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From the viewpoint of the medical founders, although not necessarily of their non-professional colleagues, one of the main objectives of the new hospitals was to facilitate the study of diseases of childhood. Continental experience indicated that specialized institutions provided unrivalled opportunity to advance knowledge of the clinical course and pathology of illness. An honest appraisal would also have indicated that sick children had a lesser chance of recovery in hospital than when carefully nursed in their own homes (as happened with more prosperous families) and that hospital medicine, as practised in Paris during the first half of the nineteenth century, had not contributed appreciably to the discovery of better remedies or actual cures.¹ The founders of British paediatric hospitals hoped to avoid the spread of infection, the main cause of high mortality in the continental institutions, by not massing children together in large wards (which anyway were not available), by careful attention to hygiene, and by encouraging good nursing. Furthermore, the new hospitals would cater for poor children who had little chance of proper care at home. As to finding cures, it was assumed that improved knowledge of disease must lead to better and more specific treatment. Although much was said about the advancement of science, in the voluntary British paediatric hospitals all that was originally intended by this high sounding phrase was the observation of disease and of its morbid pathology, if and when death ensued.

Given the small size of the paediatric hospitals that could be funded by voluntary contributions, it might seem that more children would have benefited from expansion of the rudimentary dispensary system already in existence, furthered by advice and assistance in improving home conditions of care, as opposed to the establishment of inpatient facilities. However, apart from the fact that at mid-century there was no efficient way of delivering home help and no trained people to so, to have provided such assistance would have conflicted with the Poor Law system. One of the deliberate consequences of the 1834 Poor Law had been to restrict medical relief to the truly destitute, with the expectation that other working-class families would pay for health care through sick clubs and self-supporting dispensaries.² This did not happen to any great extent since the needy could use hospital outpatient departments and public dispensaries without becoming branded as paupers. The subscriber's letter of recommendation served as an acceptable guarantee that the patient was worthy of charitable help. But, outside the voluntary institutions, free medical assistance was supposed to be made available only under Poor Law criteria. In other words, at mid-century voluntary hospitals and dispensaries were the only institutions under which free health care could be provided to individuals without

¹ The therapeutic philosophies of the Paris school are discussed in: Erwin H. Ackerknecht, *Medicine at the Paris Hospital 1794–1848* (Baltimore: Johns Hopkins Press, 1967), pp. 129–38; and in W. F. Bynum, *Science and the Practice of Medicine in the Nineteenth Century* (Cambridge: University Press, 1994), pp. 33–44.

² Ruth G. Hodgkinson, *The Origins of the National Health Service: The Medical Services of the New Poor Law, 1834–1871* (Berkeley: University of California Press, 1967), p. 9.

pauperizing them. For the physician affiliation to a fully organized hospital was far preferable to dispensary service which involved hard work but little in the way of professional recognition. Hence Charles West's extreme disappointment at the failure of his efforts to get the Children's Infirmary at Waterloo Bridge Road converted into a hospital and his later resignation from the dispensary. Such institutions may well have provided the best value for service then possible but they were inadequate sites for professional advancement or even for the controlled surveillance of patients, which was expected to advance medical science.

The relationship between hospitals and dispensaries during the nineteenth century is a topic that requires further clarification. I. S. L. Loudon indicates that the general dispensary movement, which originated in the 1770s, flourished in the first half of the nineteenth century because the voluntary hospitals were then too small, and too restrictive in their admission policies, to provide the community care needed.³ In so far as adults were concerned, the establishment of hospitals preceded that of dispensaries, which later flourished because they were comparatively inexpensive. However, when hospitals grew in size and importance in the second half of the nineteenth century, their outpatient departments began to absorb patients who had attended dispensaries and the latter became less essential and prestigious. Paediatric hospitals, on the other hand, came after the establishment of dispensaries and so, to some extent, were modelled on the latter. While the general hospitals, according to Loudon, did not undertake home visiting, the paediatric hospitals did try initially to further communal welfare by being responsible for the domiciliary care of patients, as had the dispensaries. From its inception, the Manchester General Hospital and Dispensary for Sick Children decreed that any sick child recommended by a subscriber, and residing within Manchester and Salford, was entitled to be visited as a home patient. By the 1860s not only were the medical officers of the dispensary visiting sick outpatient children in their homes but also the lady visitors were checking on the condition of patients previously discharged from the hospital. In 1865 an assistant medical officer was appointed for the express purpose 'of visiting in their own homes those children who were so seriously ill as to be unable to attend at the Dispensary'.⁴ That year there were 906 such cases, and 5,298 visits were paid, being an average of nearly six per patient. These domiciliary children suffered from a variety of complaints but the commonest were infectious diseases, with typhus and typhoid (classified together because distinction still proved difficult) held responsible for 197 cases, measles for 131, scarlet fever for 80, and whooping cough for 54. Since more than half the patients, therefore, suffered from communicable diseases, home visiting was not only more humanitarian for a very sick child but also served to limit the spread of illness.

Soon however home visiting became a casualty to complaints from hospital medical officers that it took too much of their time, fortified by representations from local physicians who considered it an invasion of their preserves. By 1879, the number of home patients cared for by physicians at the Manchester Children's Hospital had risen to 1,119.⁵

³ I. S. L. Loudon, 'The Origins and Growth of the Dispensary Movement in England', *Bulletin of the History of Medicine*, 55 (1981): 322–42.

⁴ *Thirty-Seventh Annual Report of the General Hospital and Dispensary for Sick Children* (Manchester, 1866), p. 6.

⁵ *Fifty-First Annual Report of the General Hospital and Dispensary for Sick Children* (Manchester, 1880), p. 15.

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But all who wanted the service were no longer being accommodated for, by this time, the hospital was cutting back on outpatients (as were other Manchester voluntary hospitals) by using the Manchester and Salford Provident Dispensary Association to check on the ability of families to pay provident dispensary fees. If the incoming wages were judged sufficient for this purpose (anything above a weekly income of 18s. for a couple plus 1s. 6d. for each child), the patient was not permitted to be attended by the hospital staff but referred instead to a provident dispensary.⁶ About 8 per cent of outpatients were thus deflected in 1879 into paying channels. In 1897 the number of home patients was only 859.

By this time other children's hospitals had also cut down on home visiting or even eliminated the service altogether. The management committee of the Children's Hospital at Birmingham kept having to remind the medical staff to visit home patients and, perhaps due to administrative exhaustion, the project fell into disuse during the seventies.⁷ At Edinburgh, domiciliary attendance involved 1,391 patients in 1870 (the maximum ever attained) but had also always proved difficult to administer. In 1865, the ladies committee pointed out to the directors (who were then very much in favour of home visiting but seemed unaware of the problems involved) that the extra-physicians appointed to assist with outpatients were disinclined to do domiciliary visits for the very good reason that these interfered with their own private practices.⁸ Finally, outdoor visiting was discontinued in the middle of 1879. This decision was justified on the grounds of complaints from Edinburgh medical practitioners that home visiting robbed them of patients who were not truly in need of gratuitous advice.⁹

Less controversy was incurred when home visiting was performed by nurses, or lady visitors, rather than by hospital medical officers. The Glasgow Hospital for Sick Children, a relatively latecomer to the paediatric scene since it did not open until 1882, used a system whereby the two hospital dispensary sisters spent their mornings in outpatients and their afternoons doing domiciliary work. According to Edna Robertson, 'The Sisters assisted with surgical dressings, gave medical advice and hints "on the maintenance of domestic cleanliness and wholesomeness", and to the poorest homes they took milk, eggs, and beef tea'.¹⁰ By this time other charitable institutions had launched schemes for the nursing of the poor in their homes, following the example provided by William Rathbone in Liverpool. Following the death of his wife in 1859, Rathbone persuaded the nurse who had cared for her 'to undertake at his expense to nurse certain poor patients in their homes for a limited period'.¹¹ By 1865, Liverpool was divided into 18 districts, each with its own trained nurses under the responsibility of an unpaid lady superintendent—the beginnings of district nursing which was to become widespread before the end of the century.

⁶ John V. Pickstone, *Medicine and Industrial Society: A History of Hospital Development in Manchester and its Region, 1752–1946* (Manchester: University Press, 1985), p. 187.

⁷ Rachel Waterhouse, *Children in Hospital: A Hundred Years of Child Care in Birmingham* (London: Hutchinson, 1962), pp. 32–3.

⁸ Edinburgh Medical Archives, Report of Directors' Meeting, 2nd February, 1865.

⁹ *Twenty-First Annual Report . . . of the Royal Edinburgh Hospital for Sick Children* (Edinburgh, 1880), p. 5.

¹⁰ Edna Robertson, *The Yorkhill Story: The History of the Royal Hospital for Sick Children, Glasgow* (Glasgow: University Press, 1972), p. 58.

¹¹ Margaret B. Simey, *Charitable Effort in Liverpool in the Nineteenth Century* (Liverpool: University Press, 1951), p. 70; William Rathbone, *Sketch of the History and Progress of District Nursing* (London: Macmillan, 1890).

Concurrently paediatric hospitals were abandoning a service that had originally seemed essential for good community relations but had usually proved too labour intensive and too controversial to be continued.

Parents did not, as originally anticipated, need much persuasion to bring their sick children to the new hospitals. Admissions were limited by the number of beds that could be maintained, sometimes far fewer than those available, but outpatient attendance climbed steadily. Even when hospitals charged a fee for dispensary visits, as Birmingham began to do in 1872 at the rate of 6d. per child for the first attendance, the decrease in numbers of outpatients was only temporary.¹² Birmingham Children's Hospital collected more than £300 in outpatient fees for 1874, but also found that attendance had increased by 1,178 over the previous year. Even in other hospitals where letters of recommendation were supposedly necessary, outpatient attendance flourished.

Children arrived with all kinds of disease but the commonest complaints treated in the outpatient department at Great Ormond Street in the sixties were skin affections. However, since such complaints were then in the surgical sphere, no mention of them is to be found in medical texts such as that written by Charles West. By the 1870s rickets had replaced skin diseases as the commonest ailment for which children attended Great Ormond Street. In 1876, this diagnosis was made in 1,197 outpatients, followed by skin complaints in 791, and of debility in 616 children. That year 9,148 children were seen as outpatients, so that those diagnosed as rickety represented about 13 per cent of the total. Furthermore, an unspecified number of children would show evidence of rickets in addition to the primary ailment for which they attended the dispensary and were registered in the books. In 1865, West estimated that about 30 per cent of patients that came under his notice (hospital and private cases) showed signs of the disease.¹³ As late as 1898, John Thomson, extra physician to the Royal Hospital for Sick Children at Edinburgh, judged that over 50 per cent of children under three years old attending the outpatient department displayed unmistakable signs of rickets.¹⁴ Perhaps to placate local pride, since rickets was considered due to feeding mismanagement, he added that the disease was said to be even more prevalent in the larger towns of London, Glasgow and Manchester.

However, the early records for the General Hospital and Dispensary for Sick Children, Manchester, indicate that few cases of rickets were then being brought to this dispensary. In 1861, a primary diagnosis of rickets was only made in 3.3 per cent of children seen as outpatients and, by 1866, the proportion had fallen to 1.5 per cent.¹⁵ It is unlikely that the disease was much rarer in Manchester than in London; indeed, one would have expected the contrary with probably greater industrial pollution and certainly less sunshine in the North. More likely, mothers in the Manchester area did not consider signs of rickets in their children as worth the trouble of visiting an hospital. What seems to have worried them in 1866 were diarrhoeal diseases representing nearly 16 per cent of all cases seen in the dispensary; followed by skin complaints (9.5 per cent); bronchitis (8 per cent) and

¹² 'Provident institutions and out-patient departments', *British Medical Journal*, ii (1875): 48–49.

¹³ Charles West, *Lectures on the Diseases of Infancy and Childhood* (Philadelphia: Henry Lea, 1866, from the 1865 English ed.), p. 588.

¹⁴ John Thomson, *Guide to the Clinical Examination and Treatment of Sick Children* (Edinburgh: William F. Clay, 1898), p. 286.

¹⁵ *Thirty-Eighth Annual Report of the General Hospital and Dispensary for Sick Children* (Manchester, 1867), p. 14.

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catarrh (also 8 per cent). Whooping cough was the commonest infectious ailment (although not so considered at the time) for which children were brought to the dispensary, representing over 7 per cent of all cases in 1866. The picture changed somewhat from year to year. In 1879, diarrhoeal diseases represented only 7 per cent of all cases seen in the dispensary, while bronchitis was then the commonest ailment at 15 per cent of the total.¹⁶ That year 6 per cent of the children were diagnosed as rickety, a fourfold increase in the proportion found in 1866, perhaps representing greater parental awareness of the need for and availability of effective treatment. Six per cent of the children also arrived with whooping cough which consistently remained, and would do so for the rest of the century, the infectious disease for which children most frequently attended the dispensary of the Manchester Children's Hospital.

Inpatients were considerably more select due to the relative paucity of beds. A subscriber's recommendation helped but became less and less essential for admission as the century wore on. Physicians naturally preferred to admit 'interesting' cases and also made allowances when home circumstances were considered hopelessly bad. Committees of management frequently rebuked their medical staff for excluding recommended patients or admitting too many fever cases, or too many babies, or other types of patients for which the hospital was not officially intended, but usually the rebukes were politely acknowledged by the medical committee, then quietly ignored. Feverish children formed a large proportion of admissions (except in hospitals that specifically rejected such cases) until city authorities took over responsibility by providing their own isolation hospitals (see Tables 3 and 4).

As indicated by Rachel Waterhouse, scarlet fever was unusually virulent during the sixties and seventies, with the highest death rate from this disease among children being reached between 1861 and 1870.¹⁷ At Great Ormond Street in the sixties, children suffering from scarlet fever and its complications were usually reported as the largest group of medical cases on the wards. (Even more numerous were patients with diseases of the bones and joints but these were usually classified as surgical). In 1862, 48 cases of scarlet fever (9 per cent of the total) were admitted to Great Ormond Street. (In fact tuberculosis was by far the commonest cause for admission but this was not obvious at the time since scrofula was still distinguished from tuberculosis. But if the children with scrofula of the bones and joints had been included with those diagnosed as having tuberculosis of the lungs and other organs, then this group would have accounted for by far the largest number of admissions). At Pendlebury out of 783 patients discharged from the medical wards during 1886, 206 had recovered or died (23 fatal cases) from scarlet fever (see Table 6). This large proportion was due to the hospital then being under contract with the Salford and Manchester local authorities to receive reported cases of scarlatina in their districts. Similarly the Birmingham Children's Hospital was persuaded in 1877 to receive

¹⁶ *Fifty-First Annual Report of the General Hospital and Dispensary* (Manchester, 1880), pp. 31–2.

¹⁷ Waterhouse, *Children in Hospital*, p. 74. The Registrar General's *Decennial Supplement*, for 1861–1870, B.P.P., 1875, XVIII, pt. 2, indicates that during those ten years scarlatina was responsible for 207,867 deaths of which 133,462 were of children under the age of five years. The only other diseases, then considered 'zymotic', which killed even more small children were diarrhoea and dysentery considered as a single disease group. The most lethal zymotic disease after scarlatina was typhus, with 189,285 total deaths of which 37,019 (representing a far smaller proportion) were of children under the age of five years.

local cases of diphtheria and scarlet fever under the age of twelve years.¹⁸ The management committee may later have regretted making this commitment for it kept complaining that payments from the Borough of Birmingham did not cover costs and asking for a further subsidy, as a lump sum or grant, which the town council refused to provide.¹⁹ Closure of one of the scarlet fever wards, however, worked wonders in persuading the local council to be more generous since it desperately needed the beds during periods of 'great pressure' from epidemic scarlet fever.²⁰ Lack of money was the ever recurring problem and, if any hospital had empty beds, as frequently occurred, this was not due to any shortage of acutely ill children but to lack of funds to maintain the necessary services.

The last year in which Pendlebury received cases of fever was 1897, for by then Manchester corporation had organized adequate accommodation for infectious cases at Monsall Hospital and so discontinued its subsidy to the Children's Hospital. Children with scarlet fever, measles, and whooping cough continued to attend as outpatients but from there were either shipped out to Monsall or sent home. On the medical wards children suffering from chorea, phthisis, gastro-intestinal disorders, bronchitis, empyema and pneumonia predominated for the rest of the century. (In 1900, out of 1,172 admissions about 600 were onto these medical wards.) Children with phthisis headed the list in frequency with 64 cases, 60 were diagnosed as suffering from chorea, 31 had pneumonia and 31 were malnourished babies, although only in recent years had these infants been admitted in such large numbers (see Table 6). If one includes the nearly 200 children on the surgical side suffering from caries and necrosis, spinal abscess, and disease of the hip and other joints, one is again struck by the appalling incidence of tuberculosis (see Table 13). Nor was this a complete picture without including 17 cases of tubercular meningitis, and various conditions such as lupus and disease of the mesenteric glands which were probably tubercular. A similar preponderance of tubercular cases existed in other children's hospitals (see Tables 3 and 5). During 1898, 948 children were discharged from the wards of the Edinburgh Hospital for Sick Children, and 176 died while in hospital. Of these about 1,100 children, 13 were diagnosed as having constitutional tuberculosis, 30 as suffering from tubercular meningitis, 27 as having pulmonary phthisis or tubercular pneumonia, 48 had abdominal tuberculosis, and about 90 children suffered from diseases of the bones and joints predominantly due to tuberculosis or osteomyelitis. According to Theodore Shennan, pathologist to the Royal Hospital for Sick children, Edinburgh, during a period of 16 years from 1883 to 1899, 855 autopsies were performed of which 355, or 41.5 per cent, were for tuberculosis.²¹ At Birmingham, of 1,026 children admitted to the wards during 1899, 170 were diagnosed as suffering from tubercular disease, the majority as surgical cases.

Persistently, large numbers of children were admitted with chorea (Sydenham's chorea, St. Vitus dance), then classified as a disease of the nervous system. These children were

¹⁸ Birmingham Children's Hospital Archives, Committee of Management Meeting, 13 August, 1877.

¹⁹ *Ibid.*, Committee of Management Meeting, 10 March, 1879; 9 June, 1879; 14 June, 1879.

²⁰ *Twenty-Third Report of the Birmingham and Midland Free Hospital for Sick Children* (Birmingham, 1884), p. 10.

²¹ Theodore Shennan, 'Tuberculosis in Children: A Statistical Examination of the Post-mortem Records in the Royal Hospital for Sick Children, Edinburgh', *Edinburgh Hospital Reports*, vi (1900), pp. 130-45.

gratifying patients for most did well in hospital, better it was thought than at home, rarely died and could usually be pronounced cured within a matter of weeks. (They might relapse but this was irrelevant to the immediate hospital statistics). Some physicians suspected a relationship between acute rheumatism and chorea, but the matter was still highly debatable at the end of the century.²² Children with chorea only infrequently presented themselves with a definite history of previous acute rheumatism, and although some went on to develop cardiac lesions (pericarditis and mitral disease) remarkably similar to those associated with rheumatic fever, the evidence for a common cause was not overwhelming. Nor would it become so until the 1930s when infection with haemolytic streptococci began to be perceived as the cause of these disorders. However, late-nineteenth-century physicians realized that fatal heart disease during adolescence and early adult life was frequently the consequence of cardiac complications incurred during childhood attacks of acute rheumatism and chorea. Even so, very few children with acute rheumatism were admitted either as outpatients or as inpatients at the Manchester Children's Hospital, probably because the original illness was common, usually mild and apparently fleeting. According to Goodhart and Still, many children with rheumatism were supposed by their families to be suffering from 'growing pains' and never put to bed at all.²³ Others might be rested for a day or two, but never see a doctor. In 1897 only four cases of acute rheumatism were admitted to the Manchester Children's Hospital and 29 seen as outpatients. Chorea, with its more obvious and disturbing symptoms, was another matter; the same year 190 cases were treated as outpatients and 57 choreic children admitted to the hospital (see Table 6).

General tuberculosis, acute rheumatism and rickets were frequently classified as 'constitutional diseases' implying that, although they might have a specific immediate cause, they were illnesses that occurred mainly in the predisposed, in children that came from 'tainted' families. Another important 'constitutional' disease was infantile syphilis, believed in the nineteenth century to be acquired at conception from either parent, but usually from the father, and therefore to be a hereditary disease according to then current interpretation. (In the last decade of the century the term 'congenital' tended to replace the term 'hereditary' demonstrating diminished certainty that the disease was transmitted at conception). As discussed in another chapter, some French physicians held that syphilis could be transmitted from generation to generation as a predisposition not only to syphilis but also to other diseases such as rickets and scrofula. In this way the French saw a kind of unity between the main 'constitutional' diseases with syphilis as the original cause.²⁴ Not so in England where, although it was usually accepted that a father could transmit syphilis to his offspring, the notion that the disease, or a predisposition to other disease, could be passed on to the third or the fourth generation, without reinfection, was deemed unworthy of serious consideration.

Babies with 'hereditary' or 'congenital' syphilis were frequently seen in the outpatient departments of the paediatric hospitals. At the Dispensary for Sick Children in

²² See, for example, 'A Discussion on Rheumatic Heart Disease in Children,' *British Medical Journal*, ii (1898): 1129–34. This discussion was held by members of the Section of Diseases of Children at the 66th Annual Meeting of the British Medical Association, held in Edinburgh in July, 1898.

²³ J. F. Goodhart and G. F. Still, *Diseases of Children* (London: Churchill, 1902), p. 654.

²⁴ Elizabeth Lomax, 'Infantile Syphilis as an Example of Nineteenth-Century Belief in the Inheritance of Acquired Characteristics', *Journal of the History of Medicine*, 34 (1979): 23–39.

Manchester, 85 children with symptoms of congenital syphilis were treated in 1874, 204 in 1886, 107 in 1893, and 164 in 1900. At the outpatient department of the Children's Hospital in Birmingham the figures were just as high with 272 children diagnosed as suffering from 'hereditary' syphilis in 1873, 148 in 1883, 113 in 1893, and 122 in 1897. Similarly, at Great Ormond Street, 195 outpatients were so diagnosed in 1866, 113 in 1876, 246 in 1886, and 145 in 1890. However, a very small proportion, usually less than 10 per year, of these syphilitic infants (most were under the age of one year) were admitted on to the wards and these were usually extremely sick babies. Instead the child was usually sent home to be treated with mercury in the form of a powder, a tincture, or as an ointment to be rubbed into the skin. The prognosis was considered good so long as treatment with mercury was conscientiously undertaken. Occasionally the admission of an older child with recently acquired venereal disease led to an attempted investigation of the source of infection. But usually insufficient evidence could be discovered for any criminal prosecution to be undertaken.²⁵

On the medical side often little could be done for these children apart from trying to restore strength and resistance to disease with as adequate a diet as could be taken, plentiful rest and good nursing. This was true for most other illnesses with one or two notable and encouraging exceptions. During the last decade of the century an effective antitoxin for diphtheria was discovered and also thyroid extract began to be used in the treatment of cretinism with remarkable results. Diphtheria antitoxin is discussed in the next chapter, but it is worth spending a little more time on the less well known discovery of a cure for the previously mentally and physically devastating condition known as cretinism, a case of which was described in the previous chapter.

Stunted and severely retarded children and adults were to be found in mountainous areas particularly in the Valais region of Switzerland where they were known as *crétins*. The condition was usually associated with an enlarged thyroid gland, commonly known as goitre, small stature, feeble and swollen limbs, enlarged abdomen, deformed features usually including protuberance of the tongue, pallor of the skin, and extreme mental retardation. Little was done for these children until 1839 when Dr. Guggenbühl, a young physician from Zurich, decided to live among them in the canton of Glarus, and determine the possibility of improving their lot. A couple of years later he opened a special school for their education on the Abendberg above Interlaken, and very soon this institution was renowned for the improvement wrought on the young cretins residing there. Other regions and countries began to follow the example of Abendberg and, until the last decade of the nineteenth century, expert institutional care was the accepted treatment for children diagnosed as cretins. The situation may be illustrated by the fate of two brothers brought to the Manchester Clinical Hospital for Women and Children in September, 1890. The elder brother was 11 years old but weighed only 34 lbs, and was 32 1/4 inches in height. His intelligence, like his stature, was assessed as that of a two-year-old child. He displayed the common characteristics of cretinism, as did his younger brother, aged six years and three months. But the physician consulted at the hospital, T. C. Railton, thought special education might improve the mental condition of the younger boy, who was therefore sent

²⁵ Edinburgh Medical Archives, Letter Books of Messrs. Henry and Scott, Honorary Secretaries to the Hospital, LHB 5/3/1, pp. 284 and 291; dated 8 December, 1860 and 14 December, 1860, these letters to the Procurator Fiscal first proposed an investigation and then agreed that the grounds were insufficient.

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to the Royal Albert Asylum in Lancaster, while the elder brother was pronounced too old to benefit and so returned home.

Early in 1893, it was suggested to Telford Smith, medical superintendent of the Royal Albert Asylum, that fresh thyroid should be given to the younger brother who was still a patient at the institution. Treatment was begun in March with a quarter of a lobe of fresh sheep's thyroid minced and mixed with warm rice and jam. The child ate this mixture without complaint but suffered fairly intense gastric disturbance, including vomiting, for the next couple of days. So the amount of thyroid was reduced by one half and given twice a week, with no further untoward digestive effects. Four months after treatment was begun:

Mentally he was wonderfully bright; he liked to talk and answer questions, and had learned 'Little Jack Horner' from a girl patient. His vocabulary was enlarging considerably. He was full of spontaneous play and mischief. Physically, he had got very thin, except in the face, which was plump and healthy looking without the least sign of puffiness. His appetite was good, and his bowels regular, without constipation. He was cutting two lower incisors.²⁶

Since the boy was losing weight, no gland was given from July until September, 1893, when it was realized that he was slowly reverting to his former state. By this time Burroughs and Wellcome had produced a tabloid form of thyroid, equivalent to one twelfth of a lobe, and the child was now given one tabloid daily. From then on progress continued smoothly. In the meantime, the older brother, now aged 14, was re-admitted to the Manchester Clinical Hospital in April, 1893 under Dr. Railton and also treated with thyroid. After less than one year of therapy this boy had grown four inches in height and was described as having the looks of 'a pleasant and intelligent little boy'. A very little boy who appeared about three years of age for he was still extremely backward both physically and mentally, but no longer a hopeless case. 'Time alone', in the opinion of Railton, 'will decide what kind of a man he will make'.²⁷ Appended photographs of the two brothers before and after treatment do indicate extraordinary change in the appearance of both boys. Although tiny for their years, by early 1894 they looked like normal children (see Figs 4 and 5).

Unfortunately, most illness had no specific remedy and the treatment of symptoms remained the mainstay of medical care, with only a very few novel useful remedies being discovered. Cod liver oil was confirmed as most valuable in the treatment of rickets, as useful in tuberculosis, and fruit juices and potato pulp firmly established as antiscorbutics. Quinine continued to be used as an antimalarial agent and sometimes in other forms of fever. From 1875 onwards synthetic antipyretic drugs made their appearance and sodium salicylate, originally introduced as an antipyretic agent, was soon discovered to be beneficial in acute rheumatism and chorea, two diseases that were liable to entail cardiac complications in children. Because the salicylates no longer seemed useful once pericarditis or endocarditis set in, and as they were also suspected of disturbing the action

²⁶ Telford Smith, 'Case of Sporadic Cretinism Treated with Thyroid Gland', *British Medical Journal*, i (1894): 1178–80.

²⁷ T. C. Railton, 'Sporadic Cretinism treated by Administration of the Thyroid Gland', *British Medical Journal*, i (1894): 1180–1.



Figure 4: Two brothers before treatment with thyroid gland. (From *British Medical Journal*, i (1894): 1178.)



Figure 5: Two brothers after less than one year of thyroid gland therapy. (From *British Medical Journal*, i (1894): 1179.)

of the heart, these drugs were then frequently discontinued and the cardiac complications treated symptomatically.²⁸

Surprising to the modern mind was the extent to which alcoholic beverages were prescribed to children, including babies. As Erwin H. Ackerknecht, John Harley Warner, and other historians have indicated, the therapeutic use of alcohol increased enormously during the 1860s after its promotion by Robert Bentley Todd, professor of physiology and morbid anatomy at King's College and also a renowned clinical practitioner in London.²⁹ He considered alcohol as a stimulant and food with especial value in fevers where it could act as nourishment, so preventing rapid loss of flesh, and as stimulant to the nervous system, so promoting the vital force thought necessary for recovery from illness through natural processes. Todd died in 1860 but he left disciples who continued to advocate alcohol therapy all the more enthusiastically because of determined opposition from medical and non-medical members of temperance societies. The medical science of the time was indecisive. At first French pharmacologists and Edward Smith, an English physician and nutritionist, stated that alcohol was excreted unchanged from the body and so could not act as food.³⁰ Later, during the 1860s, clinical thermometry was introduced (reintroduced might be a better term, since the measurement of body temperature had a brief vogue in the eighteenth century) into hospital medicine, when it was discovered that alcohol could lower body temperature, that is act as an antipyretic. Furthermore, by the 1870s the status of alcohol as a food was being restored by studies discrediting the former conclusion that it was excreted unchanged. John Harley Warner observes that clinicians used contemporary basic research on alcohol to justify their own theories but not to alter their practice which continued to depend on experience. In short, physicians, apart from a minority of temperance advocates, continued throughout the century to prescribe alcoholic beverages.

At Great Ormond Street, 23 from September, 1857, until 11 November, 1857, that is over a period of seven weeks, 29 bottles of port, 17 of white wine, four of brandy, and 191 pints of porter were consumed.³¹ The wine and brandy was intended for the inpatients, while the porter was for the resident medical staff, including nurses, as well as the children. (Separate records were kept for the outpatients' use of wine, so this was not involved). Considering that the hospital then had only 30 beds at its disposal, the above figures suggest an impressive allowance of alcoholic beverages and medicaments for the children. However, it was not always easy to tell who exactly was consuming what, although a medical signature was required before extra supplies of wine were supplied by the matron who kept the books. Intermittently, attempts were also made to reduce the costs of alcoholic beverages, by substituting whisky for brandy, or finding a cheaper wine than Cape wine to make *vinum ferri*, a tonic liberally dispensed to both in- and outpatients. Clearly, however, in most paediatric hospitals alcoholic beverages and remedies (usually

²⁸ Goodhart and Still, *Diseases of Children*, p. 666.

²⁹ Erwin H. Ackerknecht, *Therapeutics from the Primitives to the 20th Century* (New York: Hafner Press, 1973), pp. 109–11; John Harley Warner, 'Physiological Theory and Therapeutic Explanation in the 1860s: The British Debate on the Medical Use of Alcohol', *Bulletin of the History of Medicine*, 56 (1980): 235–57.

³⁰ Ludgar Lallemand, Maurice Perrin and J. L. P. Duroy, *Du rôle de l'alcool et des anaesthésiques dans l'organisme* (Paris: F. Chamerot, 1860); Edward Smith, 'On the Mode of Action of Alcohol in the Treatment of Disease', *Lancet*, ii (1861): 134.

³¹ Great Ormond Street Archives, Medical Committee Meeting, 11 November, 1857.

diluted with water, milk or barley water) remained high on the list of useful tonics and stimulants for the rest of the century. In 1899, Henry Ashby placed alcohol first on any list of stimulants, and found it 'beyond all question of value in treating acute disease when there is evidence of a flagging heart'.³² In his opinion, alcoholic stimulants were required in 'adynamic' forms (where vitality was failing) of scarlet fever, diphtheria, bronchopneumonia, and acute diarrhoea. However, drowsiness, delirium, and vomiting were signs for discontinuing alcohol, at least for a while. His views were commonplace although a few paediatricians did not share them. Dr. Annie Clark, for example, believed in total abstinence for both doctor and patient. Convinced that ethanol was a depressant, rather than a stimulant, she refused to order alcohol for her little patients at the Birmingham Children's Hospital. Sir Thomas Barlow was of the same opinion and both spoke and wrote on the dangers of administering spirits to children.³³

Nevertheless, in part due to the paucity of other effective remedies, alcohol continued to be used in paediatric hospitals well into the twentieth century. In 1895, according to Henry Burdett, Great Ormond Street spent an average of 15s. per occupied bed on alcohol, while the East London spent £1, and the Evelina as much as £2 per annum per occupied bed.³⁴ Reductions were however effected in 1899, with Great Ormond Street and the Evelina spending an average of only 10s. per bed, while the East London continued to expend £1.³⁵ The same year Pendlebury Hospital, Manchester, discouraged overactive scrutiny of its alcohol bill (a cost of £1 per bed in 1895) by merging it with provisions.

Although the discovery of more effective remedies proved elusive, the second half of the nineteenth century witnessed greater precision in establishing the cause of illness, mainly due to the regular use of autopsies but also to application of the science of bacteriology. By the 1890s the bacillus responsible for diphtheria (often called the Klebs-Loeffer bacillus in honour of its discoverers) could be cultured from throat swabs, which was hardly necessary in the diagnosis of severe cases but proved extremely useful with children who were only mildly sick but could propagate the disease. The test also proved invaluable in establishing the presence or absence of diphtheria when clinical trials on antitoxin serum were undertaken. The typhoid bacillus was also known by the end of the century but isolating it from a sick patient in a form suitable for culture did not then seem possible. On trial at the time, however, was Widal's test in which serum from a patient with enteric fever caused cultures of typhoid bacilli to lose their motility and stick together in clumps. According to Ashby and Wright, in their 1899 textbook, 'Widal's serum reaction though not apparently absolutely reliable is a very valuable means of diagnosis'.³⁶

During the last quarter of the century physicians were intrigued but mystified by the relation between epidemic scarlet fever and a scarlatina-like rash sometimes occurring

³² Henry Ashby and G. A. Wright, *The Diseases of Children, Medical and Surgical* (London: Longmans, Green, 1899), p. 839.

³³ Thomas Barlow, 'The Present Position of the Medical Profession in Relation to Alcohol', *Quarterly Journal of Inebriety*, 27 (1905): 234–40; Waterhouse, *Children in Hospital*, p. 83.

³⁴ Henry Burdett, *Hospitals and Charities 1897* (London: Scientific Press, 1897), p. 172.

³⁵ Henry Burdett, *Hospitals and Charities 1901* (London: Scientific Press, 1901), p. 142.

³⁶ Ashby and Wright, *The Diseases of Children*, p. 300.

post-operatively.³⁷ Usually surgical scarlatina, as the latter condition was often called, was a mild illness that subsided rapidly. Because the surgical cases proved as infectious as the epidemic ones, and because children who had suffered from surgical scarlatina did not contract the established contagious form thereafter, no matter how freely they were exposed to infection, by the end of the century it was generally accepted that the two diseases were identical, that is caused by the same as yet unidentified microorganism. But it was not at all clear why surgery should render children more susceptible to the poison of scarlatina. The solution to the puzzle would not be forthcoming until the 1920s when the Dicks of Chicago demonstrated that a toxin produced by haemolytic streptococci was responsible for the symptoms and rash of scarlet fever.³⁸

As early as 1882 Alexander Ogston, surgeon at the Aberdeen Royal Infirmary, had isolated and differentiated the streptococcus and the staphylococcus.³⁹ He demonstrated that these micrococci caused suppuration, but other investigators then showed that these were not the only organisms capable of instigating inflammation, and post-operative sepsis. Nevertheless, in 1883 the German surgeon, Friedrich Fehleisen, demonstrated that one form of streptococcus was the contagious principle in erysipelas, a serious inflammatory condition particularly fatal to infants. He was able to find *streptococcus erysipelatis* in the skin and subcutaneous tissue of affected areas, grow pure cultures and then successfully inoculate both animals and humans. But with scarlatina investigation proved more complicated. Repeated efforts were made to isolate an organism with the unexpected consequence that far too many potential culprits were indicted and no conclusion reached.

Also requiring explanation was the fact that scarlet fever could be complicated by swelling of the joints similar to that associated with acute rheumatism. Some physicians, for example Goodhart and Still, thought that the arthrites complicating scarlatina were usually the same as in rheumatic fever, while others, such as Henry Ashby, considered them as only very rarely of rheumatic origin.⁴⁰ Again this was a debate which would be resolved only in the twentieth century when it could be demonstrated that rheumatic fever was a potential complication of all haemolytic streptococcal infections including scarlatina.

Newly discovered in the 1890s, and 'on trial', was the use of lumbar puncture for diagnostic purposes. Puncture of the subarachnoid space in the lumbar region was practised by the German physician, H. Quincke, in 1891 to relieve intracerebral pressure in hydrocephalus.⁴¹ Within a few years he and others realized that lumbar puncture, although disappointing in the treatment of hydrocephalus and tubercular meningitis, offered great promise as a diagnostic tool. The normal cerebro-spinal fluid was clear whereas in meningitis it was cloudy, due to the presence of cells which varied according to

³⁷ The poor understanding of the aetiology of scarlet fever that persisted at the turn of the century is discussed by John M. Eyler, 'Scarlet Fever and Confinement: The Edwardian Debate over Isolation Hospitals', *Bulletin of the History of Medicine*, 61 (1987): 1–24.

³⁸ Thomas E. Cone, *History of American Pediatrics* (Boston: Little, Brown, 1979), p. 173.

³⁹ William Bulloch, *History of Bacteriology* (London: Oxford University Press, 1938), 150–1.

⁴⁰ Goodhart and Still, *Diseases of Children*, p. 197; Henry Ashby, 'On the Affections of the Joints which Complicate or Follow Scarlet Fever', *British Medical Journal*, i (1886): 970.

⁴¹ Robert H. Wilkins (compiler), *Neurosurgical Classics* (New York: Johnson Reprint Corporation, 1965), pp. 298–301.

the type of meningitis and, furthermore, cultures could be grown from the fluid. By the end of the century diagnostic lumbar puncture was being enthusiastically performed in Germany and in the United States, while British physicians were being more cautious.⁴² Although in 1891 W. Essex Wynter, medical registrar at the Middlesex Hospital, and Charles A. Morton, pathologist at the Bristol Children's Hospital, performed lumbar puncture to relieve pressure in tubercular meningitis apparently independently of Quincke's findings, the use of this manoeuvre as a means of diagnosis caught on more slowly and was not mentioned in turn of the century British paediatric textbooks.⁴³ Occasional reference may be found in the journals. For example, the *Lancet* in 1898 published a review of the diagnosis and treatment of epidemic cerebro-spinal meningitis by A. H. Wentworth, assistant physician to the Children's Hospital in Boston.⁴⁴ Wentworth discussed lumbar puncture, which he had performed on 29 young children and which he considered invaluable, in spite of the risk involved, because of its accuracy. The following year Bruce Low was trying to persuade fellow members of the Epidemiological Society of London that lumbar puncture 'if performed below the end of the cord was devoid of danger, easy, and almost painless, and in our present state of knowledge really indispensable to the correct diagnosis of all but typical cases [of cerebro-spinal fever] . . .'.⁴⁵ Nevertheless, as demonstrated by Susan Lederer, Wentworth's experimental use of lumbar puncture stirred up enough opposition from Bostonian anti-vivisectionists to cause him to resign his appointment at Harvard Medical School, even though he retained his post at the Boston Children's Hospital.⁴⁶ According to Goodhart and Still in their 1902 textbook, lumbar puncture was then only 'sometimes' used in Britain as a means of diagnosis between the varieties of meningitis.⁴⁷ Gradually, however, a critical number of physicians came to the conclusion that lumbar puncture was a valuable diagnostic tool, with few risks if properly performed, so that examination of the cerebro-spinal fluid was in general use by 1910.⁴⁸

Record keeping on the wards became more precise and detailed over the years. Temperature charts made their appearance during the 1870s; at the Evelina, for example, the house surgeon was authorized to purchase temperature charts (10 shillings worth) in 1869.⁴⁹ Apart from providing intriguing graphs, these also served as ever handy sites for recording diet, dosage of medicaments and other forms of treatment, and important changes in condition. Temperature charts became the standard forms for the registration of

⁴² Alexander D. Blackader in a review of 'Diseases of children', *Progressive Medicine*, (Philadelphia), i (1899): 99–206, described diagnostic lumbar puncture as a most valuable innovation that was being explored in Germany, Austria and in the United States.

⁴³ W. Essex Wynter, 'Four Cases of Tubercular Meningitis in which Paracentesis of the Theca Vertebralis was Performed for the Relief of Fluid Pressure', *Lancet*, i (1891): 981–2; Charles A. Morton, 'The Pathology of Tuberculous Meningitis with Reference to its Treatment by Tapping the Subarachnoid Space of the Spinal Cord', *British Medical Journal*, ii (1891): 840–1. Wynter first tried out the method in 1889, a couple of years before Quinke reported his procedure at the International Congress of Medicine.

⁴⁴ A. H. Wentworth, 'Epidemic Cerebro-Spinal Meningitis', *Lancet*, ii (1898): 854–8.

⁴⁵ 'Epidemiological Society', *Lancet*, i (1899): 304–5.

⁴⁶ Susan E. Lederer, 'Orphans as Guinea Pigs: American Children and Medical Experimenters, 1890–1930', in Roger Cooter (ed.), *In the Name of the Child: Health and Welfare, 1880–1940* (London: Routledge, 1992), pp. 96–123.

⁴⁷ Goodhart and Still, *Diseases of Children*, p. 490.

⁴⁸ G. Stirling Landon, 'Lumbar Puncture in Meningitis and Allied Conditions', *Lancet*, i (1910): 1056–63.

⁴⁹ Greater London Record Office, H9/EV/A2/1/1, Committee of Management Minutes, July 13, 1869.

nursing activities, providing written evidence that duties had been fulfilled. The printed charts show that nurses were expected to record in addition to temperature, morning and evening pulse and respiration, bowel movements and the amount of urine voided. In the latter department, as might be expected, entries were somewhat sporadic and the chemical testing of urine (with a printed entry in some charts) was usually ignored. Extremely well kept, however, were the temperature charts specially printed for the children with whooping cough at the Evelina hospital. Entries were made as to the time of occurrence of paroxysms of coughing, and any attending disturbance such as bleeding from the nose, vomiting, involuntary urination or defecation, convulsions and so on. But even outside this special effort to diagram the course of one still mysterious illness, the maintenance of patient records was usually remarkable for its thoroughness. The admitting physician filed a detailed case history followed by a report of the physical examination and the house officers maintained daily or weekly notes on the patient's condition and treatment while on the ward. Follow up notes were included if the child attended as an outpatient after discharge. If death was the outcome and an autopsy performed, the findings would be entered in the case notes. Very rapidly, it would seem, most hospitals established a comprehensive system for recording patient care and its outcome.