



Medicine



Niels Ryberg Finsen

The Nobel Prize in Physiology or Medicine 1903

Biography



Niels Ryberg Finsen was born on December 15, 1860, at Thorshavn in the Faroe Islands. His father, Hannes Steingrim Finsen, belonged to an Icelandic family with traditions reaching back to the 10th century, and occupied prominent (from 1871 the highest) positions in the administration of the Faroe Islands. The mother, Johanne Fröman, was also born on Iceland. The boy received his early education in schools at Thorshavn and then at Herlufsholm in Denmark. Here the Rector declared that «Niels was a very nice boy, but his gifts were small and he was quite devoid of energy». This may have been due to fagging for older pupils, for when the boy was moved to a school at Reykjavik, Iceland, in 1876, he succeeded much better in spite of the fact that he did not initially know the language.

In 1882 Finsen went to Copenhagen to study medicine, taking his final examination in 1890. The same year he also became prosector of anatomy at the University of Copenhagen, a post he left in 1893 in order to be able to devote more time to his scientific work. He still went on with private tutoring of medical students, thus gaining a very moderate income for his living.

Already from 1883 and probably several years earlier he suffered from an illness which turned out to be Pick's disease and is characterized by progressive thickening of the connective tissue of certain membranes in the liver, the heart and the spleen. This results in impairment of the functions of these organs. As time went on, symptoms of heart trouble developed in addition to the general weakness and ascites, so that Finsen became more and more of an invalid. His last years had to be spent in a wheel-chair and his ascites had to be tapped no less than 18 times - often as much as 6 litres of fluid were withdrawn. That he in spite of this was able to make his remarkable contributions to medicine tells of a strong will and great energy.

He has himself given the following short description of his work.

«My disease has played a very great role for my whole development... The disease was responsible for my starting investigations on light: I suffered from anaemia and tiredness, and since I lived in a house facing the north, I began to believe that I might be helped if I received more sun. I therefore spent as much time as possible in its rays. As an enthusiastic medical man I was of course interested to know *what benefit* the sun really gave. I considered it from the physiological point of view but got no answer. I drew the conclusion that I was right and the physiology wrong. From this time (about 1888) I collected all possible observations about animals seeking the sun, and my conviction that the sun had a useful and important effect on the organism (especially the blood?) became stronger and stronger. What this useful effect really was, I could not find; I have been working for this goal ever since but have not been able to find exactly what I have been seeking, though we have gone somewhat forward.

My intention was even then (about 15 years ago) to use the beneficial effects of the sun in the form of sun bathing or artificial light baths; but I understood that it would be inappropriate to bring it into practical use if the theory was not built upon scientific investigations and definite facts.

During my work towards this goal I encountered several effects of light. I then devised the treatment of small-pox in red light (1893) and further the treatment of lupus (1895). Both these things are therefore in a sense side-issues, but they completely occupied my time for several years and have partly drawn me away from my main goal.

During the last few years, I have, however, become convinced that it does not help to wait until I find the answer I am looking for in the laboratory, but that it is justified to work *also* with clinical experiments. Thus both approaches can be carried out simultaneously in the effort to reach the final goal.»

In beautiful but simple experiments Finsen demonstrated that the most refractive rays from the sun («the chemical rays») or from an electric arc may have a stimulating effect

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on the tissues. If the irradiation is too strong, however, it may give rise to tissue damage, but this may to some extent be prevented by pigmentation of the skin as in the negro or in those much exposed to the sun. In small-pox Finsen thought that the multiple scars might be avoided if the patient was protected from the chemical rays. The experiments with such patients were successful. On the other hand chemical rays free from heat rays might be used to obtain a useful effect either by concentration on particular area - and this led to the treatment of *lupus vulgaris* or other skin diseases - or employed as general sun-baths, which on Finsen's suggestion was tried in cases of tuberculosis. The results were promising but as a rule the northern climate was not well suited for such therapy. As is well known, this kind of treatment has been found to be excellent in places where the sun is rich in chemical rays, e.g. in the Alps where the absorption of these rays by the atmosphere is rather small. The treatment of surgical tuberculosis in this way by O. Bernhard and A. Rollier at high elevations in Switzerland has been specially successful.

Finsen himself proved very convincingly that the concentrated chemical rays may exercise very beneficial effects in the disfiguring disease *lupus vulgaris*. This is due to a bactericidal as well as a general stimulating effect on the tissues. He has developed the technique by numerous practical methods, and the Finsen Institute was erected in Copenhagen as early as 1896, being enlarged some years later due to the generosity of two Danish donors, Mr. Hageman and Mr. Jørgensen, and the Danish Government. It has served as the model for numerous similar institutes in different parts of the world, and together they have greatly reduced the number of cases of lupus.

Finsen's work contained a definite and important recent discovery and was therefore well qualified for a Nobel Prize. Moreover he was still a young man. Of course it was known that his health was not good, but it was obviously thought that the Prize might be of considerable importance. This was soon found to be the case. When Finsen, on October 17, 1903, received the letter with the announcement of the decision, his first words were: «Well, thus it has now been established that the thing is Danish». When the usual Nobel festivities took place at Stockholm on December 10, 1903, he himself was sitting at his home in his wheel-chair receiving congratulations from his personnel and from numerous friends. He then made it known that he would donate 50,000 crowns of the Prize to the Institute and another 60,000 crowns to a sanatorium for heart and liver diseases which had also been founded by him. One immediate consequence was that each of his two main donors gave 50,000 crowns to the Finsen Institute. Thus in spite of Finsen's failing health his ideas were spread still further and his creation - the Institute - was helped.

Among the many publications by Finsen *Om Lysets Indvirkninger paa Huden* (On the effects of light on the skin) appeared in 1893 and the classical treatise *Om Anvendelse i Medicinen af koncentrerede kemiske Lysstraaler* (The use of concentrated chemical light rays in medicine) in 1896. This and other papers were published in German in 1899, and *La Photothérapie* appeared in French the same year. The results of many of his researches are contained in the communications published by his Institute. Finsen tried to counteract the symptoms of his illness in various ways, and during his last years he kept to a diet poor in salt. This led to his last publication, a thorough study of *En Ophobning af Salt i Organismen* (An accumulation of salt in the organism) in 1904.

Finsen received the title of Professor in 1898, and in 1899 he became Knight of the Order of Dannebrog, to which a few years later the Silver Cross was added. He was member or honorary member of numerous societies in Scandinavia, in Iceland, Russia, Germany etc. He received a Danish gold medal for merit, and in 1904 the Cameron Prize was given him from the University of Edinburgh.

In 1892 Finsen married Ingeborg Balslev (b. 1868), daughter of the bishop Balslev at Ribe. They had four children, of which the eldest boy died the day after he was born. The second son, Halldor (b. 1896) became a physician. One daughter, Gudrun (b. 1900) married Professor S. Lomholt, who was for many years head of the Department of Skin Diseases of the Finsen Institute and is the author of a charming biography of his father-in-law. The youngest daughter, Valgerda (b. 1903), also married.

Dr. Finsen died on September 24, 1904.

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