‘the first example … of an extensive scheme of pure scientific medical investigation’: Thomas Beddoes and the Medical Pneumatic Institution in Bristol, 1794 to 1799

Right at the end of the eighteenth century, the practice of science in the British Isles underwent a fundamental, and as it turned out, lasting transformation. Substantial sums of money started to be acquired and spent in purchasing already existing buildings and turning them into spaces to undertake various practical scientific functions. During the second half of the 1790s the Andersonian Institution in Glasgow[1]
were established to provide scientific lectures while the Medical Pneumatic Institution (MPI) in Bristol was explicitly founded to undertake research

For lecturing, the new institutions drew on the eighteenth-century tradition of

project from 1793 or 1794 until its opening[12] or as a curious institution that did

succinctly put it.[13] But what has attracted most attention to the MPI, and thereby detracted from understanding the significance of the MPI

outside that period as if they belonged there.[18] Since, as Kenneth Johnston has reminded us, the 1790s was a decade characterised by almost daily change in every aspect of life,[19] such lumping requires disentangling to understand the specific processes that brought the MPI into existence.

Beddoes, the son of a reasonably wealthy tanner with significant land holdings in Shifnal, Shropshire, attended Pembroke College, Oxford. He then studied chemistry with Higgins in London and with Joseph Black (1728 1799) at Edinburgh University, before returning to Oxford where he took his MD in 1786. He left

was already critical of Jacobin leaders such as Jean-Paul Marat (1743 1793) and Maximilien Robespierre (1758-1794).[23] He appreciated that the way the Revolution had developed was the very antithesis of the Enlightenment values to which he remained strongly committed; he came to believe, for instance, that riots [24] But the British government and its supporters, as we shall see, did not appreciate such differentiations between French and English radicals and Beddoes was consistently and constantly labelled a Jacobin, providing a significant restraint to developing his career.

Now in need of an income, Beddoes, whose previous literary output had been mostly limited to translations and editing texts, began writing what would become in the ensuing years a large corpus of books and pamphlets, mostly promoting his medical views. Thus d

with its business and engineering leaders. He thought that pneumatic chemistry might possibly be used to provide cures for specific diseases such as scurvy[30] but it was the general use of gases that he thought would be most advantageous:

> ne from its present helpless condition, as the discovery of the means of regulating the constitution of [31]

salary to carry out the experimental investigations using it.[41] According to first biographer, Yonge and Beddoes together with his former assistant in Oxford, James Sadler (1753 1828), visited London in March 1793 to identify a location to house the apparatus and accommodate patients;[42] such a visit might also have been connected with Beddoes seeing both his books through the press. London was not deemed a suitable location for the project for reasons that are not clear. It was possibly related to Beddoes not wishing to work in a city leading the war against Republican France, somewhere he would have been an unpopular figure. All through the 1790s, Beddoes participation in the war and of its deleterious, as he saw it, domestic and economic effects.

By early April 1793 Beddoes had acquired the lease (arranged by Sadler) on 11 Hope Square, Hotwells,[43] a small spa village just south of Clifton and a mile or so to the west of Bristol. Then the fifth largest city in England and eighth in the British Isles, enormous wealth derived largely from the Atlantic trade. Hotwells, located on the Bristol bank of the river Avon, dividing it from Somerset, had, since the seventeenth century, a long tradition of visitors coming to take the waters to benefit their health.[44] Possibly by the middle of the month,[45] and certainly by the end, Beddoes had settled there following a last visit to Oxford

concentrating on consumption and experimenting on kittens.[67] By the middle of June, with three (unnamed) friends, he had set up an air apparatus with the

some apparatus for her to inhale the gases, but to no avail and she died on 6 June 1794 aged fifteen.[76] Watt, who took the view in such circumstances that consolation is to turn the mind to any other subject that can o [77] began

Beddoes institution , rather than infirmary or hospital or other possibilities suggests that, as someone who closely followed events in France, he was aware of the discussions then going on in Paris to found an Institut de France to replace the suppressed Académie Royale des Sciences.[91] By using the term institution in this sense for the first time in English, Beddoes signalled the radical nature of his project.[92] Beddoes was ambivalent about the term hospital, especially since in 1791 he had criticised the proposal to establish an infirmary or hospital in Truro due to the difficulty of sustaining funding, arguing instead that because of the travelling distances involved, dispensaries in individual Cornish towns would be preferable.[93] Hence his emphasis that he expected the duration of the MPI to be limited.

Use of the term was quickly taken up by other organisations, such as the Andersonian Institution founded under the terms of the will of John Anderson

purchasing apparatus, furniture and paying for a medical superintendent, three servants, contingent expenses and medicines. Beddoes now calculated that

own papers or those of the MPI have survived it is not known how Beddoes arriv

this period (he had stayed with the chemist Kirwan in Dublin during April 1794[132]). No sums for individual contributions were noted, presumabl

attention of the nation .[140] But the issues with London went deeper than merely timing or Beddoes Watt sr spelt out the problems bluntly to Beddoes:

> Doctors in London in general condemn the practice [of pneumatic medicine] in toto & some other people are sure it must be bad 1st because you believe in Lavoisiers theory, 2d because you have the character of a *Jacobin* 3

On the positive side, the venture into London brought Beddoes the support of the physician Robert Thornton (1768

like Devonshire, Beddoes [193]
Nevertheless his previous medical experience with Beddoes led him to overlook these issues and he joined in the campaign to raise money for the MPI. Closely connected to the Devonshire House circle, Hare (who donated fifty guineas) concentrated mainly on his Whig contacts. By the end of May he had secured fifty guineas from the fourth Earl Fitzwilliam (1748 1833), fifty pounds from the third Earl of Egremont (1751 1837), and, finally, from the Duke of Devonshire, fifty guineas[194] the delay doubtless reflecting the tensions in his marriage. One piece of lobbying that was not successful was that neither Devonshire, nor Hare, could persuade her brother, the second Earl Spencer (1758 1834), to contribute.[195] Nevertheless, they were successful in a few other cases including fifty pounds from the radical MP Samuel Whitbread (1764 1815), twenty guineas each from the fourth Duke of Marlborough (1739 1817) and the second Marquis of Hertford (1743 1822) and twenty-six pounds from Godfrey Webster (1749 1800). Together with Lambton fifty pounds, all this made a total of £437 15s[196]
Hare subscribers [197]

In a letter to *The Star*, written in mid-June, but not published for a month, Beddoes affirmed , referring
obliq that some hundreds of
pounds had been raised further to that already reported.[198] In August Beddoes announced in various newspapers these further subscriptions. First published in *The Star* on 15 August 1796 and in other papers in the ensuing weeks,[199] he hoped

speedily made up by members of the wealthy public. He did not, however, mention the total raised thus far, but it would have been just short of £1,300, roughly what he had told Giddy at the end of July.

For the next few months evidence is scarce, although Beddoes prepared for publication the fourth and fifth parts of *Considerations*, the former containing many more case histories. Although given a 1796 imprint, it was first advertised in mid-February 1797.[200] Furthermore, Beddoes continued engaging

[193] Duchess of Devonshire to Earl Spencer, 30 May 1796, BL MS add 75923 (no foliation).
[194] *Ibid*.
[195] *Ibid*.
[196] *The Star*, 19 August 1796, 1c.
[197] Thomas Beddoes to James Watt sr, 29 May 1797, LoB MS 3219/4/29/13.
[198] *The Star*, 13 July 1796, 4a. A similar letter was published in *The Morning Chronicle*, 23 July 1796, 3b.
[199] *The Star*, 15 August 1796, 1a; *The Times*, 17 August 1796, 1a; *The Sun*, 18 August 1796, 1d; *The Morning Chronicle*, 30 August 1796, 1b; *The Times*, 31 August 1796, 2a.
[200] Beddoes and Watt, *Considerations*, parts 4 and 5, advertised in *The Morning Chronicle*, 13 February 1797, 2a and *The Star*, 14 February 1797, 1a. See also Thomas Beddoes to

the sum of £50 by among others, Lansdowne, Watt jr and Thomas Wedgwood.[217] Beddoes told Watt sr that the opening lecture, written by him, would be delivered by Bowles on 17 November at 7pm at the Red Lodge

.[218] Come the evening of the lecture, Beddoes, despite previous requests, had not supplied the text, so Bowles went to Clifton where he found Beddoes completing the manuscript.[219] It was not until eight that Bowles reappeared, after running the mile from Clifton (fortunately downhill). He read the lecture

but gave up about three quarters of the way through to be

[220] Beddoes did have the decency to provide a written apology, adding that the problems with the lecture

[221] as it would shortly be published. It appeared as a seventy-page pamphlet

[222]

Further evidence that Beddoes had to some extent become disengaged with

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thirty chemical lectures between March and May 1798. Wedgwood had been happy with the anatomy lectures, but thought that these additional lectures would

[c] Inst[n] [223] It probably did, since the lectures, delivered by Beddoes and a couple of assistants, again in the Red Lodge, proved so popular that a fund was started to construct a 200 seat fully equipped lecture room in Berkeley Square. By the start of June £800 or £900 had been raised with more in

[217] A copy of the prospectus for this course, dated 8 October 1797, is in BRO MS

Anatom

BRO MS 35893/36/d(i), p.528. These documents are contained in volumes that are part of a number of scrap books compiled by Smith documenting, through his own written accounts, newspaper clippings, lecture notices and the like, the lives of people connected with the Bristol infirmary. The pagination of the volumes is somewhat irregular.

prospect.[224] Because of roofline restrictions, permission to build was refused and when they sought to convert a building on the Green, the Dean and Chapter of

.[225]

Another matter that could potentially have diverted Beddoes from both the MPI and the lecture courses, occurred just before Christmas 1797, when, at the insistence of Lady Anne Lambton (1772 1832),[226] Beddoes was on point of joining her to visit her husband William Lambton in Italy.[227] However, news of his death in Pisa on 30 November reached England right at the end of December[228] thus obviating the need to go Italy. That Beddoes even contemplated such an extended journey and the effort he put into the lectures, suggests that the MPI was not always his main priority. Early in 1798, Beddoes proposed a further

several hundred pounds

Birmingham to see Watt sr and Keir.[237]
1799 *The Bristol Gazette*
, presumably daily, between 11am and 1pm by Beddoes and Davy.[238]

the origin of civil society, of an extensive scheme of pure scientific medical [239] And, until his departure for the Royal Institution in early 1801, Davy did make the MPI into a significant research site in chemistry, medicine and early electricity, implementing Beddoes general idea for an institution devoted to medical and scientific research. It is noticeable that the MPI did not long survive after Davy left, turning instead into a more conventional hospital.[240] The effects of both Davy presence and absence suggests that once the money had been raised, Beddoes decided that his own role in the MPI would be limited, a continuation, perhaps, of previous indications that he was no longer wholly committed to the project. In his move to London, Davy brought the fund-raising experience, the popular lecturing and the research ethos associated with the MPI to the Royal Institution, the latter being something that had never been intended or even envisaged by its founders.[241] It is perhaps here, despite the reduction in his commitment, that the transformative and enduring legacy of Beddoes in establishing the MPI should be sought. This transformation was profoundly affected by responses to events in France, to the actions0f1 0 0.82 419.09 Tr

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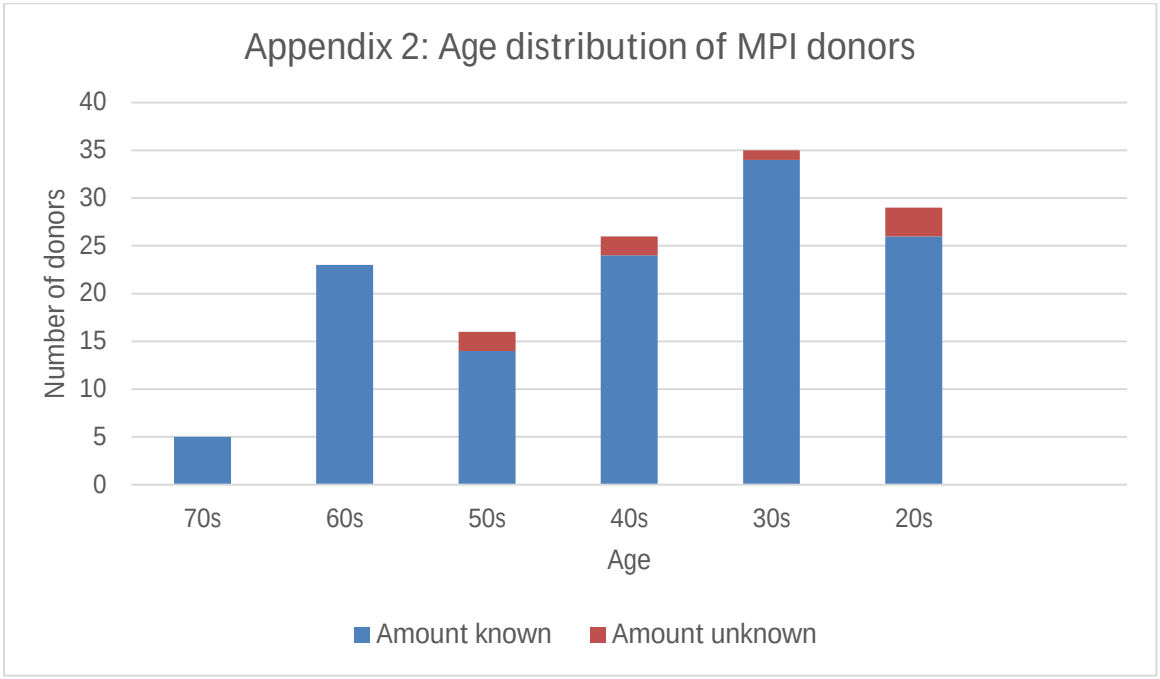
NBY the abbreviation Ygℚ refers to guinea



Appendix 3. MPI Subscribers to the end of 1796

Publication of subscription and its amount: a *Aris's Birmingham Gazette*, 17, 24 November and 1 December 1794, 3e; b *The Norfolk Chronicle*, 22 November 1794, 2d; c *The Derby Mercury*

Name	YoB	YoD	Geographical Location	Notes	Source	#
Rev Dr Thomas Barnes	1747	1810	Lancashire, Warrington.		ODNB.	f 1g
Benjamin Bell	1749	1806	Scotland, Edinburgh.	FRSE, 1783. Surgeon.	ODNB.	n/k
John Bell	1763	1820	Scotland, Edinburgh.	Surgeon.	ODNB.	n/k
Joseph Black	1728	1799	Scotland, Edinburgh.	FRSE, 1783. MD, Edinburgh, 1754. Edinburgh Professor.	ODNB.	f 5g
Alexander Blair	1737c	1815	London, Portland Place.	Industrialist. Soap manufacturer. Non-conformist.	ODNBud.	f 10g
Anne Boulton	1768	1829	Warwickshire, Birmingham.	Matthew Boulton's daughter.	ODNBuf.	af 3g
Matthew Boulton	1728	1809	Warwickshire, Birmingham.	FRSL, 1785. FRSE, 1784. Industrialist.	ODNB.	af 10g
Matthew Robinson Boulton	1770	1842	Warwickshire, Birmingham.	Industrialist. Matthew Boulton's son	ODNBuf.	af 3g
Henry Bowles	1765	1804	Hampshire, Winchester.	MD, Edinburgh, 1790. Army doctor; died at Gibraltar.	*Munk's Roll of the Royal College of Physicians*.	g 1g
Joseph Brandreth	1746	1815	Lancashire, Liverpool.	MD, Edinburgh, 1770. Liverpool Infirmary.	ODNB.	f 3g

Name	YoB	YoD	Geographical Location	Notes	Source	#
William Chambers		1804	Worcester.	MD. Worcester Infirmary.	GM, 1804, 74(2): 884.	f 1g
William Clayfield	1772	1837	Bristol.		GM, 1837, 7: 455.	f 3g
Charles Boothby Clopton, *ne* Skrymsher	1740	1800	London.		GM, 1800, 70: 800.	i 50g
John Clunie		1819	Berwick.	Corn merchant.	SM, 1819, 83: 585.	d 1g
William Coates			Bristol.	Surgeon. Known to Southey.		f 2g
Edward Coleman	1766	1839	London.	FRSL, 1831. Veterinary professor.	GM, 1839, 12: 211.	n/k
Mrs Congreve						g 2g
John Constable		1830	Berwick.		TNA will.	d 1g
Astley Paston Cooper	1768	1841	London.	FRSL, 1802. Surgeon. Lecturer. 1st Bt (1821).	ODNB.	n/k
John Cox				MD, Edinburgh.	Wallis.	g 10g
Peter Crompton	1760?	1833	Derby and Liverpool.	MD, Leiden, 1785. Friend of Thelwell, Coleridge etc.	ODNBus.	cf 2g
James Currie	1756	1805	Lancashire, Liverpool.	FRSL, 1792. MD, Glasgow, 1780. Liverpool Infirmary.	ODNB.	f 3g
Erasmus Darwin	1731	1802	Derby.	FRSL, 1761. MD, Cambridge, 1759.	ODNB.	cf 5g

Name	YoB	YoD	Geographical Location	Notes	Source	#
Erasmus Darwin	1759	1799	Derby.			

Name	YoB	YoD	Geographical Location	Notes	Source	#
Andrew Fyfe	1752	1824				

Name	YoB	YoD	Geographical Location	Notes	Source	#

Name	YoB	YoD	Geographical Location	Notes	Source	#
William Rathbone	1757	1809	Lancashire, Liverpool.	Merchant.	ODNB.	f 10g
Richard Redfearn			Norfolk, King's Lynn	MD, Leiden.		n/k
Joseph Reynolds	1768	1859	Shropshire, Ketley.	Industrialist. Half-brother of William Reynolds.	ODNBub.	f 10g
Richard Reynolds	1735	1816	Shropshire, Coalbrookdale.	Industrialist. Ironmaster.	ODNB.	f 10g
William Reynolds	1758	1803	Shropshire, Ketley.	Industrialist.	ODNB.	f 10g
J. Ridgeway jr						f 1g
William Roberts	1766c	1808	Gloucester.	MB. Gloucester General Infirmary. FGS.	"Brockworth Church" Monumental Inscriptions', *Gloucestershire Notes and Queries*, 1890, 4: 577-9, p.579.	f 2g

Name	YoB	YoD	Geographical Location	Notes	Source	#
Miss Saunders						f 1g
Robert Scott						i £20
W. Scott						f 1g
John Seward	1773	1796	Worcester.	MD. Worcester Infirmary. Friend of Southey.	AC.	f 2g
Francis Seymour-Conway, 2nd Marquis of Hertford (1794)	1743	1822	London.	Government supporter. MP, 1766-1794.	ODNB.	i 20g
Shaftesbury Book Club			Dorset, Shaftesbury.			n/k
Adam Sibbit	1747c	1813	Berwick.	Brewer.	GM, 1813 83(1): 394.	d ½g
Mrs A. Slaney			Shropshire name.			f 1g
Mrs Smith						f 2g
Thomas Smith	1740c	1805	Warwickshire, Birmingham.	MD, Edinburgh, 1767.	MM, 1805, 19: 293.	af 2g
Miss Charlotte Sneyd	1754	1822	Staffordshire, Litchfield.	A sister-in-law of R.L. Edgeworth.	Edgar E. MacDonald, *The Education of the Heart: The Correspondence of Rachel Mordecai Lazarus and Maria Edgeworth*, Chapel Hill, 1977, pp.323-4.	f 5g

Name	YoB	YoD	Geographical Location	Notes	Source	#
Miss Mary Sneyd	1750	1841	Staffordshire, Litchfield.	A sister-in-law of R.L. Edgeworth.	Edgar E. MacDonald, *The Education of the Heart: The Correspondence of Rachel Mordecai Lazarus and Maria Edgeworth*, Chapel Hill, 1977, pp.323-4.	f 5g
Edward Sneyd	1755	1832	Staffordshire, Litchfield.	A brother-in-law of R.L. Edgeworth.	GM, 1832, 102(1): 380.	f 5g
Lord Robert Spencer	1747	1831	London.	Whig aristocrat. MP, 1768-1799, 1802-1807, 1817-1820.	HP.	i 20g
George Spencer, 4th Duke of Marlborough (1758)	1739	1817	London.	FRSL, 1786. Whig aristocrat.	ODNB.	i 20g
Rev Henry Peter Stacy	1760c	1818		FLS.	AO.	f 1g
Joseph Strutt	1765	1844	Derby.	Industrialist.	ODNB.	cf 2g
William Strutt sr	1730	1800	Derby.	Industrialist.	R.S. Fitton and A.P. Wadsworth, *The Strutts and the Arkwrights 1758-1830: A Study of the Early Factory System*, Manchester, 1958, p.2.	cf 6g
William Strutt jr	1756	1830	Derby.	FRSL, 1817. Industrialist.	ODNB.	cf 2g
John Sykes	1761c	1813	Yorkshire.	Industrialist. Iron merchant	GM, 1813 83(1): 500.	f 2g
Joseph Sykes	1723c	1805	Yorkshire, Hull.	Industrialist. Iron merchant	GM, 1805, 75(2): 1175.	f 5g

Name	YoB	YoD	Geographical Location	Notes	Source	#
Benjamin Waddington	1749	1828	Monmouthshire, Llanover		ODNBud.	f 10g
William Waite		1828	Berwick, Castle-Law, near Coldstream.		*Blackwood's Edinburgh Magazine*, 1828, 26: 809.	d 1g
George Wansey	1757c	1807	Wiltshire, Warminster.	Clothier.	Thomas Phillipps, *Monumental Inscriptions in the County of Wilton*, np, 1822, South Wilts, p.94.	n/k
Jonathan Wathen	1728c	1808	London.	Surgeon, eye.	GM, 1808, 78(1): 93.	g 5g
Mrs Anne Watt, *née* McGrigor	1744c	1832	Warwickshire, Birmingham.	James Watt's second wife	GM, 1832, 102(2): 286.	af 3g
James Watt sr	1736	1819	Warwickshire,			

Name	YoB	YoD	Geographical Location	Notes	Source	#
Henry Christian Wise	1740c	1805	Warwickshire.	Gentleman.	GM, 1805, 75(1): 184.	f 5g
William Withering	1741	1799	Warwickshire, Birmingham.	FRSL, 1785. MD, Edinburgh, 1766.		