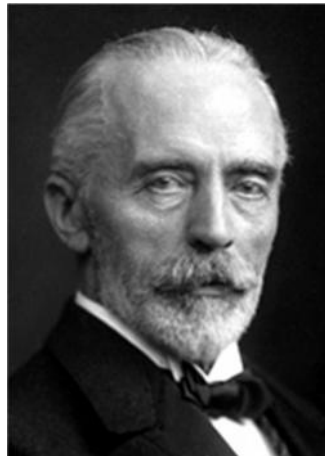


Nobel Prize in Medicine 1909



Emil Theodor Kocher

The Nobel Prize in Physiology or Medicine 1909 was awarded to Theodor Kocher *"for his work on the physiology, pathology and surgery of the thyroid gland"*.

RESEARCH INFORMATION:

The Nobel Medical Prize has been awarded this year to the famous surgeon, Professor Theodor Kocher of Bern, in recognition of his work concerning the physiology, pathology and surgery of the thyroid gland.

The thyroid gland, thyroidea, is one of the structures in the organism whose significance has only been made clear during the last few decades. At the close of the 1870's it was still stated in the physiology text-books that the function of this gland was a complete mystery. It was even questioned that it had an actual physiological significance, for the adult organism at least. On the other hand it was a common experience that it could be the site of pathological changes; in the course of these, considerable trouble could result, as, for example, when the pathologically enlarged gland exerted pressure on neighbouring parts, especially on the trachea.

Yet it was hardly right that this gland should have been undervalued, not to say disdained, for so long. Astley Cooper, who was working about a hundred years ago, had

already observed disturbances in animals after removal of the thyroid. These were specified with greater precision by J. M. Schiff in Bern. He found that animals in which the thyroid had been extirpated, often died in circumstances which suggested that this gland might be of great importance to the organism; however, he did not gain any deeper insight into the gland's function. Unfortunately, these observations did not receive the necessary attention and development. It was only after similar results had been obtained with human beings that the question of the thyroid's significance was analysed successfully. Observations made by surgeons were the cause of this.

The disturbances which occur with a pathological enlargement of the thyroid are often so grave that people had already for many years been extirpating the thyroid occasionally to relieve them, despite the difficulty and dangers which the operation then presented. Indeed, in the days before the introduction of antisepsis it often happened that the patients died of the immediate results of the operation. After the introduction of antisepsis a significant improvement took place in this respect. As a result, the number of operations of this kind, in which the whole gland was removed, increased considerably. In the meantime it was gradually noticed that the position was by no means satisfactory, even if the operation itself and the subsequent healing had gone well. Not infrequently, after a period of apparent health, significant disturbances in the general health made their appearance. The conscientious investigation of these cases of illness resulted in the establishment of a new syndrome called «cachexia strumipriva», which was characterized by muscular weakness, swelling of the extremities and of the face, anaemia, decline in intelligence, and finally death from exhaustion. Once attention had been drawn to this condition, enthusiastic and productive research into the significance of the thyroid followed in many different centres. In this, reliance was placed on clinical observations on humans as well as on animal experiments. From this research an understanding of the physiology of the thyroid has evolved which is comprehensive, even if not complete in all respects.

We now know that this gland is a vital organ, whose total removal in experimental animals infallibly causes death within the course of a few days or weeks. The gland is of great importance in the general nutrition of the adult, and especially in individuals still undergoing development. The loss of thyroid function results in serious disturbances in this nutrition. Metabolism is significantly diminished; growth ceases; the skin and the subcutaneous tissues are the site of mucous infiltration; degenerative processes occur in internal organs; serious disturbances make their appearance in the functions of the nervous system and muscles. It became clear that the gland acts by elaborating a secretion, which reaches the various parts of the body. It is, as the expression goes, an internal «secretion». Later it became evident that such processes of internal secretion are of exceptionally great importance. Not only the thyroid, but also various other glands such as the adrenals and the pancreas play a characteristic part in the processes within the organism by elaborating a secretion peculiar to each gland, which is not excreted, but is diffused throughout the organism and is of the greatest importance to it.

The knowledge of the physiology of the thyroid has brought a valuable increase in our understanding within the field of pathology. Through it new light has been thrown on hitherto mysterious morbid conditions. Pathological changes in the gland can lead to suppression or decrease of its function. Various morbid conditions are explained by this, among which are cretinism and myxoedema. On the other hand one looks for the explanation of various other disturbances such as those in morbus Basedowi in abnormally increased or possibly qualitatively abnormal activity of this gland.

This briefly outlined important and momentous development, which has benefited medicine during the past 25 years, was brought into being, as I mentioned before, as a result of observations which have been made by surgeons. In this respect, the first public utterance was made in September, 1882, by Professor J. L. Reverdin in Geneva. At this time his colleague in Bern, Professor Kocher, had also turned his attention to the same subject, and in April, 1883, the latter gave a comprehensive exposition, which has been of fundamental importance to the later development of thyroid surgery as well as to other

important areas of our knowledge of this gland. Through Kocher's exposition it became quite clear that complete extirpation of the thyroid is reprehensible. A portion of the gland which is capable of functioning, must be left behind at operation. This very important principle of surgical intervention has always been observed from that time onwards. With regard to the surgery of the thyroid, Kocher has subsequently continued to occupy a leading position. It should be possible to omit on this occasion a report concerning the development of the methods of operation and the suitability of the various types of intervention in different cases. It should suffice to recall that there are now several thousand people who owe their regained, lasting health directly to him after a goitre operation which he has successfully performed. A far greater number, which cannot be estimated, owes him a debt of gratitude indirectly for similar results. Fatal cases or secondary illnesses have become more and more of a rarity in goitre operations.

However, it is not only the treatment of the goitre which has been the subject of Kocher's research on the goitre. He has also carried out extensive investigations into the causes of the endemic occurrence of goitre in certain regions and into the cretinism connected with disturbances in thyroid function.

In the thyroid, as already indicated, other diseases can occur in addition to those which arise with the ordinary goitre. To these as well Kocher has devoted successful work, as a result of which it has been possible to define with more and more certainty the method of treatment best suited to each case; in addition, on the basis of Kocher's work a broader, deeper knowledge of the pathology of the thyroid has been achieved.

Through his research, which we have briefly described here, Kocher has carried out pioneering work of an enduring nature which is of the greatest importance to medical science and of the greatest value in the service of suffering humanity. It is this work which the Staff of Professors of the Caroline Institute has wished to honour by awarding him this year the Nobel Prize in Physiology or Medicine.

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