

# Reception of the stethoscope and Laënnec's book

PJ BISHOP

*From The Library, Cardiothoracic Institute, Brompton Hospital, London*

**ABSTRACT** A study of contemporary book reviews and other notices enables us to trace the reception of the stethoscope and Laënnec's book between 1816 and 1826. It is quite clear from these that the stethoscope was welcomed with enthusiasm by most people who saw it as the first major diagnostic tool medicine had ever had. Laënnec's book was recognised as being the most important, interesting, accurate, and complete work on diseases of the chest that had ever been published.

A bibliographic study of Laënnec permits one to trace the reception and spread of his work.<sup>1</sup> His invention of the stethoscope dates from about September 1816 as we know from AB Granville that he was present at the Necker on 13 September when Laënnec demonstrated his newly discovered instrument, making use of some tightly rolled sheets of paper. The next day he had procured cylinders of thick pasteboard, and soon afterwards he substituted a wooden model for these. Granville relates that he brought one of these back to England in November 1817, used it in his practice at Saville Row, and said that most of his contemporaries—to whom it was exhibited and explained—"made themselves merry at the credulity of French doctors and my own."<sup>2</sup>

On 26 February 1817, an unknown writer referred to the stethoscope, and said that the best conductors were simple rolls of paper.<sup>3</sup> However, by this date Laënnec had carried out extensive investigations with many materials and had concluded that wooden models were the best. It was this and perhaps other misleading reports which prompted him to state the facts before the Société de l'Ecole on 5 February 1818. On 23 February he read his memoir on auscultation before the Académie des Sciences. On 1 May he began his lecture on the stethoscope before the Société de l'Ecole, and this was continued on 14 May, 11 and 29 June, and 9 July.<sup>5</sup>

Beaugendre, one of his pupils, upheld a thesis on 27 June which mentioned the stethoscope—the first of several to appear at this time.<sup>6</sup>

In July, JB Nacquart, writing on "*Medical news. Medical instruments*", produced what was perhaps the first hostile notice of the stethoscope. Although he admitted he had no personal experience of the instrument, he did not hesitate to write in sarcastic vein, and even made use of the word "charlatanisme." He wrote "The ear is now invested with the right to appreciate the circulation of the heart and the entry

of air in the cells of the lung."<sup>7</sup> Probably the first mention of the stethoscope in any British medical journal was in the *Edinburgh Medical and Surgical Journal* of November 1818, which referred to the basic facts of Laënnec's discovery.<sup>8</sup> On 1 August 1819, the London Medical Repository reported Laënnec's memoir to the Académie des Sciences, and briefly described the stethoscope and its uses. This was probably the second notice of the stethoscope in Britain.<sup>9</sup>

The first edition of Laënnec's *De l'Auscultation Médiate* was published on 15 August 1819, in a first printing of 2100 copies, with a second impression of 1500.<sup>10</sup> It is said to have sold badly, because of poor salesmanship, and Laënnec received complaints from people who had sought for the book in vain. This was doubtless why, when he brought out his second edition in 1826, he made sure that it included a list of places and booksellers where it could be obtained. This edition was printed in 2400 copies.<sup>11</sup>

In 1819 FV Merat's article "Pectoriloque" appeared in the great *Dictionnaire des Sciences Médicales*. The title referred to the instrument itself, but Merat noted that Laënnec had just changed its name to "stethoscope." It reproduced the plate of the stethoscope from Laënnec's book, plus an interesting drawing of the instrument in actual use—almost certainly the first such illustration to appear. Merat thought that until more experience could be amassed in hospitals, one should abstain from using the stethoscope in private practice. Although this was a very commonly held view at the time, many people were buying Laënnec's book and experimenting for themselves with the stethoscope.<sup>12</sup> Leon Rostan reviewed the book in October 1819, but denied the existence of bronchiectasis, and thought pulmonary apoplexy a variety of bronchopneumonia.<sup>13</sup>

Probably the first review of Laënnec's book in Britain appeared in the *Quarterly Journal of Foreign*

*Medicine and Surgery* in November 1819. It began "This is a very interesting and important work," and ended "Models of the instrument . . . have been brought to London, and we lately saw sets of them at Mr Weiss's, in the Strand. They are of so moderate a price, that it will be in the power of all to convince themselves of the reality of the phenomena observed by Laënnec. This has already been done by several individuals, and we feel confident that very important results will, in all probability be obtained from the experiments and observations now making."<sup>14</sup>

A French review by L Rouzet in January 1820 ended "The work of M Laënnec is a book eminently practical, but we fear that its length can only be a great obstacle to its utility." This was another fairly common criticism. Rouzet wrote "We have thought to render a service to medicine and to practitioners in particular by making an analysis of the work itself, and sufficient to serve as a practical manual."<sup>15</sup> One anonymous writer in January 1820 was clearly deterred by the amount of work needed to master the art of stethoscopy; nevertheless he wrote "those who have meditated on the work of Dr Laënnec know how to appreciate the zeal and profound knowledge of the author."<sup>16</sup>

Typical of several long analytical reviews was James Johnson's, in his *Medico-Chirurgical Journal*, of 20 January 1820. It included translations of some case histories, and ended "To the enlightened author, of whom France may well be justly proud, the thanks of Europe are due." Johnson tells us that he had procured some "cylinders" from Paris, and "has engaged a workman in London to make them for any gentleman . . . who may wish to have one. They are constructed of box or other close wood, by Mr Allnutt, of Piccadilly, at four shillings each. Models of the instrument may be seen at the Editor's residence at any time."<sup>17</sup> PA Piorry, writing in 1820, said of the stethoscope "if this method had only a quarter of the utility attributed to it by its inventor, it would still be one of the most precious discoveries of medicine."<sup>18</sup> Piorry reduced the volume of the early "baton" types of instrument, thus making them lighter and more portable. In addition to being a keen supporter of the stethoscope, Piorry tried to do for mediate percussion what Laënnec had done for mediate auscultation.

In 1821, AJ De Lens wrote the article on the stethoscope for the *Dictionnaire des Sciences Médicales*. He stated "Laënnec's discovery exacted great attention. If some doctors compromised their judgment and the dignity of their characters for only making it a subject of caricature and pleasantry, the majority welcomed it. The public, far from ridiculing it, also welcomed it. The stethoscope can henceforth only have detractors who are deaf or those who do

not want to hear."<sup>19</sup>

A very favourable review of Laënnec's book by AB Granville appeared in February 1820. He thought that Laënnec had subordinated descriptions of pathological anatomy (which Granville thought were very important) to his descriptions of mediate auscultation. We know that Forbes also thought this, and in his first edition of his English translation he restored the work to what he always thought it should have been: two independent treatises, one on pathological anatomy, the other on diagnosis. A footnote by Granville tells us that Treutell and Würtz, booksellers of Soho Square, imported the stethoscope from Paris (Paris price 2 francs), and that they were also being made by Allnutt.<sup>20</sup>

Between June 1820 and August 1821, FMP Lejumeau de Kergaradec published a remarkable five-part review of Laënnec's book. In his final article he stated that he had wanted to discuss some of the objections raised by detractors of the stethoscope but he thought that, such was the progress of opinion concerning the instrument since his first article, it would now be superfluous to defend it.<sup>21</sup>

John Forbes's four editions of his English translation of Laënnec's book produced between 1821 and 1834 were very important. Although he has been criticised in recent years for some of the great liberties he took with the original work, most contemporary reviewers thought (as he did) that he had considerably improved upon Laënnec's original arrangement, and had made it more acceptable to English readers. Forbes first heard of the stethoscope through his friend James Clark. The latter's *Medical Notes on Climate*, 1820, which included his description of Laënnec's work at the Necker, had been seen through the press by Forbes. Clark's visit to the Necker had coincided with one of Laënnec's absences but he had been shown round by Bruno Cayol, his Chef de Clinique. Clark was one of the first British physicians to adopt the stethoscope, and he had used it in his practice at Rome, which included many consumptive patients. He relates how he had brought back an instrument from Paris, and had given it to a colleague who had already found it useful. This may have been Forbes himself.<sup>22</sup>

The first edition of Forbes's English translation appeared in 1821, and although he abridged parts of Laënnec's work, omitted others, and condensed much, reducing it to about half its original length, he probably did as much as anyone to popularise the use of the stethoscope and to introduce Laënnec's teaching to English readers.<sup>23</sup> He undoubtedly underestimated seriously the great influence the stethoscope was to have on medicine, but obviously realised the immense importance of the book in

general. In a letter to Laënnec dated 13 September 1823 he was able to report that all 500 copies had been sold: a thing, as he said, almost unprecedented in a translation from a foreign work. On hearing from Laënnec that his first French edition was also out of print, and that he was working on a second, he asked him to let him have an up-to-date account of his researches, and embodied these in his own *Original Cases with Dissections* which appeared in 1824.<sup>24</sup>

his work was both timely and important, and can be regarded as a stop-gap between his first English edition of 1821 and his second edition of 1827. In addition it included the first English translation of Auenbrugger's *Inventum Novum*, together with a selection of Corvisart's commentaries. This was important, as Laënnec's book had not only put mediate auscultation on the map, but had also done much to popularise the twin method of percussion. It also included a translation of Victor Collin's little work of 1824 which, while it contained nothing original, was of value in providing a current review of the progress of these then new and exciting methods. Forbes was far more than a mere translator, and his work of 1824 reveals that like Laënnec he too had tried to correlate his stethoscopic observations with pathological findings.

Several interesting early references to the stethoscope appeared in Germany. Some accounts say that Laënnec's method was first recommended by Marx, but first employed extensively in the clinics of Peter Krukenberg, JL Schönlein, and CF Nasse. Nacquart's report of *Medical news*, published in Paris in 1819, was noticed in CW Hufeland's *Journal der practischer Arzneykunde* in January 1819.<sup>25</sup> Some German reviews gave a detailed analysis of Laënnec's book, and one of these ran to 86 pages.<sup>26</sup>

Piderit was one of several Germans who devoted their doctoral theses to the stethoscope,<sup>27</sup> and from a paper of December 1822, we learn that Carl Ignatz Lorinser (one of Laënnec's pupils) was giving weekly, two-hourly, free lectures on Laënnec's pathological teaching.<sup>28</sup>

The first German edition of Laënnec's treatise appeared at Weimar in 1822, and included a translation of Kergaradec's memoir on the stethoscope applied to obstetrics. Further German editions were published in 1832 and 1839.

On 28 November 1824, Enrico Acerbi wrote to Laënnec stating his intention of making a "rigorous translation," but I do not think he ever did this. A four-volumed Italian translation appeared at Livorno during 1833-36 and later translations in 1859-60 and 1874. In addition there had been an Italian version of Forbes's work of 1824 published in Genoa in 1830.

Although I know of only one Spanish edition of

Laënnec's treatise in book form, and that a modern one of 1954, several references to the stethoscope and to Laënnec's book appeared at an early date in Spain. In March 1821, DF Juanich y March, gave a detailed description of Laënnec's book, which included a plate of the stethoscope.<sup>29</sup> In the same year Antonio Hernandez Morejon published a work in Madrid which contained perhaps the first reference to the use of the instrument in Spain.<sup>30</sup> In April 1821, a French journal referred to investigations made in Spain to verify the utility of the stethoscope,<sup>31</sup> and in 1822 a periodical in Cadiz published a translation of Merat's article together with the rare illustration of the stethoscope in actual use.<sup>32</sup>

The following year Manuel Hurtado de Mendoza published an article on "Pectoriloquia y Pectoriloquio" in a major Spanish dictionary of medicine and surgery.<sup>33</sup>

Others helped to spread the doctrine of mediate auscultation throughout Europe, and Gotfredsen tells us that Oluf Lundt Bang, who had been a pupil of Laënnec in Paris in 1823, introduced the stethoscope into Denmark, while Andreas Christian Conradi did the same for Norway.<sup>34</sup>

It seems that the first review of Laënnec's book to appear in the United States was in the *New England Journal of Medicine and Surgery* in Boston in April and May 1821. In the first article we read "We value this book so highly that we should be disposed to promote the translation of it in this country, had we not received an intimation that this had been undertaken in London. We hope to have this confirmed." The writer of this long review was obviously impressed with Laënnec's book, but in common with many others thought that progress with the stethoscope in private practice would be slow.<sup>35</sup>

Edmund Strudwick, writing in the *Philadelphia Journal of Medical and Physical Sciences*, stated "Never, in a single instance, have the indications of the stethoscope been falsified by the observations and dissections made at the Alms House, at least those with which I am acquainted." He also referred to Dr Jackson "of this city" as a supporter of the stethoscope.<sup>36</sup>

Although one must beware of drawing conclusions from isolated examples, it would seem that as late as 1834 there were some in the USA who were unaware of the dissemination of Laënnec's work. Samuel George Morton, in the preface to his important work on tuberculosis, wrote "It has often surprised me, that of the works of Bayle, Laënnec, and Louis, we have no American editions." He knew of Forbes's translation, and wrote "My attention was first particularly directed to the diseases of the lungs, by an attention on the clinical lectures of the

celebrated Laënnec; who with astonishing acuteness of mind, and personal urbanity combined the felicity of imparting a portion of his enthusiasm to all who heard him." However, an advertisement pasted on the half-title stated that since the book had gone to press the author had been advised that Forbes's translation had been "some time since reprinted in the US."<sup>37</sup> It had, in fact, appeared in 1823 and 1830 and later American editions were to appear in 1835 and 1838. The reference to the impact made by Laënnec on his pupils is but one of very many we find in the literature.

Apart from Morton, other known American pupils of Laënnec were John Bell, who published a paper on the stethoscope in 1824,<sup>38</sup> and John Fisher, who added Andral's valuable notes to the fourth American edition of Forbes's translation published in 1838. This edition also included Fisher's observations on cerebral auscultation. Some of Laënnec's pupils came from Latin America: one, AJ Reverend, later became physician to Simon Bolivar. Another pupil, Joseph Thea, came from Newfoundland.

The *London Medical Repository* of June 1824 referred to the Necker Hospital, and said it was little frequented until "the celebrated Laënnec attracted so much notice, . . . through the medium of the stethoscope, an instrument which we hope to see more employed in British medical practice than it is at present."<sup>39</sup> Although many writers on Laënnec have expressed the view that his contributions to cardiology were not as great as those he made to chest diseases, an edition of RJH Bertin's book, published in 1824, included the statement "We are not afraid to say that the happy discovery of auscultation has shed, in a few years, more light on the diagnosis of heart diseases than all the other modes of exploration have made in two centuries."<sup>40</sup>

A somewhat inaccurate paragraph in the *London Times* of 19 December 1824 briefly described the stethoscope, but without any mention of Laënnec's name, and stated that the instrument had been invented only a few months before.<sup>41</sup>

In January 1825, James Johnson's *Medico-Chirurgical Review* published a notice of Forbes's *Original Cases* which stated "We were the first in this country to give an extended analysis of Laënnec's immortal work, and to express our conviction of its superior merits. We immediately procured some stethoscopes from Paris, and had others made in London." Johnson thought very highly of Forbes as a translator. It is interesting that as early as 1825 he was referring to "Laënnec's immortal work."<sup>42</sup>

On 19 August 1826, the *Lancet* published its "Directions for the use of the stethoscope," and referred to Sir James MacGrigor's recent order to army surgeons to use the instrument regularly and to

report their investigations.<sup>43</sup> Apparently similar instructions were issued to naval surgeons, but I do not know if any "collective investigations" ever arose out of these orders. In a later issue of 9 December, the *Lancet* reported that "many subscribers had asked for further information on the stethoscope, and that the *Lancet* was giving a description of the varieties of respiratory sounds, and of the voice, taken from Laënnec's first edition."<sup>44</sup> This would appear to indicate that at this date knowledge of the stethoscope was not yet completely diffused throughout Britain.

Laënnec's second edition of 1826 was generally very well received, and an unknown Scottish reviewer wrote in October of that year "The merits of the work of M Laënnec are neither to be understood nor appreciated by a review. The conscientious student will be satisfied with nothing short of a diligent perusal of the work; and even the most experienced pathologist will not disdain to consult a book in which he finds information so original, so copious, so accurate, and so well arranged."<sup>45</sup> This appraisal of Laënnec's book had been made at an earlier date. In 1819 the great pathologist, Matthew Baillie, had written to thank Laënnec for sending him a copy of his first edition, and had said of it "It contains the fullest and most able account of the diseased appearances of the Heart and Lungs which has yet been published."

Another reviewer wrote "When we compare the value and amount of what Laënnec has affected for medical science, with the claims of the most successful of his contemporaries, we are compelled to yield to him the palm of universal pre-eminence."<sup>46</sup>

There were, of course, some who scoffed, and a *Lancet* editorial of 18 August 1826 referred to a Dr Grant David Yeats, and his Croonian Lectures to the Royal College of Physicians of London. Wakley waxed sarcastic over Yeats' lectures, in which he had classed the stethoscope with acupuncture, metallic tractors, and phrenology, declaring them all to be "ephemeral follies."<sup>47</sup> At this time the *Lancet* often reported on the practice of the Paris hospitals, and their issue of 23 December 1826 stated that "The patients labouring under diseases of the heart and lungs are sent to the wards of Laënnec for the benefit of the auscultants or Laënnec trumpeters as they have been maliciously called by some."<sup>48</sup>

Nevertheless the mood was changing, and in February 1828 a reviewer at Glasgow could write "In 1821, . . . the new mode of examination, began to attract attention in this city. Though at first suspected, ridiculed, and sometimes abused as a piece of pompous quackery, it has gradually gained ground in the estimation of medical men. . . . Those who formerly scoffed, would now be ashamed to acknow-



ledge the ignorance in which they then glorified." With references to Forbes, he wrote that the fact that Laënnec himself quoted Forbes to prove the possibility of some of his own observations is the greatest possible testimony. Of Laënnec, he stated "None will dare to deny that he has produced the most complete treatise on diseases of the chest, which exists in any language. . . ."<sup>49</sup>

Between the publication of Laënnec's first edition of 1819 and his second edition of 1826, many works on the stethoscope appeared. Some of these were doctoral theses, like the works of Meriadec Laënnec in 1821,<sup>50</sup> Lorinser in 1823,<sup>51</sup> and van Hall in 1823.<sup>52</sup> Lejumeau de Kergaradec had introduced the stethoscope into obstetrics in 1822,<sup>53</sup> and the next year Lisfrance had done the same for orthopaedics.<sup>54</sup> Victor Collins's popular little work on the new methods of physical diagnosis, published in 1824, had enjoyed a great success.<sup>55</sup> Forbes's first edition of his English translation had appeared in 1821, and this had been followed up by his valuable work of 1824. William Stokes, while still a student, had published his *An Introduction to the Use of the Stethoscope* in 1825<sup>56</sup>; and in 1828 his *Two Lectures on the Applicability of the Stethoscope*.<sup>57</sup> In this latter work he said of the stethoscope "It is one of those rich gifts which Science now and then bestows upon her favourite votaries, which, while they extend our views, and open to us wide and fruitful fields of inquiry, confer in the meantime the richest benefits and blessings on mankind. The instrument was first introduced by one, whose works will ever remain as an example of patient investigation, philosophical research, and brilliant discovery, and its use is now supported by the liberal, the enlightened, and the scientific portion of the medical world."

Over 300 mostly young medical men had attended Laënnec's lectures, ward rounds, and pathological demonstrations. In addition they had had the opportunity of learning the art of stethoscopy from the master himself. Many of them carried away with them lasting impressions of his teachings, and helped to spread them throughout the world. One of them was WEE Conwell who in 1829 published at Malacca a work on pulmonary diseases in India and the use of the stethoscope, a work which he had expressly promised Laënnec he would undertake.<sup>58</sup>

It is not to be supposed that all were united in praising the stethoscope, Laënnec's book, or his teaching and practice. Some thought the book too long and, with regard to his practice or therapeutics, some thought this was the weaker part of a much greater whole. But as far as the stethoscope itself was concerned, although there were some who scoffed in the early days, it is quite clear from contemporary reviews that the great majority not

only welcomed the instrument but saw its great potential as the first major diagnostic tool medicine had ever had. As far as Laënnec's treatise was concerned, almost all discerning writers acknowledged it as being the most original, complete, accurate, and important work on the subject that had ever appeared.

## References

- 1 Bishop PJ. *A Bibliography of RTH Laënnec*. London: Unpublished manuscript, 1981.
- 2 Granville AB. *Sudden death*. London: John Churchill, 1854:22-3.
- 3 Anon. *Ann Polit Morales et Litt* 1817; No. 650, 2.
- 4 Laënnec RTH. M Laënnec lit un Mémoire sur l'Auscultation par des moyens acoustiques, etc. *Proc-verb Séances Acad Sci* 1816-19; 6:286-7.
- 5 Laënnec RTH. M Laënnec commence la lecture d'un mémoire . . . sur l'auscultation à l'aide de divers instruments acoustiques. *Bull Fac Méd* 1818;129, 156, 171.
- 6 Beaugendre FMA. *Dissertation sur l'Apoplexie*. Thèse de Paris, 1818.
- 7 Nacquart JB. Nouvelles de médecine. Des instruments en médecine. *J Gen Méd Chir Pharm* 1818;64:135-6.
- 8 Part III. Medical Intelligence. *Edin Med Surg J* 1818;14: 655-6.
- 9 New French mode of discovering ulcers in the lungs. *Lond Med Repository* 1819;12:150-1.
- 10 Laënnec RTH. *De l'Auscultation Médiate ou Traité du Diagnostic des Maladies des Poumons et du Cœur*. Paris: Brosson et Chaudé, 1819.
- 11 Laënnec RTH. *Traité de l'Auscultation Médiate*. Seconde édition. Paris: JS Chaudé, 1826.
- 12 Merat FV. Pectoriloque. *Dict Sci Méd* 1819;40:9-35.
- 13 Rostan L. De l'Auscultation médiate, . . . Laënnec. *Nouv J Méd* 1819;6:154-84.
- 14 Art V. De l'Auscultation Médiate, . . . par RTH Laënnec, Paris, 1819. *Quart J For Med Surg* 1819-20;2:54-68.
- 15 Rouzet L. Analyse des Ouvrages. De l'Auscultation Médiate . . . par RTH Laënnec. *Rev Méd Hist Philos* 1820;1:1-82.
- 16 Anon. *Gaz de Santé* 1820;16 January.
- 17 De l'Auscultation médiate par RTH Laënnec. *Med-Chir J* 1820;2:461-94.
- 18 Piorry PA. Pneumato-thorax; Pneumato-pericarde. *Dict Sci Méd* 1820;43:339-42, 370-84.
- 19 De Lens AJ. Stethoscope. *Dict Sci Méd* 1821;52:586-90.
- 20 Granville AB. On mediate auscultation by RTH Laënnec. *Lond Med Phys J* 1820;43:164-70.
- 21 Lejumeau de Kergaradec FMP. De l'Auscultation Médiate, par RTH Laënnec. *Bibliothèque Méd* 1821;73: 151-64.
- 22 Clark J. *Medical Notes on Climate, Diseases, Hospitals, and Medical Schools in France*. London: T and G Underwood, 1820.
- 23 Forbes J. *A Treatise on the Diseases of the Chest*. Translated from the French of RTH Laënnec by John Forbes. London: T and G Underwood, 1821.
- 24 Forbes J. *Original Cases with Dissections and Observations illustrating the use of the Stethoscope and Percussion*. London: T and G Underwood, 1824.
- 25 V. Blicke in das ärztliche Leben von Paris. Von Dr Nacquart (sic). *J Pract Arzneykunde* 1819;48:81-9.
- 26 Laënnec von der Lungenschwindsucht und der Möglichkeit ihres Heilung. *Neue Samml auserlesener Abh Prakt Aertz* 1821;5:559-645.
- 27 Piderit JCH. *De Exploratione Thoracis ad Morbos Pectoris*

- Internos Cognocendos*. Berlin: T Brüscke, 1820.
- <sup>28</sup> *J Pract Heilkunde* 1822;**55**:125.
- <sup>29</sup> Juanich y March DF. Reflexiones . . . de la enfermedades del pecho . . . etc. *Per Soc Salud Publ Cataluna* 1821;**1**: 376-87.
- <sup>30</sup> Morejon AH. *Ensayo de Ideologia Clinica o fundamentos filosoficas para la ensenanza de la Medicina y Cururgia*. Madrid, 1821.
- <sup>31</sup> Espagne. Madrid.—Medecine—Pectoriloge (sic) du docteur Laënnec. *Rev Encyclop . . . Litt Sci Arts* 1821;**10**:232-3.
- <sup>32</sup> RLA. Comentarios del libro de Laënnec Auscultacion mediate. *Per Soc Med-Quir Cadiz* 1822;**3**:35-65.
- <sup>33</sup> Hurtado de Mendoza M. Pectoriloquia y Pectoriloquio. *Diccionario de Medicina y Cirurgia del Profesor D. Antonio Ballanos*. Madrid, 1823, **3**; Part 1 (Suplemento) 247-60.
- <sup>34</sup> Gotfredsen E. The development of medicine in Denmark since the foundation of the University of Copenhagen in 1479. *Dan Med Bull* 1957;**4**:170-9.
- <sup>35</sup> Review Article III. De l'auscultation mediate. *New Engl J Med Phys Sci* 1824;**8**:265-93.
- <sup>36</sup> Strudwick E. Art II. Remarks on the Stethoscope in relation to phthisis pulmonalis. *Philad J Med Phys Sci* 1824;**8**:33-53.
- <sup>37</sup> Morton SG. *Illustrations of Pulmonary Consumption*. Philadelphia: Key and Biddle, 1834.
- <sup>38</sup> Bell J. Art I. Some general remarks on the use of the stethoscope. *N Y Med Phys J* 1824;**3**:269-81.
- <sup>39</sup> Hopital Necker. *Lond Med Repository* 1824;**1**:516-7.
- <sup>40</sup> Bertin RJH. *Traité des Maladies du Coeur*. Rédigé par J Bouillaud. Paris: JB Baillière, 1824.
- <sup>41</sup> *The Times*, 19 December 1824.
- <sup>42</sup> Review. Original Cases with Dissections. John Forbes, London, 1824. *Med-Chir Rev* 1825;**5**:144-60, 169-80.
- <sup>43</sup> Directions for the use of the stethoscope. *Lancet* 1826;**x** 667-70.
- <sup>44</sup> Directions for the use of the stethoscope. *Lancet* 1826-27; **xi**:312-4.
- <sup>45</sup> Art VI—Traité de l'Auscultation Médiante. Seconde edition. *Edin Med Surg J* 1826;**26**:406-43.
- <sup>46</sup> Art II. Traité de l'Auscultation Médiante . . . par RTH Laënnec, Paris, 1826. *Q Med Rev* 1827;**1**:17-39.
- <sup>47</sup> *Lancet* 1826-27;**xii**:637.
- <sup>48</sup> Foreign Report. Clinical report of the practice in La Charité, during the winter of 1825-26. *Lancet* 1826;**xi**: 376-8.
- <sup>49</sup> X. On auscultation and percussion. *Glasgow Med J* 1828; **1**:59-77.
- <sup>50</sup> Laënnec M. *L'Auscultation Médiante peut-elle servir aux progres de la médecine pratique?* Thèse de Paris, 1821.
- <sup>51</sup> Lorinser CI. *Die Lehre von der Lungenkrankheiten*. Berlin: Schüppel'scher Buchhandlung, 1823.
- <sup>52</sup> van Hall HC. *Dissertatio de Stethoscopii in Morbia Uso*. Traj ad Rhen, OJ von Paddenburg, 1823.
- <sup>53</sup> Lejumeau de Kergaradec JA. *Mémoire sur l'Auscultation appliquée à l'Etude de la grossesse*. Paris: Méquignon-Marvis, 1822.
- <sup>54</sup> Lisfranc J. *Mémoire sur les Nouvelles applications du Stethoscope*. Paris: Gabon, 1823.
- <sup>55</sup> Collin V. *Des Diverses Méthodes d'Exploration de la Poitrine*. Paris: JB Baillière, 1824.
- <sup>56</sup> Stokes W. *An Introduction to the Use of the Stethoscope*. Edinburgh: Machlachan and Stewart, 1825.
- <sup>57</sup> Stokes W. *Two Lectures on the Applicability of the Stethoscope*. Dublin: Hodges and M'Arthur, 1828.
- <sup>58</sup> Conwell WEE. *Observations chiefly on pulmonary diseases in India and an essay on the use of the stethoscope*. Malacca: Printed at the Mission Press, 1829.