

THE HISTORY AND DISTRIBUTION OF LEPROSY IN FORMOSA¹

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The island of Formosa is the most southerly territory of the Japanese Empire. Lying between Long. 119° 18' and 122° 6'E, and Lat. 21° 45' and 25° 38' N, the land is 400 km. long from north to south and 160 km. wide from east to west in its broadest part. The total area is 35,961 sq. km., abounding in mountains and high peaks. The western coast of the island faces the Chinese continent, only an overnight voyage away, and to the south are the neighboring Philippines, across the Bashi channel.

Before discussing the original source of the leprosy in Formosa, it is necessary to point out the origins of the people of the island, who altogether total nearly 6,000,000 according to a recent census. The earliest inhabitants were the ancestors of the Takasago tribe of today—the aboriginals. Next came the Chinese immigrants, mostly from Fookien and Canton provinces, after the famous Chinese hero Tei Sei-ko, in 1661, defeated the Hollander army at the Fort of Anpin and conquered the land. The people now called Formosans are the descendants of those Chinese immigrants, and they constitute the largest part of the population.

Leprosy, it is said, was not seen in Formosa among the aboriginals—the Takasagoans—before the invasion by the Chinese. If this is so then this disease was evidently brought into this beautiful, green southern island by Chinese from their motherland. That is, the carriers of leprosy were among the immigrants who have come from China during the past three centuries, and today lepers are found most commonly among the descendants of those immigrants. Next to the Formosans in frequency of leprosy are the Japanese who reside here, fairly large numbers of lepers being found among them. In the Takasagoans, on the other hand, no cases are found among those

¹A summary of this article was to have been read at the International Leprosy Conference held in Cairo in March, 1938.

living primitively in the mountains, though an occasional one has been discovered among those who live in the plains and are closely associated with the Formosans.

Hence leprosy in Formosa is an imported disease, brought from southern China beginning some 300 years ago. Very little can be learned about the lepers of those early days, and I have been unable to find any detailed records referring to them. In old literature written many decades later, it is stated that in the year 1736 an institution called "Yohsai-in" was founded in Shokwa, at the request of Governor Shin Shi-Bo of that province, for the purpose of segregating and relieving lepers. In other records of that time it is suggested that there were lepers among the coolies immigrated from southern China, and that the disease spread so widely and became so prevalent that the governor had to appeal to the central government for the measure mentioned. Later there were established here and there in the island benevolent institutions for the care of paupers, and some small numbers of lepers were also taken into these asylums, but until quite recently there were no other facilities for the relief of lepers worth mentioning.

INCIDENCE AND DISTRIBUTION

Incidence.—Only a few references have been found that contain statements regarding the supposed numbers of lepers in Formosa. Babes, and also Jadassohn, said that they may constitute 1 percent of the total population, which on the basis of old population figures would amount to 40,000 or more. Klingmüller (1930) quotes a verbal statement by Miyahara that there were 25,000 cases here, but he also cites estimates of 4,000 and 5,000 by Gushue-Taylor and one of 10,000 by Fletcher.

As for actual records of this matter, there are no data dating back to the time that the island was under the Chinese flag. After it became Japanese territory some decades ago, however, the matter was investigated from time after time by the Police Board. The statistics obtained are shown in Table 1. The maximum figure there shown is 1,084 cases, in 1930.

Distribution.—The jurisdiction of Formosa is divided into eight administrative prefectures. The distribution of lepers in these districts, according to the result of a survey made by the government in 1930—that is, prior to the establishment of the existing leprosaria—is shown in Table 2.

TABLE 1. *Statistics of leprosy in Formosa (surveys made by the Police Board).^a*

Years	Numbers of lepers				Totals	Increase or decrease
	Japanese	Formosans	Takasagoans	Others ^b		
1910.....	8	795	2	5	810	—
1918.....	13	610	14	4	641	-169
1926.....	9	731	16	0	756	+115
1929.....	5	623	5	0	637	-119
1930.....	39	1022	7	16	1084	+447
1935.....	33	792		25	850	-234
1936.....	46	759		22	827	-23

^aThe investigations by which these data were obtained were made simultaneously throughout the island. The figures include lepers in asylums.

^bThis column refers to Chinese.

According to these figures the Bohko prefecture, which comprises a group of small islands to the west of the mainland (see Text-fig. 1), was found to be the most heavily infected one, with an incidence rate of 8.5 per 10,000 population. The Taichu prefecture, on the other hand, was the least infested district, with only 0.9 per 10,000. In most instances the distribution of the disease in Formosa is very irregular. Cases are numerous in certain villages while the surrounding villages are free from the infection, the picture being one of leprosy centers situated in the healthy surroundings.

TABLE 2. *Distribution of lepers in Formosa, according to the survey of 1930.*

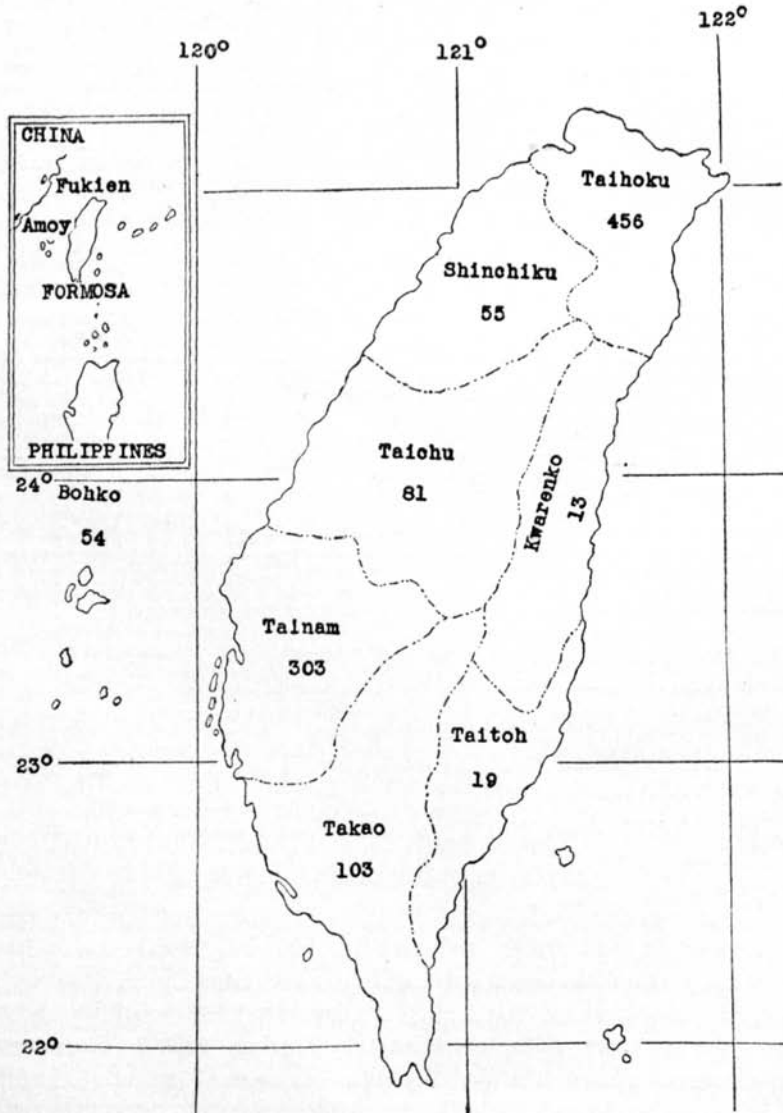
Prefecture	Number of lepers	Incidence per 10,000 population
Taihoku.....	456	5.4
Shinchiku.....	55	1.0
Taichu.....	81	0.9
Tainam.....	303	2.9
Takao.....	103	1.7
Taitoh.....	19	4.3
Kwarenko.....	13	2.2
Bohko.....	54	8.5

ESTIMATE FROM SAMPLE SURVEYS

The numbers of cases actually enumerated by the police surveys—1,084 in 1930, reduced to 827 in 1936—have differed so greatly from the assumed incidence as given by various writers that it was decided to make a survey which would provide a basis for a more definite estimate. During 1936-7 I undertook to examine all of the inhabitants of several selected localities which were supposed to be heavily infected.

In making this investigation a day was appointed for the examination of a locality, and with the aid of the police the

people were gathered in a convenient place. Those who did not come for examination on the fixed day, despite the notice given, were brought in by police officers, except that those who could not come on account of debility or illness were visited in their homes. Considerable numbers of people were not seen,



TEXT-FIG. 1. Distribution of lepers in Formosa in 1930, from data collected by the Police Board.

as is shown in Table 3 (roughly 8 percent of the total population), but in the main these were people who had been absent from home for some length of time. Most of them were abroad, in China and the South Sea islands, for work, while some were on business trips to distant places. In order to make sure that they had not gone away to avoid inspection because they knew themselves to be infected with leprosy, as much information as possible was obtained from members of their families, from their neighbors, and from police and administrative officers of the districts, concerning their condition of health, destination, etc. The figures obtained in the survey are, I trust, reliable, and it is believed that there are no other lepers in the places investigated than those now recorded.

TABLE 3. *Findings of the sample surveys of seven localities in Formosa.*

Localities surveyed	Numbers of people			Numbers of lepers			Leprosy rates (p. mil.)	Percent new cases ^a
	Population	Examined	Not examined	Newly found	Already known	Total		
Ratoh.....	6,443	5,685	758	2	4	6	0.9	50.0
Bohko.....	15,264	13,664	1,600	13	26	39	2.6	50.0
City of Taihoku (North district) ..	6,756	5,336	1,420	2	8	10	1.5	25.0
Shajo.....	2,826	2,513	313	8	12	20	7.1	66.7
Kigo.....	11,561	11,534	27	18	9	27	2.3	200.0
Yamagami.....	6,456	6,365	91	6	10	16	2.5	60.0
Anpin.....	5,797	5,539	258	0	5	5	0.9	0.0
Totals.....	55,103	50,636	4,467	49	74	123	2.2	66.2

^aPercentages of the newly discovered cases with reference to the known cases previously registered by the police.

The places selected for investigation in this survey were, as has been said, those known to be especially infected. It is considered probable, therefore, that the leprosy rate for the whole island may be much lower than the figures here given. Hence, I estimate that the numbers of lepers in Formosa are about 50 percent greater than the figures given by Police Board. This would bring their 1930 figure of 1,084 up to 1,626, their 1935 figure, 850, to 1,275, and that of 1936, 827, to 1,241.

SYMPTOMS OF FORMOSAN LEPROSY

Here I shall discuss briefly certain features of the symptoms of leprosy as it occurs in Formosa. The patients observed for the purpose total 500, all of them under the care of the Rakusei-in (government) and Rakuzan-en (private) leprosaria. In a general comparison of symptoms according to the sex and age of the patients, and of the type of the disease, with what

is found in patients in Japan proper no notable differences are observed at first glance. When the matter is studied more closely and carefully, however, there are seen a few particular things that are of interest.

1. *Alopecia leprosa*.—In Japan proper leprotic alopecia is a very common symptom, so much so that it can be found in from 45 to 60 percent of the leprosarium patients. In foreign countries, as for instance the Philippines and the South Sea islands, this condition is reported to be comparatively rare. In Formosa it is not found as frequently as in Japan proper, but on the other hand it is not rare. It occurred in 21 percent of the patients in Rakusei-in, and in 13 percent of those in Rakuzan-en.

2. *Ulcers*.—In the Zensei-Byoin leprosarium, in Japan proper (Tokyo), it is reported, 45 percent of the patients have ulcers of the leg and 18 percent have plantar ulcers. Both types of ulcers are much more common in the leprosarium patients in Formosa, for in Rakusei-in 87 percent have leg ulcers and 47 percent have ulcers of the sole.

3. *Type of the disease*.—In Formosan lepers we see a higher proportion of nodular cases and a relatively lower proportion of neural ones than is the general rule. In Table 4 are given data on this point for the inmates of Rakusei-in, and also of three leprosaria in Japan proper. Comparison of the condition of individual cases, however, shows that the Formosan cases are generally less severe than are those in Japan.

TABLE 4. *Type of the disease as seen in Rakusei-in and three leprosaria in Japan proper.*

Type of the disease	Rakusei-in		Aisei-en		Kyushu		Kosei-en	
	Cases	Pct.	Cases	Pct.	Cases	Pct.	Cases	Pct.
Nodular...	593	78.9	443	58.3	321	42.0	146	62.6
Macular...	116	15.5	211	27.7	414	54.2	69	29.7
Neural...	42	5.6	107	14.0	29	3.8	18	7.7
Total...	751	100.0	761	100.0	764	100.0	233	100.0

ANTILEPROSY MEASURES IN FORMOSA

1. *Government policy*.—The Formosan government estimates that there are in the island about 1,000 open cases of leprosy that are dangerous to public health. On this basis it planned to establish a leper asylum with accommodations for that number of patients, in order to apply the measure of segregation to the end that the disease may be eradicated within the next

few decades. In 1929 there was issued the Antileprosy Law of Formosa, which provides for compulsory segregation of the patients from the public, or home isolation under strict control.

2. *Government leprosarium, the "Rakusei-in".*—This institution, located at Shinso Guai, Shinso Ghun, Taihoku Prefecture, is about 11 kilometers outside of the city of Taihoku. It was opened on October 15, 1930, and for three years accommodated only 100 patients. Since then it has been greatly enlarged, with 227 patients in 1935, 327 in 1936, 427 in 1937, 587 in 1938 and 679 in 1939. The total capacity at present is 700.

3. *The "Rakuzan-en" leprosarium.*—This private institution, superintended by Dr. G. Gushue-Taylor, is located at Hachiri Sho, in the vicinity of Taihoku city. It has accommodations for 60 patients, with 48 resident there in 1939.

4. *Other hospitals or clinics for lepers.*—Besides the two leprosaria mentioned, three hospitals—the Mackay Memorial Hospital in Taihoku, the Shinroh Hospital in Tainan, and the Christian Hospital in Shokwa—treat lepers as out-patients once or twice a week. The numbers of patients under treatment at these hospitals is, however, very limited, as few as 10 at a time.

5. *Other organizations.*—In 1938 a semiofficial organization, the Anti-Leprosy Association of Formosa, was organized to assist in effectuating the measures taken by the government. This foundation now conducts a home for untainted children of lepers, provides advisory facilities for the lepers, and engages in antileprosy education of the public. Another organization, the M. T. L. of Formosa, was organized some years ago and now cooperates with other entities in this work.

6. *Imperial benevolence to lepers.*—The Imperial Family of Japan has in the past repeatedly bestowed boundless graciousness upon lepers. H. I. M. the Empress Dowager, especially, takes much pity on those who suffer from leprosy and grants a large gift every year as a consolation fund for them. Both of our leprosaria, Rakusei-in and Rakuzan-en, have been honored with favors. Moreover, all of us have been favored with Her Majesty's ode:

Tsure-zure no

Tomo to naritemo nagusame yo

Yukukoto kataki Ware ni kawarite

Translated, this means: "Thou shalt be a good friend to those pitiful sufferers and console them in place of me, for I could not go and see them."