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Romantic Medicine in the Time of COVID

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Abstract
This article discusses the pioneering medical activities of Thomas Beddoes, in two contexts that the Covid epidemic has made topical: oxygen treatment and its efficacy; epidemiology, including tracking and tracing infection. I ask what we, in a time of pandemic, can learn from Beddoes and the advances he made in treating respiratory diseases and in tracking and tracing epidemics.

Biographical Note
Tim Fulford has written many books and articles on Romantic-era topics, not least science and medicine. His most recent works are *Wordsworth's Poetry, 1815-45* (2019), and *The Collected Letters of Sir Humphry Davy* (2020) (ed. with Sharon Ruston). His current project is *The Collected Letters of Thomas Beddoes* (forthcoming, 2026) (ed. with Dahlia Porter).

1. As we experience what it is like to live with a pandemic for which medicine has neither a vaccine nor a reliable cure, we find ourselves in a position rather similar to that of people in the Romantic era. In the period we study there were epidemics of influenza, cholera and yellow fever, killing tens of thousands in European and American populations far smaller than today's. As with COVID, the means of transmission and of protection were hotly debated issues—and even doctors did not agree. There was also, it seemed (seemed because reliable figures did not exist), a dramatic increase in diseases affecting the lungs—phthisis and consumption. These were all the more discussed because they struck young adults from the higher classes as well as the malnourished poor who had little access to doctors. And they killed very slowly, so that the sufferer, the sufferer's family, and the sufferer's doctor had years of slow, almost inevitable decline to endure. If the case of Keats is the best known, scores of other brilliant intellectuals wasted away—among them Elizabeth Smith, the writer and walker revered by Wordsworth and De Quincey; Gregory Watt, the geologist son of the great engineer James Watt; and Thomas Wedgwood, friend of Coleridge and Davy and inventor of photography.[1] There was little medical agreement on lung diseases' causes: some doctors thought them inherited; some thought them produced by exposure to unhealthy atmospheres; some thought them, like COVID, passed from person to person at close quarters—through the air and/or on surfaces.

2. No one investigated the epidemic and endemic sicknesses of the age more thoroughly than the man who, as a doctor, chemist, poet and political campaigner, strongly influenced Coleridge, Davy, Southey and Wordsworth—Thomas Beddoes (1760-1808). In 1798, Bristol-based Beddoes opened a Pneumatic Institution, which brought the poor the benefits of the new medical technology he had developed—the treatment of lung disease by oxygen and other gases. He became the driving force in a national effort to gather statistics about means and rates

of infection and to co-ordinate a strategy to halt, or slow, epidemics' spread. He was a pioneer of social medicine—relating disease to lifestyle and to working conditions. He deserves our praise for these efforts—original responses to a newly globalising era in which disease spread on a mass scale with unprecedented speed.[2] If some did not succeed, others were later taken up by a more institutionalised medical profession and a more supervisory government than existed in his time: Beddoes had to do from private resources what would later be done by public bodies. He had, too, not only to brave the indifference of doctors who made a comfortable living treating the rich by established methods but also to endure the scorn of men of power to whom his new methods spelt a dangerous overturning of traditional authority. That Beddoes, in the face of such reactions, continued to take the reputational risk of creating new treatments and new knowledge and applying them on a large scale, for free, bespeaks a commitment to public health that should make him a hero of the NHS.

3. With Dahlia Porter, I am currently editing Beddoes's correspondence for a Collected Edition. Transcribing his letters reveals that, in the face of a deeply conservative medical profession, he addressed himself indefatigably to innovative approaches—putting science at the service of medicine, and putting medicine at the service of those who could not afford doctors.

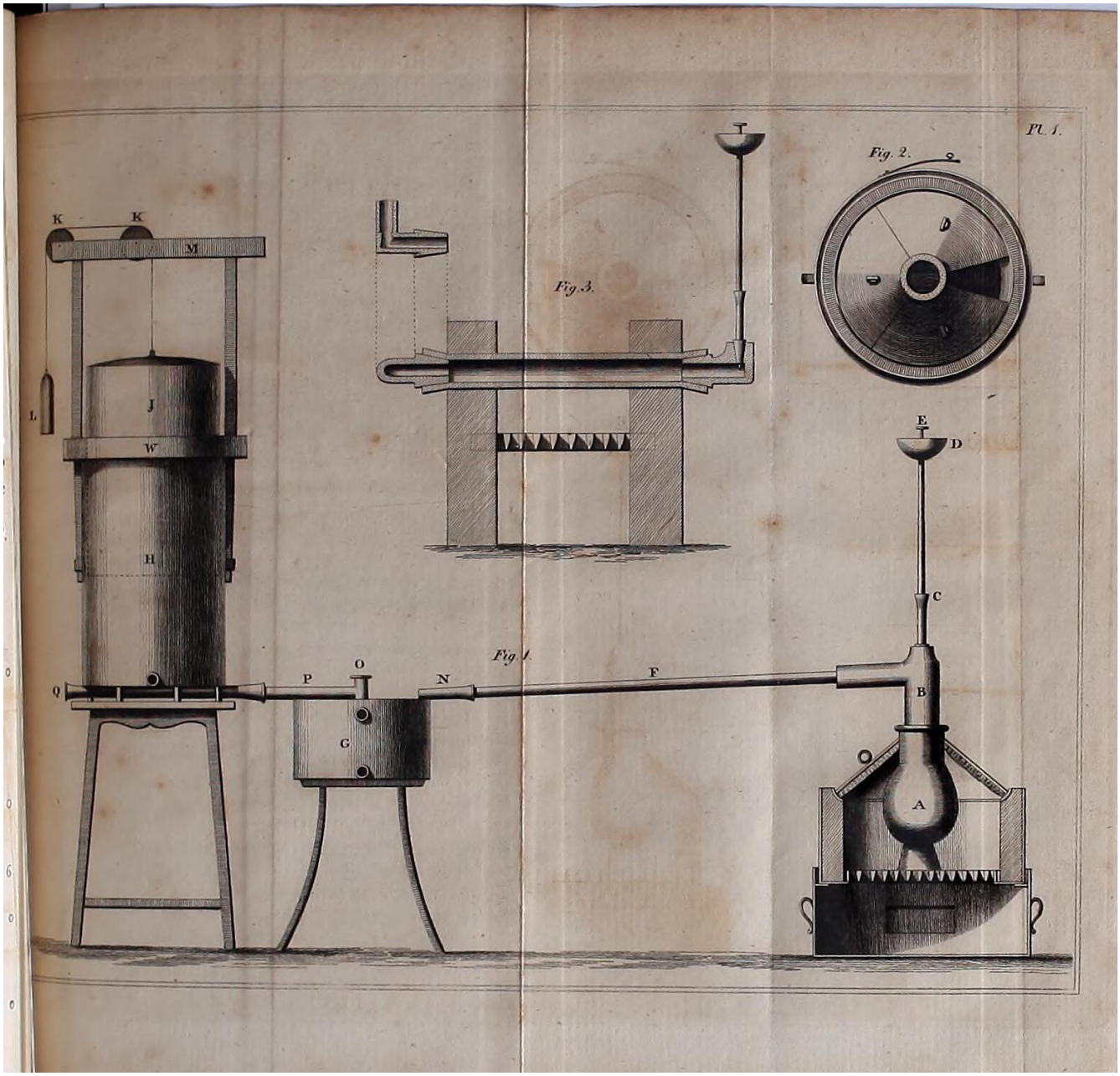
Oxygen Treatment

4. In 1793, when Beddoes left an Oxford lecturing post in chemistry, the most exciting recent discoveries were the gases or "airs" first isolated by Joseph Priestley in 1774. Priestley not only discovered (what were later conceptualised as) oxygen and carbon monoxide, but also showed which of these gases, constituents of common air, were essential and which hostile to animal

life; in the process, he revealed that plants, unlike mammals, take up carbon dioxide and exhale oxygen. Priestley's investigation of plants enabled Jan Ingenhousz to discover the process of photosynthesis; his work on mammals stimulated Erasmus Darwin to consider oxygen as a treatment for human patients. Beddoes became Darwin's correspondent in 1793, as Priestley was in the process of moving to America. As a fellow medical man, he discussed, as well as Darwin's physiological account of consciousness, the cases of patients who troubled him—and among these, consumptives figured large. Noticing "from the florid colour of the blood of consumptive patients, that it abounds in oxygene," and regretting the doctor's helplessness in face of their distressing decline and inevitable death, he proposed in December 1793 treating them with Priestley's "airs" (Beddoes qtd. in Darwin 301). His theory was that consumption (TB/phthisis in modern terms) was caused by hyperoxygenation, and that sufferers might be helped by breathing air with a diminished proportion of the gas. He also thought that increasing the amount of oxygen inhaled might benefit sufferers of typhus, hysteria, hydrothorax, diabetes, liver disease, ulcers and palsy (Beddoes, *A Letter to Erasmus Darwin* 57). If this seems—and was—excessively optimistic, it is nonetheless true that, without the enthusiasm that led him to over-anticipate cures, Beddoes would never have maintained the energetic commitment that enabled him to fund a purpose-built research institution to test his theories (Britain's first—today's numerous charity-funded institutes researching cures for cancer follow in his wake).

5. Oxygen treatment needed a technology that scarcely existed—a reliable breathing apparatus. Whereas modern ventilators utilise a piped or bottled supply of ready-made gas, Beddoes required machines that could generate the gas as well as deliver it safely to the patient's lungs. Almost none existed in viable, portable form that could be used by patients at home; nor were there any located in hospitals. Faced with this scarcity, he needed an engineer who understood

chemistry, a manufacturer, and possibly also a venue—although he hoped that in the future "a convenient small apparatus for procuring and containing oxygen air" will "soon come to be ranked among the ordinary items of household furniture" (Beddoes, *A Letter to Erasmus Darwin* 43).[3] His main asset as he looked for what he needed was his ability to impress the men of science who had been Priestley's friends. He used correspondence to do so, winning the respect of Darwin by assisting him with the account of cognition he was about to publish in *Zoonomia.* Darwin's good opinion led, in 1794, James Watt, a fellow member of the Lunar Society, to consult Beddoes over the illness of his daughter Jessy. Beddoes advised the worried father by letter and attended the consumptive young woman in person. His diligence recommended him so strongly that, after Jessy died (on 6 June), a grief-stricken Watt offered to design the oxygen apparatus he needed to make gas treatment a practical proposition for consumptive patients. Beddoes then astutely ensured Watt's continued engagement by sending him a constant stream of letters. In these, he enquired about progress, suggested sources of raw materials, requested improvements to the design, and asked Watt to join him as co-author of a book that would detail the therapy, publish drawings of the apparatus, and provide an instruction manual for its use (Beddoes, *Considerations on the Medicinal Powers*). He also bombarded Watt's son with letters planning ways to publicise the treatment and to attract wealthy funders. Co-opted, the Watts agreed to manufacture the apparatus themselves and to sell it at a moderate price without patent—a coup for Beddoes since the Boulton and Watt company ran the largest and most sophisticated machinery factory in the country and normally enforced its patent rights fiercely.



(Figure 1: parts of Watt's pneumatic apparatus, from *Considerations on the Medicinal Powers, and the Production of Factitious Airs*, 2nd edn [Bristol, 1795], plate 1.)

6. Among the Watts' friends was the industrialist Josiah Wedgwood, who had made a fortune from pottery production—and his sons Josiah II and Thomas who would in 1798 give Coleridge the annuity that freed him from becoming a Unitarian minister. Beddoes "lettered" the Wedgwoods into becoming funders of his oxygen scheme, writing to Thomas for help after

proving his worth as his physician (Tom was subject to debility and depression at regular intervals throughout his adult life; Beddoes treated him with drugs and gases in Bristol; it was through this connection that Tom came to meet Coleridge). In 1797 Tom promised no less than £500 to help fund an institution where the treatment could have a thorough trial.[4] Today, the Gates Foundation's involvement in making COVID tests and vaccines available is an analogous action: the Wedgwoods, like the Watts, donated to a medical treatment based on new science having become rich by creating, manufacturing, and marketing new technology.

7. By 1795, Watt's apparatus was in action at the homes of several patients. Beddoes described the benefits it brought them not only in his campaigning correspondence but also in the books he published to promote the treatment and raise money to establish an institution. An early friend of and reviewer for John Murray, he had always understood the value of the new journals as the means of publicizing innovations, there being little opportunity to debate ideas in the conservative professional bodies of English medicine. He had succeeded, too, as an author recommending healthy ways of living to the poorly-educated common people. Now he published a series of works recommending the new gas treatments, each addressed to a different audience. *Considerations on the Medicinal Powers, and the Production of Factitious Airs* went through three editions, in 1794, 1795, and 1796, becoming longer and more detailed each time it reappeared. It engaged medical and scientific men and was compiled in a manner intended to mitigate the risk of his seeming a projector riding a hobby horse or a quack looking for people's cash. It contained case studies of gas treatment provided by doctors in France, Germany, and Sweden, as well as London. It also included details of a series of experiments he had made on animals, so as to establish Beddoes's authority as a man of science who proceeded from properly observed facts.

8. Other publications aimed at people who were emotionally, rather than professionally, involved with the disease. Beddoes's 1799 *Essay on the Causes, Early Signs, and Prevention of Pulmonary Consumption for the Use of Parents and Preceptors* was more than an attempt to attract donations from worried relatives; it was a pioneering work of social medicine that aimed to trace the disease to the lifestyles that led it to flourish and spread—or that gave immunity to it. Like doctors today, Beddoes worried about interiors. Gathering evidence that cases of consumption were far more prevalent than thirty years earlier, he argued that, as well as the old and feeble poor, the disease liked middle-class modernity. The warm, close rooms and unexercised bodies that had become markers of urban gentility were dangerous. He recommended cool, airy houses, and, for children, a country "education through the senses, exercise and *aeration*" (Beddoes, *Essay on Pulmonary Consumption* 318). Importantly, he based his advice not on subjective opinion or personal experience, but on the new science of statistics. Sir John Sinclair's statistical survey of Scotland showed him that outdoors was good: people who worked outside were less plagued by the illness. Conducting his own survey of Bristol butchers, he found that consumption was almost unknown among them, although it was not clear whether this was because their meat diet made them healthy or because they ingested protective matter from animals' bodies. At any rate, statistics allowed him to arrive at a general proposition worthy of experimental testing—"certain classes are less liable than others to consumption, whether because the exhalations, to which they are exposed, preserve the lungs in a healthy state, or because they acquire from their mode of life, a habit less susceptible of the complaint" (Beddoes, *Essay on Pulmonary Consumption* 104).

9. The testing went on in and around the Pneumatic Institution, up and running in 1799 because Beddoes's industrious courting of industrialists, doctors, and men of science, combined with his

press campaign, attracted sufficient donors—among them the doyenne of the fashionable aristocracy, the Duchess of Devonshire. Watt's apparatus was installed and updated, and Humphry Davy was recruited to carry out an experimental programme of gas inhalation with it. He tested not just oxygen itself but other gases including hydrogen, hydrocarbonate (hydrogen mixed with carbon dioxide), and nitrous oxide. Famously, Southey and Coleridge were delighted to try the latter; their exhilaration at its heady effects should not blind us to the fact that it was part of a systematic therapeutic trial to combat a deadly disease.

10. 1799 and 1800 were the Institution's golden years. While Davy's nitrous oxide promised to transform body and mind, the other "wonder-drug" discovered by Watt's Lunar Society circle was in also operation: Beddoes was prescribing digitalis to the consumptive poor who began to throng the Institution, declaring "I daily see many patients advancing towards recovery, with so firm a pace, that I hope consumption, will, henceforward, be as regularly cured by the fox-glove, as ague by the Peruvian bark" (Beddoes, *Essay on Pulmonary Consumption* 270). He was also using nitric acid to heal troublesome sores that were resistant to older treatments (Coleridge ordered some).[5] And less than half a mile away, a consumptive patient was living in a converted stable that she shared with cows, in the hope that inhaling the effluvia given off by their urine and dung might heal her ulcerated lungs. This months' long stabling certainly was a trial for the poor woman, Sarah Finch (Priestley's daughter, ironically enough), but if it reminds us of some of the wackier COVID cures touted by authorities as wise as Donald Trump, we should remember first that it was an extension of the gas treatment Beddoes had been researching for years and second that it was only forty miles away that another scientific doctor, Edward Jenner, was trialling the immunity from smallpox produced by contact with matter exuded from cows (vaccination).[6]

11. In 1801, Beddoes's hopes were dashed. Davy's exhaustive experiments showed that, though gas treatment gave consumptives some relief from symptoms, it did not remove the cause. Digitalis produced a truce with the disease but did not defeat it. The cowshit cure calmed the patients' coughing but was too gross for many to tolerate, and damaged Beddoes's reputation. Nitric acid healed syphilitic sores, but more appeared. Davy moved on to London; Southey was in Portugal, Coleridge and Wordsworth had left for the Lakes. The Bristol circle was broken: even Tom Wedgwood, Beddoes's long-term patient and biggest benefactor, uncured by the atmospheric treatment, had departed for the West Indies, Dorset and London. Coleridge recorded his disillusion in a notebook entry in December 1801: "Beddoes hunting a Pig with a buttered Tail—his whole Life an outcry of Eureka and all eurekas Lies" (vol. 1, entry 1034).

12. Cures had not been found, but valuable work had been, and would continue to be, done, as Coleridge later acknowledged. Beddoes's research centre had shown the medical value of scientific institutions capable of testing therapies' efficacy. It had successfully demonstrated that his hopes were futile and his theories erroneous—but accurate demonstration is what it had been founded to achieve. The introduction of new treatments would, if medicine took up the lesson of the Pneumatic Institution, no longer have to depend on the acceptance of subjective or self-interested claims, or on haphazardly selected case histories. As such, it was a forerunner of the laboratories that, today, conduct experimental trials so as to distinguish between the relative utility of Remsdesivir, hydroxychloroquine, and bleach in treating COVID. And although it suspended pneumatic therapy, the Institution did not perish but grew. After 1801 it increased its outreach to the sick poor, treating thousands of people on an outpatient, drop-in basis—in this way it helped prevent the spread of the infectious diseases that flourished in the cramped slums of the Bristol docklands.

Epidemiology

13. It was in the infant science of epidemiology that Beddoes made interventions that look all the more striking as, in 2021, we debate whether our vulnerabilities are caused by genetic or by lifestyle factors, and argue about transmission methods, safe distances, and PPE. In March 1803, influenza broke out across a country that as yet had no public health authorities, no national health institutions, and no government ministry dedicated to health. There was no co-ordinated response to the epidemic; information was at a premium; no organization had a system to discover the epidemic's extent or predict its direction of travel. Doctors did not share their local knowledge centrally; they had no agreed understanding of the sickness's causes, of the best methods to prevent its spread or treat the infected. Faced with this situation, Beddoes was one of the first to take action. He used one of the few national systems available—the periodical press, writing to the Editor of *The Monthly Magazine* on 17 March 1803 in terms that uncannily anticipate today's public advice:

> Sir,
>
> Your Magazine may yet reach many places before the influenza; and there are two or three remarks, which may be of use to persons disposed to neglect the complaint, or to treat themselves.
>
> Supposing the influenza contagious at all, of which there seems to be no room to doubt, it would, at first sight, appear the most contagious of all diseases. It certainly seizes more individuals than any other. But one principal reason I take to be this: no pains are taken to guard against infection. Those who are not confined by the severity of the attack; mix in society; and the different individuals of a family associate without precautions. In other

> instances, the nature of the disorder keeps them apart, or precautions are taken in favour of the uninfected.
>
> The influenza may be despised by the robust; but it is formidable enough to the puny and the infirm. When it does not immediately destroy, it may leave behind it fatal consequences.
>
> There will, I believe, be no difficulty in securing many of those who are in most danger from its attacks. In the first place, all communication should be cut off between these and the infected; every thing used or worn by the latter immediately put into water, and all the rules for preventing febrile infection regularly practiced.
>
> Fumigation with mineral acids will probably add farther security. I have been much surprised, at finding the accounts from Paris and London so silent upon this article; especially as our parliamentary debate, the writings of M. Morveau and Dr Odier, and other eminent men, and the returns of the physicians deputed to the places visited by the Spanish epidemic, have of late so forcibly drawn the attention of all Europe towards this mode of prevention. From the evidence it results that various species of contagion have been destroyed, in different countries and situations, by acid fumes. They have, in truth, succeeded wherever they have been employed. [. . .]
>
> The danger of the hot regimen should be pointed out to those who may be inclined to treat themselves. Heated apartments, warm, and especially spirituous liquids, a load of bed clothes, and close apartments, will often convert a slight into a dangerous, a dangerous into a fatal, attack. (Beddoes, Letter to the Editor 295-96)

Here Beddoes makes a series of recommendations that today's leaders in Britain took up too slowly and that the President of the USA effectively undermined: the need to take rapid

largescale measures and to learn from the experience of men of science in foreign countries; the danger of "robust" people feeling blasé and so imperilling those made vulnerable by their pre-existing bodily conditions; the lingering effects of the disease even when it did not kill at once; the necessity of social distancing in households and of disinfection of surfaces; the risk factor of unventilated interiors. That he gave this advice while many doctors did not even accept that flu was a contagious disease makes it all the more remarkable.

14. Soon, Beddoes realized that to fight the epidemic effectively, he must find a means of generating a medical consensus about flu's causes—and so he turned to the other national network available—the postal service—and to the statistical method that Sinclair had used in Scotland. To garner compatible information, he had a questionnaire printed and mailed, via well-connected acquaintances, to the doctors of different regions. As he explained to Davies Giddy in Cornwall in a letter written in the margins of one of these questionnaires, he aimed to dispel the notion that flu was not transmitted from person to person but received from miasmas—infectious atmospheres blown-in during unusual wind conditions:

> The present <late> epidemic, as far as far as I can conflate by the communications of medical men & my own observation has immediately destroyed or rendered consumptive from 200 to 500 people Now I believe I prevented it in all the families I saw by acid fumes – & if I can render it tolerably probable as I & most others, who looked sharp, believe, that it is contagious, I shall be able to persuade these who practice, when it appears next, to extinguish it at once – This is remote – but what can a medical man, or any man, do better? (Letter [May 1803])

15. The questions were simple, but clearly directed towards establishing a timescale against which cases and movement could be plotted:

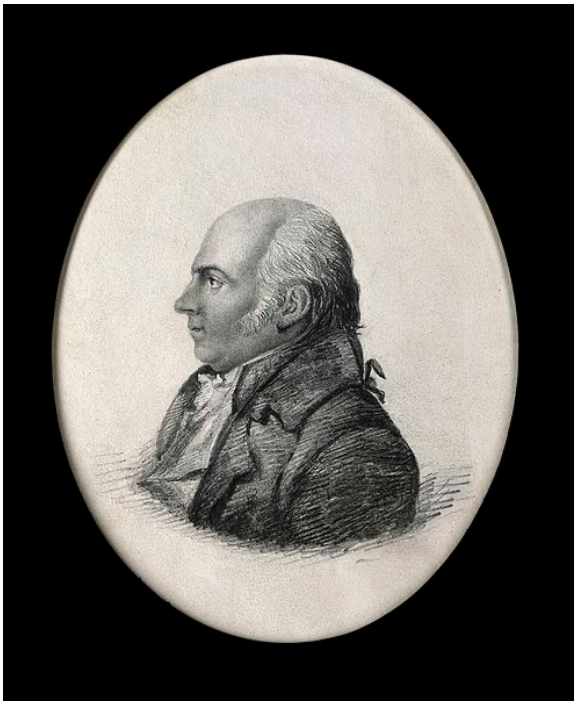
1. When did the influenza begin & end (if ended) with you
2. Was its date the same in the town & adjacent country
3. After being general did single instances occur for some time
4. Did it seem to you to pass from person to person or otherwise & why
5. If infectious, had you ever reason to suppose the contagion conveyed by articles of dress or other fomites –

Any other obsn[s] you please (Beddoes, Letter [June 1803])

Having gathered doctors' responses to the questionnaire, Beddoes published them in the *Medical and Physical Journal*[7] so as to achieve a national professional consensus that flu was contagious, to find what other factors were in play, and to chart the causes, speed and direction of its spread, and thus allow preventive measures to be adopted. He had, of course, no means of doing more than recommending these measures: the periodical press efficiently disseminated information but could not enforce action. Nor was consensus easily generated: many of Beddoes's correspondents denied contagion on the basis that some people who had been in close contact with sufferers remained well. Or because it disappeared from their districts too rapidly. Without an understanding of acquired immunity, it was difficult to achieve the medical momentum needed for the interference in people's homes that mass disinfection required. Flu was here, there and everywhere; it required a widespread and rapid information network to grasp it—like COVID which, even in today's era of instant communication, gets beyond us. With the slow and limited resources at his disposal, Beddoes, however perceptive he was,

inevitably lagged behind the disease's spread. Britain would suffer many more epidemics over the next sixty years.

16. Beddoes was right when many doctors were wrong; he was also ahead of his time—his perceptiveness and methodological innovativeness exceeded the understanding of disease, the treatment-technology, the organization of knowledge and the systematization of action required to deliver the solutions he imagined. Had he lived longer (he died aged forty-eight) he might have seen the kind of statistical survey that he conducted bear fruit, at least in diseases that can be pinned down to fixed geographical origins. In 1854 a single doctor, John Snow, used local enquiry to plot cholera infection against polluted drinking water and demonstrate the disease's origin. Flu, however, remained harder to trace to a source or to defend against. It needed, and, like COVID still needs, largescale national and international cooperation. In the Romantic era, that cooperation—a reformed medical profession and governmental institutions that take responsibility for citizens' wellbeing—had still to be forged. Flu flourished, as TB also did. That COVID flourishes today when political leaders disregard doctors and defund public health would not have surprised Beddoes: after all, he accused Prime Minister Pitt, as we accused President Trump, of a pursuit of wealth for the few that exposes the many—the poor and the infirm most of all—to sickness and death (Beddoes, *A Letter to the Right Hon. William Pitt)*.



(Figure 2: Thomas Beddoes, 1808, from an engraving by C. Warren after a sketch by Edward Bird, frontispiece to J. D. Stock, *Memoirs of the Life of Thomas Beddoes, M.D.* [London, 1811].)

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[1] See Lawlor's *Consumption and Literature. The Making of the Romantic Disease*.

[2] As revealed in Bewell's *Romanticism and Colonial Disease*.

[3] See Jay's *The Atmosphere of Heaven: The Unnatural Experiments of Dr Beddoes and His Sons of Genius*.

[4] Somewhat more than a pittance and later supplemented by a further £150 and £400, a total sum worth between £25000 and £30000 in today's money. For more information, see James 30.

[5] For more on this topic, see Owens.

[6] Announced by Jenner, who was based in Berkeley, north of Bristol, in 1798, vaccination took several years of presenting test cases before it gained acceptance. For more, consult Fulford and Lee.

[7] Beddoes, *Medical and Physical Journal*.