

Biography

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LAENNEC

THE LISTENER



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THE STORY OF THE STETHOSCOPE AND ITS INVENTOR

WHAT does the doctor hear when he tunes in on your chest with his stethoscope?

It all depends. If your heart is normal, he hears directly over it a song of rhythmic clicks and thumps. If the faithful old pump is sick, he may hear a disorderly jazz, irregular in tempo and pitch. If the valves leak, he is likely to hear a swish or murmur instead of the precise snap of the valves. Normal breathing sounds he describes as the lullaby of a breeze gently stirring the leaves of a quiet forest. But when the air tubes are clogged—what a bubbling and boiling! Or, if the little air sacs are stuck together because of an inflammation—what a crackling when a deep breath forces them open! Dozens of abnormal conditions of the heart and lungs may be distinguished by their peculiar sounds, provided the ear that listens and the brain that interprets are trained.

There is nothing mysterious about the stethoscope. It is merely a flexible tube which transmits sounds. These sounds can be heard quite as well by placing the ear snugly on the chest, except that it is not possible to get the ear in all positions desired unless both doctor and patient are contortionists.

The stethoscope was invented by a young physician of Brittany, Theophile Laennec, about 125 years ago. To be sure, doctors knew the trick of listening to chest sounds before Laennec's invention, but they did not use it often. One reason was that patients, especially those of the poorer classes, were not very clean. Even in the hospitals, there were no bathtubs, clean linen was rare, the wards were dirty. Gentlemen of that day wore luxurious wigs, and so no fastidious doctor dared risk the chance of getting his prized headdress infested with lice. Another drawback was that many people did not like to have the doctor place his ear on their chests. Even when the doctor was able to overcome these drawbacks, listening did not help him much because the doctors differed as to what the various sounds really meant.

Curiosity is the father of invention. Young Laennec, an eager student, was always thirsty for knowledge. Give him a patient, rich

or poor, and, like a detective, he could find no rest until he had solved the mystery. It happened that one day, while he had charge of a very fat girl in the Necker Hospital in Paris, he was much put out because he could make no diagnosis. She was in great distress and panting for breath, but Dr. Laennec could not get at the cause of the trouble. The thick layer of fat blanketed the sounds of the heart. Nor did the patient help much, because a false modesty caused her to shrink away from the doctor's attempt to listen closely.

That afternoon, the young medico took his usual stroll through the Gardens of the Louvre. Debris lay scattered about, the result of one of the several upheavals of the French Revolution. The beauty of this garden, now disheveled by rubbish, was a depressing sight, but yonder, on a pile of timbers, he noticed some boys having a wonderful time. Two or three bent over one end of a long beam of wood with their ears pressed tightly to it. At the other end, the rest were lightly tapping the beam. Of course, these slight sounds traveled with little resistance along the beam, much to the amazement of the youngsters. To them, this crude telephone was a jolly toy; to Laennec, who understood the scientific principle, it was the solution of his problem. He turned on his heel and hurried back to the hospital.



St. Louis Museum of Art

"AN INCIDENT OF THE FRENCH REVOLUTION" by Julian Story

Striding into the ward where the fat girl was, he snatched up a paper-backed book, rolled it into a tight tube, and to the amazement of the nurses, placed one end of this tube to the girl's chest and his ear to the other. The sounds he wished so much to hear came through even more clearly and crisply than he had expected!

After that event, one can picture Laennec persuading every patient in the hospital, whether he had smallpox, housemaid's knee, or gout, to bare his chest so that he might listen. The scoffers smiled at the folly of this callow youth and his silly "cornet de papier," but he kept right on with his new hobby. Day after day, Laennec passed through the wards with his paper tube tied with strings, patiently listening to hearts and lungs and carefully making notes.

The paper roll was not very substantial, so Laennec next made a tube of wood. He had first to learn the art of turning on a lathe. He experimented with various kinds of wood and finally found that an instrument made of beech or linden wood transmitted the sounds best. He gave the instrument a Greek name, *stethoscope*, which means chest examiner.

As time went on, Laennec's stethoscope was modified. How it was gradually perfected into the instrument that is now as much a part of the doctor as his shirt, is well illustrated in the pictures.

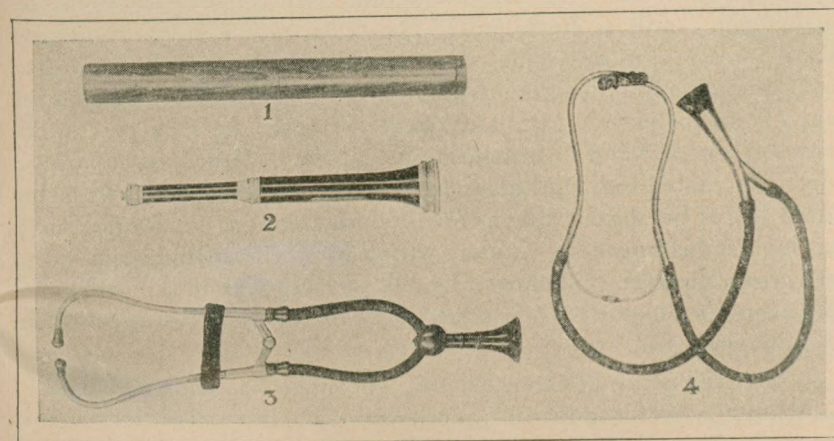
Fortunately, Laennec had an ear for music; in fact, he enjoyed an enviable reputation as a flutist. Consequently, when he began his experiments, he was able not merely to hear crackles and bubbles but to distinguish the varying volumes of sounds, their pitch and tonal qualities. He studied these many different sounds in relation to the disease conditions that caused them. To some of these sounds he gave picturesque names; for instance, *pectoriloque*, from the Latin, meaning the voice of the chest, and *egophony*, from the Greek, which means the bleating of a goat.

To Laennec, we owe an even greater debt than the invention of the stethoscope. He clarified medical knowledge about diseases of the chest, which in that day were poorly understood. Before his time, the doctors recognized and gave names to at least twenty diseases, all of which Laennec showed to be tuberculosis in different stages of development. Symptoms and signs described in the current medical books were confusing, but Laennec showed their connection with the various stages of tuberculosis and explained what these symptoms meant. Thomas Addison said of Laennec that he was the author of the "alphabet of thoracic (chest) disease."

Laennec's work was valuable also because it helped doctors to diagnose tuberculosis in its early stages. That is important because if this condition is discovered early, the chances of getting well are much brighter than if discovered in its later stages when even the merest amateur can see that it is "consumption."

Laennec also showed that *scrofula*, the so-called "King's Evil" so frequently referred to in medieval literature and which was supposed to be miraculously cured by the king's touch, is in reality tuberculosis of the lymph glands in the neck.*

Laennec was only 23 years old when he produced his great work, a medical book which described the chest sounds. Many of the passages of this book have a modern ring. For example, he taught that



Courtesy Army Medical Museum

STEPS IN THE DEVELOPMENT OF THE STETHOSCOPE

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| 1. LAENNEC'S STETHOSCOPE, 1816 | 3. CAMMANN'S TWO EAR PIECE STETHOSCOPE, 1852 |
| 2. PIORRY'S INSTRUMENT. ABOUT 1830 | 4. MODERN TYPE OF STETHOSCOPE |

tuberculosis is contagious, though the germ was not discovered until 80 years later. He believed it was curable, which we now know to be true. What is most pertinent, he stated that the disease may be "latent" or asleep without causing symptoms and later become active, which modern medical science has verified.

Laennec, who shed so much light on the riddle of tuberculosis, himself died of that disease. He probably did not recognize the various ailments he suffered in youth as the danger or warning signals of what was impending. With our present knowledge of how this disease begins and how it slowly develops, we can trace quite clearly the trail of tuberculosis in the life of this young genius.

* This form of the disease is quite uncommon today because most of the milk used now is pasteurized, a process which kills tubercle bacilli that may have got into the milk from tuberculous cows.

Theophile Laennec was born in 1781. Six years later, his mother died. Theophile and his elder brother, Michaud, then left their quaint home in Brittany to live with their Uncle Michel, a clergyman in England. This uncle had tuberculosis and died of the disease when Theophile was about eight years old. Very likely, both Theophile and Michaud were infected with tubercle bacilli by the uncle, for this good man certainly did not know then that children are easily infected by older persons who have the disease, and he probably fondled and kissed them as any adoring parent would. That alone would not have been serious, for we know that many children are infected, but most of them suffer no harm because bodily resistance keeps the upper hand.*

What made infection the worse for Theophile was his intense eagerness to attack whatever interested him with a nervous pep. He burned the candle at both ends. His sharp eyes led him to nature study—we see him collecting bugs, beetles, and botanical specimens, and poking his nose into the secrets of nature generally. Though he was a thin, pallid youngster and small of stature, he took part in all sports of the day and he swam like a tadpole. He danced superbly. Music fascinated him, and many lonely hours were enlivened with the liquid joy of his flute. For a time, he practiced for six hours a day; but look at his upper lip—no boy with a lip like that could long keep away from the flute. Whatever he did, says Dr. Gerald B. Webb, one of Laennec's biographers, whether work or play, he attacked with abandon and vim.

After the death of Uncle Michel, Theophile was sent to his Uncle Guillaume, a doctor in Nantes, gentle, wise, and intensely interested in his profession. Michaud was sent to Paris to study. Theophile trudged along with Uncle Guillaume on his professional rounds, soon caught his inspiration, and decided that he, too, would become a doctor. This was during the trying days of France when she was in the grip of the Revolution. The carnage and bloodshed made abundant work for the uncle, and Theophile was his willing assistant, making lint bandages, serving as an orderly, tying up wounds. "Theophile is working like the devil," wrote the uncle in one of his letters.

The horror of the Revolution made a deep and melancholy impression on the vivid mind of the boy. The howling mob, demanding blood and vengeance and liberty, burned itself into his imagination. Tumbrils bumping over the cobblestones, carrying their despairing victims to the guillotine, were a common sight to him. Before he was fifteen years old, he had seen 50 heads fall from the guillotine into the gory basket beneath. These are not experiences to make a youth's life



IN BRITTANY, WHERE LAENNEC WAS BORN

Railways of France

carefree and happy, as it should be. Sadness and worry favor the development of tuberculosis.

Poverty was another burden. His father sent him old clothes and good advice, but seldom money. And good food was a scarce luxury during those terrible times when Laennec, the youth, needed it most.

After many struggles, he managed to enter the great medical school in Paris, where he joined his older brother, Michaud, and shared a room with him in the Latin quarter. A few happy months of this and then—Michaud died—of tuberculosis!

In Michaud's case, the infection evidently quickly developed into actual disease, progressed rapidly, and took his life while he was still a young student. Theophile, however, in spite of his frail body and vigorous spirit, seemed to have more resistance. Yet, as a lad, he had vague symptoms of what was undoubtedly a tuberculous process, and as he grew older, these symptoms became more definite. For example, he suffered with frequent colds and fever, and later complained of indigestion. Especially significant is his complaint of fatigue; and how impatient he was when this confounded tiredness interfered with his plans! Foolishly, he tried to fight it off by speeding himself up.

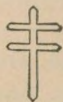
Had his wise Uncle Guillaume had the advantages of modern medical science, he would have made an X-ray examination of Theophile's chest even before there were troublesome symptoms. And then, if he had found the harmless-looking little tubercles, he would have seen to

* Infection is determined by the tuberculin test, a simple, harmless, skin test.

it that the boy got plenty of rest and good food; he would have restrained him in his vigorous work and play and so have prevented the very early stage of tuberculosis from developing into a genuine case of consumption.

For the rest, the story is one of courageous struggle. In one of his letters, he wrote, "Health is a treasure recognized only after it has eluded us." Yet he relished life. He enjoyed the rewards of scholarship and was awarded many prizes as a student. He attained success as a doctor—Chateaubriand, Madame de Staël, and other famous people were his patients. He won the honor of the medical profession. He left to the world a valuable instrument and precious knowledge.

Still young and full of promise, he died at the age of 39. But the light he shed on the dark mystery of tuberculosis has saved many lives since then though it could not save his own—and many more might be spared if the knowledge we now have could be fully applied.



Published by

NATIONAL TUBERCULOSIS ASSOCIATION

370 Seventh Avenue

New York City



Distributed by

DISTRIBUTED BY

THE TUBERCULOSIS LEAGUE OF PITTSBURGH

2851 BEDFORD AVE.
PITTSBURGH, PA.

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