

*Famous Norwegian Dermatologists

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Danielssen maintained his fundamental conception of the humoural pathology of leprosy to the end, though he had difficulty in reconciling this with modern theories. But Armauer Hansen was a typical representative of the ideas which characterised the era of Pasteur, and took an active part against the accepted ideas of the epoch in which he began his study of leprosy.

Hansen was born at Bergen in 1841 and belonged to a family of 16 children, most of whom made their mark in different vocations. Through force of circumstances he had, to a very large extent, to support himself during the course of his studies, and this greatly fortified his ideas of independence and prepared him for his hard work and the joy of fruitful labour. Already at the outset of his studies he was highly thought of by his companions on account of his brilliant intelligence and his great courage, and a very honourable scientific career was predicted for him. From the beginning he felt himself particularly attracted by pathological anatomy, but when he became assistant doctor to Danielssen at the Lungegaard hospital towards the end of 1860 the study of leprosy soon occupied his entire interest. The leprosy clinic had been so well organised by Danielssen that there was not much more to discover in that domain, and Hansen did not find himself particularly attracted towards clinical studies. He occupied himself little or not at all with private practice except in the earlier years.

The etiology of disease and hygiene became his field of labour. Except in leprosy this work was of a theoretical nature, but in everything that he produced one is struck with the simple clarity of his logic and the perspicuity of his scientific conception. In everything he had the faculty of expressing his ideas in a fashion which was simple, clear and persuasive, not only orally but especially in writing. And as his character was open, honest and frank, so was his critical sense acute. All these qualities created his success when he set out on the discovery and exposure of the cause of leprosy.

It is right to make clear that this work was far from

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easy at first, ous and often contradictory opinions. *Danielssen and Boeck*, whose opinion was authoritative, thought of leprosy—as we have seen above—as a dyscrasia of the blood, which was not due to any specific cause but which could result from a series of circumstances unfavourable to life. Spontaneous origin was, in their opinion, an exceedingly rare phenomenon.

In most cases leprosy was transmitted by heredity; though, strange to say, there might at times be several healthy generations interspersed. They admitted, however, that there should always have existed one leper in the direct line of descent. As this did not always occur, *Bidenkap* extended the conception of heredity to include collateral lines. Contrary to this *J. J. Hjort* opposed absolutely the principle of heredity and believed that every case was produced spontaneously. *Holmsen* also rejected the theory of heredity, but he thought the disease was specific and produced by a miasma which existed in certain regions. Lastly *Lochmann* said that leprosy was a specific disease spread most commonly by heredity, but rarely by contagion.

By deep theoretical reasoning and by conscientious examination of all that was known of the subject of heredity and of specificity of diseases from the scientific point of view, *Armauer Hansen* arrived at the result that it was necessary to establish a frank distinction between heredity and specificity. A specific disease, due to the action of a determined poison either of a chemical nature or organic, whether vegetable or animal, is not able to transmit itself by heredity, using this word in the scientific sense. It is then absolutely inexact to designate as hereditary a case of congenial syphilis; such a case is due to infection *in utero*, not to heredity. Thereafter he submitted leprosy as it was found in Norway to a profound and detailed examination, visiting and studying on the spot the places infected with leprosy throughout the whole country. As a final result he arrived at the conclusion that *leprosy should belong to the specific diseases which are spread by contagion*.

He conceded however, that at the moment (in 1873) he could not give any decisive proof in any direction, but he believed that he had collected as evidence certain phenomena appearing in the disease which found their most natural explanation if one admitted contagion, but which remained entirely inexplicable if one supposed heredity.

In support of his hypothesis of contagion he made in rabbits a series of inoculations with material from leprous nodules, but the results were absolutely negative. He began

to look for a specific cause of the disease. Although Danielssen had already searched for bacteria in leprosy without arriving at any result, Hansen resolved to continue in this direction. Hansen has himself written: "in this epoch which according to Cohnheim is 'mycophile' my research should be in this direction."

The result of this research was the discovery, now universally acknowledged, of the bacillus of leprosy. Hansen does not recollect exactly when he first saw the bacillus, but it would be in the year 1873. It was in the leprous deposits of cutaneous nodules and in the cellular elements specially described by Danielssen which Hansen called "the brown elements" that he first saw the microscopic rods, which he also found later in leprous deposits in the internal organs. He was tossed about between hope and fear; hope that he would make a remarkable discovery, and fear that he had committed a mistake.

The greatest difficulty was the lack of proper methods of staining, as the staining of bacteria was still very primitive at that time. Hansen employed a solution of osmic acid; but it was the staining of tubercle bacilli by Robert Koch which gave the excellent help in diagnosis of lepra bacilli which we have to-day.

The first demonstration of lepra bacilli was long in obtaining the entire approbation of his colleagues. They spared him neither doubt nor ironical expressions on the subject of his discovery, but his deep conviction of exactitude and of the importance of his discovery kept him busy with his indefatigable research to demonstrate bacilli in all undoubtedly leprous tissues. And after long years of investigation he succeeded and silenced all doubt and criticism. This was the first time that it had been demonstrated that a chronic disease could be caused by bacilli. It is useless to emphasise here the importance of this fact. It should be added here that Hansen himself emphasised that he had found confirmation of his opinion in the description of the evolution of leprosy in Surinam by Drogat-Landre in his book *La Contagion Seule Cause de la Lèpre*.

Hansen was not only a zealous partisan of Pasteur's ideas; he became also rapidly a convinced Darwinist, and he made himself in his country one of the most decided champions of Darwinism and of his conception of life. That is nothing remarkable for a man in modern times, but it was very difficult at the time of Hansen's youth. It then constituted a revolt against old, established theories, especially in the domain of religion. And in the course of the conflict

Hansen experienced how terrible and bitter the judgment passed on such a revolt can be. One particular reason, on account of which he fought the old conception of life and sought to defend the rights of the new scientific theories, was the *religious fatalism* which he met among the public in his campaign against leprosy. His constant and intense reminders of the necessity for prudence in coming in contact with lepers, as the disease could be transmitted by contagion, were often followed by rejoinders such as these: "it is predestined", or "that depends on God and not on you". Though he criticised strongly the unhygienic kind of life in the leprous districts, yet he was very popular and one to whom one could speak freely. It is pleasing to recount how the peasants often considered him a very ingenious person. When he explained to them that it was his intention to extirpate leprosy they asked him: "But how long do you expect to live then?"

Armauer Hansen was a handsome man, solidly built, and one who quickly drew attention even in a crowd. He was not exactly eloquent, but he possessed a remarkable gift for putting forward his opinions in a simple, short, clear manner, which procured the attention of his hearers. As a popular scientific author he possessed the same excellent qualities which gave him great importance as a propagator of new contemporary scientific ideas among the masses of the people.

Armauer Hansen died in 1912 at the age of 70 in the course of an official voyage. He died happy and content, with the conviction that his life work had been useful to his country and to humanity, and certainly this fact is incontestable.

In testimony of his universal renown his bust was erected through international subscription in the garden of the Bergen Museum on his 60th Anniversary in 1901.

Already in 1895 they had erected by international subscription a plaque in honour of Danielssen, which is now placed above the door of the leprosarium at Bergen.