



When his elder brother died, his father being already dead, he had to return to Scotland to see to the education of his younger brothers and sisters. There he was fortunate to find a friend living near the family estate who asked him to live in his house and take charge of his son who had a chronic illness. He also had a small medical practice. After nearly two years he came into a small legacy and he resolved to further his education before going into practice in Hamilton. He attended the winter sessions of 1734-35 and 1735-36 classes in Edinburgh, including the anatomy lectures of Monro primus. In the summer months he lived with a clergyman in Northumberland and read general literature and philosophy - an unusual preliminary to general practice today. Early in 1736 Cullen returned to Hamilton from Edinburgh and set up a practice there nominally as a surgeon. His training was now over but his energy and proper use of available time ensured that his education continued to the very end of his life.

### Practice in Hamilton

His practice grew rapidly among the local people and he had the care of the Duke and his family and the estate workers. We can today get a glimpse of the nature of his practice, as there is in the Royal College of Physicians of Edinburgh library a ledger in which he recorded the drugs used for his various patients. The Duke spent more money on drugs for his horses and dogs than for his wife and children.

Soon after settling in Hamilton, Cullen became acquainted with a young man, Willie Hunter, who had intended to go into the church and been educated for this at Glasgow University. Doubts about some articles of faith led him to give up the study of theology. Cullen persuaded him to lay aside all thoughts of the church and to enter the profession of medicine. He came to live with Cullen as an apprentice surgeon-apothecary. Three years later it was decided that he should join the practice and do the surgical work, allowing Cullen to concentrate on the medical side. Before this could be effected young Willie had to get further education and he left, first and briefly for Edinburgh, and then for London. He never returned to Hamilton but became the famous William Hunter. He and his younger brother John, whom he had taught, became the leading anatomists of the day and the owners of an anatomy school in London that drew students from far and wide. The two friends met again only once and briefly, but they corresponded regularly. Hunter was Cullen's man in London and Cullen saw to the care of Hunter's old mother in Scotland.

In 1741 Cullen married Anna Johnstone, the daughter of a clergyman in the west of Scotland. She provided a home for Cullen and their eleven children for 46 years, dying three years before her husband. Her portrait fig 00 shows an alert and elegant woman who was the admiration and delight of all who met her. She entertained many of Cullen's students who were fascinated by her conversation. They included the young Benjamin Rush who remembered her many years later when he was a leading physician in the young United States of America.

Although his practice in Hamilton flourished, Cullen must have realised that a small town did not provide full scope for his talents. His friend Willie was not returning from London and he was perhaps missing his intellectual companionship more than his help in the practice. The Duke, with whom he had always got on well, died and the young Duke was only a boy. Cullen had a young wife and soon a family to support. When friends in Glasgow asked him to move his practice there, he considered the invitation for two years, as no doubt did his wife, before moving to Glasgow in the autumn of 1744. He had spent eight years as a country general practitioner and was 34 years old.

### Physician and university teacher in Glasgow

Cullen spent his next 13 years in Glasgow until he accepted an invitation to a chair in the medical faculty at Edinburgh. During these years he acquired his reputation as a physician, laid the foundation of all his subsequent teaching and gained experience of being a member of faculty and senate with all their associated intrigues.

The church had founded Glasgow University in the fifteenth century, and teaching theology to prepare men for the ministry was its main activity. In Cullen's time theology and medieval philosophy were still important subjects. There was however a distinguished geometrician on the staff, Robert Simson (1687-1768). Cullen as a student attended his classes and enjoyed his support on his return to the university as a teacher. There were professors of medicine and anatomy but they gave no lectures and it is not known what teaching they did.

Cullen gave extramural lectures in medicine immediately on his arrival in Glasgow. Then in 1746, with the approval of the professor of medicine, he gave his lectures at the university and changed the professorship

from a titular sinecure to a teaching post. He also gave lectures in chemistry, materia medica and botany. He broke new ground at Glasgow by lecturing in English but adhered to Latin in his botany lectures; Latin facilitated the use of the system of classification that had been recently introduced by the great Swedish botanist, Linnaeus. Throughout his time in Glasgow Cullen gave lectures and practical demonstrations in chemistry. Among his pupils was Joseph Black who was to become the foremost chemist in Britain. Cullen and Black became firm friends and colleagues in Glasgow and continued so when both moved to Edinburgh. Black was also a physician and a Fellow of the Royal College of Physicians of Edinburgh. Cullen's work on chemistry was closely associated with that of Black.

A celebrated colleague at Glasgow was Adam Smith who was appointed Professor of Moral Philosophy a few days after Cullen had been appointed Professor of Medicine and they became lifelong friends. He had been a delicate child and in later life was something of a hypochondriac and Cullen was his physician. In a letter to a friend in 1760 Smith wrote:

My friend, Dr Cullen, took me aside on the street in Edinburgh and told me that he thought it his duty to inform me plainly that if I had any hope of surviving next winter I must ride at least five hundred miles before the beginning of September.<sup>1</sup>

A predecessor of Adam Smith in the chair of moral philosophy was Francis Hutcheson 1694-1746. He was a distinguished man who has been described as the 'Father of the Scottish Enlightenment'. Cullen was a lifelong student of philosophy and as a student had read Locke's *Essay on the Nature of Human Understanding*. Hutcheson's lectures were published posthumously, as the *System of Moral Philosophy*. It would be in keeping with Cullen's character for him to have attended these lectures when in Glasgow as an apprentice surgeon, but there is no evidence that he did.

## The move to Edinburgh

This was no simple affair. Henry Home, a lawyer who owned a country estate, knew Cullen through a common interest in agricultural chemistry. He had been encouraging him for some years to move to Edinburgh. Home, better known as Lord Kames (his title when he became a law lord), was a philosopher, a literateur and a prominent figure in the Enlightenment. Things came to a head in the early summer of 1755 when the professor of chemistry at Edinburgh, Andrew Plummer, a physician and a Fellow of the College but not a man of distinction, had a stroke. This incapacitated him temporarily but there was uncertainty about whether or not he could recover in time to give his lectures in the next winter. This uncertainty lasted throughout the summer and autumn with much canvassing as to who should succeed him if he did not. In September Home wrote a letter to the Duke of Argyll asking him to recommend the appointment of Cullen to the chair. Soon after, the Duke was in Edinburgh and used his influence with the Town Council. In November Cullen was appointed joint Professor with Plummer, about whose health there was still uncertainty. In fact he never taught again and died in the following summer when Cullen was appointed sole Professor.

All this happened with much backbiting. Cullen's reputation as a physician in Glasgow was well known and some physicians in Edinburgh thought that his arrival would diminish their practice. Most of the senior physicians in Edinburgh had studied at Leiden under Boerhaave, and for some his teaching had been almost Holy Writ. Cullen, when he might have gone to Leiden, went to the West Indies. Who knows which of these was a better educational experience for a young doctor then, or even now? Cullen would have seemed to some to be, as a Glaswegian, not 'one of us'. Such parochial attitudes in the appointment of professors in medical faculties were for long common and may be seen even today. Cullen too must have had some doubts about the desirability of the move for him and these would have been mainly financial.

## Financial factors

Inevitably the move to Edinburgh would lead to a temporary reduction in his income from practice. University professors then got a minute salary, if any, but they received the students' class fees which might be paid in guineas at the door. At Cullen's first course of lectures in chemistry at Edinburgh 17 students enrolled, at his second 59, rising to a maximum of 145. Professors also had the leisure to write textbooks and this could be a valuable addition to income. That Cullen was short of money on arrival in Edinburgh is shown by his intention to translate a commentary on some of Boerhaave's writings, but this labour turned out to be unnecessary. Further he did not buy a house on arrival in Edinburgh and Mrs Cullen and the children remained in Glasgow for many months. The journey to visit them took up to two days, such was then the state of the road.

Cullen hoarded paper like a squirrel hoards nuts. The libraries of the Colleges of Physicians and of the Universities at both Edinburgh and Glasgow now contain many volumes of his manuscripts, lecture notes, case records, proofs corrected in his own hand and correspondence. There is, however, but one manuscript, his account book for medicines at Hamilton, which deals with his finances. It would be out of character if Cullen had not made and kept records of these. What happened to them? Were they just chucked in the bin when the family house was cleared up on his death? I like to think that one of his sons or daughters, up in Edinburgh for his funeral, took them away to England and that they will be discovered some time by an antiquarian in an old chest. What a find this would be for students of the economic life of families in the eighteenth century.

For most of his life Cullen appears to have been comfortably off he had the money to buy books – but never to have been wealthy. His father, as a lawyer and the owner of a small estate, was not a poor man, but he died whilst Cullen was still a boy. How much money did Cullen receive subsequently from his family? Did he take a job as a ship's surgeon rather than study on the continent of Europe, as did most of his peers, because he had not the money for independent travel? It is, however, certain that after he returned from the West Indies, he spent the next six years, until he settled in practice in Hamilton, as a student. During this period, although he earned a little money, he was mainly dependent on private means. When he moved from Glasgow to Edinburgh, he was certainly hard up for a brief period. He then lived in Mint Court in the Old Town in a house which was respectable and suited to a university professor at that time. Cullen lived in Mint Court for the rest of his life and died there. No house agent could describe it as 'an elegant town house'. If he had been wealthy, some fifteen years or so later he could have moved into such a house in the New Town. He did not. He did, however, in 1778 at the age of 68, when his income from practice would have been at a maximum, acquire a small property in the country near Kirknewton some eight miles from Edinburgh. During the last twelve years of his life he had much pleasure in developing the property and making the garden. At his wish he was buried in the village kirkyard. Surely if he had been wealthy he would have bought such a property fifteen or twenty years earlier, when he could have taken his young children.

## The teacher

Cullen was a charismatic lecturer. He always came before a class with a manuscript or lengthy notes that he revised each year, but he rarely used them and spoke extemporarily. He gave the students the necessary background of information, but this was never presented as a list of facts to be memorised, rather as a journey of exploration into the mysteries of diseases and the processes that caused them. The Professor and his students were companions on the journey. Phrases like 'as far as I know' and 'I am persuaded' abound in his lectures and textbooks.

Many tributes from his former students survive today. Here are two. The first probably written in 1766 is from a notebook of a young man recently arrived in Edinburgh from Philadelphia, Benjamin Rush.

His knowledge in medicine is founded upon an accurate acquaintance with all the Laws of the Animal Aconomy. He never orders a medicine without laying down Indications of Cure which are deduced from the proximate Cause of the Disease. Never shall I forget with what Rapture I have listened to him while he was explaining these Laws of the Animal Aconomy... he never attempted anything carrying Demonstration with him. When this failed he ventured conjectures and this he did with so much Ingenuity and probability that it was impossible not to assent to it. The candour was equal to his ingenuity. He took pleasure in acknowledging his mistakes and would often start Difficulties in the way of some of his own Doctrines which none of his Pupils would ever have dreamed of... he tho't clearly, and therefore spoke distinctly. He had a great turn for system, and arranged all his Lectures in such a manner that it was hard to tell which most to admire, their Ingenuity or their Order.

The second, also from Benjamin Rush, then a leading physician in Philadelphia, is from a letter to Dr Cullen written in 1784.

My Dear and Honourable Friend,

I want words to convey to you the pleasure I derived from your very friendly letter by Mr Dobson. It has revived in me all that enthusiasm for science with which you inspired me in the years 1766 and 1768. (Then there follows a long account of local news and of the treatment of tetanus in the military hospitals before ending as follows). Your First Lines accompany population and government in every

part of this western world. An edition of your last volume is now in the press in this City and will be published in a few days. I hope his Britannic Majesty will not hear this, otherwise your salary as his physician in Scotland will be in danger; for he caught injustice to his former principles and conduct, never to forgive the man who has taught his once ungrateful subjects the art of restoring health and prolonging life perhaps for the purpose of employing both hereafter in lessening his own power.

With respectful compliments to Mrs Cullen, I have the honour to be yours most affectionately

Benj Rush

The extent and scope of his experience as a lecturer is shown by the number of subjects in which he gave the main course of university lectures and for how many years. Chemistry (12 years at Glasgow and 10 at Edinburgh), botany (2 years at Glasgow), physiology (5 years in Edinburgh), theory of medicine and practice of medicine (5 and 18 years in Edinburgh).

The lectures formed the bases for three books much appreciated by students and translated into European languages. These were *Institutions of Medicine Part 1 Physiology*, 1772, *First Lines on the Practice of Physic* in four parts published between 1777 and 1784 and *Treatise of the Materia Medica*, 1789.

The story of Cullen and materia medica is almost a fairytale as it begins sadly and ends happily. In the winter session of 1760-61 the Professor of Materia Medica died suddenly soon after starting his course of lectures. Cullen, as a stop gap, completed the course and also that for the next session. His lectures were popular and manuscripts of students' notes were circulated as far as Europe. Ten years later a version of these was published in London without his knowledge. Cullen's immediate response to his outrage was to write to his old friend of Hamilton days, Willie Hunter, and to ask him to get a lawyer to arrange for an interdict on any further sales. Hunter however first arranged to meet the two young men responsible for the text and also the printer. He reported in a letter to Cullen that the authors had no ill intentions towards him but thought that the book would add to his reputation and be of benefit to the public. They had given the MS *gratis* to the printer who was a man of good character and 'not one of the impudent, audacious rascals that print what they please'. The letter concluded:

There are two courses now open; if you find the book unworthy of you... to oppose it by all lawful means which the lawyers will manage; otherwise to let the sale go when the publisher has paid all your expenses, and make a present in money for the benefit of the University or College library, or for the Royal Infirmary...

Cullen chose the second alternative and the book continued to be sold but with a new title page and some minor additions. The preface of a second edition expressed the hope that Dr Cullen himself would prepare a new edition. This hope did not begin to materialise until 1784 and was not completed nor the book published until 1789, only a year before his death. His wife had died in 1786 and the bereaved and depressed man spent the long winter evenings of his last years writing and rewriting the pages of the book. It was at once a success, for it covered much new ground and became the standard text on the subject and remained so for over thirty years. A long book in two volumes each of over four hundred pages, it is a remarkable achievement for a man over seventy-five who was still doing some teaching and medical practice. I have read carefully the first section, 214 pages *Of Aliments* (dietetics) and also the long accounts of opium and alcohol, which is treated as a medicine not as an aliment, and browsed in the rest of the book. There is throughout that verve which characterised his lectures, as described by young students who had attended them over twenty years before. The ordering and choice of subject matter, the style and layout, the language with the choice of simple words and their use in accurate grammar make the book a model for a student's text today. Anyone contemplating writing one could, before starting, profit by spending a day with the *Treatise of the Materia Medica* and see how it should be done. If there is not a copy in your medical library, come to Edinburgh where the Royal College of Physicians of Edinburgh library has one. There is still much that we can learn from Cullen.

Cullen's first book, *Synopsis Nosologiae Methodicae*, was published for the use of his students in 1769. It provided a new classification of diseases. The background to the book was the publication in 1735 by Linnaeus of his *Systema Naturae*, in which plants were classified into genera and species; this was a landmark in the history of biology. Linnaeus, who was also a physician, attempted a classification of diseases on the same lines, as did other physicians besides Cullen. Today diseases are classified by their aetiology or pathology. The knowledge for this was not available in the eighteenth century and perforce symptomatology was used and what a muddle this could lead to. Cullen's book was perhaps the most popular of the early nosologies. There were four editions of the Latin text in his lifetime and it was

reprinted in Holland, Germany and Italy. After his death there were English translations, the first in Springfield USA in 1793 and the last in London in 1823. Thus it was influential for many years.

Cullen's lectures attracted large numbers of students because, besides presenting them with the necessary factual information, he gave them an insight into the mind of a thoughtful man. He had ideas, often original, on the whole range of the science and practice of medicine. The subjects in which he was most influential were chemistry and the nature of the nervous system. His innovating ideas on chemistry were developed by his pupil, Joseph Black. His views on the nervous system and nervous diseases were essentially developments of those of his immediate predecessor in Edinburgh, Robert Whytt. Students would have appreciated Cullen's broad outlook on all the sciences of his day, presented with his characteristic charisma.

### As a physician

Cullen had two distinct practices, a consulting one and a hospital one at the Royal Infirmary. A large part of the consulting one was by correspondence, at first mainly from patients or their doctors in Scotland, but later in England and, such was his reputation, a few from continental Europe and the USA. There are copies of some 3,000 of his consultation letters in the Royal College of Physicians of Edinburgh library. I have spent some hours browsing in them and here is a typical one.

After considering attentively the history of his Lordship's former and present complaints we are of the opinion that they have been very entirely rheumatic... His Lordship should now go to the country as soon as possible and when there should be as much in the fresh air as the weather and other circumstances will allow. He may walk out very often but exercise in this way should always be very moderate and never go the degree of being in the least heated or fatigued by it... In every situation the utmost care is to be taken to avoid cold and therefore his Lordship should not lay off his flannel waistcoat perhaps at any time and at least while any degree of pain or stiffness remains in any part of his body.

By air and gentle exercise it is to be hoped that every ailment will be dissipated but it will also be proper at the same time to give attention to diet.

Every morning his Lordship may take a draught or two of fresh drawn cow milk whey so that upon the whole about an English pint is taken. Half a pint may be taken pretty early and his Lordship may sleep after it...

His Lordship's ordinary breakfast of tea and bread may be taken but tea in the least strong we think very improper and if his Lordship could in place of it take a basin of new milk we think it may be useful in the present state of things.

At dinner his Lordship may take soup and a bit of any plain light meat he likes best but till everything rheumatic is entirely gone we would wish to avoid a full meal of meat and would always have a great part of it made up with pudding and vegetables.

For ordinary drink we think sherry diluted with a good deal of water will be best and that all sort of malt liquors should be avoided. Every day at dinner his Lordship may take two or three glasses of claret or of white wine and water but we need not say to his Lordship that the quantity of either be very moderate.

A dish of coffee in the afternoon if not very strong we think very allowable.

At supper for some time we think his Lordship should hardly take any solid food and that some kind of milk, meat or vegetables are the most proper.

By air, exercise and the above regimen we expect that his Lordship will get perfectly well and we have but one medicine to propose to assist in the business. It is a balsamic Tincture prescribed on a paper. [Here follow details of dosage]

Edinburgh WILLIAM CULLEN  
15 June 1781

The patients were for the most part elderly and suffering from chronic diseases, many of which are now considered as diseases of affluence. Cullen read the patient's or doctor's letter carefully; some of them were very long. His answers were directed to the individual patient's needs rather than to a specific disease. Indeed there was usually no attempt at a specific diagnosis and seldom a promise of cure but

always encouragement that the patient would feel better when his advice had been followed. This advice was usually for some change in the lifestyle and tailored to the patient's particular needs; Cullen would have had no use for printed handouts. Often it was to take more exercise; riding was recommended even for ladies, provided there was a suitable horse or carriage. A holiday with a change of scene or climate might be recommended; Cullen had a travel agent's knowledge of the spas of England and the continent. Almost invariably there was dietary advice. Cullen was well informed about all the foods naturally available in Scotland and about the increasing variety of exotic foods being imported. His patients received advice about what foods were best for them to eat. This was similar to that given today in the government booklet *Healthy Eating*, but his patients were not bothered and perhaps confused with vitamins, polyunsaturated fatty acids or cholesterol. Maybe here is a lesson for today. Many of his patients were hard drinkers and they were advised on how many glasses of wine they should drink and when, and even to water it down. Others were advised that a little wine might be good for them. Cullen's reputation as a physician arose because he was seen to treat each one as individual, to give practical advice and always to be helpful and encouraging, yet giving no false hopes.

## A speculation

Little is known about Cullen's religious views. There is however a comment in Benjamin Rush's diary when a student. Rush, it may be added, was brought up a devout Presbyterian and remained so all his life.

There is one thing however wanting in Dr Cullen to constitute his Character a complete one, viz: a Regard to Religion. (Then there follows a page of Rush's orthodox views.) I am not fully acquainted with Dr Cullen's Principles, nor do I believe he has formed any regular system for himself. He believes in immateriality and immortality of the soul, this I had heard him frequently declare in his Lectures - but with regard to revealed religion he professes himself a sceptic, altho' he never was heard to say anything disrespectful to it in a public manner.

Cullen's views on religion were probably similar to those of his friend David Hume, a notorious sceptic but unlike Hume, he kept quiet and did not publicise them in books.

Cullen's wife was the daughter of a minister. It would have been in keeping for her to take her family to church on a Sunday morning where they would hear a long sermon. Cullen as a tolerant man and a good family man went with them. At the family dinner afterwards the sermon was discussed. This was entertaining because Robert, their eldest son, reproduced part of it in the minister's own voice. As a youth Robert was perhaps as well known in Edinburgh society as his father through his ability as a mimic. He took off the leading members of society including lawyers and professors at the university and the Principal Robertson, a family friend of the Cullens. Robertson was a scholar who wrote an excellent book in good English. When he went to London to promote its sales, people had difficulty in understanding him, for his speech remained that of the boys in the Lothians with whom he had grown up. Robert Cullen had a distinguished career as a lawyer and became Lord Cullen. He made it known that he intended to write a biography of his father, but when he died at the age of 68 it had not appeared. This has been a great misfortune for us.

## References

1. Barfoot, M (1991). *Procs R Coll Phys Edin* 21: 204-214.

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