

REPRINTED ARTICLES

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WHY IS LEPROSY DECREASING IN NORWAY?¹

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Presented by Major General Sir Leonard Rogers.*

In Norway there are now about ninety lepers, whereas in 1856, that is to say only a little more than seventy years ago, there were about 3,000, or more exactly stated 2,858. This decrease from about 2 per cent. to 0.03 per cent. of the population is so great and so remarkably rapid that I have been led to think that it might be of some interest to inquire a little more closely into the causes which must be presumed to exist for this phenomenon, so satisfactory for our country and so interesting for medical science.

As we know, there are some who think that leprosy must be classed together with the ordinary epidemic diseases which flare up and die out without it being possible to give any definite explanation of the reasons therefor. Apart from the fact that this view is highly unsatisfactory from a scientific standpoint, and that it means self-surrender on the part of practical medicine, it must be obvious to everyone that we must, at any rate to be able to speak of epidemics, reckon with *centuries* in the history of leprosy, where in ordinary diseases we reckon with years. The comparison must at any rate be said to be somewhat far-fetched and halting, but nevertheless we ought to try to elucidate the matter a little.

In the following I shall try, with the greatest possible brevity, to give a picture of the course of leprosy in this country. Unfor-

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tunately, I must trouble you with some sets of figures, but these shall be as few and as short as possible.

HISTORY OF LEPROSY IN NORWAY

Already in the year 1000 A. D. leprosy must have been fairly widespread in this country, for from the beginning of the 11th century we find laws aiming at the protection of the healthy population against this disease, which at that time, here as elsewhere, must have been regarded as contagious. Further details are not known, but in Norway, as elsewhere in Europe, the diffusion of the disease must have reached its summit in the 13th century. At this time three new hospitals for lepers were established, two in Bergen and one in Tonsberg. The disease must then have followed the descending curve which we know from history to have occurred, for we see that in 1545 St. Jörgen's Hospital in Bergen, which at that time was, so far as we know, the only leper hospital in West Norway, ceased to be a hospital for leprosy and was converted into an ordinary hospital, with a small ward reserved for lepers. Respecting this decline and subsequent extinction of leprosy in Europe there has been much writing and discussion, and it may now and then be heard stated from medical quarters that the disease died out "of itself," i.e., without any special measures being taken against it. Time does not admit of going further into this question, but a decided protest must be entered against the view that no special measures against leprosy were adopted in the Middle Ages. Never, we may believe, have the precautions for the combating of this malady been stricter than precisely in the Middle Ages. The more I have sought to penetrate into the conditions prevailing at that period, the more evident it has become to me that many innocent persons have been made to suffer for the horror with which the leper was regarded; that is to say, that many who suffered from chronic skin-diseases have been shut in for life as being lepers, owing to a wrong diagnosis. By this it is not intended to assert that other circumstances besides isolation have not played a role in bringing about a decrease in the malady. As a purely personal idea, I have not been able to avoid the thought that the severe epidemics of so-called "plague" must have been of significance. Thus the greatest epidemic that has visited Northern Europe, the "Black Death," about the middle of the 14th century, must undoubtedly have caused quite a sweeping clearing out of the lepers, at any rate in this country.

The above-mentioned decrease in leprosy in Norway must have lasted for some time, because at the beginning of the 17th century we have an official statement to the effect that leprosy at that time was not so wide-spread as before. But in 1654 it was complained that St. Jørgen's Hospital, where at that time there were 29 lepers and only 23 non-lepers, could not accommodate all the lepers who needed treatment; and in 1670 there were 49 lepers and only 8 other patients in St. Jørgen's, whilst there were constantly repeated complaints regarding the diffusion of the disease in certain districts in West Norway. Somewhat later, in 1720, the number of lepers in the hospital had risen to 58, and the demand for room was steadily increasing, so that the hospital had to be enlarged both in 1745 and 1754. And at the end of this latter year there were 135 lepers in St. Jørgen's, a greater number than ever before, in spite of the fact that in 1713 a comparatively large hospital for lepers had been erected at Reknes near Molde. The increase in the disease seems therefore to be beyond doubt. There are several things which would seem to indicate that this had led to the establishment of several small hospitals, or, more correctly speaking, hospital wards for lepers along the west coast in the course of the 18th century. These seem, however, to a large extent to have been abolished again by the end of that century or in the beginning of the 19th century. In the first quarter of the latter we hear little or nothing about the disease; and it is highly probable that it had again declined somewhat, for in 1825 the number of lepers in St. Jørgen's Hospital was only 98, as against 135 in 1754 as stated above. In this connection I must not omit to mention that at the close of the 18th century Norway was going through a period of considerable improvement in many respects, whereas, on the contrary, the first part of the 19th century, with its wars, distress and misery amounting to absolute famine in some districts, subjected the Norwegian people to a strain the like of which we cannot find in the mediæval history of our country. It can therefore not cause any surprise that some years later, about 1830, we note the first but certain signs of the last great wave of leprosy in Norway. For leprosy, as we all know, is a disease that belongs first and foremost to want and misery. And now we begin to get a more certain grasp of the extent and progress of the disease. The enumerations of lepers made in 1836, 1845, 1853, and 1856 showed respectively 650, 1,125, 1,695, and 2,079 lepers, a more or less steady increase of about 400 for each census. But even this last enumera-

tion with the highest figures—which was carried out by the doctors whereas the former were made by the clergymen—does not give a true picture of the situation. A subsequent more exact examination and correction shows that at that time (1856) there were at least 2,858 lepers, as stated above. A similar correction of the other enumerations would, of course, likewise have shown much higher figures. From 1856 we have annual countings and we can follow the course of the malady in detail on the accompanying graphs.

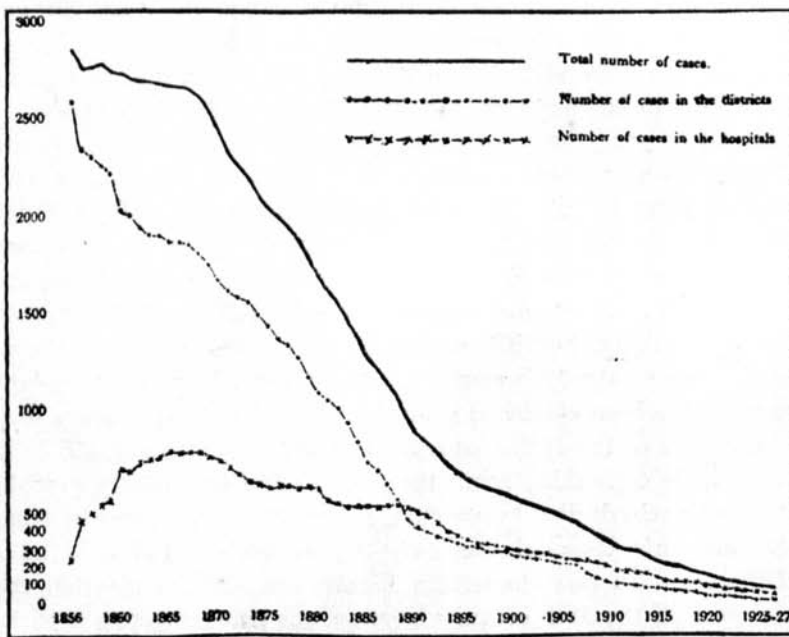


TABLE 1.—Course of leprosy in Norway from 1856 to 1927.

There is seen a slight decline in the number of cases until about 1868, when there were 2,650 lepers. From that year there comes a steadily increasing fall until 1896, from which year the uniform decrease continues, although at a somewhat slower rate. The same will be seen from the columns showing the number of new cases. The increase in the five-year period 1901 to 1905 is due to the fact that the practice of always assigning the newly-notified cases back to the year of their commencement had for practical reasons to be abandoned.

From this brief account of the course of the disease we must conclude that leprosy has been endemic in this country for at least

1,000 years, even though there has been some fluctuation in its diffusion and intensity. Furthermore, we may venture to express the confident hope that the malady is now not far from becoming extinct here; for no new case has been discovered since the summer of 1926, that is to say during two years, probably for the first time in all these 1,000 years.

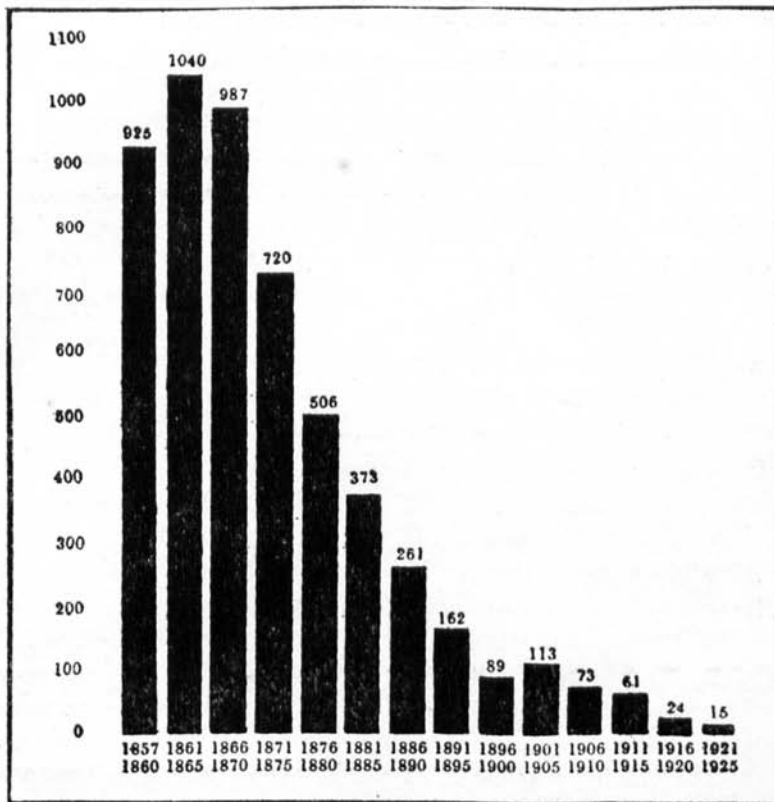


TABLE 2.—Number of new cases in five-year periods from 1857 to 1925.

CAUSES OF THE DECREASE

If we now try to form a well-founded opinion as to the causes of the great decrease in the disease since 1856, we must first examine whether leprosy here in Norway during this time has offered any signs that might indicate that it is a disease which is dying out of itself. Strictly speaking, it is not possible to give an answer to this question, seeing that the malady has by no means been left to

itself. Quite the contrary; it has been vigorously combated in various ways.

IS THE DECLINE SPONTANEOUS?

When an ordinary epidemic dies out, this usually finds expression in the fact that the grave cases become more rare and the disease altogether assumes a milder course. Applied to leprosy, this would mean that the grave forms of the disease, the nodular leprosy, would become less frequent and the milder, smooth (anæsthetic) forms would be entirely preponderating. Both from what I had formerly learned from Danielssen and Armauer Hansen and from my own experiences throughout thirty-five years, it must be said that the horrible, repulsive cases are now rarer than formerly. Apart from the fact that a great accumulation of severe cases as in former days must make a far stronger impression than some few such cases, as we have now, we may surely be entitled to assume that the improved treatment of these unfortunates, both in and out of the hospitals, has succeeded in eliminating the most hideous features of the malady and in ameliorating the clinical course in these cases. But this applies to both forms of the disease, the anæsthetic and the nodular.

If we have recourse to the Norwegian official statistics in order to find the proportion between nodular and anaesthetic cases we meet with the figures at the end of the years 1885, 1890, 1900, 1910, and 1925: For these years the percentage of anaesthetic forms was respectively, 43, 40, 37, 56 and 72. Whilst the number of anaesthetic cases remains nearly unchanged, or rather declines a little until the year 1900, there is seen a growing and considerable preponderance of such cases in the last twenty-five years, which according to theory should point to a spontaneous dying out of the disease. But here we are confronted with one of those dangerous statistical reefs, on which we may easily suffer shipwreck if we do not steer very cautiously. The average duration of the anaesthetic forms is more than twice as long as the nodular. If now the number of fresh cases is small, as it has been of late years, the nodular lepers die out, whilst the anaesthetic patients live long and constantly appear again on the annual lists. There are still living many anaesthetic lepers who have been suffering from the disease for much longer than half a century. If we take all the cases entered in the statistics we shall be able to get more accurate results with respect to the relation between the two forms. Of all cases reported up to the years 1875,

1880, 1890, 1900 and 1910 the anaesthetic lepers constituted respectively 33, 30, 31, 31, and 33 per cent. of the total number, thus showing no change in the proportion from 1875 to 1910, although leprosy as a whole has decreased very rapidly in these thirty-five years. From 1915 on I have a very close personal knowledge of all new cases, which altogether amount to 41. Of these cases 17, or 42.5 per cent., were anaesthetic, and the latest case is a very grave nodular one, which seems likely to take a very acute, malignant course. If we were to take the forms of the disease as an indication of its dying out in this country, we should thus undoubtedly have to wait a long time before leprosy disappeared of its own accord.

THE EFFECTS OF ISOLATION

If we now proceed to consider the importance of *isolation*, it will be seen from Table I that in 1856 there were only about 235 lepers in the hospitals. The number rapidly rose, however, to the maximum of 1864 and remained more or less unchanged until 1870, but the number of patients in the hospitals never exceeded 800, a figure which was very far from half the number of lepers *outside* the hospitals at that time. And yet it was then that the rapid decline of the disease was beginning. From 1870 the number of lepers in hospital rises in proportion to those not in hospital, and in 1890 there were more patients *in* than *outside* the hospitals. At the present moment (1928) fully two-thirds of all lepers are isolated in hospitals. These are the naked figures, but they must be treated with the greatest caution if we are to draw conclusions from them; for the individual figures have very different values and importance in the question here under discussion. The significance of the comparatively small number of isolated patients in the hospitals will be still further reduced when we remember that many of these lepers lay in hospital only for a relatively short time during their illness. Some came in only to die, after having lain ill at home for many years. But on the other hand, there is one circumstance that invests the comparatively few isolated patients with *far greater importance* than their number alone can give, namely, the fact that we have always tried to isolate the worst cases, that is to say, *those in which the danger of infection was presumably greatest*, whether the danger lay in the form of the disease itself or in the conditions prevailing in the homes. Accordingly I venture to think that hardly more than 10 per cent. of those who at the moment are living in their homes present any great

danger for their surroundings. They are for the most part old anaesthetic cases or nodular cases in which the disease has run its course. Many of these are undoubtedly cured, even though it may be impossible to furnish strictly scientific proofs of the cure.

Furthermore, the isolation of lepers in Norway is not confined merely to placing the patients in one or other hospital. The Norwegian law requires that lepers living in their own homes shall "be securely isolated from those amongst whom they live." This in practice means that every leper (with the exception, however, of married couples who wish to live together) shall have, not only his own bed, but also his own room, where he eats by himself with his own table utensils, etc., and where he must remain when he is not out in the open air. This manner of isolation, though not at first in such clear and definite form as was the case later, began, it must be noted, several years before the demonstrable decline of the disease and long before the infection theory was recognized, namely, about the year 1850. Of course, none of us is so simple as to believe that all such prescriptions were always and everywhere followed, but nevertheless they have been of significance, a point to which I shall later revert. Neither must it be forgotten that the great increase in the prevalence of the disease from 1830 onwards must have created a feeling of uneasiness and dread even in the most unimpressionable and indifferent amongst the population, which in many cases led to the result that people instinctively tried to avoid these sufferers. But that the indifference must have been very great cannot be denied. Thus we see that, of the lepers found to exist in 1856, no less than 70 had got married, notwithstanding that they had presented unmistakable signs of leprosy.

In explanation of this, for us so incomprehensible circumstance, it must be remembered that leprosy had during centuries been declared both scientifically and officially to be a non-infectious disease. And as regards its hereditary transmission, which by no means proved to be a fact in all cases, this was far too indefinite and vague a conception to counteract the effects of the strongly fatalistic tendency in religious sentiments and in views of life on the whole, a tendency widespread and deep-rooted amongst large sections of the population. To this comes a factor to which I for my part attach very great weight in the question here under discussion.

EFFECTS OF ECONOMIC DISTRESS

The unhappy years of distress, which I have mentioned above, created a deterioration not only in economic and social respects, but also, what is here a matter of great importance, in *hygiene*. Sanitary requirements were at that time almost non-existent and cleanliness was an unknown luxury for most people. Therefrom resulted the disquieting prevalence of scabies, a disease so closely associated with dirt. And in old times almost all lepers are said to have suffered also from that malady. From about 1830, however, the country began to recover, although slowly. The economic situation improved, and therewith came roomier dwellings, better food and clothing, better and more spacious conditions of life on the whole. And by degrees there also was awakened a sense of the importance of better hygiene, of greater cleanliness.

THE VALUE OF HEALTH COMMITTEES

As stated above, this work of enlightenment did not begin to make real progress before the years following 1850, when the establishment of Health Committees was commenced in those districts in which leprosy was prevalent. After some attempts of a more private and voluntary nature, these Health Committees were established by law in 1857. Dr. Höegh, who in 1854 was appointed to the very important and exacting position of the first Chief Medical Officer for Leprosy, had already before his appointment been working very energetically for the establishment of these committees. He also issued on his own account a small publication for the general public dealing with health conditions, *Folkets Helse* ("The People's Health"), which was specially intended for circulation in the districts where leprosy was prevalent. When we remember that it was at that time supposed that leprosy could *arise spontaneously from bad hygienic conditions*, it will be understood that the programme and mode of action of these Committees were bound to be of *general hygienic nature*. This appears very clearly from the excellent instructions and directions for guidance which the chief medical officers appointed for dealing with leprosy sent round to the district physicians in the areas where the disease prevailed. Thus, in a circular dated 24th December, 1858, to the Chairman of the Health Committees, Dr. Löberg, who in February the same year had been appointed chief medical officer for dealing with leprosy in the southern part of Norway, urges the district physicians to come forward as instructors of the people by means

of public lectures respecting hygienic reforms in the country districts. He also makes the following remark: "It is important that the Chairman of the Health Committees should lay down a proper plan for their operations, so that the measures they find it necessary to put in force for the promotion of hygiene in the rural districts may be supported by an explanation of and information respecting the general fundamental principles on which a rational hygienic system is based." In the next place, there was given fairly detailed advice as to how the various hygienic problems, whereof shall here be mentioned only *the housing question, clothing, foodstuffs, cleanliness, and the care of children*, ought to be dealt with at the meetings of the Health Committees and in public lectures. *It is recommended that the lepers shall be isolated from the healthy population*, attention being drawn to the fact that "the presence of lepers in rooms frequented by healthy individuals must of necessity in many respects be inconvenient and detrimental, especially if the disease is far advanced."

Marriage between lepers, and between lepers and healthy persons, ought to be discouraged. Finally, it is enjoined upon the separate members of the Health Committees that they shall keep under close observation every individual leper in the district and that everything concerning these lepers shall be constantly discussed at the committee meetings. Thereto are added excellent and detailed instructions for the members of the committees as to what they have to see to with respect to hygiene and to the lepers in their districts. Of the contents of these instructions it shall here merely be mentioned that the members are enjoined to take care that the *lepers observe cleanliness in all respects, that so far as possible they live in separate rooms, or at any rate sleep alone, and use separate utensils, that they shall never be employed as wet-nurses or nursemaids and shall, if needy, never be sent by the parish from farm to farm as boarders*. All these prescriptions may perhaps seem to be of an altogether too theoretical character. In practice, however, they have undoubtedly been of great benefit. And there is no reason to doubt that Dr. Höegh is right when, in his report for the year 1857, he makes the following statement: "That the Health Committees have already done good service, by awakening the attention of the public to various unfortunate conditions, is fully proved, and it is no less certain that not a few of the district physicians with praiseworthy zeal, and some indeed with

talent, have striven to arouse in the people a desire for something better."

DISCUSSION

Thus we see that already early in the 1850's there had begun to be awakened a realization of the fact that intimate and unhindered intercourse with lepers involved a danger that the disease might be spread to others. It is obvious that this conception must have had an influence on the progress of the disease in this country, even though its infectiousness was not yet clearly and distinctly realized either by the learned or the unlearned.

So far as we now can see, leprosy, under the existing conditions in Europe, cannot be described as being a *very* infectious disease. As to the paths of infection and the mode or modes of transmission we do not know very much, but everything indicates that special circumstances and conditions are required in order that transmission may take place, and in general an intimate intercourse of rather long duration with lepers is necessary for the transference of the malady to others. According to investigations which I have previously carried out (Lie, 1911), the years of childhood seem to constitute the most dangerous time. The same result has been arrived at by Leonard Rogers in India. On close investigation of the situation as regards children in leprous families we find many things of considerable interest. The children examined by me came from 481 marriages in which one or both of the parents were lepers. In 230 of these the *father* was leprous, and of the 769 children of these marriages 79, or 10.7 per cent., were leprous. In 223 of the marriages the *mother* was a leper and of their 648 children 106 or 16.36 per cent., were leprous. And finally there were 28 marriages in which *both father and mother* were lepers, and of their 74 children no less than 29, or 39.19 per cent., were leprous. Somewhat similar although smaller figures have been found by Sand (1911) in his statistics from the north of Norway. Another statistical return I may also mention in this connection. It is from Iceland and prepared by District Physician Thoroddsen (1915). With his thorough knowledge of persons and conditions, acquired in the course of forty years, he found that on the farms where there had been poor lepers as boarders, 10.04 per cent. of their associates became *leprous*, whereas on the farms where in the same period of time there had been no

lepers only 1.52 per cent. of the people became *leprous*. It is difficult, or impossible, to interpret these statistics as meaning anything else than that it is the intercourse with lepers that is the great danger, and the more intimate the intercourse is, the greater is the danger. Therefore, as already stated, every circumstance that diminishes the intimate intercourse *must also diminish the danger of transmission and diffusion of the disease*. And as I have endeavored to show above, such conditions as were bound to contribute to preventing the diffusion of the disease had already begun to prevail in Norway several years before the great and persistent decline in leprosy commencing from 1868 onwards.

The course of leprosy in Norway must be regarded in connection with the whole economic and cultural history of the country. The increase and decline of the malady seem to follow, at some distance, periods of depression and prosperity in the country. This phenomenon seems to become clearer and more distinct the nearer we come to our own times. The great decrease in the prevalence of the disease since 1856 must therefore be regarded in the light of the great progress the country has made during that time in all respects, and not least in hygiene and sanitation. And as an important factor in this respect *isolation*, conceived and applied as I have shown above, has played a considerable rôle.

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