

SUMMARY OF THE FIRST LEPROSY CENSUS IN THE REPUBLIC OF MEXICO

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INTRODUCTION

In January, 1925, as head of the Institution of Hygiene, I obtained from the Public Health Department authority to prepare the first census of leprosy in the Republic of Mexico. This undertaking was carried on in the Institute until January, 1927, when I was appointed technical inspector of the same Department, where it was completed in the same month. The present article is a summary of the published report of this inquiry⁽¹⁾.

The Republic of Mexico politically has 28 states, 2 territories and the Federal District. These comprise a total area of 1,978,201 square kilometers, with a total population of 15,160,369 inhabitants, according to the general census completed on October 27, 1910. Detailed data are given in Table 1, in which an alphabetical order of the names of the states and territories has been followed.

The leprosy census was based on information obtained from the hospitals, sanatoria and asylums, and from individual physicians. Out of the total of 2,272 townships information was obtained from only 435, or 19 per cent; many in each of the territorial divisions were not included. The total number of the institutions referred to is 285, of which 186 (65 per cent) answered the questionnaire. Inquiries were sent to all mayors concerning the doctors in their communities; 1,800 mayors replied and 472 did not. There are only 516 townships in which it is known that there are doctors; in 1,333 there are none, but for the rest this is not known. Of the 2,756 known doctors, 1,406 replied to the questionnaire sent them while 1,350 did not. In 81 townships there are doctors who failed to reply, so those towns could not be included in the census. In other towns having several doctors some ignored the questionnaire, but when any answered it the towns were given a place in the statistics.

The deficiencies here indicated are not really surprising. Nowhere has it been possible to obtain a perfect census of lepers, and

TABLE 1.—Data on the extent of the leprosy survey, and the number and concentration of known cases of leprosy in Mexico.

State or territory	Townships in leprosy census							
	Population	Area sq. km.	No. of townships	Number	Population	Number with leprosy	No. of cases	No. per 100,000
Aguascalientes.....	120,511	7,692	8	1	69,319	1	8	12
Baja California.....	52,272	151,109	9	6	43,125	4	18	42
Campeche.....	86,661	468,855	8	3	53,496	3	9	17
Coahuila.....	362,092	165,219	37	21	317,926	8	74	23
Colima.....	77,704	5,887	9	2	50,976	2	15	29
Chiapas.....	438,813	71,302	103	12	130,114	5	18	14
Chihuahua.....	405,707	233,214	66	22	239,634	5	15	7
Federal District.....	720,753	1,499	16	13	671,303	5	226	34
Durango.....	483,175	109,495	42	14	262,631	9	24	9
Guanaajuato.....	1,081,651	28,363	45	24	808,975	16	130	16
Guerrero.....	594,278	65,480	68	16	232,549	9	69	30
Hidalgo.....	646,551	22,373	73	12	188,752	2	8	2
Jalisco.....	1,208,855	86,752	116	33	510,623	25	237	46
México.....	989,510	23,909	119	24	305,544	3	8	3
Michoacán.....	991,880	58,594	88	31	523,243	22	155	30
Morelos.....	179,594	4,911	26	4	50,250	2	4	8
Nayarit.....	162,499	28,371	17	4	78,188	3	15	19
Nuevo Leon.....	365,150	64,838	51	19	154,525	7	22	14
Oaxaca.....	1,040,398	92,443	590	7	76,345	3	5	6
Puebla.....	1,101,600	33,653	202	23	315,053	6	17	5
Querétaro.....	244,663	11,638	7	2	78,287	2	24	31
Quintana Roo.....	9,109	49,914	3	2	3,334	1	4	120
San Luis Potosi.....	627,800	62,177	58	16	283,301	4	16	6
Sinaloa.....	323,642	71,380	16	9	198,416	5	144	73
Sonora.....	285,383	198,496	75	20	146,522	5	28	19
Tabasco.....	187,574	26,871	17	9	119,610	2	2	2
Tamaulipas.....	249,641	79,861	39	13	109,468	5	17	16
Tlaxcala.....	184,171	3,974	36	7	55,243	0	0	0
Veracruz.....	1,132,859	72,216	187	41	518,812	9	42	8
Yucatán.....	359,613	41,287	91	15	190,657	5	79	41
Zacatecas.....	477,556	63,986	50	10	170,425	8	22	13
TOTALS.....	15,171,665	2,405,159	2,272	435	6,956,647	186	1,450	695

we could not expect it in Mexico, a large country with very different states of culture and irregular distribution of inhabitants—from on one hand the cities of the central plateau with their European civilization, to on the other hand the almost inaccessible mountain hamlets inhabited by natives separated by centuries from our present western culture. Notwithstanding the inaccuracy of our statistics, in common with most others of like nature, they permit us to judge with reasonable exactness where leprosy attains its greatest development in Mexico. This is, as yet, the only scientific basis on which to build sanitary legislation to fight it.

FINDINGS OF CENSUS

Number of cases.—In total, 1,450 lepers were reported, as shown in Table 1. This is a greater figure than that for any of the European nations, and is surpassed in America only by Colombia, Dutch Guiana and Brazil. We do not, of course, come anywhere near the intensity which the disease has attained in the Asiatic and African centers.

TABLE 2.—*Age distribution of known cases: (a) age when reported and (b) age at onset.*

Age	Age when reported		Age at onset	
	Number	Percent	Number	Percent
0-9	18	1.6	24	3.9
10-19	65	5.8	113	18.2
20-29	352	31.5	216	34.7
30-39	214	19.1	160	25.7
40-49	312	27.9	86	13.8
50 and more	158	14.1	23	3.7
Totals	1,119	100.0	622	100.0
Unknown	251		828	

Age distribution.—The data on the age distribution of these lepers, shown in Table 2, confirm what is already known about the age when the disease is most likely to occur. Only 18 cases up to the age of 9 years were reported, and from 10 to 19 only 55, indicating that the disease is rare in the first stages of life. This is contrary to the findings of Brinckerhoff, who stated that at Molokai, in Hawaii, leprosy was prevalent in children and youths; in 450 cases there were 32 from 1 to 10 years of age, and 160 from 11 to 20. In our statistics the largest age group (352 cases), is from 20 to 29 years. According to a statistical report on lepers in Colombia there are in that country few children with leprosy between the ages

of 3 and 9—only 110 of the 5,444 cases; generally speaking men between the ages of 32 and 38 are more likely to have this disease, and women between the ages of 35 and 40. It is of much importance from the social point of view that the disease should take its toll of victims in the prime of life.

Age at onset.—The data in Table 2 regarding the ages at onset of the disease are only approximate. The first manifestations of leprosy often pass unnoticed, not only to the patients but even to physicians who are not familiar with this disease. As is natural, these figures maintain a certain relation with the ages of the lepers. In only 24 cases did the disease appear in the first decade; in the greatest number (216 cases) it was between the ages of 20 and 29. The occurrence after 50 years is even more infrequent than before 9, for only 23 individuals were taken sick after that age.

Sex.—According to our data most of the lepers are males. Of the cases for which the sex was given 795 were men and 456 women, a ratio of 1.7 to 1. This ratio is higher than that in Colombia, which is almost 1.0 to 1.0. On the other hand, it is the same as that given by Brinckerhoff and Reinecke for 3,926 cases recorded in Hawaii in the 28 years from 1881 to 1908, of whom 2,502 were men and 1,434 women (1.7 to 1). In most countries the sex distribution of the disease is similar. In Mexico, as elsewhere, it is a fact that men are more exposed to contagion because of their way of living and working.

Civil state.—The reports gave 507 lepers as single and 428 as married. The fact that more are single than married may be of interest from the viewpoint of prophylaxis, since it makes the isolation of the lepers easier.

Occupation.—The lepers' occupations as recorded are shown in Table 3. The largest group of them (165) were classed as "peasants." Then follow 124 engaged in farming and related occupations, 113 laborers, and 113 employed in domestic service, not including 40 "housewives." It is revealed that many are engaged in trades prohibited to them; these include domestic servants, school teachers, seamstresses, sellers of food, washerwomen, tailors, confectioners, bakers, marketers, butchers, barbers, milkmen, etc. Unquestionably, there are a large number of lepers who, because of the way they earn their living, constitute a perpetual public menace.

Types of cases.—The type of the disease was reported in 1,249 instances. Of these 734 (59 per cent) were of the nodular or tuber-

cular form, 262 (21 per cent) were of the neural form, and 253 (20 per cent) were mixed. This is consistent with the data for the three lazarettos of Colombia, where of 5,444 lepers 60 per cent were nodular, 30 per cent neural, and 10 per cent mixed.¹

TABLE 3.—Occupations of lepers in Mexico.

Peasants	165
Farmers and farmhands, including stockfarmers, cow-boys, etc.	124
Laborers	113
Domestic servants	113
Housewives	40
Merchants	42
Beggars	26
Clerks and bookkeepers	20
Capitalists	13
Bakers, cooks and food vendors	13
Lime workers	12
Carpenters	11
Shoemakers	10
Soldiers	10
Weavers, tailors and seamstresses, teachers and charcoal burners (6 to 8 each)	28
Miscellaneous, 2 to 4 each	44
Miscellaneous, 1 each	16
Unemployed	65
Occupation unknown	585
Total	1,450

Open lesions.—Of the 1,450 lepers it is known that 503 had open lesions (rhinitis, ulcers, perforating lesions); 484 had none; while for 463 cases information is lacking. The occurrence of such open or infectious lesions indicates the unavoidable necessity of isolating these patients under the direction of the State, either in public asylums or in their own residences, depending upon the circumstances of each patient.

Intimately related to the nature of the lesions are the conditions in which the lepers live. We must take into account that the ignorant, the nomads and the beggars absolutely neglect the most elementary hygienic care. According to our data 571 of the cases live in bad hygienic conditions, crowded, dirty and miserable. Aside from 151 who are sheltered in hospitals, only 344 were reported to be living under good conditions. How the remaining 384 live is not known.

¹“Prophylaxis and Statistics of Leprosy in Colombia”, a thesis presented by Dr. Pablo Garcia Medina at the First Pan-American Conference of Directors of Public Health Services, held in Washington, D. C., in September, 1926.

Food.—Some hold that food has an important relation to the etiology of leprosy, though many deny its influence. The questionnaire used included an inquiry about the use of the foods more frequently accused of relation to this disease, namely fish and pork. The latter of these has been especially indicted in this country; the chief authority for the relation with fish was Jonathan Hutchinson.

Our reports state the food habits of 880 cases previous to appearance of the disease. Pork was used through preference by 301, only 24 depended on a diet of fish, while 501 used both of these foods. We emphasize the scant value of these figures. Though many fed on pork before onset, this can be simply explained by the frequency with which this substance is used in many parts of the Republic. It would seem that the condition is a mere coincidence rather than an etiological factor.

Birthplace of patients.—The question of the birthplace of the cases is directly related to that of the endemic centers in the country. The figures show that Jalisco can claim the largest number, 202, Guanajuato following with 176, Michoacán with 156, and Sinaloa with 140. In 244 cases the birthplace of the lepers is unknown.

Twenty two of the cases were foreigners. Fifteen were of Asiatic origin, from China and Japan, countries in which leprosy claims many victims. Continual streams of emigration, the unavoidable result of over-population and poverty, have gone out from these congested regions at different periods to America and therefore to Mexico.

Place where the disease was contracted.—Because of the long incubation period, it is difficult to determine the place where the disease was contracted, even with intelligent patients. Therefore the data on this point have no definite value. However, they may be of interest for statisticians. The figures obtained agree to a certain extent with those for birthplace, Jalisco being credited with the largest number, 155. Guanajuato follows next with 134, Michoacán with 125, Yucatán with 71, and Coahuila with 60. On the other hand, though the Federal District is an important center of this disease only 10 persons were taken ill with it there; this large focus was formed by importation.

Nineteen individuals assert that they contracted leprosy in foreign countries: 9 in the United States, 4 in China, 3 in Spain, 1 in Central America, 1 in Cuba and 1 in Korea. Cases of Asiatic, Cuban, Spanish, and Central American origin are easily explained because

these countries are infested, but not those from the United States where the total number of recognized lepers does not reach 300. Recently Denney, of the National Asylum in Louisiana, has estimated that there are 1,200 cases in the country, but an exact estimate is well nigh impossible. In any event, the existence of lepers in Mexico coming from foreign countries would justify the enforcing of measures to prevent their entrance.

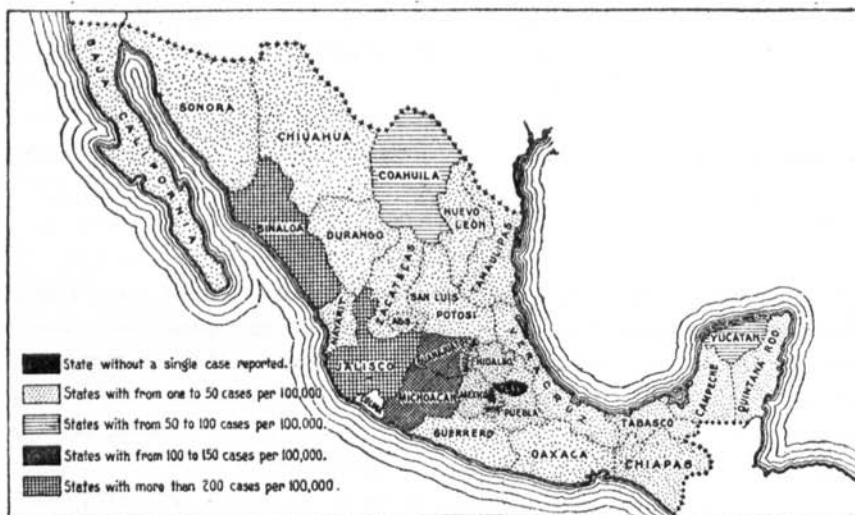
Data on contagion.—To ask whether one can be infected with leprosy through contagion is superfluous. The three international conferences on leprosy, and that held in Rio de Janeiro in October, 1922, accepted among their conclusions that the efforts to prevent contagion constitute the decisive element in the campaign against leprosy. However, because of its very long incubation period it is at times impossible to determine its origin. However, the results of our inquiry corroborate the theory of contagion, because out of the 652 cases 359 appeared to have acquired the disease in that way. This was denied by 197, and by 96 the disease was attributed to heredity. In 798 instances the method of propagation was unknown.

Concentration of leprosy.—Data on the relation of the numbers of patients and those of inhabitants are given in Table 1. For the Republic as a whole, with 15,151,695 inhabitants in 1910, the average concentration would be one case for each 10,449 people, or 9.6 per 100,000. In terms of area it would be one for each 1,370 square kilometers. However, considering only population of the townships for which the census was taken, 6,956,657, there would then be one to each 4,797, or 21 per 100,000, which is more nearly correct.

Considering the States of the Republic, the greatest density is in the small Quintana Roo region, with one leper in 836 inhabitants of the townships reported, a rate of 120 per 100,000. Other high rates are found for Sinaloa with 73, Lower California with 42, and the Federal District with 34 per 100,000. In Yucatán, Jalisco, Guerrero, Michoacán, Querétaro, and Coahuila, our traditional centres of leprosy, the density is also high.

Leprosy in the Republic demonstrates the non-telluric character of the disease, the mystery that surrounds its transmission showing the domination of different factors grouped together under the designation of social conditions. Some of the principal centers are located at sea level, in extremely hot tropical climates, as in Yucatán, others in the temperate and cold regions of the Central Plateau, such

as the Federal District and the states of Guanajuato, Jalisco, Michoacán and Coahuila.



TEXT-FIG. 1.—Graphic distribution of leprosy in the Republic of Mexico, according to the first census completed in July, 1927.

It is not intended to enter into the eternal discussion with regard to the origin of leprosy in America; that is, whether or not it existed before Columbus in America as a whole, or before Cortes with reference to Mexico. Nevertheless, it may be pointed out that the distribution of our centers seems to indicate a sort of stream which starts at the Pacific coast and continues through the states of Jalisco, Guanajuato and Querétaro until it arrives at the Federal District. This current might coincide with the route followed by the active colonial trade during the Spanish rule, which was established with Asia and Australasia—chiefly the Philippines—and which involved the immigration of natives of those places into Mexico. This surely has left traces in the zone covered by our disease, which possibly was brought to our country at that time. With respect to the peninsula in which Yucatán is located, it may be that the disease originated in the West Indies, there having been particularly frequent relations with Cuba.

REFERENCE

- (1) *Primer Censo de la Lepra*. Departamento de Salubridad Pública, México. 1927.