finally came into Langlassé's hands on October 2, after he had been delayed in Tumaco more than 3 weeks; apparently he had made few or no collections during this period.

Between October 5 and October 20 (the dates of two letters from Tumaco), Langlassé made a difficult trip up the Río Mira and its affluent the Río Nulpi (or Nulpe), in both cases to the head of navigation by small boat. The following excerpts from his letters tell all that is known about these trips:

"Ce rio Mira ne peut se remonter en canot que pendant huit jours et avec les plus grandes difficultés. Pendant ce laps de temps j'ai passé

52 rapides ; les péons descendant dans la rivière et levant l'embarcation à l'aide de cordages . . . ”

“ . . . le huitième jour j'ai rencontré une chute qui empêche toute sorte de navigation et comme il n'y a aucun chemin de tracé ce n'est [que pendant] quatre ou cinq mois que l'on pourrait parvenir dans les régions supérieures. N'ayant pas le temps d'entreprendre une telle expédition, j'ai remonté le cours du Nulpe, affluent du Mira, jusqu'au point navigable et suis revenu à Tumaco avec trois caisses de plantes vivantes que je [vous] expédie ce jour.”

“ Tous ces végétaux ont été recueillis dans les régions basses ne dépassant pas 300 mètres de haut . . . ”

The junction of the Río Mira and the Río Nulpi lies in the coastal plain, at an elevation of 35 meters (Amer. Geogr. Soc. Map of Hispanic America at 1:1,000,000, sheet NA 17, Río Mira—Islas Galapagos, Provisional edition, 1927). South and east of this point the mountains rise abruptly, so that an elevation of 300 meters on the Río Nulpi would be reached not more than 15 to 20 kilometers from the junction. A similar elevation on the Mira itself would be reached after approximately twice as much travel in a general southerly direction. Above an elevation of about 175 meters (above the junction with the Río San Juan), the course of the Río Mira lies in Ecuador.

The living plants, as enumerated in a letter of October 21, comprised numbers 34-50, of which 34 to 44, inclusive, were collected along the Nulpe (“ Rives du Nulpe ”); 45 and 48 at the junction of the Nulpe and the Mira; 47, 49 and 50 on the Mira (“ Rives du rio Mira ”). No locality is given for number 46, an aroid, but the collector states that this is the same as herbarium specimen no. 2. From this last it may be inferred that very few herbarium specimens were collected by Langlassé during his stay at Tumaco, for his arrangement and numbering of his collections was always rather strictly chronological, and the somewhat more than 100 herbarium numbers comprising his Colombian collections must have come for the most part from his subsequent trips over the mountains west of Popayán.

On returning to Tumaco from his trip up the Río Mira, Langlassé found that he could take passage the same day (October 20) on a coastal packet going to Buenaventura, a day's journey to the north. He reached Buenaventura the 21st, hoping there to secure men and boat to go to Micay, which he had been unable to reach from Tumaco. Here again, however, he found the bad luck which dominated his Colombian work. A revolution had just broken out in the country, and all able-bodied men were being drafted into government service. Unable to secure a boat, Langlassé decided to attempt to reach Micay from the interior; he had learned of a new route over the mountains from Popayán :

“ De Popayan il y a un chemin récemment tracé et peu fréquenté qui va à Puerto Sergio situé sur la rivière Micay à environ 120 kilomètres de son embouchure. Ce chemin, partant de Popayan à une altitude de 1600 mètres traverse une ramifications de la cordillère à un point appelé Santa Ana à une altitude de 3200 mètres... De Puerto Sergio je descendrai la rivière jusqu'à Micay d'où je m'embarquerai avec les plantes pour Buenaventura ”. [Letter to Marc Micheli, Buenaventura, October 21, 1899].

With this plan in mind, Langlassé secured at Buenaventura a passport which would enable him, as a foreigner, to travel anywhere in the country in spite of the political unrest. He took the train from Buenaventura to San José, two hours up the valley of the Río Dagua, then apparently continued to Cali on horseback, although he does not definitely say so :

“ N'ayant pu trouver de chevaux à San José pour transporter mes bagages j'ai dû attendre huit jours leur arrivée à Cali ; j'en ai profité pour sécher quelques plantes... ”

“ En sortant de San José, la route qui est à peu près parallèle à la rivière Dagua, traverse une région remarquable par la beauté de sa végétation et riche en orchidées de terres chaudes puis, brusquement, quitte la région humide pour entrer dans une zone aride ayant beaucoup d'analogie avec le Mexique, où j'ai rencontré quelques Cactées du genre *Cereus* que j'espére collecter ainsi qu'une espèce d'*Agave* qui fournit un excellent textile. Passant une ramifications de la cordillère occidentale à 2000 mètres d'altitude d'où l'on domine la superbe et fertile vallée du Cauca, j'arrivai à Cali... ”

From this one may infer that Langlassé had planned to travel, with his effects, from San José to Cali, collecting along the way as had been his practice in Mexico ; otherwise there is no apparent reason for his leaving the train at San José. Unable to secure horses to carry his baggage to Cali, he must have made arrangements to have it follow him, then gone on ahead, either afoot or by horse. Certain phrases in his letter suggest this strongly, for example, “ j'ai rencontré quelques Cactées... ” If he had been riding on the train he would hardly have used the word “ rencontrer ” ; more probably he would have said “ j'ai vu ”. Another example is his note that he passed (i.e. passed over), at an elevation of 2000 meters, a branch of the cordillera which commanded a view of the Cauca Valley ; evidently he did not travel by the railroad which winds through a pass at about 1600 meters, a more circuitous route than the one crossing the summit from Dagua to Cali.

From Cali, after the arrival of his baggage, Langlassé proceeded to Popayán. He wrote to Micheli from this city on November 16, discussing his plans for the next few weeks ; this was the last communication received from him before his death. He adhered at this

time to his original plan of securing a good collection which he would ship from Micay after descending the Río Micay from Puerto Sergio. Following this he planned to return to the interior, presumably by retracing his route over the cordillera and down the Micay, collecting on this last trip some boxes of living orchids.

Little is known of his whereabouts between November 16, 1899, when he wrote to Micheli from Popayán, and January 16, 1900, when he died of yellow fever in Buenaventura, having been taken suddenly while preparing to return to France. A few inferences may be drawn from a study of his collections of herbarium specimens, which comprised hardly more than 100 numbers¹. As suggested above, hardly any dried plants were collected during the early part of Langlassé's Colombian trip. Number 14, for example, was collected on November 11, almost 3 months after his arrival in Colombia. A few collections were made in the Cordillera Occidental before the middle of November, either on the first trip to Cali and Popayán from the coast, or on subsequent trips out from Popayán (See No. 44, *Neriacanthus Lehmannianus*, collected at the summit of the Cordillera at 2000 m. elevation, or no. 67, *Lycopodium cernuum*, from the summit of the Cordillera at 1800 m.).

Collection-data are available for most of Langlassé's numbers between 92 and 102a, and these suggest that the collector actually crossed the Cordillera Occidental as he had planned, ascending from Popayán to the summit at Santa Ana, and thence descending to the Río Micay. Data for several species were published by Schlechter²; the remainder were taken from actual specimens in the United States National Herbarium, or were furnished by Dr. Lyman B. Smith:

No. 92	Cordillera occidental, eastern slope	2500 m.	November 24, 1899
94	»	»	November 25
95	»	»	November 26
95b	»	»	November
96a	»	»	2800 m.
97	Alto de Tineno	2800 m.	November
98	Cordillera occidental, eastern slope	2200-2800 m.	November
100	Santa Ana	2800 m.	December 3
100a	Victoria	2000 m.	December
101	Cordillera occidental	1200 m.	December
102a	Cordillera occidental, western slope	1800 m.	December
104	Cordillera occidental	600-800 m.	December

¹ The set in the United States National Herbarium includes numbers 1-108.

² SCHLECHTER, R. *Die Orchideenfloren der südamerikanischen Kordillerenstaaten. II. Colombia*, in *Fedde Repert. Spec. nov. Beih.* 7: 37-206 (1920).

The unfortunate end of Langlassé's Colombian explorations naturally affected the quality and amount of material to reach Europe after his death. While his Mexican collections had been most gratifying to his sponsors, the results of the work in Colombia were disappointing, as summed up by Micheli in the last paragraph of his communication to the Société Botanique de France, at the séance of March 23, 1900¹:

"Les résultats de cette entreprise si tristement terminée sont peu importants. J'ai reçu une caisse de plantes sèches dont beaucoup ont souffert de l'humidité du climat et sont plus ou moins moisies, et 25 caisses de plantes vivantes qui, emballées dans de la mousse trop pleine d'eau, ont péri en majorité. Nous n'avons pu sauver qu'un certain nombre d'Orchidées et quelques Aroïdées qui commencent à être mises en végétation."

Part 2. Itineraries in Mexico, March 1898 to July 1899.

Langlassé made extensive collections at about 200 different localities in the valley of the Río Balsas, and also along the Pacific slopes of the Sierra Madre del Sur. About one-fifth of the collections were made in Michoacán, the remainder in Guerrero. The areas in which he worked are of major botanical interest, not only because of their geographical positions in Mexico, but also because of their relative inaccessibility. Almost no botanical work had been done in the areas before his time, and in recent years only one collector (G. B. HINTON) has made any major contribution to our knowledge of this region.

The plants collected by Langlassé in Mexico in 1898 and 1899 included about 97 lots of seeds, 179 living plants, and herbarium specimens numbered from 1 to 1067. Most of the collections were forwarded to Micheli; a few were sent for trial to André, and some cacti were collected especially for Dr. Weber, of Berlin. The horticultural material proved of considerable value to European growers, and several species unknown to science were described from living plants (e.g. *Hymenocallis cordifolia* Micheli, *Agave Langlassaei* André, *Lycaste Micheliana* Cogn., *Mina cordata* Micheli, *Pitcairnia Micheliana* André). Occasionally a collection-number is cited for one of these species based on living material; for example *Lycaste Micheliana* is based on Langlassé's No. 113. It should be remembered that Langlassé maintained three series of numbers: one for seeds, one for living plants, a third for herbarium specimens.

¹ MICHELI, Marc. *Note sur le voyage botanique d'Eug. Langlassé au Mexique et en Colombie* in *Bull. Soc. bot. France* 47: 117-119 (1900).

The herbarium specimens from Michoacán and Guerrero comprised a series of 1067 numbers, about 10 sets of which have been distributed to the major herbaria in Europe and the United States. The collection as a whole has proved to be of major importance, as indicated by the relatively large number of species (about 140) previously unknown to science, and first described from Langlassé's plants. The family *Leguminosae*, comprising about one-fourth of the entire collection, was studied by Marc Micheli and the results published in a posthumous paper¹. Out of 257 numbers and supplementary numbers of *Leguminosae*, 26 were described by Micheli as new to science. Apparently the rest of the collection is similarly rich in material of botanical interest.

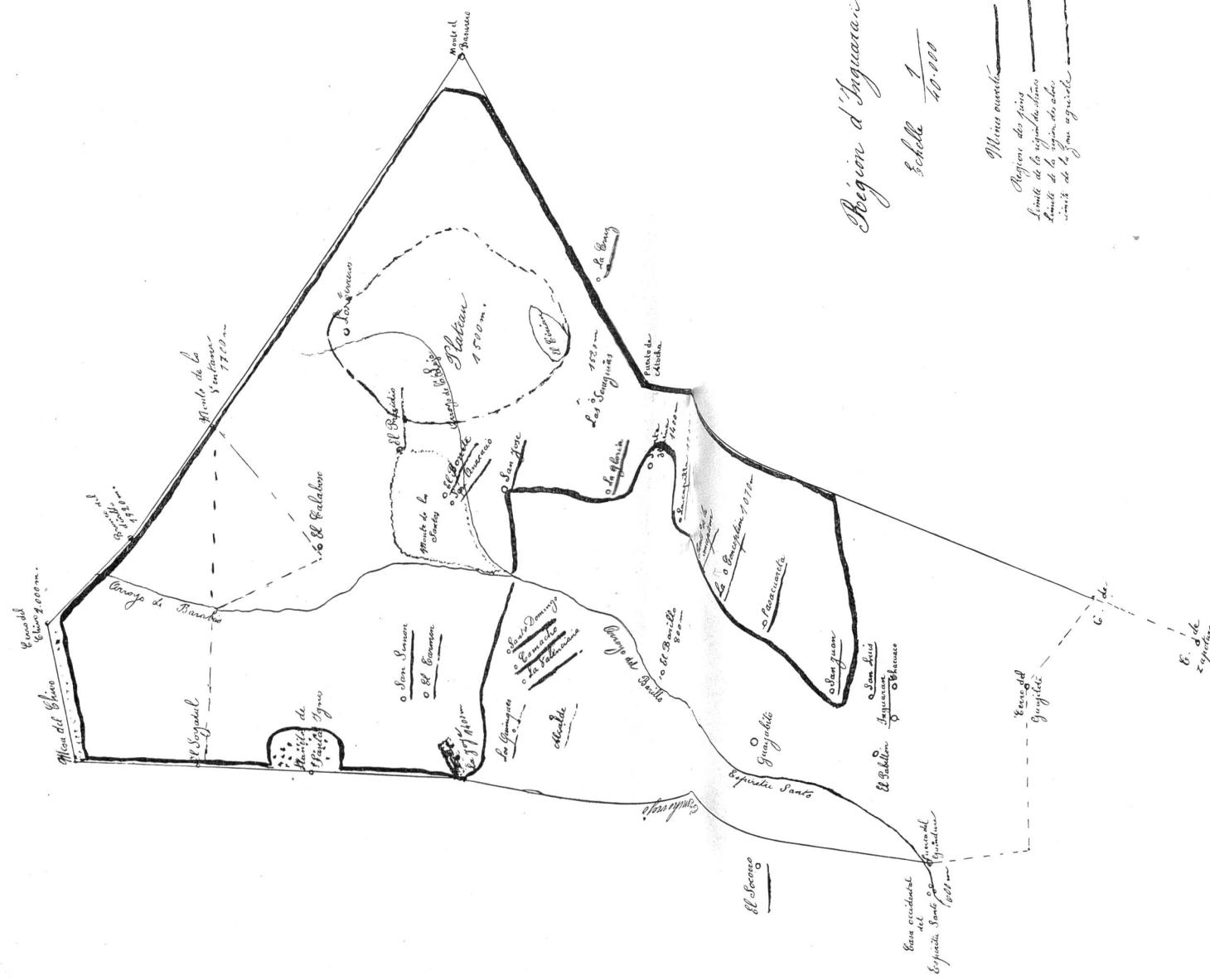
Because of the rarity of many of the species represented in the collection, and because of the paucity of botanical records from this part of Mexico, it is particularly important to be able to locate precisely the places in which the individual specimens originated. This is difficult for several reasons. Because of the relatively sparsely settled country in which the collections were made, most of the localities cited by Langlassé are small ranches or mines, or local topographic features (e.g. "Cerro Verde"). Many of these names do not appear on even the most detailed maps.

The printed labels distributed with the herbarium specimens are headed simply "Herborisations dans les Etats de Michoacan et Guerrero"; none of the specimens as originally distributed was assigned to one state or the other. The specific localities (the name of the state never given), the dates of collection, and the elevations in meters, as copied from Langlassé's original notes, are written on the labels in ink. On several hundred specimens no locality is given except "Sierra Madre"; it is of course impossible to determine the origin of any single specimen of which one knows nothing except that it was collected in the "Sierra Madre" of Michoacán, or the "Sierra Madre" of Guerrero.

Fortunately, however, Langlassé numbered his collections carefully in chronological order. He was also careful to date each collection, and to note the elevation in meters of each locality. By arranging his collections numerically and at the same time chronologically, then, one is enabled to follow him from locality to locality and from sea level to mountain top. As recently noted by Wood², it is possible by the use of Micheli's *Leguminosae Langlasseanae* to

¹ MICHELI, Marc: *Leguminosae Langlasseanae. Légumineuses récoltées dans les États mexicains de Michoacan et de Guerrero pendant les Années 1898 et 1899 par Eugène Langlassé* in *Mém. Soc. Phys. et d'Hist. nat. Genève* 34: 245-294 (1903) (with 28 plates, t. p. & frontisp. [portr. of Micheli]).

² *Rhodora* 51: 364 (1949).



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FIG. 2.
Map of the region of Inguarán, Michoacán
The original, signed by Langlassé and dated April 22, 1898, was loaned for this study by the firm of Mirabaud & Cie, Paris. It is on thin paper, about 30 by 40 cm., and was certainly prepared in the field by Langlassé himself.

prepare an incomplete itinerary based on the sequence of dates and collection-numbers as published in that paper. With this as a skeleton itinerary, one can fill in many gaps from published records in literature and from specimens in herbaria. Most of the specimens cited below have been seen either in the Gray Herbarium of Harvard University, or in the United States National Herbarium. Finally, all but a few remaining details have been filled in from the manuscript material on Langlassé which was collected by Micheli and loaned to me by Dr. Baehni.

The following summary is arranged chronologically, according to dates which can be rather definitely fixed by reference to Langlassé's letters to Micheli and to Mirabaud, or by reference to the dates on his herbarium specimens. Immediately following the date of each entry will be found references to the letters and/or herbarium specimens by which the dates are fixed. The letters have been arranged chronologically and numbered serially, and will be distinguished here by appropriate abbreviations, thus: Mir 4 (4th letter to Mirabaud), Mich 22 (22nd letter to Micheli). The herbarium specimens are cited by number alone, but in italic type, thus: 958.

1898

March 3?-7? (Mich 2; 1-19) Collections were made at or near Inguarán, at elevations of 500-950 meters. Localities are Monte d'Inguarán, Coimbo ("village de Coimbo"), Monte de los Pajaros, Monte del Loreto, Monte de San Luis.

March 7?-16? (Mich 2; 20-38?) Langlassé left Inguarán for Santa Helena. He seems to have spent a week or ten days visiting the mines at the middle elevations (750-1600 m.), perhaps at no time more than 15 km. from Inguarán. Localities in approximate chronological order are Monte del Puerto ; Monte de Pavillon, Inguaran ; Monte de San Aparicio ; Arroyo de Barabas ; Las Seneguias ; Monte de Santa Ignesa, Inguaran ; Huerte del Barillo. Living plants were also collected at Monte de la Concepcion, Arroyo de los Quiniques, Monte del Rosario, Rincon de San Nicolas.

March 18 (Mich 3) Ario [de Rosales]. Langlassé has come here to send off to André a first shipment of living plants.

March 20 (40-58) These collections were made in one day, apparently before the collector left the highlands in the vicinity of Ario ; the elevations are from 1760 to 2000 m. Localities are : Monte del Puerto del Conde ¹ ; Monte de las Cortaduras ; Las Puentes ; Monte de los

¹ Or Canelo. See Gazetteer, under *Puerto del Canelo, Monte del.*

Fresnos ; prairies de los Fresnos ; Los Magueyes ; "entre les villages de El Burro [El Buno ?] et Los Magueyes" ; village de Durazno ; Monte del Burro [Buno ?] ; Monte de Uruapa ; Los Fresnos ; Monte de la Ventana.

March 22-April 5? (61-94). Return to Inguarán ; about two weeks of collecting in various parts of the company property, at elevations of 500-1550 m. Localities are : San Pedro, Monte de la Gloria, Monte de Sta. Helena, Monte de San José, Monte de la Pasacuera, Monte de San Juan, La Capilla (also Monte de la Capilla), Arroyo de Barabas, El Barillo, Sirian [i.e. Cirián], Monte de las Senguias, La Joya, environs de San Pedro, Rio Espiritu Santo, Monte de Sta. Ignesa, Monte del Rosario.

April 11-12 (Mich 4 ; 95-98.) Ario. Langlassé has come here to ship some living plants and the first 92 numbers of dried plants (except 30 and 31).

April 13 (99-101). Volcán de Jorullo, visited while Langlassé was on the way from Ario back to Inguarán.

April 17-26 (Mich 5-7 ; Mir 1-3 ; 103-108). Espíritu Santo. This is the locality given at the heading of all the letters written at this time ; some of the herbarium specimens are labelled " Rio Espíritu Santo ". For discussion see under " Espíritu Santo " in list of localities. Langlassé used this term more or less interchangeably with the name Inguarán ; in his letter of April 24 he announced the sending of numbers 30 and 31 and up to 108, saying : " ces plantes proviennent toutes de la région d'Inguarán que je quitterai après-demain ". His numbers 103-108, " toutes de la région d'Inguarán ", are labelled " Espíritu Santo ". While heading his letters " Espíritu Santo ", he wrote on May 31 to announce his departure with the words " J'ai quitté les environs d'Inguarán le 26 Avril ".

April 26 (Mich 7). Langlassé left the vicinity of Inguarán. He went by way of San Pedro Jorullo and Las Anonas, where he joined the "chemin royal" from Patzcuaro to the coast. This road he followed southward to the Río Balsas.

April 29 (109, 110) Cueramo [Gueramo]. The route from Cueramo to the coast is outlined in a letter (Mir 4) : " De Gueramo je me dirigeai vers le Rio Marques que je traversai près de l'Organal et j'atteignis le fleuve (Las Balsas) près de los Nopales. De los Nopales à Pitirera — traversai le fleuve à la Garita et suivis le chemin de la Union jusqu'au Aguila. De ce point à la Orilla passant le bras de Zacatula à pied sec, le bras principal du fleuve en barque étroite..."

April 30 (112, 113). Los Camarones.

May 1 (114-122). Panda, La Garita.

May 2 (123?-131). La Barranca, torrent de la Barranca, at 150 m. elevation. According to Micheli (l.c. 266) no. 123 was collected at La Orilla and no. 157 at La Barranca, but the chronological sequence of Langlassé's collections, which he maintained carefully, makes it appear probable that the numbers were inadvertently transposed by Micheli; I have not seen the collections.

May 3 (133-136). San Diego, La Copradilla.

May 4 (137). El Plátano.

May 5 (Mir 4; 139-141). Arrival at La Orilla and the delta of the Río Balsas.

May 5-14 (139-168). La Orilla and vicinity. Localities are: El Canal, delta du Rio Balsas; Embouchure du Rio Balsas; Delta de las Balsas; Las Salinas; La Orilla; La Laguna. For a note on no. 157 see above under May 2.

May 16-24 (Mir 4; 170-197). Trip along the coast to the westward, chiefly for the purpose of visiting various mining sites on the Hacienda de la Orilla, which was bounded on the west by the Río Chuta. Localities are Acalpica, rives du torrent d'Acalpica (170-172; May 16-17); Embouchure du torrent de Chicuitán, rives du torrent de Chicuitán, Chicuitán (173-175; May 17-18); Chuta, torrent de Chuta (176-186; May 19-20); Las Mesitas (187-194?; May 22-24); La Concepción (192; May 23); Las Seibas, torrent de Chuta; Las Seibas (193?-196; May 24).

May 29-June 12 (Mich 7; Mir 4-5; 199-210). La Orilla and the delta of the Balsas. Part of this time was spent north of the Delta in searching for a practicable all-weather route out of the region to the north; Langlassé proposed a bridge across the Balsas at a point between El Veladero and Marmolejo, 4 or 5 kilometers north of La Orilla, at a point where the river was not more than 200 meters wide and restricted by hills on each side.

June 13?-28? During this period Langlassé's precise itineraries are unknown; apparently he collected almost no plants. On June 12 he had written to Mirabaud from La Orilla: "N'ayant plus rien à faire aux environs de la Orilla, je vais me mettre en route pour la Goleta, traversant sur la rive droite de las Balsas la région habitée par les Indiens peints suivant le programme que vous m'avez indiqué." Presumably this program was to explore the agricultural and especially the mineral resources of the region; the long report which was sent to Mirabaud on July 29 deals chiefly with mines and minerals. This report mentions a number of localities, but often without definite statement that Langlassé himself has visited them. From the account, however, it appears that he actually made at least one trip up the

Balsas, perhaps during this period. He describes rock and soil conditions at successive localities beginning with La Orilla and continuing with La Nopalita and El Veladero, Ojo de Agua near the Balsas, and Carrizal (near Tahuasal, on the "chemin royal" between La Orilla and Patzcuaro). At least one plant-specimen, 217, *Quercus tahuasalana* Trel., was collected near Tahuasal on June 18.

June 28?-July 7? (Mich 8; Mir 6-7; 212-222). Langlassé perhaps left La Orilla just before the beginning of this period, travelled west to the Río Chuta and ascended its valley. He made plant-collections at Las Mesitas (600 m.; living plants); La Concepción (700 m.; 211); Chiquihuitillo (900 m.; June 29, 212); El Muleto (850 m.; June 30, 213-215); El Carrizal (800-900 m.; July 2-3, 216-222); torrent de las Lajas (850 m.; living plants). He was in El Carrizal on July 5 and 6, and sent off a shipment of living plants and dried plants (up to no. 179) from there; at this time he was planning to leave almost at once to cross the "terres chaudes"—the valley of the Balsas—and to go then to La Unión.

July 8-15 (Mich 9; 224-245). Trip across the "terres chaudes" between El Carrizal and La Aguila. The general direction of travel was at first south-southeast, then southeast. The localities are: Las Juntas (July 8); La Lajita (July 10); La Higuerita, terres chaudes (July 11); Las Minitas (July 11 or 12?); San Salvador (July 11-12); Los Hornos (July 11 or 12?); La Pitirera, terre chaude (July 13); San Diego (July 15); La Garita (living plants); El Sauce (243, and living plants).

July 16-18 (Mich 9; 246-252). Collections at or near La Aguila, 200-650 m. elevation. Localities are: La Aguila; torrent de l'Aguila; Monte de la Piedra, près Aguila; Santa Rosa près Aguila; El Guayaval; Pantano. Numbers 253, 254 were collected at El Candado (100 m.; July 18).

July 19-29 (Mich 9, 10; Mir 7; 255-257). La Unión, Guerrero. No. 256 was collected at El Cobano. On July 22 a large collection of seeds (nos. 23-29), living plants (nos. 58-93), and dried plants (up to no. 254), mostly from the "terres chaudes", was sent off with a letter to Micheli. On the 29th Langlassé sent off to Mirabaud a long report on his explorations of the "rive droite" of the Río Balsas during June.

July 30-August 4 (Mir 9; 259-271). Trip through the coastal lowland from La Unión to Zihuatanejo. Localities are: Chutla (259-260); Llanos de Temalhuacán (July 31; 261); Lagunillas (Aug. 1; 262); Pantla (Aug. 1; 264); Barrio Nuevo (Aug. 2; 266-267); La Puerta (August 2; 268-270); La Correa (Aug. 4; 271).

August 5-19? (Mich 11; 272-282). Zihuatanejo. Most of the collections from this place were made during the period August 7-9; on

the 18th Langlassé wrote : " J'ai été quelques jours indisposé par une attaque de fièvre et pour me rétablir complètement je vais partir demain dans la Sierra." A few collections from Pantla (283-286) are dated August 17 and 18, suggesting that he may have undertaken a trial field-expedition before setting out for the " Sierra ".

August 19 (Mich 11). The trip to the mountains probably began on this day. The traveler retraced his routes toward La Unión as far as Lagunillas, then turned a little east of north. All his wanderings for the next four months are described to some extent in a letter (Mir 9), and are shown in detail on his sketch map which is reproduced as Figure 2.

August 22-27 (290-308). Vicinity of Rancho del Cedral and of Hacienda del Tibor. The collections from these two localities are intermingled in the numerical series.

September 1 (309-311), Vallecito (Rancho).

September 2-3 (314-316). La Barranca (Rancho).

September 5-6 (318-326). Valle Grande. Another locality is : Mont de San Cristobal, Valle Grande.

September 6-7 (327-332). La Tuveria.

September 8-9 (333-342 ?). El Faisán.

September 10-17 (Mich 12 ; 343-359). Real de Guadalupe. Langlassé was forced by continued rains to stop some days here.

September 17-19 (360-367). Vallecitos.

September 21 (368-369). La Laja. As outlined in a letter on December 22 (Mir 9), the return from Real de Guadalupe was by way of Vallecitos, La Laja, El Plan de Cuche, and Chaveta, thence probably to El Calabazal.

September 26 (370). Zihuatanajo.

September 27-October 2 (371-403). La Correa (Agua de Correa) and vicinity. At least one collection is from La Parota (383).

October 3 (406-409). El Talabasal (i.e. Calabazal). Apparently this was a one-day trip from La Correa ; the distance is 6 or 7 kilometers.

October 4-10 (Mich 13 ; 410-444). Agua de Correa and vicinity. Apparently the collector made a trip to La Puerta (October 4-5) and to Mata de Dios or La Mata San Dias on October 7.

October 13 ?-20 (447-483). El Calabazal. After a week spent here, Langlassé returned to La Correa before setting off on his next trip to the mountains.

October 20-21 (Mich 14; Mir 8; 485). Agua de Correa. On the 20th a letter to Micheli announced the plan to set off for the Sierra the following day, and apparently this plan was carried out. From Correa the route led northeasterly to Chaveta, then to El Ocote on the Río de las Cuevas, thence to the highlands near the sources of this stream.

October 22-25 (488-510). Baqueta.

October 25-26 (511-523). Chaveta.

October 28?-30 (526-554). Vicinity of El Ocote, at elevations between 300 and 580 m. Not to be confused with another place of the same name, some distance further east, on one of the branches of the Río Petatlán (elevations 500 to 1000 m.). Most of the collections from this first Ocote are marked "Cerro Pedregoso, Ocote".

October 31?-November 9? (Mir 9; 555-613). Trip up the upper reaches of the Río de las Cuevas (here called Arroyo de Cohuayana) to El Cedro and (about November 6) to Cerro Verde. The collections made on this trip are the first to be labelled simply "Sierra Madre". The altitudes as stated on the labels range from 1000 to 1300 meters (300 to 800 m. on the last day of the return trip), and the approximate position can be determined for any specimen by noting the altitude and date as written.

November 10-12 (614-624). El Ocote; not to be confused with the first place of this name (see above, under entry of October 28?-30).

November 13-16 (Mich 15; 628-640). Petatlán. Apparently Langlassé came here directly from El Ocote, by way of Murga and La Piedra. Without much delay he set off again for the Sierra, this time following the course of the Río Petatlán.

November 18 (643-646). Jimalcota.

November 19 (650). Cajinicuar.

November 21-22 (Mir 9; 652-662). La Botella.

November 24 (664-668). Along the Río Petatlán, above La Botella (450-500 m.).

November 26-27 (670-682). La Botella and vicinity, and return to Jimalcota by way of Cajinicuar. Plants were collected at La Botella and also at Cerro Mamegal, 500-1000 m., on both days.

November 28 (685). Jimalcota.

November 28-30 (Mich 16). Petatlán. Collection no. 683 is dated at Petatlán, November 28; on the 30th Langlassé wrote to Micheli, explaining that his excursions in the Sierra were progressing slowly because of the want of adequate trails and the steep narrow stream-valleys through which it was necessary to travel. After this brief return to Petatlán, another trip to the Sierra must have been

begun within a day or two, this time directed toward the mountains between the Río Petatlán and the Arroyo de Murga.

December 2 (688-689). Jimalcota.

December 3-4 (Mir 9 ; 691-699). El Ocote (2), at elevations between 500 and 1000 m. See note under entry for October 28 ?-30. After leaving El Ocote and crossing the Arroyo del Venado, the route crossed a mountain ridge at about 1070 m.

December 5 (700-702). Sierra Madre, at elevations of 900 to 1100 m. (that is, between El Ocote and La Morena).

December 7 (704-708). La Morena. From this point Langlassé must have travelled rapidly into the low country, by way of Murga ; the next collections were made at San Felipe.

December 9 (709-711). San Felipe. No. 709 and 711 are dated December 9 and 710 December 7 ; probably the latter is in error.

December 10 (712-715). San Geronimoto. No. 712 is dated January 4, 1899 ; it was probably collected on this date, and assigned the number out of sequence.

December 11-30 (Mich 17 ; Mir 9 ; 716-724). Itineraries unknown to me. One might suppose that Langlassé returned to base at Petatlán, from San Geronimoto, after a foray of nearly two weeks' duration into the mountains. The next numbers in the herbarium series, however, 716 and 717, are both dated December 15, and are from El Ocote and La Calera, respectively. Possibly after a brief stop at Petatlán another trip was made to El Ocote about the middle of December. The collector wrote letters from Petatlán on December 22 and 24, stating that he had finished his work in the nearby Sierras and would go to La Correa to make ready his shipments of dried plants. Herbarium specimen no. 720 was collected in Petatlán on December 27. Nos. 722, 723 and 723 bis are from El Ocote, but dated simply "December" as far as I have been able to see the specimens ; these may represent a residue from one of the earlier trips to El Ocote. No. 724 was collected at Agua de Correa, December 30.

1899

January 2 (Mich 18). Agua de Correa. Three boxes of dried plants, as far as no. 723, and one box of living plants (nos. 94-112) are being sent off from here.

January 4 (709, fruit ; 726-728). San Geronimoto. See also no. 712, above. At this time Langlassé was *en route* from la Correa to Petatlán.

January 5 (729 ?-730). Petatlán. Nos. 725 and 729 were collected here, but the dates of collection are unknown to me.

January 6-12 (Mich 19; 731-743). Trip from Petatlán to Tecpan de Galeana. The trip may be followed by reference to the herbarium collection series: Joluchuca (January 6; 731); El Cayacal (January 7; 733); "plage sabl. à Coyuquilla" (734); Papanoa (January 8; 735-736); Nusco (January 9-12; 738-739); Rives du Río Tecpan (January 12; 741-743). On the 12th Langlassé wrote to Micheli from Tecpan, sending a package of seeds collected at various localities along the coast: Coacoyul, Laguna de Potosí, San Geronimoto, Cuesta del Calvario, Coyaquilla, Papanoa, Nusco.

January 13-31 (Mich 20; Mir 11; 744-822). Trip to the summit of the Sierra by way of the route over the mountains from Tecpan to Ajuchitlán on the Río Balsas. The trail passes Moreno (January 13; 744), El Reparo (January 14; 747), El Carrizal (January 15; 748-752) and then ascends the mountains slopes almost directly to the north. A number of collections were made at or near the highest elevations reached, 1700-1840 m. (January 22-27; 771-805). Here, as he wrote Micheli, Langlassé found "un magnifique plateau couvert d'une forêt vierge, froide et humide". The return to Tecpan was apparently by the same route, as indicated by the dates and elevations given for the collections made along the Río Tecpan. On the 31st an account of the trip was dispatched to Micheli.

February 1?-6 (823-834). Trip from Tecpan back to Coyuquilla, and collections in the vicinity of the latter. Localities are Nusco (823); San Luis (February 3; 824); El Tamarindo (February 4; 827); Coyuquilla (February 5-6; 829-834).

February 7-23 (Mich 21, Mir 11; 835-920). Trip from Coyuquilla across the Sierra Madre and return, following the trail leading to Coyuca de Catalán, on the Río Balsas. This trail, according to Langlassé, was the better of the two routes which he followed across the mountains. It was said to be an easy ascent, following up the valley of the Río Coyuquilla and crossing the Sierra at an elevation of 2230 m. He followed the trail down the "versant oriental"—the slopes descending to the Balsas—down as far as Los Guajes, at an elevation of 1000 m.; he was impressed by the relative aridity of these landward slopes which were covered with oaks and pines. From the herbarium specimens it can be ascertained that the first ascent from Coyuquilla was made during the period from February 7 to 10 (835-856). The descent of the "versant oriental" was made February 11 and 12 (858-864). By the 16th the collector had regained the summit of the Sierra, and apparently he worked in this area until the 18th (2000-2300 m.; 872-899). The descent was begun on February 19; on the 21st collections were made on the Río Coyuquilla between 500 and 700 m.; on the 22nd Langlassé reached El Parotal and on the 23rd Coyuquilla.

February 24?-28 (Mich 21, 22; Mir 11; 923-928). Trip from Coyuquilla to San Luis. Collections were made at San Luis as early as February 25 (924). A letter to Micheli on February 28, from San Luis, describes the trip up the Río Coyuquilla, and another letter to Mirabaud, same date and place, describes the coastal strip between La Unión and Tecpan.

March 1-12 (Mich 22, Mir 11, 12; 929-934). Itineraries uncertain. On February 28 Langlassé planned a trip up the Río San Luis, and apparently he actually made the trip, for herbarium specimen no. 934 was collected at Santa Lucía at an elevation of 350 m., March 3, and living plants were taken in the same area, up to 500 meters elevation. Succeeding collections (936-937, 939) are from Nusco and Tecpan, respectively, and apparently no extensive collections were made in the region of San Luis after about March 1. Herbarium specimens up to and including no. 941 were packed for shipment from Tecpan by March 11, and apparently no further collecting was done in this area during the rest of the stay in Tecpan, which continued for one or two days after March 12, the date of the last letter from that place. Living plants packed for shipment from Tecpan included nos. 113-139 and some additional collections.

March 15-18 (942-952). San Juan, at elevations from 25 to 50 meters. Apparently no mention is made of this place, or of collections made here, in any of Langlassé's letters, and I have not been able to locate it on any map. It is probably somewhere in the coastal region between Tecpan and Atoyac.

March 22-April 1 (Mir 13; 954-983). Round trip from Atoyac de Alvarez to the coffee-growing areas in the upper valleys of the Río Atoyac, at elevations of 900 to 1000 m. Localities are Mexcaltepec and San Andrés (March 22; 954-959); La Victoria (March 23; 960-961); Las Valles (March 24; 962-963); El Porvenir (March 25-27; 964-971); La Soledad (March 28-29; 972-976); La Sibería (March 30; 978-980); San Andrés (April 1; 983). The fincas of La Victoria, El Porvenir, La Soledad and La Sibería do not appear on any maps known to me; according to Langlassé the oldest at the time of his visit was El Porvenir, which had been in operation about 10 years. Others, as for example La Sibería (also called La Fortuna), were no more than 2 years old.

April 2-9 (Mich 23; Mir 13; 984). Trip from Atoyac to Acapulco, and preparation for a trip to Chilpancingo. Probably Langlassé reached Atoyac on April 1 or 2, after passing San Andrés on the 1st (983). Apparently he made a side-trip to San Jerónimo, as noted in his letter of April 8: "J'ai laissé il y a peu de jours à San Geronimo une caisse contenant des fougères". On April 5 he was at Cacalutla

(984), and on April 7 he reached Acapulco, where he found funds awaiting him. He tarried no more than two days before setting off for Chilpancingo with the expressed intent of exploring the crest of the Sierra Madre west of that place, at the headwaters of the Río Coyuca de Benítez.

April 10-18 (Mich 24; Mir 13; 988-1000). Trip from Acapulco to Chilpancingo, along the "camino real". Localities are Egido (April 10; 988-989); Sabanilla (990); La Venta (991); Cerro de los Cajones (April 14; 992-993); Cuesta del Peregrino (April 15; 994-995); Sierra Madre, 800-1000 m. (April 15; 996-1000). Chilpancingo was reached on April 17; a letter was sent off to Micheli the same day, and one to Mirabaud the following day.

April 20-30 (Mir 14; 1002 2-1015). Trip from Chilpancingo along the southwestern slopes of the Sierra Madre to Jaleaca, then to the mineral region comprised between the villages of Santa Bárbara, Santa Rosa and San Cristóbal, and finally down to Tepetixtla in the valley of the Río Coyuca and to La Providencia some 12 km. east of Coyuca. The sequence is not entirely clear, but from the catalogue of herbarium specimens it appears that the collector worked along the Sierra Madre west of Chilpancingo on April 20-22 ("Sierra Madre", 1002-1006); at Santa Bárbara, April 24 (1008-1009); at Jaleaca and San Cristóbal, April 25 (1010 and 1011). The next dated collections, April 26, the following day, are from Tepetixtla (1013) and La Remostla [?] (1014). Tepetixtla is some 30 km., airline, from San Cristóbal, and it is difficult to understand how Langassé could have made the trip in one day with pack-animals. I have not been able to determine the locality for no. 1014 (*Miconia* sp.), because of an illegible label. The next dated collections are April 29 and 30, from La Providencia (1013 bis, 1014 bis, 1015).

May 1-11 (Mich 25; Mir 14; 1016-1026). Return to Chilpancingo. I can find no suggestion in Langassé's papers as to the route followed, but he probably returned to Jaleaca, for the following reasons. The herbarium specimens are all labelled "Sierra Madre" except no. 1022, collected May 9 at San Vicente. Presumably the specimens collected May 2-4 (1400-1700 m.; 1016-1020) came from the mountains somewhere between La Providencia and Jaleaca; leaving Jaleaca the collector must have taken one plant in the mountains near San Vicente, then continued toward Chilpancingo, collecting nos. 1023-1026 on May 9 and 10. On the 11th he wrote to Mirabaud a long general report of his findings in Guerrero to date, and a briefer letter to Micheli, stating that he had at last finished his excursions on the seaward slopes ("versant occidental") of the Sierra. He was planning a trip to Iguala before starting for Inguarán by way of the Río Balsas.

May 12-20 (Mich 26, Mir 15; 1028-1031?). Trip from Chilpancingo to Iguala and collections, mostly of living plants, not far from the route between these places. Herbarium specimens were collected at El Correjo (May 18; 1028-1029), Zacacoyana (1030), and Xatitla (1031). On May 20 dried plants up to and including no. 1027 were sent off from Iguala, as were also living plants numbered 140-157. Nos. 147-155 were collected from near Chilpancingo or from Mesquititlán.

May 21-30 (Mich 27; Mir 16, 17; 1032-1041). Travel from Iguala toward Chilpancingo as far as Zumpango, with herbarium specimens and/or living plants collected at Tololapa [Tonalapa ?], Mexcala (May 23), Xochipala (May 24), between Mexcala and Xochipala (May 25), Cañada (or Cariote) del Zopilote, and Zumpango. A letter to Mirabaud, May 30, from Zumpango, suggests that Langlassé has been to Huitziltepec, and that he is planning to go to Chichihualco.

May 31?-June 1? (Mir 15, 16; 1042). Chichihualco. Langlassé's projected route to Ajuchitlán, as outlined in a letter to Mirabaud, May 20, from Iguala, included stops at Mexcala, Xochipala, Zumpango, Chichihualco, Tlacotepec, San Nicolás del Oro, and Tepantintlán. From Chichihualco he apparently headed over the mountains (here 2000 meters in elevation) toward Tlacotepec.

June 2-4 (1043-1047). Trip toward Tlacotepec. Localities are "Sierra Madre", 2000 m. (June 2; 1043); Sierra Madre, and El Ocote (June 3; 1045-1046); Chapultepec (June 4; 1047).

June 5?-15 (Mich 28; Mir 17; 1049-1060). Excursions in the recently discovered mining regions south and southeast of Tlacotepec, mostly in an area bounded by the villages of Corral de Piedra, Campo Morado, Otatlán and Yextla. Langlassé probably reached Tlacotepec on June 4 or 5. His route may then be followed approximately by reference to the herbarium specimens: Yextla (June 8; 1049); Sierra Madre (June 9; 1050-1052?); Tlacotepec (June 10; 1053); Campo Morado (June 14-15; 1057-1060). Some living plants and no. 1054 were collected at Huautla (June 11), and no. 1055, *Lonchocarpus eriophyllus*, may have come from the same place (reported by Micheli from "Huentla").

June 16?-23 (Mich 28; Mir 17; 1061-1067). Trip from vicinity of Tlacotepec to Ajuchitlán, by way of Los Llanos (June 18; 1064-1065), the gold mine of San Felipe (8 km. from San Nicolás del Oro), San Nicolás del Oro itself, Coronilla (Miña Grande) and Tepantintlán. Most of the time on the way was occupied by investigation of known mineral deposits and the collection of specimens of these. A letter and some specimens were sent off from Ajuchitlán on June 23, and here also Langlassé received instructions to cut short his collecting activities and return at once to Paris.

June 24?-July 10 (Mich. 29; Mir 17). Trip from Ajuchitlán to Mexico City. A few living plants and seeds were collected along the way. Localities are Rives du Río Mexcala [Balsas], Coyuca de Catalán, El Platanal, Huetamo, Poturo [Potrero ?], Inguarán, San Pedro (Jorullo). In a letter to Micheli Langlassé suggests that he made haste after leaving Ajuchitlán; "D'Ajuchitlán j'ai suivi jusqu'à Coyuca de Catalán où j'ai reçu votre estimée du 10 Mai et après avoir traversé le fleuve Mexcala je suis arrivé à Huetamo et de là à Inguarán." On July 8 dried plants up to no. 1067, living plants numbered 168-179, and seeds 94-97 were sent from Patzcuaro, and on July 10 the Mexican excursions of Langlassé ended in Mexico City. While in Inguarán he had received Micheli's offer to send him to Colombia, and had at once accepted.

Part 3. Gazetteer; localities in Mexico visited by Langlassé.

The localities which follow are arranged alphabetically, without regard to state boundaries; following each individual entry the state in question is indicated by the appropriate abbreviation (Mich., or Gro.). The location is usually given with reference to some other well known city or point which can easily be located on ordinary atlas maps or other generally available maps. When a definite geographical position is assigned to a locality, without reference to a map or other source of information, it may be assumed that the locality is listed, in the position given, on the *Map of Hispanic America at 1 : 1,000,000*, published by the American Geographical Society of New York. The area travelled by Langlassé is covered by two of the sheets comprising this map (Ciudad de México, N.E-14, edition of 1938, and Colima, N.F-13, edition of 1933); nearly half of the localities which he visited are found on the map.

When the discussion of the position of a locality is followed by the word ATLAS, the locality is not listed in the American Geographical Society's map, but is listed in the *Atlas Geográfico de los Estados Unidos Mexicanos* (Scale 1 : 500,000), edition of 1943. The mapsheets covering the area in question are three in number (Colima, Chilpancingo, México).

Certain localities are found on neither of the above, but only on the manuscript maps published as Figures 1 and 2 of this paper; following the discussion of each of these localities will be found the words "Langlassé's map".

When a locality is not known to appear on any map, this is indicated by the words "Not located" prefixing the discussion.

No attempt has been made to give even approximate positions in latitude and longitude for all points. The States of Michoacán and Guerrero are relatively poorly mapped, so that even the two

major sources of information, the maps given above, disagree in many instances. No more than approximate locations can be given for most of the smaller localities, so that these are most adequately fixed by their distances and directions from other, better known points.

The index includes references to numerous variant spellings. In a few cases it has not been possible to determine which spelling was the correct one (e.g. La Higuerita or Las Higueritas). In many cases, however, the variants seem to have arisen through clerical errors, perhaps chiefly in the transcription of Langlassé's field-notes by persons who were unfamiliar with the localities and perhaps unfamiliar with his handwriting. This probably accounts for the published references to such localities as Baguita (Baqueña), Testla (Yestla, i.e. Yextla), and Zilmatango (Zihuatanéjo).

When two or more localities of the same name occur in the same state, their names in the list are numbered serially; e.g. the citation "El Ocote (3)" designates the place of that name near Tlacotepec, but not either of the places by the same name on the Pacific slope; these are El Ocote (1) and El Ocote (2), respectively.

The last item under each geographical entry in the following list is usually a date or series of dates. These are the approximate dates of Langlassé's visit or visits to the place in question, but are intended primarily as cross-references to the chronological account which precedes this (Part 2, above). Those wishing to learn more about itineraries between points, or exact dates of collections at a certain point, should consult Part 2 at the place dealing with the dates as indicated.

Acalpica (Mich.). — About 16-17 km. west of La Orilla, near the mouth of the stream of the same name ("torrent d'Acalpica"); May 16-24, 1898.

Acapulco [de Juárez] (Gro.). — An important city on the Pacific coast, at about $99^{\circ}55'$ W. long.; April 7-9, 1899.

Aqua de Correa (Gro.). — About 50 km. southeast of La Unión and 3 km. east of Zihuatanéjo; usually called La Correa by Langlassé; August-October, 1898.

Aguila, La (Gro.). — About 21 km. northwest of La Unión (ATLAS), on a stream which is apparently the "torrent de l'Aguila" referred to by Langlassé; July 16-18, 1898.

Ajuchitlán [del Progreso] (Gro.). — On the Río Balsas at about $100^{\circ}28'$ W. long.; about June 23, 1899.

Anonas, Las (Mich.). — About 35 km. south of Ario; this was the point at which the road from Inguarán joined the "camino real" from Pátzcuaro to the coast; April 26, 1898.

Ario (de Rosales) (Mich.). — About 33 km. southeast of Uruapan and 85 km. southwest of Morelia ; March-April, 1898.

Atoyac [de Alvarez] (Gro.). — About 65 km. west-northwest of Acapulco and 15-18 km. from the ocean, on the Río Atoyac ; March 22-April 1, 1899.

Bagueta (or *Baguita*) (Gro.). — Same as *Baqueta*, q.v.

Banco Nuevo (Gro.). — Same as *Barrio Nuevo*, q.v.

Baqueta (Gro.). — Not located, but apparently between El Calabazal and Chaveta, i.e. about 30 km. northwest of Petatlán ; October 22-25, 1898. Also spelled *Bagueta*, *Baquita*, and *Baquetas*.

Barillo, El (Mich.). — About 3 km. north of Ingúarán (Langassé's map) ; March-April, 1898. Collections are labelled also *Huerte del Barillo*.

Barrabás, Arroyo de (Mich.). — About 10 km. a little east of north of Ingúarán (Langassé's map). One of the sources of the Río Espíritu Santo, at an elevation of 1950 m. ; see Ingúarán ; March 7?-16?, 1898. Always spelled *Barabas* by Langassé.

Barranca, La (1) (Gro.). — Not located, but evidently between La Garita and San Diego, in the valley of the Balsas, at 150 m. elevation ; May 2, 1898.

Barranca, La. (2) (rancho) (Gro.). — About 10 km. south-southwest of Valle Grande (ATLAS) ; September 2-3, 1898.

Barrio Nuevo (Gro.). — About 12 km. northwest of Zihuatanexo (ATLAS) ; August 2, 1898. Also cited as *Banco Nuevo* (Micheli, p. 282).

Botella, La (Gro.). — About 18 km. northeast of Petatlán, on the Río Petatlán ; November 21-27, 1898.

Burro, El (Mich.). — Not located, but apparently in the higher mountains (1760-2000 m.) southeast of Ario. Specimens were collected at Monte del Burro [or Buno ?], and "entre les villages de El Burro [or Buno ?] et Los Magueyes" ; March 20, 1898.

Cacalutla (Gro.). — Near the coast, about 55 km. west-northwest of Acapulco ; April 5, 1899.

Caibas, Las (Mich.). — Same as *Las Seibas*, q.v.

Cajinicuilar (Gro.). — See *Guajinicuilar*.

Cajones, Cerro de los (Gro.). — About 20 km. south of Chilpancingo (ATLAS) ; April 10-18, 1899.

Calabazal, El (Gro.). — About 6-7 km. north-northeast of Agua de Correa (ATLAS) ; elevation 130 m. (Langassé's map) ; September-October, 1898.

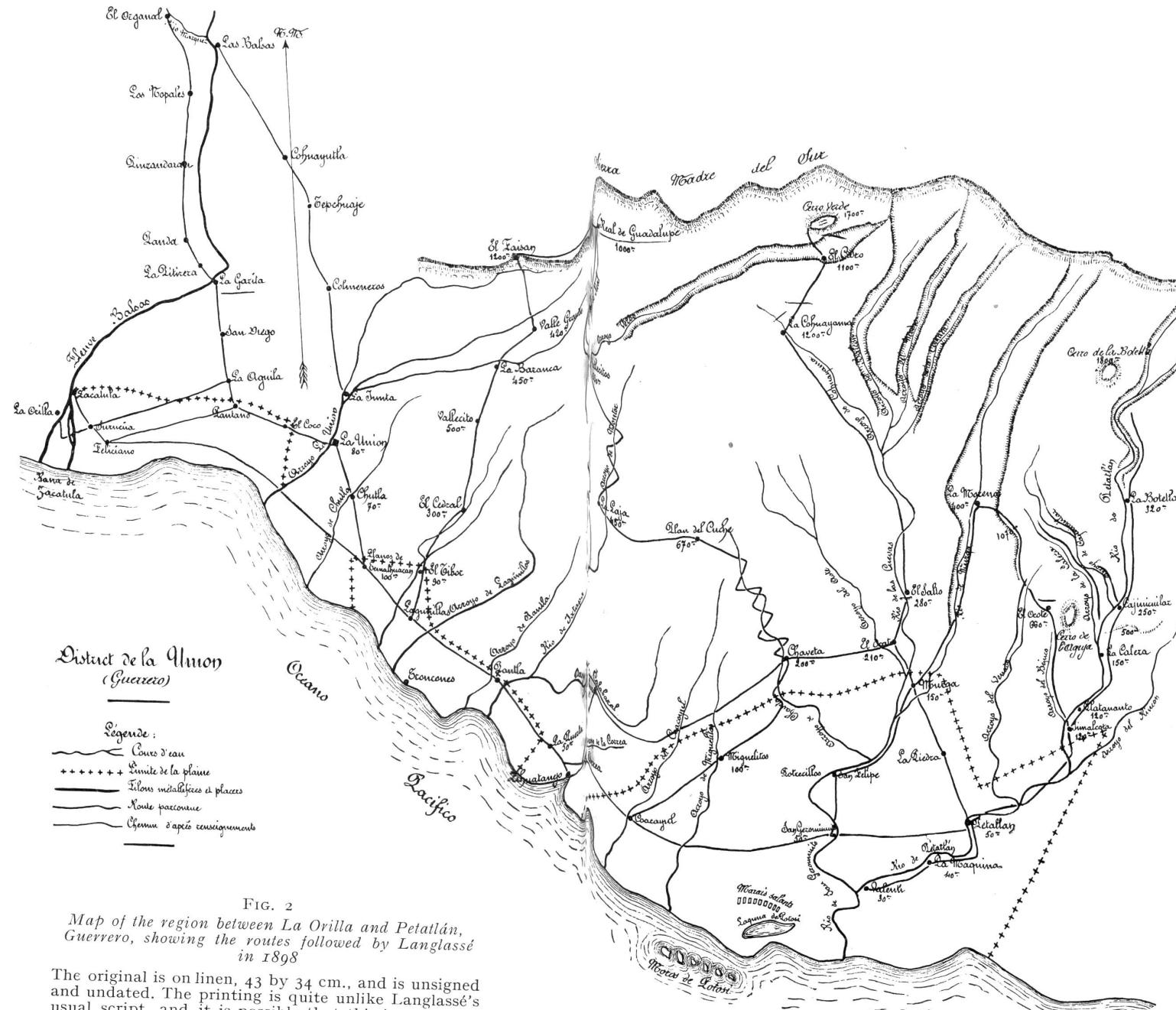


FIG. 2

FIG. 2
Map of the region between La Orilla and Petatlán, Guerrero, showing the routes followed by Langlasse in 1898

The original is on linen, 43 by 34 cm., and is unsigned and undated. The printing is quite unlike Langlassé's usual script, and it is possible that this is a copy of a map prepared by him in the field, rather than his own work.

Calera, La (Gro.). — On the Río Petatlán, about half-way between Petatlán and La Botella (Langlassé's map) ; December 11-27, 1898.

Calvario, Cuesta del (Gro.). — Calvario is about 18 km. southeast of Petatlán (ATLAS) ; this is apparently the place named El Cayacal on the map of the American Geographical Society (i.e. south of Sa. del Calvario) ; January 6-12, 1899.

Camarones, Los (Mich.). — On the Río Balsas just south of $18^{\circ}30'$ N. lat. (ATLAS) ; April 30, 1898.

Campo Morado (Gro.). — About 25 km. west of Yextla, q.v. ; June 5 ?-15, 1899.

Canal, El (Mich. or Gro.). — One of the channels of the delta of the Río Balsas ; see La Orilla.

Candado, El (Gro.). — Not located, but probably in the area between La Aguila and La Unión ; July 18, 1898.

Capilla, Monte de la (Mich.). — La Capilla was one of the mines situated along the mountains between Inguarán, q.v., and the "torrent de la Laja", about 3 to 4 km. north-northeast of Inguarán (Langlassé's map) ; March 22-April 5 ?, 1898.

Carrizal, El (Gro.). — On the Río de Tecpan, 20 km. north of Tecpan ; January 13-31, 1899.

Carrizal, El (Mich.). — Not located under this name ; appears on modern maps as Arteaga, 60 km. north-northwest of La Orilla ; June 28 ?-July 7 ? 1898. The name Carrizal seems to have disappeared from recent maps, although the ATLAS retains the name Río Carrizal for the main branch of the stream rising in the hills above Arteaga and flowing south to enter the Pacific just west of $102^{\circ}30'$ W. long. ; this is called Río Chuta on the American Geographical Society's map. The name Río Chuta is restricted in the ATLAS (where spelled Chula) to a smaller branch of the river, coming from the northwest.

Cayacal, El (Gro.). — Near the coast, 17-18 km. southeast of Petatlán ; January 7, 1899.

Cedral, El (rancho) (Gro.). — About half-way between Lagunillas and Vallecitos (1) (Langlassé's map) ; i.e. about 10-12 km. south of east of La Unión ; August 22-27, 1898.

Cedro, El (Gro.). — A settlement at the head of the Río de las Cuevas (here called Arroyo de Cohuayana) near Cerro Verde, at an elevation of 1100 m. (Langlassé's map) ; November 4, 1898. Not located on any other map, but probably about 35 km. north of Petatlán.

Ceibas, Las (Mich.). — Same as *Las Seibas*, q.v.

Cerro Pedregoso. — See *Ocote, El* (1).

Chapultepec (Gro.). — About 10 km. east of Tlacotepec (ATLAS); June 4, 1899.

Chatitla (Gro.). — Same as *Xatitla*, q.v.

Chaveta (Gro.). — About 28 km. northwest of Petatlán and 15 km. northeast of Agua de Correa; September, October, 1898. Listed on the map of the American Geographical Society as Chuveta, and in the ATLAS as Chavela. Also spelled Chavete and Chavita.

Chelitla (Gro.). — Same as *Xatitla*, q.v.

Chichihualco (Gro.). — About 25 km. northwest of Chilpancingo; May 31?-June 1?, 1899.

Chicuitán (Mich.). — Not mapped; probably about 20 km. west of La Orilla, on a stream of the same name ("torrent de Chicuitán")¹; between Acalpica and Río Chuta, near the coast; May 16-24, 1898.

Chilpancingo [de los Bravos] (Gro.). — Lat. 17°33' N., long. 99°30' W.; April 17-May 11, 1899.

Chiquihuitillo, El (Mich.). — In the upper valley of the Río Chuta [Río Carrizal of ATLAS], about 12 km. south of Arteaga, at an elevation of about 900 m.; June 28?-July 7?, 1898.

Chuta (Mich.). — About 35-40 km. west of La Orilla, near the mouth of the Río Chuta, which at the time of Langlassé's visit formed the western boundary of Hacienda de la Orilla; May 16-24, 1898.

Chutla (Gro.). — About 8 km. southeast of La Unión; July 30-August 4, 1898.

Cijones, Cuesta de los (Gro.). — Apparently same as *Cajones, Cerro de los*, q.v.

Cirián, El (Mich.). — Same as *El Sirián*, q.v.

Coacoyul (Gro.). — About 20 km. northwest of Petatlán; January 6-12, 1899.

Coajuquillo (Gro.). — Same as *Coyuquilla*, q.v.; a variant spelling used by Micheli (p. 254). Also spelled Coajuguillo.

Cobano, El (Gro.). — About 6 km. south-southwest of La Unión (ATLAS); July 25-29, 1898.

Cofradía, La (Gro.). — About 10 km. west of south of San Diego and 22 km. west-northwest of La Unión (ATLAS); May 3, 1898. Spelled Copradilla by Langlassé.

¹ Doubtless this is the same as the Río Chucutitán which is listed on the Carta Hidrográfica (1/1,000,000) published in *Geografía Económica Agrícola del Estado de Michoacán*, by Fernando Foglio Miramontes (3 vols. & atlas of plates, México, 1936). On this map the stream is shown rising north and west of Arteaga and flowing generally south to the Pacific at a point about 20 km. west of the delta of the Balsas.

Cohuayana, Arroyo de (Gro.). — See *Cuevas, Río de las*.

Coimbo (Mich.). — Not located ; said to be a village ; probably very near Inguarán, as specimens were collected at both places on March 4, 1898, on one of the first days after Langlassé's arrival. An Hacienda Cuimbo, Municipio La Huacana, which may be the same locality, is listed by Foglio Miramontes (for reference see footnote under Chicutitán).

Coluchuca (Gro.). — Same as *Joluchuca*, q.v.

Concepción, La (1) (Mich.). — In the valley of the Río Chuta [Río Carrizal of ATLAS] about 20 km. from the Pacific coast and 40 km. northwest of La Orilla ; elevation 700-750 m. ; May 16-24, June 28 ?-July 7 ?, 1898.

Concepción, Monte de la (Mich.). — La Concepción (2) was stated by Langlassé (who spelled it Conception) to be one of the mines situated along the mountains between Inguarán, q.v., and the "torrent de la Laja" ; about 2 km. northeast of Inguarán (Langlassé's map) ; March-April, 1898.

Copradilla, La (Gro.). — Same as *Cofradía*, q.v.

Coronilla (Gro.). — Same as *Mina Grande*, q.v.

Corral de Piedra (Gro.). — About 7 km. north of *Yextla*, q.v. ; June 5 ?-15, 1899.

Correa, La (Gro.). — Same as *Aqua de Correa*, q.v.

Correjo, El (Gro.). — Not located, but probably along the road between Chilpancingo and Mexcala ; May 18, 1899.

Cortaduras, Monte de las (Mich.). — Not located, but apparently in the higher mountains (1760-2000 m.) southeast of Ario ; March 20, 1898.

Coyuca (de Benítez), Río de (Gro.). — Empties into the Pacific Ocean about 25 km. northwest of Acapulco (ATLAS). According to the ATLAS Coyuca de Benítez is in the lower valley of this stream and Tepetixtla, q.v., in the upper valley ; according to the map of the American Geographical Society the two places are on different streams ; April 20 ?-30, 1899.

Coyuca (de Catalán) (Gro.). — On the Río Balsas, about 40 km. southeast of Huetamo, Mich. ; about July 1, 1899.

Coyuquilla (Gro.). — About 27 km. east-southeast of Petatlán and 43 km. west-northwest of Tecpan, on the Río Coyuquilla ; January-February, 1899.

Cueramo (Mich.). — About 10 km. north of the great bend of the Río Balsas, on the road between Ario and the coast ; April 29, 1898 ; also spelled Gueramo by Langlassé.

Cuevas, Río de las (Gro.). — An affluent of the Río Petatlán which joins the latter near its mouth ; the upper parts are called Arroyo de Cohuayana (Langlassé's map) ; see *El Ocote* (1), or *Cerro Verde*.

Durazno (Mich.). — Not located ; said to be a village ; apparently in the higher mountains (1760-2000 m.) southeast of Ario ; March 20, 1898.

Egido (Gro.). — This is apparently *Ejido Nuevo*, about 20 km. northeast of Acapulco ; April 10-18, 1899.

Espíritu Santo (mina) (Mich.). — As pointed out in the chronological part of this paper under dates of April 17-26, 1898, Langlassé sometimes used the terms " *Inguarán* " and " *Espíritu Santo* " interchangeably, evidently with the feeling that plants from either locality were part of the same collection. The famous mining camp of *Espíritu Santo*, however, was at least 75 km. southeast of *Inguarán*, west of *Huetamo* and north of *Zirándaro*, not far from the Río *Balsas*. The apparent discrepancy is explained by Langlassé's map (Figure 1), on which the " *Casa occidental del Espíritu Santo* " is listed about 1.5 km. west of *Inguarán*. This " *Casa occidental* " may have been an establishment maintained by the proprietors of the original *Espíritu Santo* ; this I do not know, but it seems clear that Langlassé spent some days here while making ready to leave the region of *Inguarán* ; April 17-26, 1898.

Espíritu Santo, Río (Mich.). — A stream which divided the holdings of the *Compagnie d'Inguarán*, flowing generally south toward the *Balsas* and passing about 1 km. to the west of *Inguarán* (Langlassé's map). As Langlassé wrote in one of his reports, the same stream " prend sa source entre le Cerro del Chivo et le Brinco del Diablo, à une altitude de 1950 mètres, sous le nom de *Barabas* et sort à 600 mètres sous celui de l'*Espiritu Santo* . . ." The drainage according to Langlassé's map and also according to the *ATLAS* is south and southeast, directly to the Río *Balsas*. On the American Geographical Society's map, however, the region around *Inguarán* is shown as draining to the southwest, into the Río *Pozo Real* and thence into the *Balsas* ; April 17-26, 1898.

Faisán, El (Gro.). — Not definitely located, but this is apparently the *Faisán* which on the *ATLAS* sheet appears at 18°16' N., 101°33' W. This agrees approximately with its location north of *Valle Grande* as shown on Langlassé's map. On the other hand Langlassé collected on successive days at *Valle Grande*, *La Tuveria* and *El Faisán*, which suggests that the *El Faisán* meant may be the place of that name located on the *ATLAS* sheet at 18°02' N., 101°26' W. ; September 8-9, 1898. Also spelled *Faixin*.

Fallecitos (Gro.). — Same as *Vallecitos* (2), q.v.

Fortuna, La (finca) (Gro.). — Same as *La Siberia*, q.v.

Fresnos, Los (Mich.). — Not located, but apparently in the higher mountains (1760-2000 m.) southeast of Ario; March 20, 1898. Specimens were also labelled "prairies de los Fresnos" and "Monte de los Fresnos"; published by Micheli as Frenos.

Garita, La (Gro.). — On the Río Balsas about 40 km. northwest of La Unión, about 3 km. west of the point where the Río San Antonio enters the Balsas (ATLAS); May 1, July 13, 1898.

Gloria, Monte de la (Mich.). — About 4,5 km. northeast of Inguarán (Langlassé's map); La Gloria was one of the mines situated along the mountains between Inguarán, q.v., and the "torrent de la Laja"; March 22-April 5 ?, 1898.

Guadalupe, Real de (Gro.). — About 8-10 km. east of El Faisán (Langlassé's map). Not located on any other map; the above location would place it at about $18^{\circ}16' N.$ lat., $101^{\circ}27' W.$ long. or about 25 km. north-northeast of Valle Grande. See discussion under Faisán; September 10-17, 1898.

Guajes, Los (Gro.). — Not located on a map; in the Balsas drainage, at an elevation of 1000 m., along or near the trail leading from the headwaters of the Río Coyuquilla to Coyuca de Catalán; February 7-23, 1899.

Guajinicuilar (Gro.). — On the Río Petatlán, 3-4 km. below La Botella (ATLAS); November 19-27, 1898. Always spelled Cajinicuilar by Langlassé.

Guayaval, El (Gro.). — Not located on any map but apparently near La Aguila and Pantano; July 17, 1898.

Gueramo (Mich.). — Same as *Cueramo*, q.v.

Higuerita, La (Mich.). — Not located. A ranch visited during a 6-day trip across the Balsas lowlands from El Carrizal to La Pitirera, Mich., July 8-13, 1898. Also spelled Las Higueritas.

Hornos, Los (Mich.). — Not located. A ranch visited during a 6-day trip across the Balsas lowlands in Michoacán, July 8-13, 1898.

Huautla (Gro.). — About 70 km. northwest of Chilpancingo and 15 km. south of the Río Balsas; about June 11, 1899.

Huentla (Gro.). — Not located. Herbarium specimen no. 1055, *Lonchocarpus eriophyllus*, is reported by Micheli, p. 268, from this place. Possibly an error for *Huautla*, q.v.

Huetamo (Mich.). — About 15 km. north of the Río Balsas, in W. long. $100^{\circ}53'$; about July 1, 1899.

Huitziltepec (Gro.). — About 25 km. north and a little east of Chilpancingo; May 21-30, 1899.

Iguala (Gro.). — Lat. $18^{\circ}18' N.$, long. $99^{\circ}33' W.$; May 12-30, 1899.

Inguarán (Mich.). — Lat. $18^{\circ}56'$ N., long. $101^{\circ}38'$ W. About 35 km. southwest of Tacámbaro and about the same distance southeast by south from Ario de Rosales; about 10 km. southeast of the Volcán de Jorullo. The holdings of La Compagnie d'Inguarán, according to Langlassé, comprised approximately 5000 hectares (in English units about 20 square miles). The area extended northward and northeastward from Inguarán toward the mountain fronts, mostly between the lines marked by about the 700 and 1500 meter contour lines, but reaching 2000 meters in elevation at the Cerro del Chivo (Langlassé's map, reproduced as our Figure 1). Approximately half the property was said to be in the oak zone above 900 meters: "La région des chênes proprement dite qui couvre environ la moitié de la superficie totale de la propriété est comprise entre une ligne qui part de la Joya et se dirige à l'Ouest [l'Est?] sur San José et de ce point descend au sud à San Juan et les limites du territoire."

The mining region ("La région minière") of the company's property was said by Langlassé to occupy the chain of mountains between Inguarán and the "torrent de la Laja". The principal mines were said to be Barenó, San Luis, San Juan, la Pasacuareta, la Concepción, el Puerto, la Capilla, la Gloria, San José. During the month of March, 1898, herbarium specimens were collected in the vicinity of all these except perhaps the first. These collections are labelled "Monte de la Capilla" (76), "Monte de la Pasacuareta" (71-73), etc.

Other mines of lesser importance are enumerated by Langlassé, but as far as I have seen, he made no collections near them. The names of the mines are included here for the sake of completeness: On "Le Monte d'Inguarán", the mines of Barenó, la Botica, and the "mina grande", i.e. the principal mine of Inguarán; on the Monte de los Santos, the mines of Bonete, Presidio, Lava vieja, La Luz, Las Flores, el Guedal de Pedrasa; south and southeast of La Joya the mines of El Alcalde, La Valenciana, Santo Domingo, Camacho, Los Quiniques; northeast of La Joya the mines of San Simón and El Carmen.

The Spanish word "Monte", as used by Langlassé, evidently meant to him something between "Cerro" and "Sierra"; when he wrote "Monte d'Inguarán" he probably understood approximately what would be expressed in English as "mountainside above Inguarán", or "mountains about Inguarán". For example he wrote the following: "Le monte de los Santos, compris entre l'arroyo de Barabas et celui de la Laja serait un des plus riches en mineraux". His map (Figure 1) shows the area as an irregularly shaped one between the two streams, evidently comprising a dissected mountainous divide separating the rivers, rather than a single isolated mountain peak.

The higher lands on the property of the Compagnie d'Inguarán are mentioned by Langlassé in his reports to M. Mirabaud, but without any very definite discussion of locations. He estimated that 25 hectares of the higher elevations were covered with pine forests : "Les pins se trouvent disséminés à las Seneguias, à la Joya, à la mesa del Chivo, au mont Basurero". The relatively small area covered by pines would lead one to suppose that the upper limits of most of the company's property were below 2000 meters in elevation, and this is confirmed by the map (Figure 1), which shows the pines occurring in the small isolated areas already named.

A small proportion of the company's property, according to the same account, was suitable for agriculture. At about 1500 meters elevation a small plateau bounded by Los Terreros, El Presidio and El Cirián, comprised some arable land.

Langlassé's work at Inguarán began soon after March 1, 1898, and continued until April 26; see the chronological part of this paper. Most of his collections were made on the company property (Figure 1), that is within an area extending about 10 km. to the north and northeast of the mines at Inguarán itself. His collections during this period are not arranged in strict chronological sequence, and it has not been possible to work out an exact account of his trips here and there within this small area.

Jaleaca (Gro.). — About 40 km. southwest of Chilpancingo; April 20-May 11, 1899.

Janalcote (Gro.). — Same as *Jimalcota*, q.v.

Jimalcota (Gro.). — On the Río Petatlán 5-8 km. northeast of Petatlán (Langlassé's map); November 18-December 2, 1898. The spelling Janalcote was used by Micheli, p. 268.

Joluchuca (Gro.). — About 10 km. southeast of Petatlán; January 6, 1899. Also spelled Coluchuca.

Jorullo, Volcán de (Mich.). — About 25 km. south of Ario; April 13, 1898.

Joya, La (Mich.). — About 5-6 km. north of Inguarán, near the lower limit of oaks and on the western boundary of the company's property (Langlassé's map); March 22-April 5 ?, 1898.

Juntas, Las (Mich.). — Not located. A ranch visited during a 6-day trip across the Balsas lowlands from El Carrizal to La Pitirera, Mich., July 8-13, 1898. Also spelled La Junta.

Laguna, La (Mich. ?). — Not located, but evidently in or near the delta of the Río Balsas, near La Orilla; May 5-14, 1898.

Lagunillas (Gro.). — About 18 km. southeast of La Unión; August 1 and 19, 1898.

Laja, La (Gro.). — Northwest of Chaveta, near the Río Ixtapa (Langlassé's map). [Apparently near Zumatlán of ATLAS and of the American Geographical Society's map] ; September 21, 1898.

Laja, torrent (or Arroyo) de la (Mich.). — A small stream rising on the plateau above Los Terreros, about 8-10 km. north-northeast of Inguarán, and flowing southwesterly to join the Arroyo de Barrabás at a point about 5 km. north of Inguarán ; below this point the stream is known as the Arroyo del Barillo, and further down as the Espíritu Santo (Langlassé's map).

Lajas, torrent de las (Mich.). — Not located, but not far from El Carrizal, at an elevation of 850 m. ; June 28 ?-July 7 ?, 1898. This is doubtless the same as the Arroyo de la Laja listed on the hydrographic map of Foglio Miramontes (for reference see footnote under Chicutitán). This stream is shown rising about 5 km. east of Arteaga (Carrizal) and flowing generally south into the Río Balsas about 9 km. above the delta.

Lajita, La (Mich.). — Not located. A ranch visited during a 6-day trip across the Balsas lowlands from El Carrizal to La Pitirera, Mich., July 8-13, 1898. Also spelled Lasita or Lazita.

Liberia, La (Gro.). — Same as *La Sibería*, q.v.

* *Llanos, Los* (Gro.). — Not definitely located ; probably in the mountains between Tlacotepec and San Nicolás del Oro. Elevation given as 1600 m. ; June 18, 1899.

Loreto, Monte del (Mich.). — Not located, but probably on the property of the mining company, not far from Inguarán, q.v. ; March 3 ?-7 ?, 1898.

Magueyes, Los (Mich.). — Not located ; said to be a village ; apparently in the higher mountains (1760-2000 m.) southeast of Ario ; March 20, 1898.

Mamegal, Cerro (Gro.). — Not mapped, but near La Botella, according to Langlassé ; November 26-27, 1898.

Marmolejo (Gro.). — A point on the Río Balsas, according to Langlassé, where a bridge might be erected ; not mapped, but said to be at an elevation of 100 m., 4-5 km. north of La Orilla ; the corresponding point on the other side of the river was El Veladero ; May 29-June 12, 1898.

Marqués, Río (Mich.). — One of the branches of the Río Tepalcatepec, which enters the Río Balsas from the northwest at about $18^{\circ}44'$ N. lat. ; from Langlassé's description it appears that the main stream was known to him as Río Marqués at its junction with the Balsas ; April 29, 1898.

Mata de Dios (Gro.). — Not located but probably near the coast, not far from Agua de Correa ; October 7, 1898. Also cited as Mata San Dias.

Mesitas, Las (Mich.). — Not mapped ; apparently in the valley of the Río Chuta [Río Carrizal of ATLAS], at an elevation of about 600 m., probably not far from La Concepción (1), q.v. ; May 16-24, June 28 ?-July 7 ?, 1898. Also spelled Mexitas.

Metzcaltequez (Gro.). — Same as *Mexcaltepec*, q.v.

Mexcala (Gro.). — On the Río Balsas (or Mezcala), about 50 km. north of Chilpancingo ; May 12-30, 1899.

Mexcaltepec (Gro.). — About 5 km. north of Atoyac (ATLAS) ; a variant spelling used by Micheli (p. 258) is Metzcaltequez ; March 22-April 1, 1899.

Mexitas, Las (Mich.). — Same as *Mesitas*, q.v.

Mezcala, Río (Mich.-Gro.). — An alternative name for the Río Balsas ; the name Mezcala is more generally used toward the headwaters of the river.

Mezquititlán (Gro.). — About 25 km. north of Chilpancingo (ATLAS) ; May 12-20, 1899.

Mina Grande (Gro.). — Same as *Coronilla*. About 40 km. south-southeast of Ajuchitlán ; June 16 ?-23, 1899.

Minitas, Las (Mich.). — Not located, but visited during a 6-day trip across the Balsas lowlands from El Carrizal to La Pitirera, Mich., July 8-13, 1898.

Morena, La (Gro.). — About 25 km. north of Petatlán, on the Río or Arroyo Murga ; December 7, 1898.

Moreno (Gro.). — On the Río de Tecpan, about 15 km. north of Tecpan ; January 13-31, 1899.

Muleto, El (Mich.). — In the upper valley of the Río Carrizal, at an elevation of about 850 m., about 20 km. south of Arteaga (ATLAS) ; June 28 ?-July 7 ?, 1898.

Murga (Gro.). — About 18-20 km. north-northwest of Petatlán, on the Arroyo Murga (ATLAS) ; December 7, 1898.

Nopales, Los (Mich.). — On the Río Balsas just north of $18^{\circ}30' N.$ lat. (ATLAS) ; April 29 or 30, 1898.

Nopalita, La (Mich.). — Not located, but mentioned by Langlassé as a locality near the right bank of the Balsas, not far above La Orilla ; June 13 ?-28 ?, 1898.

Nuxco (Gro.). — About 12 km. west of Tecpan ; January 6-12, February 1 ?-6, 1899. Spelled Nusco by Langlassé.

Ocote, El (1). (on Río de las Cuevas) (Gro.) — About 3-4 km. northwest of Murga, between that place and Chaveta, at 210 m. elevation (ATLAS ; Langlassé's map) ; October 28-30, 1898. Most of the collections from this place are also marked "Cerro Pedregoso".

Ocote, El (2) (near Río Petatlán) (Gro.). — East of Arroyo del Venado, at 660 m. elevation ; east or northeast of Murga and about halfway between that place and La Botella (Langlassé's map) ; November 10-12, and December 3, 1898.

Ocote, El (3) (near Chapultepec and Tlacotepec) (Gro.). — Not located, but probably near Chapultepec, between that place and Chichihualco ; June 3, 1899.

Ojo de Agua (Mich.). — Not located, but said by Langlassé to be near the Balsas ; probably not far from La Orilla ; June 13 ?-28 ?, 1898.

Organal, El (Mich.). — Near the great bend of the Río Balsas, where Langlassé's road south crossed the Río del Marqués (Langlassé's map) ; April 29, 1898.

Orilla, La (Mich.). — South of latitude 18°, near the upper end of the west branch ("le bras de La Orilla") of the Balsas delta, about 10 km. from the Pacific Ocean. At the time of Langlassé's visit this was the more important arm of the delta ; it was not possible to ford it as was possible with the other arm, the "bras de Zacatula". The river, which had already carried away the village twice in recent years, causing it to be built each time farther to the north, was still taking two or three hundred meters of land annually from the bank, and a new inundation was feared.

The settlement of La Orilla was the headquarters of the Hacienda of the same name, belonging to Don Salvador Luna of Mexico City. With permission from the proprietor, Langlassé spent much time studying the resources of this tract of 30,000 hectares, which occupied all the territory bordered by the Río Balsas on the east, the Río Chuta on the west, the Pacific Ocean on the south, and the mountain front between 800 and 1000 meters elevation, on the north.

Many of the localities visited on this Hacienda were placer mines along the principal streams, notably the mines of Las Seibas and Mal Paso "dans le torrent de Chuta" ; Las Joyas and La Huertita "dans le torrent de Popuyata" (i.e. about 28-30 km. west of the delta of the Balsas, according to the hydrographic map of Foglio Miramontes ; for reference see footnote under Chicutitán).

Apparently Langlassé also visited similar workings west of the Chuta, in the adjoining property ; he mentions the placers of Chuquihapa and Barranca Honda, in the Río Chuquihapa, and the mines at Santo Niño on the Río Nexpa ("Neispa") above Tupitina.

Langlassé's travels within the boundaries of the Hacienda were chiefly along the coast between the settlement of La Orilla and the mines of the Río Chuta; he seems to have ascended the course of the Chuta on at least two occasions, probably going this way to El Carrizal. He discusses in his 7th letter to Mirabaud a route between El Carrizal and the mouth of the Nexpa, but it is not clear that he actually made the journey: "En temps de sécheresse on peut aller du Carrizal à la mine de Santo Niño en passant par le Mal Paso, la Barranca Honda et Ahuindo; le terrain est très accidenté et le voyage assez pénible. La traversée des torrents de Chuta et de Chuquihapa en mauvaise saison est fort dangereuse. Le chemin le plus praticable est celui qui longe la plage."

He describes the pine forests of the hacienda, but perhaps mostly from hearsay: "Au nord de la Conception et du Valle, une vaste forêt de pins s'étend jusqu'aux environs d'Ahuindo." He seems to have made a trip from La Orilla to the north, following the west bank of the Balsas for some distance, then striking inland toward El Carrizal.

The dates of his work in and near the Hacienda de la Orilla are from about May 1, 1898, to just before July 15, 1898.

Otatlán (Gro.). — About 30 km. west and somewhat north of Yextla, q.v.; June 5 ?-15, 1899.

Pájaros, Monte de los (Mich.). — Not located, but probably on the property of the mining company, not far from Inguarán, q.v.; March 3 ?-7 ?, 1898.

Panda (Mich.). — Near the Río Balsas, about halfway between La Garita and Pinzandarán (Langlassé's map); this would be about $18^{\circ} 20'$ N. lat.; May 1, 1898.

Pantano (Gro.). — About 5 km. south of La Aguila (ATLAS; Langlassé's map); July 17, 1898.

Pantla (Gro.). — About 15 km. northwest of Zihuatanejo; August 1, 1898.

Papanoa (Gro.). — About 5 km. south-southeast of Coyuquilla (ATLAS); January 6-12, 1899. Also spelled Papansa.

Parota, La (Gro.). — About 15 km. northeast of Agua de Correa (ATLAS); September 27-October 2, 1898.

Parotal, El (Gro.). — Not located; apparently on the Río Coyuquilla at an elevation of 250-300 m.; February 7 and 22, 1899.

Pasacuareta, Monte de la (Mich.). — About 2 km. northeast of Inguarán (Langlassé's map); La Pasacuareta was one of the mines situated along the mountains between Inguarán, q.v., and the "torrent de la Laja"; March-April, 1898.

Pátzcuaro (Mich.). — About 50 km. west-southwest of Morelia ; at the time of Langlassé's visit this was the end of the railroad from Mexico City ; February 1898 ; July 1899.

Pavillon, Monte de (Mich.). — Not located, but apparently to the west of Inguarán, q.v., and very near it. A locality called El Pabellón appears on Langlassé's map less than 1 km. west-northwest of Inguarán. Collections are labelled "Monte de Pavillon, Inguarán" ; March 7?-16?, 1898.

Peregrino, Cuesta del (Gro.). — About 50 km. south of Chilpancingo, near the highway to Acapulco ; not mapped as such, but Cumbre del Peregrino and Venta del Peregrino appear in this general area (ATLAS) ; April 10-18, 1899.

Petatlán (Gro.). — About 10 km. from the Pacific coast on the Río Petatlán, about 160 km. west-northwest of Acapulco and 75 km. southeast of La Unión, i.e. about $101^{\circ}17'$ W. long. ; November, December, 1898.

Piedra, La (Gro.). — About halfway between Petatlán and Murga (Langlassé's map), i.e. about 7-8 km. northwest of Petatlán ; November 13-16, 1898.

Piedra, Monte de la (Gro.). — Not located, but said by Langlassé to be near La AgUILA ; July 16-18, 1898.

Pitirera, La (Mich.). — Near the Río Balsas, a few km. northwest of La Garita, i.e. about $18^{\circ}17'$ N. lat., and 102° W. long. (Langlassé's map) ; July 13, 1898.

Plan de Cuche, El (Gro.). — Northwest of Chaveta about halfway from that place to the Río Ixtapa (ATLAS ; Langlassé's map) ; September 20?-25?, 1898.

Platanal, El (). — Not located ; living plants were collected here in June or July, 1899, on the trip between Ajuchitlán and Inguarán.

Platano, El (Gro.). — Not located, but somewhere between San Diego and La Orilla ; May 4, 1898.

Porvenir, El (finca) (Gro.). — Not mapped ; northeast of Atoyac, in the upper valley of the Río Atoyac, elevation 900-1000 m. ; March 22-April 1, 1899.

Potosí, Laguna de (Gro.). — The salty basin between the coastal bar and the mainland, southwest of Petatlán (ATLAS) ; also called Salinas de Potosí ; January 6-12, 1899.

Poturo (Mich. ?). — Not definitely located; an Hacienda Poturo is listed by Foglio Miramontes (for reference see footnote under Chicutitán) in the Municipio de Churumuco, and if this is Langlassé's locality it is most probably in Michoacán between Inguarán and the Río Balsas. Living plants were collected here in June or July, 1899 on the trip between Ajuchitlán and Inguarán.

Providencia, La (Gro.). — About 25 km. north of Acapulco; April 20 ?-30, 1899.

Puentes, Las (Mich.). — Not located, but apparently in the higher mountains (1760-2000 m.) southeast of Ario; March 20, 1898.

Puerta, La (Gro.). — About 7 km. northwest of Zihuatanejo (ATLAS); October 4-5, 1898.

Puerto del Canelo, Monte del (Mich.). — The same as *Monte del Puerto del Conde*, q.v. This is the source of no. 40, *Eupatorium pazzcuarense*: the labels accompanying this specimen in American herbaria have been interpreted to read "Conde" or "Cande" or possibly "caucle" but Dr. Baehni informs me that on two sheets at Geneva it is plainly "Canelo".

Puerto, Monte del (Mich.). — El Puerto was one of the mines situated along the mountains between Inguarán, q.v., and the "torrent de la Laja"; Puerto de la Concepción is listed on Langlassé's map as a mine 3 km. northeast of Inguarán; March-April, 1898.

Puerto del Conde, Monte del (Mich.). — Not located but apparently in the higher mountains (1760-2000 m.) southeast of Ario; March 20, 1898.

Quiniques, Arroyo de los (Mich.). — Not located, but probably on the property of the Compagnie d'Inguarán; Los Quiniques was a mine southeast of La Joya and about 5 km. north of Inguarán (Langlassé's map); see Inguarán; March 7 ?-16 ?, 1898.

Remostla [?], La (Gro.). — Number 1014, *Miconia* sp., was collected here on April 26, 1899. The name of the locality as written on the specimen is illegible.

Reparo, El (Gro.). — On the Río de Tecpan, about 12 km. north of Tecpan (ATLAS); January 13-31, 1899.

Rosario, Monte del (Mich.). — Not located, but probably northeast of, and not far from Inguarán, q.v., on the property of the mining company; March, 1898.

Sabanilla (Gro.). — About 25 km. northeast of Acapulco; April 10-18, 1899.

Saca Coyana (Gro.). — A locality cited by Micheli (p. 276) ; not located. A more probable spelling is *Zacacoyana*, q.v.

Salinas, Las (Mich. ?). — Not located, but evidently in or near the delta of the Río Balsas, near La Orilla ; May 5-14, 1898.

San Andrés (Gro.). — About 15 km. northeast of Atoyac (ATLAS) ; March 22-April 1, 1899.

San Aparicio, Monte de (Mich.). — Not located, but probably on the property of the mining company, northeast of and not far from Inguarán, q.v. ; March 7 ?-16 ?, 1898.

San Cristóbal (1) (Gro.). — About 45 km. north of Acapulco ; April 20 ?-30, 1899.

San Cristóbal, Monte de (Gro.). — Near Valle Grande. San Cristóbal (2) is about 7 km. north of Valle Grande ; September 5-6, 1898.

San Diego (Gro.). — About 7 km. north of La Aguila (ATLAS) ; May 3 and July 15, 1898.

San Felipe (1) (Gro.). — About 3-4 km. north of San Jeronimito (i.e. 10-13 km. northwest of Petatlán) (Langassé's map) ; December 9, 1898.

San Felipe (2) (mina) (Gro.). — Not mapped. A gold mine 8 km. from San Nicolás del Oro, q.v.

San Jeronimito (Gro.). — About 10 km. west-northwest of Petatlán ; December 10, 1898 ; January 4-12, 1899. Spelled San Geronimito by Langassé.

San Jerónimo (Gro.). — About 10 km. from the coast, and 8 km. south-southwest of Atoyac ; April 2-9, 1899.

San José, Monte de (Mich.). — About 5 to 6 km. north-northeast of Inguarán (Langassé's map) ; San José was one of the mines situated along the mountains between Inguarán, q.v., and the "torrent de la Laja" ; March-April, 1898.

San Juan (Gro.). — Not located ; see chronological account, March 15-18, 1899.

San Juan, Monte de (Mich.). — About 1 km. north-northeast of Inguarán (Langassé's map) ; San Juan was one of the mines situated along the mountains between Inguarán, q.v., and the "torrent de la Laja" ; March-April, 1898.

San Luis, Monte de (Mich.). — Less than 1 km. northeast of Inguarán (Langassé's map) ; San Luis was one of the mines situated along the mountains between Inguarán, q.v., and the "torrent de la Laja" ; March-April, 1898.

San Luis de la Loma (Gro.). — About 45 km. southeast of Petatlán and 30 km. a little north of west of Tecpan, on Río San Luis ; February 1 ?-6, February 24 ?-28, 1899. Called San Luis by Langlassé.

San Nicolás, Rincón de (Mich.). — Not located, but probably northeast of Inguarán, q.v., on the property of the mining company ; March 7 ?-16 ?, 1898.

San Nicolás del Oro (Gro.). — About 40 km. south-southeast of Ajuchitlán ; June 16 ?-23, 1899.

San Pedro (Mich.). — Not located, but evidently on or very near to the property of the Compagnie d'Inguarán ; apparently not the same as San Pedro Jorullo, which Langlassé specifies by that name ; March 22-April 5 ?, 1898.

San Pedro Jorullo (Mich.). — Between Inguarán and Las Anonas (ATLAS) ; April 26, 1898.

San Salvador (Mich.). — Not located. A ranch visited during a 6-day trip across the Balsas lowlands from El Carrizal to La Pitirera, Mich., July 8-13, 1898.

Santa Bárbara (Gro.). — Southeast of San Cristóbal (1) and north-northeast of Santa Rosa (2), qq.vv. (ATLAS) ; April 20 ?-30, 1899.

Santa Helena (Mich.). — About 4 km. northeast of Inguarán (Langlassé's map) ; March-April, 1898. Collections are labelled also Monte de Santa Helena.

Santa Ignesa, Monte de (Mich.). — Same as *Santa Inés*, q.v.

Santa Inés (Mich.). — About 6-7 km. north of east of Inguarán, q.v. (ATLAS) ; collections were labeled Santa Ignesa or Monte de Santa Ignesa ; March-April, 1898.

Santa Lucía (Gro.). — On the Río San Luis, about 25 km. from the Pacific Ocean ; March 1-12, 1899.

Santa Rosa (1) (Gro.). — About 21 km. northwest of La Unión and 7-8 km. northeast of La Aguila (ATLAS) ; July 16-18, 1898.

Santa Rosa (2) (Gro.). — About 10 km. southeast of San Cristóbal (1), q.v., and 40 km. north and a little east of Acapulco ; April 20 ?-30, 1899.

San Vicente (Gro.). — About 30 km. west-southwest of Chilpancingo ; May 9, 1899.

Sauce, El (). — Not located. A place called Sauz appears on the ATLAS sheet just north of La Unión, Gro., but Langlassé's no. 243, from El Sauce, if listed chronologically, must have come from Michoacán not far from La Pitirera, the source of no. 244 ; July 12 or 13, 1898.

Seibas, Las (minas) (Mich.). — Not mapped ; these were placers along the course of the Río Chuta, near the coast (elevations as given, 100-250 m.) ; May 16-24, 1898.

Seneguias, Las (Mich.). — About 5 km. northeast of Inguarán on the pine-covered hills at an elevation of 1500-2000 m. ; (Langlassé's map) ; some collections are also labelled Monte de las Seneguias ; March 15 and March 22-April 5 ?, 1898.

Sibería, La (finca) (Gro.). — Not mapped ; northeast of Atoyac, in the upper valley of the Río Atoyac, elevation 900-1000 m. ; March 22-April 1, 1899.

Sierra Madre (Gro.). — All collections marked "Sierra Madre" are from the state of Guerrero. The approximate locality for any number may be determined, if the date of collection be known, by consulting the chronological part of this paper.

Sirián (or Cirián), El (Mich.). — About 6 km. northeast of Inguarán (Langlassé's map) ; said by Langlassé to mark one of the borders of an arable area. at an elevation of 1500 m., on the property of the Compagnie d'Inguarán ; March 22-April 5 ?, 1898.

Soledad, La (finca) (Gro.). — Not mapped ; northeast of Atoyac, in the upper valley of the Río Atoyac, elevation 900-1000 m. ; March 22-April 1, 1899.

Tahuasal, El (Mich.). — Not mapped, but said by Langlassé to be near El Carrizal, q.v. ; June 18, 1898.

Talabasal, El (Gro.). — Error for *Calabazal*, q.v.

Tamarindo, El (Gro.). — About 8-9 km. west of San Luis de la Loma (ATLAS) ; February 1 ?-6, 1899.

Tecpan [de Galeana] (Gro.). — About 90 km. west-northwest of Acapulco (i.e. about $100^{\circ} 41'$ W. long.) and 15 km. from the coast, on the Río Tecpan ; January 13-31, 1899.

Temalhuacán, Llanos de (Gro.). — About halfway between Lagunillas and Chutla (Langlassé's map) ; Temalhuacán appears in the same position, i.e. about 13-14 km. southeast of La Unión, on the ATLAS sheet ; July 31, 1898.

Tepantintlán (Gro.). — Not located ; said by Langlassé to be a mining area a few kilometers east of San Nicolás del Oro ; June 1899.

Tepetixtla (Gro.). — About 50 km. northwest of Acapulco ; April 20 ?-30, 1899. See note under *Coyuca de Benítez*.

Testla (Gro.). — Same as *Yextla*, q.v.

Tibor, El (hacienda) (Gro.). — A few km. from Lagunillas on the direct road to Vallecitos (1), i.e. about 15 km. southeast of La Unión (Langlassé's map) ; August 22-27, 1898.

Tlacotepec (Gro.). — About 50 km. west-northwest of Chilpancingo; June 2-15, 1899.

Tololapa (Gro.). — Not located; possibly an error for Tonalapa, which Langlassé passed through several times during the period in question, May 12-30, 1899; Tonalapa is about 25 km. south of Iguala.

Tuveria, La (Gro.). — About 8 km. east of Valle Grande (ATLAS, as Tuberia); September 6-7, 1898.

Unión, La (Gro.). — Lat. $17^{\circ}58'$ N., long. $101^{\circ}48'$ W.; July 19-29, 1898.

Uruapa, Monte de (Mich.). — Not located, but apparently in the higher mountains (1760-2000 m.) southeast of Ario and perhaps near Urapa (14 km. southeast of Ario); March 20, 1898.

Valle Grande (Gro.). — About 28 km. northeast of La Unión; September 5-6, 1898.

Vallecitos (1) (rancho) (Gro.). — About 15 km. northeast of La Unión; September 1, 1898. On Langlassé's map and in his letters always spelled Vallecito. Also cited as Vallecita (Micheli, p. 283).

Vallecitos (2) (Gro.). — On the upper Río Ixtapa, about 40 km. northeast of Zihuatanajo (ATLAS); this is apparently only 1-2 km. from the Coacoyular listed on the American Geographical Society's map; September 17-19, 1898. Also cited as Fallecitos by Micheli, p. 279.

Valles, Las (Gro.). — Not located; possibly one of the coffee fincas northeast of Atoyac, in the upper valley of the Río Atoyac, elevation 900-1000 m.; March 22-April 1, 1899.

Veladero, El (Mich.). — Not mapped; for discussion see Marmolejo.

Venado, Arroyo del (Gro.). — An affluent of the Río Petatlán, between it and the Arroyo Murga; the trail from Jimalcota to La Morena crossed this arroyo near El Ocote (2) (Langlassé's map); December 3, 1898.

Venta, La (Gro.). — About 10 km. northeast of Acapulco; April 10-18, 1899.

Ventana, Monte de la (Mich.). — Not located, but apparently in the higher mountains (1760-2000 m.) southeast of Ario; March 20, 1898. See also a mountain of the same name, 8 km. north of Inguarán (Langlassé's map).

Verde, Cerro (Gro.). — A mountain of 1700 m. elevation, above El Cedro at the headwaters of the Río de las Cuevas (here called Arroyo de Cohuayana) (Langlassé's map); about November 6, 1898. Not located on any other map, but probably about 35 km. north of Petatlán.

Victoria, La (finca) (Gro.). — Not mapped; northeast of Atoyac, in the upper valley of the Río Atoyac, elevation 900-1000 m.; March 22-April 1, 1899.

Xatitla (Gro.). — About 10 km. northeast of Mexcala; May 12-20, 1899. Spelled Chatitla by Langlassé; cited as Chelitla by Micheli, p. 284.

Xochipala (Gro.). — About 35 km. north-northwest of Chilpancingo and 15 km. southwest of Mexcala; May 24-25, 1899.

Xextla (Gro.). — About 45 km. west of Chilpancingo; June 5 ?-15, 1899. Also spelled Testla.

Zacacoyana (Gro.). — Not located, but probably along the road between Chilpancingo and Mexcala; May 12-20, 1899. Spelled Saca Coyana by Micheli, p. 276.

Zacatula, bras de. — See *La Orilla*.

Zihuatanajo (Gro.). — About 45 km. southeast of La Unión, on the Pacific Ocean; August 5-19 ? and September 26, 1898. Also cited as Zilmatango by Micheli, p. 285.

Zilmatango (Gro.). — Same as *Zihuatanajo*, q.v.

Zopilote, Cañada del (Gro.). — The road between Chilpancingo and Mexcala follows the valley of the Río Zopilote (Cañon del Zopilote, ATLAS). Also cited as Cariote del Zopilote (Micheli, p. 276).

Zumpango (Gro.). — About 12 km. north of Chilpancingo; May 21-30, 1899.

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