THE CULLEN CONSULTATION LETTERS

J. Dallas, Rare Books Librarian, Royal College of Physicians of Edinburgh

Within the pages of Andrew Carnegie's biography of the Scottish engineer James Watt, you can find the statement: 'It would be difficult to name an invention more universally used.' With the name James Watt, one automatically thinks of the steam engine. Reading on, however, it is surprising to find that Carnegie is referring to something quite different.

> It would be difficult to name an invention more universally used in all offices where man labors in any field of activity. In the list of modest inventions of greatest usefulness, the modern copying-press must take high rank, and this we owe entirely to Watt.[1]

Watt refers to this invention in a letter he wrote to Joseph Black, Professor of Chemistry at Edinburgh. The two men had become close friends when Black was Professor of Chemistry at Glasgow and Watt was instrument maker to the University. In 1766 Black moved to Edinburgh to succeed William Cullen who had resigned the Chair of Chemistry to become Professor of the Institutes of Medicine. In 1774 Watt moved on to Birmingham. Watt and Black's friendship and professional interests were thereafter sustained mainly by correspondence. In July of 1779 Watt wrote to his old friend that he had:

> lately discovered a method of copying writing instantaneously, provided it has been written within twenty-four hours. I send you a specimen and will impart the secret if it will be of any use to you. It enables me to copy all my business letters.[2]

Watt was obviously aware of the commercial potential of such equipment, for its development was carried out in great secrecy, and Joseph Black was one of the few people allowed to share in this secret. One of the most important elements in the copying process was in perfecting the composition of the ink. As the most eminent chemist in Europe, it was not surprising Black took a great interest in this particular task.

Keeping in mind the commercial potential, Black urged Watt to form a list of subscribers. For this he suggested a few trusted friends in Edinburgh who would be interested in acquiring such a device. He had already informed Watt that the Duke of Buccleuch, Adam Ferguson, and the banker Sir William Forbes were all enthusiastic about the enterprise. In January 1780 he further wrote:

> Since my last I have found two gentlemen besides the former who wish to be possessed of your secret for copying writing – Mr Smith who is now a Commissioner of the Customs here, and Doctor Cullen to whom it will be extreamly usefull.[3]

These two gentlemen were close friends of Black. 'Mr Smith' was none other than Adam Smith, author of *The Wealth of Nations*. The 'Doctor' was William Cullen, a man then regarded to be 'the most illustrious physician in Europe' (Figure 1).

FIGURE 1
William Cullen, age 58, after William Cochrane.
Royal College of Physicians of Edinburgh

By the end of 1779 Watt had more or less perfected the composition of the ink, and applied for a patent for his 'letter-copying machine' (Figure 2). On its receipt in May 1780 he was ready to go into production. Charles Babbage's 1832 description of how it worked is probably as good as any:

> a sheet of very thin paper is damped, and placed upon the writing to be copied. The two papers are then passed through a rolling press, and a portion of the ink from one paper is transferred to the other. The writing is, of course, reversed by this process; but the paper to which it is transferred being thin, the characters are seen through it on the other side, in their proper position.[4]

In December 1779 Watt wrote to Black outlining his proposal for opening a subscription of 1,000 persons at the cost of five and a half guineas each. He assures Black, however: 'In relation to the Duke of Buccleuch and the gentlemen for whom you pass your word they shall be accommodated with the first presses which are made, without waiting for the filling up the subscription.'[5] James Watt faithfully fulfilled this promise, and Black himself and

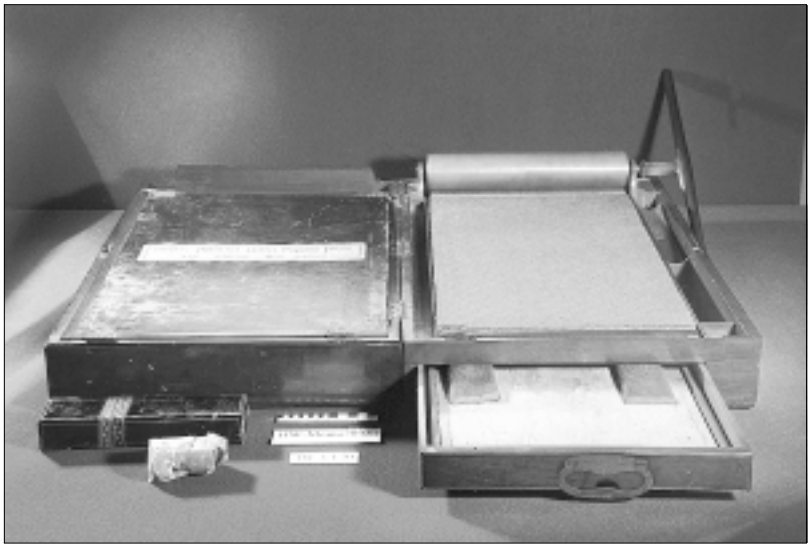

FIGURE 2
The above copier from the Heriot-Watt University museum collection is a portable version, with a fold-out writing desk. It was presented in 1906 to the Heriot-Watt College Watt Club, now the University's alumni association. It is currently on loan to the Museum of Scotland where it can be seen as part of the James Watt display.

several of his friends in Edinburgh were among the first to acquire an invention which was to herald in a new age of 'office equipment'. Although the banking world was initially suspicious that it was nothing more than a means to make forgery easy, the value of such an item was irresistible. The copying-press went on to be such a success that during the nineteenth century it became standard office equipment. It was as late as 1905 that Andrew Carnegie made his reference to its universal use.

Joseph Black was certainly correct in saying his medical colleague in Edinburgh would find the copier useful. As a professor of medicine at Edinburgh, William Cullen played a major part in establishing the city as one of the foremost medical centres of its day. His lectures attracted students from all over the world, and the medical schools and institutions founded by his pupils set the pattern for medicine in North America. As First Physician to the King in Scotland and President of the Royal College of Physicians of Edinburgh, his fame was such that his medical opinion was sought far beyond those who could actually consult him in person. From 1764 he therefore carried on a 'clinic by correspondence'. From all over Europe physicians seeking advice for their patients, or the sick and ailing themselves, wrote in hope to 'Doctor William Cullen, Physician, Edinburgh'.[6] People wrote describing their diseases and ailments from cities and villages throughout Scotland, including such places as Aberdeen, Inverness, Paisley, Montrose, and Dumfries. Other enquiries came from south of the border including London, Liverpool, Carlisle, Bristol, Southampton, as well as from Dublin, Belfast and the Isle of Man. From overseas Cullen's advice was sought from patients in Antwerp, Rouen, Genova, Cadiz, Madeira, and even from as far as New York and New Orleans in the New World. One patient from Boulogne-sur-Mer declares: 'I cannot bring myself to place any confidence in the skill of the French physicians.'[7]

Each letter seeking help was answered, most of them by the following day. Cullen rose before 7 a.m. in order to read the previous day's mail and dictate his replies and prescriptions to his assistant. By 9 a.m. he was ready to deal with his Edinburgh patients or attend to his lectures at the University. His assistant was then left to make manuscript file copies of the doctor's answer and any accompanying prescriptions he may have recommended. All copied by hand, that is, until he received the very newest thing in office equipment – James Watt's letter-copying machine. From April 1781 to December 1789, all copies of Cullen's replies in the collection are duplicates produced using Watt's copier.

The collection of William Cullen's correspondence gives a fascinating insight into medical practice during the Scottish Enlightenment, as well as the diseases, ills, and concerns of those who lived at the time. It also provides revealing glimpses of the character of William Cullen himself. In the question of payment for his services, for example, we find him writing in 1785: 'Nobody, however, shall suffer from want of my advice and therefore I shall give my best now, tho' I expect that everybody that can afford it will pay me for it.' The great doctor's generosity was well known. It is said he treated rich and poor alike.

> to his patients his conduct in general, as a physician, was so pleasing and his address so affable and engaging, and his manner so open, so kind, and so little regulated by pecuniary considerations, that . . . he became the friend and companion of every family he visited.[8]

In November 1789 in a letter to a Dr Smith in Dublin, Cullen writes that he was in 'a very infirm state of health which my time of life necessarily brings on'.[9] The last consultation letter is dated 26th December 1789 and was written to a William Charters who was suffering from asthma.

The great doctor died on the 5th February 1790 and is buried at Kirknewton in Midlothian. Produced over a period of 25 years, the Cullen Collection adds up to almost 3,000 consultation letters. They are all now contained within twenty quarto volumes in the manuscript collection of the

Library of the Royal College of Physicians of Edinburgh. Their content is a testimony to the vibrant and influential age that was the Scottish Enlightenment, and their very fabric anticipates the scientific revolution that was already on its way.

REFERENCES

1 Carnegie A. *James Watt* [online]. New York: Doubleday, Page and Company; 1905. Available from: http://www.cif.rochester.edu/~sids/index.html [accessed 12 February 2001].

2 Robinson E, McKie D, editors. *Partners in Science: Letters of James Watt and Joseph Black.* London: Constable; 1970; 67.

3 *Ibid*., p. 75.

4 Babbage C. *The Economy of Machinery and Manufactures* [online]. Available from: http://socserv.socsci.mcmaster.ca/~econ/ugcm/3113 [accessed 12 February 2001].

5 Robinson E, op. cit. ref. 2, 73.

6 See Risse GB. Cullen as Clinician. In: Doig A, Ferguson JPS, Milne IA *et al*., editors. *William Cullen and the eighteenth century medical world*. Edinburgh: Edinburgh University Press;1993.

7 Cullen Consultation Letters, vol. 12. Letter to Cullen dated 12 August 1785.

8 Thomson J. *An account of the life, lectures and writings of William Cullen, M.D*. Edinburgh: William Blackwood and Sons; 1859; vol. 1; 121.

9 Cullen Consultation Letters, vol. 21. Copy-press duplicate, dated 11 November 1789.