

Gerhard Henrik Armauer Hansen

Seen Through His Own Eyes

A Review of His Memoirs

Øivind Larsen¹

In the course of the century which has elapsed since the discovery of the leprosy bacillus in 1873 by G. H. Armauer Hansen (1841-1912), several biographers and medical historians have stressed the importance of this event.²

The life span of G. H. Armauer Hansen covers a period when bacteriology was a growing specialty in medical science. Earlier suggestions that certain diseases might be associated with infectious organisms were partly confirmed during the 1830's when fungi were demonstrated in certain skin diseases. In the middle of the 19th century, a series of severe epidemics lay as scourges over European towns and industrial centers, where poverty and bad sanitary conditions made the dense populations extremely vulnerable. However, the epidemics had yielded scarcely any evidence regarding the course of their contagion. Therefore, a great interest in the problem of contagiousness was quite natural.

The smaller bacilli were more difficult to observe than the fungi. Nevertheless, the anthrax bacillus was demonstrated by Pollender in 1849, and by Davaine and Rayer in 1850. The microorganisms were found in the blood of animals which had died from the disease. Thus, further use of the microscope in the search for disease causative microorganisms was an obvious approach. Additionally, at this time the scene of the most successful proceedings and discoveries in medical research were shifting from that of the house physician's bedside obser-

vations to the new great hospitals of the first half of the century and to their laboratories.

Following Louis Pasteur's (1822-1895) extension of the general knowledge of the life and activity of microorganisms through his fermentation studies, the road was open for thorough investigations designed to determine whether or not whole series of diseases might have infectious etiologies.

New results and achievements followed each other at short intervals, especially in the decade beginning with 1877 when Pasteur turned his interest to human bacteriology, and even more when Koch in 1882 found the tuberculosis bacillus. These findings led to further enthusiasm for bacteriology as a whole. Now that the immediate cause of a wide range of hitherto unexplained common diseases could be demonstrated, general medical interest was more directed at the specificity and etiology of disease, than to the mere description of symptoms and functions in the diseased human body.

Born in 1841, Armauer Hansen's active years lay just within this important period of transformation and development in medicine. In his education and in his work as a physician and as an investigator, we know that he closely watched what was happening in the medical world. He then applied the new ways of thinking to the field of prime interest to himself, and also to Norwegian medicine, namely leprosy.

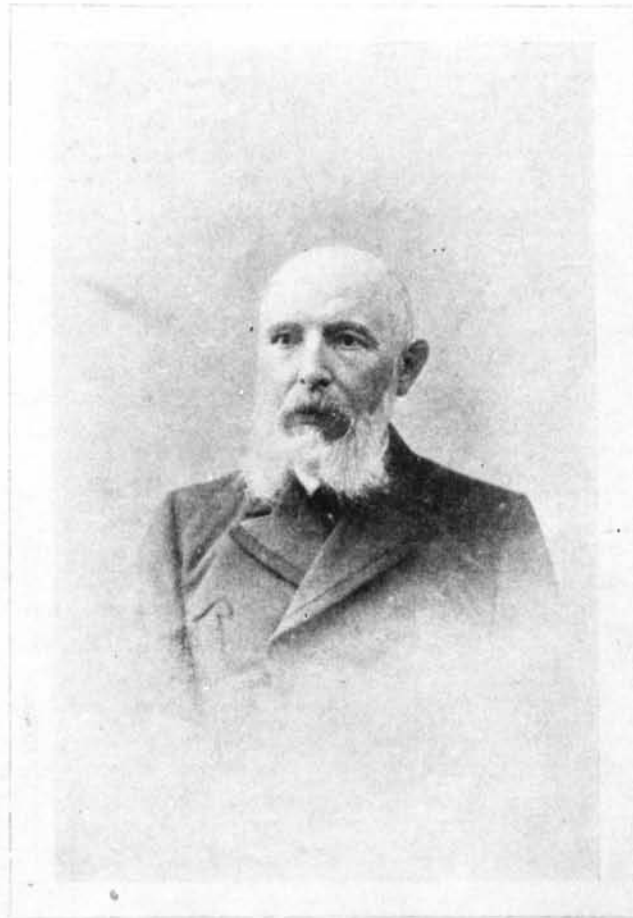
Some of the investigators working on epidemiology and bacteriology were successful due to their technical skill and to the quality of their scientific methods as a whole. Hansen undoubtedly was among these. On the other hand, many enthusiasts failed in their search for microorganisms. For some of them the explanation was quite simple. They were not clever enough.

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² A comprehensive biography has been published by the Norwegian bacteriologist, Thomas Martin Vogelsang (14), in 1968, and a short but penetrating survey by Irgens (6), in 1973. However, as these are written in Norwegian, reference is given to some of the more important articles in English on Armauer Hansen and his discovery (2, 9, 10, 11), and on the leprosy situation in Norway (1, 7, 8, 13).

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G. Armauer Hansen

Livserindringer og Betragtninger



Kristiania 1910 - Forlagt av H. Aschehoug & Co. (W. Nygaard)

G. Armauer Hansen, *Memoirs and Contemplations.*
(Title page)

Others, however, perhaps quite as good scientists as many of their colleagues who later developed great names, failed simply because they were seeking microorganisms in diseases where none could be found, misled by theories and hypotheses which proved to be wrong. Therefore, it is difficult to assess correctly the historical significance of famous men of achievement from this vivid period of progress. For some, their own impressions of themselves help in our evaluation. In the case of Armauer Hansen we have to some degree an opportunity to compare what we know about him with his own words because, in 1910, he published, in Norwegian, his memoirs (⁴). This was a volume of 142 small pages, reflecting views and contemplations of his life experiences. This presentation is based on that publication.

Armauer Hansen was born in Bergen, and through all his life remained a devoted son of this city. In the first chapter he describes his childhood and youth in this town on the west coast of Norway. A rich trade with long traditions had made Bergen into a center in many ways, but when a youngster wanted to go to a Norwegian university, he had to leave for Christiania, the capital situated in the eastern part of the country. Thence, Armauer Hansen journeyed.

The second chapter describes his student life in Christiania. He tells that he and his fellows spent an interesting time, but as his father had inadequate resources for supplying him with money, Hansen had to finance his studies by means of various jobs. At first, he found work as an "informator"—which meant a sort of house teacher—for Herman Schirmer, who was later to become an architect. In this home he was treated as a friend of the house and could look back to it with veneration and gratitude. A subsequent job in a young girls' school did not turn out so successfully. He had to leave this job and return to Bergen for lack of money. We read, however, that a month later, he got a letter from his teacher in anatomy who asked him to work for him during his own stay abroad. This teaching of anatomy and his own medical studies clearly interested him very much. He also

taught at a school for young boys. He describes his classes in zoology and botany, and we understand that he had a pragmatic view of what the young pupils had to learn and what must be regarded as dead knowledge to them.

At the time when he arrived in Christiania, it seems that Armauer Hansen was a religious man. He wrote that he prayed every day and went to church on Sunday. To judge from his memoirs, he apparently turned in the course of a few student years into an atheist, a development which meant much to him, and apparently predisposed to his deep personal commitment when he encountered the works of Charles Darwin.

Hansen described himself as an inquisitive student, interested in following his own observations. This led him into some conflict with his medical teachers, but, nevertheless, the reader gets a charming impression of the relationship between professors and students at the still very small university. Hansen, however, was of the opinion that the contact between the students in Christiania and the intellectual life in the rest of Europe was not very good. Some discussions were held in private circles, for instance, on the relationship between religion and natural sciences. These questions interested Armauer Hansen deeply and in his book he presented a severe criticism of the way the men of the church defended their views against the new thoughts on evolution.

Throughout the year of 1867, the first year after his final medical examination, Hansen worked as a physician at the University Hospital in Christiania. After that he went to Lofoten, a fishing district of northern Norway, to work during the season as a physician to the fishermen. His description of this time among the native population, and of the dramatic voyage from Bergen to Lofoten which lasted for 21 days, being hampered by a fierce winter storm, shows that he learned much about the practical function of the medicine he had been taught in the rather sheltered and quite different milieu of the university city, more than 1,000 km to the south.

In the fourth chapter he related how he

first encountered the dreadful state of the leprosy patient when he obtained a position as a doctor at the leprosy hospital in his native town of Bergen. He entered this work with great enthusiasm, there being enough interesting problems to engage his attention. Here he not only had responsibility for his patients but also had a certain amount of social life to fill his time. Nevertheless, his first scientific work on leprosy was published approximately one year after his arrival at the leprosy hospital. This paper consisted of a study of the characteristics of leprosy. Some of the material was found in a previously concluded study of the normal and pathologic anatomy of the lymph nodes, a work which earned him a gold medal from the University of Christiania in 1869.

Hansen next received a travel grant and in the spring of 1870 he went to Germany, having as his first destination Bonn, where he planned to work in the laboratory of the microscopist, Max Schultze. The journey from Bergen was long and cumbersome. From Hamburg to Bremen he traveled by stagecoach. He found the stay in Bonn of limited value. Dr. Schultze was, Hansen wrote, not able to get interested in topics other than his own field, which was the retina of the eye.

In the month of July in 1870, the war between Germany and France broke out. The numerous guests at the surrounding bathing resorts immediately wanted to go home. The Rhine district was congested with traffic, and Hansen noted how the railway station could be overcrowded by passengers and luggage. At the same time, troops were moved westward towards the combat zone. Thus, 18,000 men passed through Bonn every day. Hansen wrote of his admiration for the precision and effectiveness that he observed. His own scientific work, however, was interrupted.

Hansen then left Bonn for Vienna. On his way he placed a red cross on his arm, and apparently out of curiosity, went to Saarbrücken where he wanted to work as an army surgeon but the Red Cross headquarters did not give him work. He had just arrived the day after a great battle. The wounded soldiers had already been

removed from the battlefield, but dead men and horses were still scattered all over. He was deeply impressed by this sight. He remarked especially on the distended cadavers of the killed horses and the mutilated human corpses from which robbers had cut off fingers in order to steal valuables. Hansen gave up his plans to join the Red Cross. He resumed his journey in Heidelberg where he visited a hospital. There all the war casualties caused him to write that he was fortunate in not having succeeded in getting involved in the war.

In Vienna, he had an experience which, to judge from his memoirs, must have been of immense importance to the rest of his life. One day he saw in the window of a bookstore the book by Darwin, *Natürliche Schöpfungsgeschichte*. Its title evoked his interest; he bought the book and went home to read it. He read Darwin that day and spent also the next day in its perusal. In his memoirs he states that by that time the whole world immediately appeared in another light to him. All his previous concepts and thoughts were confused by this new basis for a philosophy.

Later, in Bergen, he made more thorough studies of Charles Darwin's works, and he states that these formed the basis for his own further philosophical thinking. He wondered why Darwin was not better known in Norway, and he felt it an obligation to write about Darwinism in a local Bergen newspaper. In his memoirs Hansen criticized the theologically colored philosophies of life severely and revealed himself as a rationalist, believing only in what he could deduce from observations.

As a gift from a friend he received a round trip ticket to Venice, a city which impressed him. On his return to Norway he stopped in Dresden and Berlin. He ended his chapter on the journey with some remarks on Catholicism, and again his atheistic views are quite clear. He concluded by noting that he did not learn much during his stay abroad. The exposure to the works of Charles Darwin, he said, was the most valuable result. The purpose of his tour, which was to study pathologic anatomy, is hardly mentioned.

On the following pages, we read about

how he continued to work on the etiology of leprosy. He discussed the problems of the disease with the physician-in-chief, Daniel Cornelius Danielssen (1815-1894), and he received another travel grant, this time for the purpose of going out into the countryside to examine the occurrence and suspected causes of leprosy in the native population. For two years, during the summer months, he traveled about the western parts of Norway. Although often inconclusive, his observations indicated that leprosy had a specific cause which should be sought in the pathologic manifestations, rather than in environment or heredity.

Hansen stated that bacteriology at this on Norwegian peasants. One has to have enough time when you are asking for something, and you have to use your personality to get what you want, he noted. These reflections on the nature of the native population of rural Norway led him to a discussion of several characteristic features of Norwegian society. This is witness to an ability to make sharp observations and to make succinct conclusions.

Hansen states that bacteriology at this time had advanced so far, that it was natural also for him to start searching for bacteria as pathogenic factors. Bacterial etiology had not been proven in any chronic disease, among which leprosy must be classified. At first he did not find any microorganisms, but since he was convinced that leprosy had to be an infective disease, he continued his studies. Under the microscope he actually soon discovered bacteria-like forms, but the study of these was so difficult that he could not draw any definite conclusions. He had no success applying the new staining methods described by Weigert and Koch.

In 1879, Albert Neisser (1855-1916) from Breslau, arrived in Bergen to study leprosy. Hansen tells us that he discussed his problems with him. On his return to Breslau, Neisser brought with him some preparations made by Hansen. Neisser was more successful in his coloring and he published his findings. According to his memoirs, Hansen apparently looked at this event as a trick by Neisser to gain credit for priority of discovery, but Hansen notes that he

reacted quite calmly because he had already written a communication on the causes of leprosy in the Norwegian *Magazin for Laegevidenskaben*.³ Danielssen, Hansen says, was very angry over the skirmish with Neisser. Later, Hansen published his finding also in a German magazine. He states that there should be no disagreement over his being the one who discovered the leprosy bacillus. From Hansen's memoirs, the reader gains the impression that he, himself, was not so interested in this priority competition. He felt it an exciting challenge to try to find an infective origin for leprosy, because, as he said, if the disease was hereditary there was little to be done for those who were afflicted. If the disease was infective, however, something could be done.

When he evaluated the precautions taken in Norway against leprosy, Hansen found that these had clearly resulted in a decreased prevalence of the disease and noted that this point was a strong argument in support of the infective theory. The Norwegian health authorities shared Hansen's opinion and further restrictions were laid on the patients with leprosy, to avoid infection and spread of the disease. Regarding the criticism which arose in connection with these new regulations, Hansen remarked that healthy people also must have the same human rights as sick people. When the healthy people find that the sick pose a danger to them and to society, then it had to be their right to take preventive precautions, when this could be done in a humane way.

On his own role in the gradual eradication of leprosy in Norway, Hansen remarked that it is wrong to lay all the honor for the success upon him. The prophylactic measures against the disease were older than himself. He himself was only fortunate to find out that the measures which had been put into force on quite another scientific basis later proved to be right.

The leprosy congress in Berlin in 1897

³The original Norwegian communication from 1874 is translated into English and reprinted in 1955 (5), and should be read together with Vogel-sang's comments (11). The controversy between Hansen and Neisser is discussed in references 3 and 12.

regarded him as a famous man because of his discovery. In his memoirs, he humbly remarked that he himself regarded the discovery of the lepra bacillus as something which had to come when anyone began to study the disease with eagerness, intelligence and skill. In all scientific work, he noted, sound thinking and much work will give results. Some of those who work in this manner are perhaps especially gifted, or so lucky that new and fruitful directions of work are revealed to them and turn them into great names. Here, Hansen mentioned his beloved Darwin as an example.

The discussion of heredity in leprosy did not fade, Hansen wrote in his memoirs, despite the weight of evidence for the infection theory. During the great emigration period in the 19th century, about 200 Norwegians with leprosy had settled in North America. Armauer Hansen thought that it would be possible to throw light on the heredity theory by examining the Norwegian population in America. An application for a travel grant to the Norwegian parliament was turned down, but a friend of Hansen, Dr. Evard Bøckmann of St. Paul, Minnesota, offered to cover his travel expenses. Therefore, he left for New York on a study tour in 1887. He described his voyage, gave amusing characteristics of his fellow passengers, and met New York with interest and curiosity.

In St. Paul, Dr. Bøckmann provided him with a working place and the necessary facilities. The following summer Hansen traveled around and examined immigrant families with leprous ancestors.⁴

Hansen remarked on the difference between the Norwegian farmers in Norway and the Norwegian farmers in the United States. The latter he found to have more sanitary living and to be more busy. It was difficult for him to persuade farmers to give him an interview, not because they were reluctant but because they had no time to spare. He also made critical remarks about the men of the church, noting that clergymen settlers did not understand that they were in a new country with new living conditions.

⁴ He did not find any indications for heredity (14).

"I have found," he stated in the concluding chapter of the memoirs, "that there has been more of pleasure than of sorrow in my life; possibly this is so because I have a somewhat crude constitution—but I have liked it anyhow. The only thing I dislike in life is to get old." He noted that after the age of 40 he felt that although the ability to work still was present, he no longer possessed the eagerness of his youth for new tasks and ideas. In his conclusion he praised the neutral scientific approach to all questions, as the best basis for work in every field.

Hansen regarded the discoveries of Pasteur and the evolutionary theories of Darwin as the greatest scientific achievements occurring in his lifetime. He discussed this and in talking about Darwin he referred to religion, stressing his own rationalistic thinking anew.

Reflections and comments are dominant in his book and biographical facts are rather scarce. From the text, we do not know to what extent, for example, the opinions presented from his most active years are colored by his own development from a young and progressive scientist to an aging and celebrated authority.

Therefore, it is impossible to use the memoirs to elicit Hansen's immediate reactions and attitudes towards important events in his life; for example, the encounter with Darwinism, the discovery of the lepra bacillus, and the controversy with Neisser. The formation of his atheistic philosophy obviously dominated his thoughts at least at the time when he was looking back and writing about his life at the age of nearly 70 years. Biography and a detailed outline of Hansen's achievements within medicine and natural sciences have to be based upon other sources. On the other hand, the memoirs present a supplement, since they give us some first hand glimpses of his personality.

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