

LEPROSY IN THE UNITED
STATES OF AMERICA.

B Y WADIM GLOVATSKY.

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Leprosy is a chronic infectious disease closely allied to tuberculosis, caused by the Mycobacterium Leprae discovered by Hansen in 1871 (usually known as Bacillus leprae). /Synonyms:---Elephantiasis Graecorum. French: La-lépre. Italian: Lebbra. German: Aussatz. Norwegian: Spedalskhed. Arabic: Djudsam/.

Leprosy is known to the man from the ancient times, and the first description of the leprosy occurs some thousands of years before Christ. It is true, however, that even at the present time there is occasionally much difficulty with regard to the diagnosis of leprosy from allied diseases, and therefore in the ancient times and in the Middle Ages many skin diseases and syphilis without doubt were confused with it. The Hebrew writers make many references to leprosy, but it is evident from the description in Leviticus that many different skin diseases were embraced under the term of leprosy. The disease was well known to the ancient Egyptians, Syrians, Greeks and Romans. We find descriptions of the disease in the writings of Herodotus, Aristotle, Celsus and Hippocrates. Galen mentions it also. Both in India and in China leprosy was known many centuries before Christian era. The ancient Japanese books actually refer to what we call leprosy, together with other diseases. The old Greek and Roman physicians were perfectly familiar with its manifestations, but so variously and curiously was this affection described, that there is no doubt it was confused with many other diseases.

Leprosy was exceedingly prevalent throughout Europe in the Middle Ages. It is probable that the malady passed from Egypt to Greece, and later to Italy, by means of Pompey's troops, and that it was disseminated throughout by the Roman legions, by trades, and later, perhaps, by the Crusaders returning from the East. It was so prevalent in Europe at that time that leprosariums were established everywhere in towns of any considerable size. There are indications that close upon twenty thousands such leper houses were instituted. Leprosy gradually increased in Europe from the days of Pompey till XIII-th century, and existed to such an extent that stern measures were enforced, and all lepers were isolated. They were

compelled to wear a special dress, to use a clapper when passing along the roads, to indicate only with a stick the articles they desired to buy in a market; while they were forbidden to drink from the public fountains, to touch children, to speak to a healthy person in a loud voice, or to eat with any person other than a leper. Further, the Church performed the Burial Service over a person who was diagnosed to be a leper, and therefore officially he was dead. The results of these extreme measures appeared to be quite beneficial, as the number of lepers diminished rapidly in XIV @ XV centuries. In England the first known leper house was at Canterbury, in 1096, and the latest at Highgate, in 1472. Since XV-th century the disease has almost disappeared from many parts of Europe, including England.

There is evidence of a pre-Columbian existence of leprosy in America found in the old pieces of Peruvian pottery, representing deformities suggestive of this disease, but Ashmead denies their significance. Officially the disease has been known in North America for at least 200 years, and the first case reported was in Florida in 1775.

Climatology and geographical distribution of leprosy are very interesting. At the present time there is but little leprosy in many parts of Europe. It is almost extinct in Denmark, Belgium, Holland, Austria, Hungary and England. It is less frequent than formerly in Norway, Sweden, Greece and some Mediterranean islands, being very rare in France and Germany. But it is still very common in Iceland, Finland, Esthonia, Lathvia and Russia (Baltic sea coast, White sea coast, Siberia and Caucasus). Number of cases are found in Prussia, Spain, Portugal, Italy, Balcanic States, Crete and Cyprus. In Turkey leprosy is quite prevalent.

Leprosy is very common throughout the whole Asia. In no part of Asia can one fail to find cases of leprosy. China, Japan and India give more than 100000 cases each. There are particularly many lepers in Ceylon, many of whom are treated in a leper asylum at Hendela, near Colombo, which is believed to be one of the best in the world.

Africa is probably the original home of the disease/Egypt/ from whence it spread to Asia and Europe. Leprosy is spread all through Africa, but less common in West Africa. Of special interest is the fact that there are over 4000 cases of leprosy on the Island of Madagascar. No figures are obtainable from the interior of Africa.

In Australia the disease is known principally in Queensland and New South Wales, and also in Victoria. In New Zealand it is known among the Maoris. Many cases are found in New Caledonia, Tahiti and the Sandwich Islands. More than 4000 cases are found on the island of Java. Disease is very prevalent in the Philippines.

In South America it appears to be common in Colombia, Venezuela, the Guianas and Brazil, but whether it is rare or simply not recognized in other countries is unknown. Leprosy is well known in Central America, and is very common in the West Indies, just as well as in Mexico. It is rather rare in Canada, and is spread sporadically over the United States of America.

In 1902 a Government Commission took a census of the lepers in the United States and found 278. /White, Vaughan, and Rosenau, Document No. 269, 57-th Congress, 1-st Session, 1902./ Of these two hundred and seventy eight cases 145 were born in the United States and 186 probably contracted the disease in the United States. Only 72 of these lepers were isolated and 205 were at large. In 1909 Brinckerhoff

studied the prevalence of leprosy in the United States and found 139 cases, of which 50 were in Louisiana, 20 in Florida, 16 in Minnesota, and 12 in Texas.

During the calendar year 1911 there were reported in the continental United States 41 cases of leprosy as coming to official notice during the year. These 41 cases were distributed among 19 States. There was reported as being present January 1, 1912, a total of 146 cases of leprosy in the continental United States. Of these, 41 were new cases coming first under official recognition during the year 1911. These cases were under supervision of the health authorities of 17 States. This number, however, represents only a part of those present, as in many States the disease is not notifiable and in others the requirement of notification is for various reasons difficult of enforcement. According to the "Annual report of the Surgeon General of the Public Health Service of the U.S. for the fiscal year 1912", leprosy has been specifically made a notifiable disease in the following 18 States and the District of Columbia: Alabama, California, Connecticut, District of Columbia, Florida, Idaho, Illinois, Indiana, Iowa, Massachusetts, Nebraska, New Jersey, NEW York, Oregon, Pennsylvania, South Carolina, Utah, Washington, Wisconsin. It is also notifiable in Hawaii, Porto Rico, and the Philippine Islands. In Michigan a regulation of the State board of health specifies that cases of leprosy shall be reported for statistical purposes. In certain other States the law requires that cases of all infectious or contagious diseases shall be reported, and among these leprosy would naturally in most cases be included. However, in the absence of a statement of the disease that shall be construed to be infectious or contagious, it would appear to be left to the personal opinion of each practicing physician as to which diseases came properly under such classification, and were, therefore, notifiable. Under these conditions the reports are likely to be incomplete.

In accordance with the resolution adopted by the Tenth Annual Conference of State and Territorial Health Authorities with the Public Health Service, held in June, 1912, leprosy is one of the diseases the occurrence of cases of which the State health authorities report to the Public Health Service. For the making of these reports ~~the following~~ special blanks has been prepared.

During the year of 1913 the occurrence of the following cases of leprosy has been reported by States:

California-----	5 cases, -1 deported.
Colorado-----	1 " " " " " "
Florida-----	1 " " " " " "
Massachusetts-----	2 " " " " " "
Indiana-----	1 " " " " " "
Michigan-----	2 " " " " " "
Minnesota-----	2 " " " " " " ---total---14 cases,
Mississippi-----	1 " " " " " "
New York-----	1 " " " " " "
Rhode Island-----	1 " " " " " "
Texas-----	2 " " " " " " ---one died.

This report, however, can't be considered as complete one. More complete are the "Annual Reports of the Surgeon General of the Public Health Service of the United States" beginning

the year of 1915.

REPORT OF LEPROSY, BY STATES, FOR 1915.

	Reported during the year:	Present on the 1-st of Jan., 1916:
District of Columb.-----		1 case
Louisiana-----		102 " " "
Massachusetts-----2 cases		12 " " "
Michigan-----		3 " " "
Minnesota-----1 case-		10 " " "
Oregon-----1 case- (died)		-----
Tennessee-----1 case- (died)		-----
Washington-- some cases at Diamond Head, not under State control.		

An additional information given later:

	Reported during the year:
California-----	7 cases,
D. of Columbia-----	2 " " " "
Louisiana-----	19 " " " "
South Carolina-----	1 " " " "
Wisconsin-----	1 " " " "
Texas-----	1 " " " "

REPORT OF LEPROSY, BY STATES, FOR 1916.

	PRESENT JAN. 1, 1916.	Reported during the year.	Died or removed.	Present Jan. 1, 1917.	I S O L A T E D. under State contr.	under local contr.
Arcansas "		1	1			23
California 24		13	14	23		1
Colorado		1		1		1
Connecticut		1		1	1	
D. of Columb. 1				1		1
Indiana		2		106	91	
Louisiana 105		21	36	1		1
Maryland 1				9	9	
Massachusetts 12		2	5	9		9
Minnesota 10			1			
Montana 1		1		1		1
New Jersey 1						1
Ohio 2		1	1	2		2
South Carolina 1		1		1		1
Utah		1		1		1
Washington		2	1	1		
TOTAL:	153	49		158		

REPORTS OF LEPROSY, BY STATES, FOR 1917.

STATE.	Present	Reported	Died	Present	I S O L A T E D .	
	'Jan. 1. 1917.	'during the year 1917.	'or re-moved 1918.	'Jan. 1, 1918.	'under State control	'under the local control.
California	27	20	16	31		31
Colorado	1			1		1
Connecticut	1			1		1
D. OF Col.	1			1	1	
Illinois	1			1	1	
Indiana	1			1	1	
Louisiana	91	9	9	91	91	
Massachusetts	9	3	1	11	11	
Minnesota	7			7		7
Mississippi		3		3		3
Montana		1		1		1
New Jersey	2	1	2	1		1
NEW YORK	20	4	8	16		12
North Dakota	1			1	1	
Rhode Island		1		1	1	
Texas	(2)	4	2	(2)		(2)
Utah	1		1			
Washington	1			1	1	
TOTAL:	166	46		171		

REPORTS OF LEPROSY, BY STATES, FOR 1918.

STATE	Present	Reported	Died	Present	I S O L A T E D .	
	'Jan. 1. 1918	'during the year 1918	'or re-moved 1919.	'Jan. 1, 1919.	'under State control	'under the local control.
Arizona		1	1			
California	31	27	24	34		34
Connecticut	1	2		3	2	1
D. C. ----	1		1			
Florida	7	7	1	12	11	
Indiana	1		1			
Louisiana	91	15	21	85	85	
Massachusetts	11	3	3	11	11	
Minnesota	8	2		10		10
Missouri	2			2		2
Mississippi	3		2	1		
Montana	1			1		1
New Jersey	2	3	2	3		3
New York	22	2	1	23		13
North Dakota	1			1		1
Ohio	1	1		2		2
South Carolina	2			2		2
Texas				18		
Virginia	1			1		1
TOTAL:	186	63		209		

REPORTS OF LEPROSY, BY STATES, FOR 1919,

STATE	Present	Reported	Died	Present	I S O L A T E D .	
	Jan. 1. 1919.	during the year	or re-moved	Jan. 1. 1920.	under State control	under local control.
California	34	16	11	39		39
Connecticut	3	1	1	3	2	1
Colorado		3	3			
Florida	13			12		
Illinois		2	1	1		
Louisiana	91	16	20	87	87	
Massachusetts	11	2		13	13	
Michigan		3	2	1		
Minnesota	9			9		9
Mississippi	1			1		1
Montana	1			1	1	
New Jersey	4		1	3		3
New YORK	26	6	6	26		10
North DACota	1			1		1
Ohio	2		1	1		1
Oregon		1		1		1
South Carolina	2			2		
Virginia	1			1		1
Washington		2		2		
Wisconsin		2	1	1		
TOTAL:	199	54		214		

No statistical data concerning leprosy in the United States are given in the "Annual reports of the Surgeon General of the Public Health Service of the United States" for the years 1920, 1921, 1922, and 1923.

According to "Weekly Public Health Reports", during October, November, and December of 1920 the occurrence of the following cases of leprosy has been reported by States:

- California -----2
- District of Col. ---1
- Florida-----3
- Indiana-----1
- Kansas-----1
- Louisiana-----1
- New Jersey-----1

 Total: 10

During January, February, March, 1921:

- California-----8
- Florida-----1
- Illinois-----1
- Louisiana-----4
- Minnesota-----1

 Total---15

During April, May, June, 1921:

Alabama-----1
Arizona-----1
California-----7
Florida-----2
Connecticut-----1
Illinois-----1
Louisiana-----6
Massachusetts---1
Michigan-----2
New Jersey-----1
Oregon-----1
South Carolina--1

TOTAL: 25

During July, August, September, 1921:

California-----2
D.C.-----1
Florida-----1
LOUISIANA-----2
Minnesota-----2
Pennsylvania-----1

TOTAL: 9

During October, November, December, 1921:

California-----8
Florida-----1
Illinois-----2
New Jersey-----1

TOTAL: 12

TOTAL FOR 1921:-----61 cases.

During January, February, March, 1922:

California-----4
Florida-----4
Louisiana-----4
New Jersey-----1
Ohio-----1

TOTAL: 14

During April, May, June, 1922:

Arcansas-----1
California-----6 , one deported to China.
Florida-----1
Louisiana-----6
Minnesota-----1
Mississippi-----2
Virginia-----1

TOTAL: 18

During July, August, September, 1922:

Arkansas-----1
California-----11
Illinois-----1
Kansas-----1
Louisiana-----1
Massachussetts--1
New York-----2

TOTAL: 20

During October, November, December, 1922:

California-----3
Connecticut-----1
D. C.-----2
Florida-----2
Louisiana-----1
Mississippi-----1
Oregon-----1

TOTAL: 11

TOTAL FOR 1922:-----52 cases.

During January, February, March, 1923:

Arizona-----I
California-----5
Florida-----I
Minnesota-----I

TOTAL: 8

During April, May, June, 1923:

California-----II
D. C.-----I
Florida-----4
Illinois-----I
Louisiana-----I
Maryland-----I
Washington-----I

TOTAL: II

During July, August, September, 1923:

Arizona-----I
California-----2
D. C. -----I
Florida-----1
Louisiana-----7
Minnesota-----I

Total: 13

TOTAL FOR 9 MONTHS OF 1923----32 cases.

The distribution of leprosy and the total number of lepers to-day in the continental United States are variously stated. The number actually registered is about 200, approximately half of which are in Louisiana, a few in each of the other States bordering on the Gulf of Mexico, and the remainder scattered, but chiefly confined to New York, Massachusetts and California. The opinion generally held by leprologists is that the total number in this country is at least 500, and there are some who believe that it will run up to 2000.

The insular possessions of the United States have large numbers of lepers. (Hawaiian Islands, Philippines and Porto Rico).

Particularly interesting in this respect are Hawaiian Islands. By some leprosy is supposed to have been introduced into Hawaiian Islands by the Chinese, many of whom settled there about the middle of the nineteenth century. The reason for that is the first name given by natives to that disease—"ma i p a k e"—, meaning "Chinese disease". The missionaries who came here in 1820 reported that some of the natives were afflicted with what they called "scrofula", "which was not only frequently met with but extremely malignant". In 1865 King Kalakaua called an council to consider means of checking its spread. Hospital for examination and treatment of persons afflicted was established in November of the same year. It is known now as Kalihi Observation and Detention Hospital. In addition to that there was established a settlement on the island of Molokai, about 80 miles (128 kilometers) from the island of Oahu and Honolulu (KALAUAPAPA LEPPER COLONY.).

These institutions started their work in June of 1866. During the first 10 years 1587 lepers were isolated. The largest number was in 1873,----487 cases,---while in 1886 there were only 43 isolated, with total number 590. In 1890 there were 1213 lepers present.

In 1904 there were 856 lepers present on the Territory of Hawaiian Islands. The statistics gives the following figures for Hawaiian Islands:

YEAR.	New cases reported:	Present on Jan. I of the following year:	Died or removed:
1911	65	696	
1912	28		
1913	27(Jan.-July)	726(on July I,1913).	
1914		696	
1915	70	670 (the other figures give 736)	
1916	82	703	
1917	79	638	92
1918	93	657	75
1919	86	685	58
1920(Oct.-Nov.* -Dec.)	24		
1921	103		
1922	79		
1923(Jan.-Sept.)	49		

The total number of lepers present on the Territory of Hawaiian Islands is not given in any of the reports of the United States Public Health Service after 1919.

In the Philippines the disease is also present to such an extent that its control constitutes one of the important functions of the Health Authorities. According to the "U.S.Public Health Service Reports" for 1912, in round numbers there have been collected in the Philippine Islands and transferred to the CULION LEPPER COLONY 6000 lepers. Of these about 3000 came from the island of Cebu. This island has a population of approximately 700000, and as the total population of the Philippine Islands is approximately 7000000, it will be noted that although it has been only 1/10 of the population of the entire islands, it has furnished approximately 50% of the lepers up to date. On this island many instances have come to light which indicate that leprosy is so called "house disease".

Statistics for the Philippine Islands:

YEAR.	New cases reported:	Died or removed:	Present on the I-st of January:	Present Jan. I-st, following year:
1911	1142		2197	2754
1915	841			4472
1916	932	468	4472	4936
1917	778	495	4919	5146
1918	1015	1835	5129	5298
1919	599	642	5298	5108

No reports are given beginning 1920.

Statistics for Porto Rico:

Jan. I, 1912	28	lepers present.	10 new cases.
" " " 1916	37	" " "	3
" " " 1918	38	-----	6
" " " 1919	37	-----	4
" " " 1920	37	-----	4

The disease is caused by Hansen's bacillus, which morphologically has the greatest resemblance to the tubercular bacillus, and is stained by the same methods. There are three views with regard to the cultivation of the bacillus:-

1--That it has never been cultivated.

2--That it can be cultivated as a streptothrix or nocardia.

3--That it can be cultivated as a bacillus.

The first is still the most generally accepted view.

The mode of transmission is not really known, although various statements are made with an air of authority. On arrival inside the body, the bacillus is supposed to come to rest inside a lymph space somewhere, and there to grow and form colonies, from whence it can be disseminated through the body, perhaps by the blood and the lymph streams.

Mere contact with those suffering from the disease is probably sufficient if prolonged enough, because so many bacilli are discharged from the nose and from open ulcerations. On the Island of Cebu (Philippine Islands) many instances have come to light which indicate that leprosy is so called "house disease". The bureau of health is now collecting statistics, and already has a number of instances on hand in which cases of leprosy have developed year after year the first leper was taken from the house. We have to add, however, that the Catholic Sisters and others who spend their lives in nursing and caring for these patients, are practically never infected (only two exceptions). No doubt they are well aware of the risk and are very careful, but they do not avoid contact with the sick. It has always been thought that sexual intercourse plays a very great part in the spread of the infection. There is no evidence that leprosy is inherited, even when both parents are lepers, and there are many examples of the contrary/ MacCallum/.

The incubation period is entirely unknown, and must necessarily remain so until the method of infection and the date of the onset of the disease is discovered. Hence the statements made by the different observers that it may last for a few weeks or months up to many years. The method of invasion is also unknown. According to Sticker, it begins with nasal symptoms---blocking of the nose, epistaxis, and frontal headache; the other observers suggest that it begins with the skin eruptions. The truth appears to be that, so far, the initial lesions and their symptoms, if any, have escaped notice.

From the public health point of view, when we know so little about the transmission of leprosy, we must consider leprosy as a disease which appears to require for its spread from the sick to the well a more or less prolonged or intimate contact. It is, however, an infectious disease due to a specific microorganism, and each case represents a focus of infection from which other persons may become infected if their association with the sick is sufficiently intimate or prolonged.

In the "Annual report of the Surgeon General of the Public Health Service of the U. S. - For the fiscal year 1913" we find the following statement: "There are comparatively few cases of leprosy now in the U.S.A.; but if this number is to be kept small and the burden of an ever increasing number of lepers is not to be placed upon future generations, it is necessary that all foci of the infection be controlled and lepers segregated. This segregation will necessarily work some hardship on the persons affected, but probably not so great a hardship as that put upon these unfortunates at the present time in the average American community. AS the segregation of lepers will be for the welfare of the community at large, it should be made as agreeable and as devoid of inconvenience to the sick as it is practicable to

make it."

Lepers are taken care of in various ways in the different States. Only three States, California, Massachusetts, and Louisiana, have established institutions for their segregation and care. Other States attempt to control their movements by confining them to their home premises. Other States ignore them entirely. The fact that number of lepers being reported every year, and some of them are native Americans, brings to general attention the need for some definite policy for the control and segregation of these unfortunates.

The number of cases in many of the States is so small that it has been considered economically impracticable to make satisfactory provision for their control and care. For the sanitary welfare of the community and the future generations it is imperative that adequate provision be made for all cases. It became apparent therefore that some provision should be made for the care of lepers by the Federal Government.

This question was discussed in the Annual Report of the Public Health Service for the fiscal year 1914, and again in 1915. A bill providing for a home for lepers was introduced in the Sixty-Third Congress, but failed of passage. In the first session of the Sixty-fourth Congress a bill (H.R. 193) "To provide for the care and treatment of persons afflicted with leprosy and to prevent the spread of leprosy in the United States" was passed by the House of Representatives on May 4, 1916.

A similar bill (S. 4086) has been favourably reported to the Senate by the Committee on Public Health and National Quarantine.

After very diligent search by the Public Health Service for a suitable location, the Louisiana Leper Home, which had been in operation a number of years at Carville, was purchased January 3, 1921, from the State of Louisiana. Since the date of acquisition by the Government, this home, officially known as U.S. Marine Hospital NO 66, has been extensively rehabilitated and enlarged, and, at the present time, affords accommodations for 172 lepers. All available beds are constantly occupied, and there is a waiting list of approximately 100 known lepers who desire to take advantage of the facilities of the institution. In view of the fact, however, that there are, in accordance with the most conservative estimates of authorities competent to judge, there are about 1000 persons suffering from leprosy in the United States, the time is not far distant when Congress will be asked to appropriate funds for the care of additional 500 patients/Edward R. Marshall/.

In San-Francisco Leprosy Hospital, San-Francisco, Cal., there are about 20 cases at present.

Early diagnosis, compulsory segregation and treatment of isolated cases, -----these are three main problems at present.

B I B L I O G R A P H Y .

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