

Laennec and his Stethoscope

René-Théophile-Hyacinthe Laennec (1781–1826) invented the stethoscope when he was at the Hôpital Necker, in France. A pioneer in its use for the diagnosis of chest conditions, his life was cut short by tuberculosis.

Laennec wrote:¹

In 1816, I was consulted by a young woman labouring under general symptoms of diseased heart, in whose case percussion, and the application of the hand, were of little avail, on account of the great degree of fatness. The other method just mentioned [immediate auscultation] being rendered inadmissible by the age and sex of the patient, I happened to recollect a simple and well-known fact in acoustics, and fancied at the same time that it might be turned to some use on the present occasion. The fact I allude to is the augmented impression of sound when conveyed through certain solid bodies: as when we hear the scratch of a pin at one end of a piece of wood, on applying the ear to the other. Immediately on this suggestion, I rolled a quire of paper into a kind of cylinder, and applied one end of it to the region of the heart, and was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear...

The first instrument which I used was a cylinder of paper, formed of three quires compactly rolled together, and kept in shape by paste. The longitudinal aperture, which is always in the centre of paper thus rolled, led accidentally, in my hands, to an important discovery. This aperture is essential to the exploration of the voice...

Bodies of a moderate density, such as paper, the lighter kinds of wood, or Indian cane, are those which I always found preferable to others... In consequence of these various experiments, I now employ a cylinder of wood an inch and a half in diameter, and a foot long, perforated by a bore three lines wide [6mm], and hollowed out in a funnel-shape to the depth of an inch and a half at one its extremities.

Henry Hyde Salter (1823–1871), himself a sufferer of asthma, is remembered for his magnum opus, *On Asthma: Its Pathology and Treatment*, first published in 1860.² In 1856, he became the youngest elected fellow of The Royal College of Physicians and the youngest elected to the fellowship of



1. Forbes' translation of Laennec on diseases of the chest. Quoted by: Curtis JH. *The cephaloscope and its uses*. London, John Churchill. 1842. pp 57–60.

2. Sakula A. Henry Hyde Salter (1823–71): a biographical sketch. *Thorax*. 1985; 40: 887–8.

the Royal Society, the latter bestowed for his physiological work. He was a physician at Charing Cross Hospital and later at King's College Hospital.

In 1863, when Salter lectured on the stethoscope, he affirmed that 'the material that gives, on the one hand, the smallest amount of loss of sound, and, on the other, the least perversion of sound, is that of which Laennec himself first recognised the value – some porous wood.' Salter then continued:¹

How long should a stethoscope be? Laennec said a foot. His reason for having it so long was that it enabled him to reach the axilla and other remote parts without inconvenience, and to auscultate his patient in bed without stooping much over him. But I think it too long...

I have a very simple rule as to length; namely, to have my stethoscope just a little bit shorter than the long diameter of the crown of my hat; and for this simple reason, in order that I may carry the one in the other. It happens to be a very convenient and usual length, and even if it were not, this method of portage would reconcile me to it. If the instrument is just the least bit shorter than the crown of one's hat, and after putting it into the top of the hat directly antero-posteriorly, a little twist is given to it, it sticks firmly and is safely supported. Some people revile this practice of always carrying about one's stethoscope in one's hat and call it unprofessional and shoppy; but it has this great advantage, that you and your stethoscope are never far apart; for where your hat is there is your stethoscope, and in this climate a man is as likely to be without his head as without his hat...

Fig 4 represents the section of what I consider a very good stethoscope... the ear-piece is flat and broad, and the most careless application of the ear would produce perfect occlusion; the chest-end is small, with a narrow and rounded edge. The measurements are – length seven inches, diameter of ear-piece three, diameter of chest-end one and a quarter, circumference of shaft one and a quarter.



The stethoscope shown in this article closely matches the design and dimensions given by Salter for a 'very good stethoscope'.

1. Salter H. Lecture V: On the stethoscope. *Brit Med J*. 1863; i: 105–8.