

# HEALTH AND VIRTUE: OR, HOW TO KEEP OUT OF HARM'S WAY. LECTURES ON PATHOLOGY AND THERAPEUTICS BY WILLIAM CULLEN *c.* 1770

by

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## I

William Cullen MD (1710–90) has not generally been considered amongst the front rank of medical scholars.<sup>1</sup> His position as a professor in the Edinburgh Medical School, holding consecutively the chairs of chemistry (1755–66), the theory of medicine (1766–73), and the practice of medicine (1773–89), and at the same time (1755–76) contributing to the clinical classes given by himself and his colleagues in the Royal Infirmary of Edinburgh, has ensured him a place in medical annals.<sup>2</sup> Estimation of Cullen's particular contribution to medical science has, however, been qualified.<sup>3</sup> His biographer, writing in the early decades of the nineteenth century, began an exercise in rehabilitation which, by focusing on the originality of Cullen's research, set the tone of most subsequent assessment. He has been seen, for example, as one of the "systematizers" of the eighteenth century, along with such men as Friedrich Hoffmann (1660–1742), Georg Ernst Stahl (1660–1734), and Albrecht von Haller (1707–77), each of whom created a theory of human physiological organization from one fundamental concept.<sup>4</sup> But Cullen's physiological base in neural function is considered derivative, a

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<sup>1</sup> The standard, and still most informative, source of information about Cullen is John Thomson, *An account of the life, lectures and writings of William Cullen M.D.*, 2 vols., London, Blackwood, 1859. [Hereinafter referred to as *Life*.]

<sup>2</sup> This essay is concerned with Cullen's medical work, although there is another considerable body of literature dealing with his work as a chemist and teacher of chemistry. See W. F. D. Wightman, 'William Cullen and the teaching of chemistry', *Ann. Sci.* 1955, 11: 154–165; and 1956, 12: 192–205; A. L. Donovan *Philosophical chemistry in the Scottish enlightenment*, Edinburgh University Press, 1975; R. C. W. Anderson *The Playfair Collection and the teaching of chemistry at the University of Edinburgh 1713–1858*, Edinburgh University Press, 1978; Andrew Kent (editor), *An eighteenth-century lectureship in chemistry*, Glasgow, 1950; J. R. R. Christie, 'Ether and the science of chemistry: 1740–1790', in G. N. Cantor and M. J. Hodge (editors), *Conceptions of ether: studies in the history of ether theories*, Cambridge University Press, 1981.

<sup>3</sup> Cullen's principal works are *Synopsis nosologiae methodicae*, Edinburgh, 1st ed. 1769, 2nd ed. 1771, 3rd ed. 1780, 4th ed. in 2 vols. 1785; *First lines of the practice of physic*, Edinburgh, vol. I 1776, vol. II 1779, vol. III 1783, vol. IV 1784, translated into French in 1785, into Latin in 1777 or 8, into German in 1778 and in 1789; *A treatise on the materia medica*, Edinburgh, 1789, originally published without Cullen's consent in 1771 under the title *Lectures on the materia medica*. John Thomson also produced a general edition of *Cullen's works*, containing much of the above together with extracts from manuscript material, which gives a satisfactory general picture of Cullen's published work.

<sup>4</sup> R. H. Shryock, *The development of modern medicine*, Madison, University of Wisconsin Press, 1974 (1936, 1947), pp. 26–29; F. H. Garrison, *An introduction to the history of medicine*, Philadelphia, W. B. Saunders, 4th ed., 1929, pp. 313–314; A. Castiglioni, *A history of medicine*, New York, Knopf, 1941, p. 586; C. Singer and E. Ashworth Underwood, *A short history of medicine*, Oxford, Clarendon Press, 1962, p. 148.

pale reflection of the more rigorously developed theories of Hoffmann and Haller. Castiglioni would not accept that Cullen was the “father of the neural concept of disease”.<sup>5</sup>

Cullen’s work on pathology has also been considered less than seminal. It is argued that he was amongst those concerned to reduce the accumulated empirical discoveries of the seventeenth century to systematic order,<sup>6</sup> and his contribution to eighteenth-century disease taxonomy (*Synopsis nosologiae methodicae*, Edinburgh, 1769) has been compared with Linnaeus’ botanical classification, with which he was familiar. But, it is pointed out, Cullen’s classifications were considered redundant less than a generation after his death.<sup>7</sup> Cullen’s physiological and pathological achievements rated only minimal attention—a matter of lines—from the historian particularly devoted to Scottish medical history,<sup>8</sup> a reflection of a consensus aptly summed up by Fielding Garrison in his remark that “Sir William Hamilton was perilously near the truth when he said that ‘Cullen did not add a single new fact to medical science’.”<sup>9</sup>

Historians have been more comfortable applauding Cullen’s practical work. His name is generally linked with that of Herman Boerhaave (1668–1738) as “the two great teachers of Clinical Medicine in the eighteenth century.”<sup>10</sup> He could with confidence be called “[t]he leading British physician of the eighteenth century . . .”<sup>11</sup> in the context of a discussion of the growing interest in the aetiology of fevers and contagious diseases, particularly in military medicine. Even here, however, discussion of Cullen’s work is generally more or less used as an overture to consideration of the therapeutic ideas of John Brown, the pupil of Cullen considered to have captured and popularized Cullen’s essential therapeutic ideas.<sup>12</sup>

More recently, Cullen’s work is being reappraised with less qualification. He has been pointed to again as “undoubtedly the most significant figure” in British medicine in the second half of the eighteenth century,<sup>13</sup> and again Cullen’s therapeutics, specifically his classification of fevers, is being examined for the light it sheds on the fever literature generally, and military medical literature in particular, of the

<sup>5</sup> Castiglioni, *op.cit.*, note 4 above.

<sup>6</sup> See Shryock (1974), *op.cit.*, note 4 above, pp. 26–31, for a general discussion of this idea and the shortcomings of the “monistic pathology” which developed from it.

<sup>7</sup> Lester S. King, *The medical world of the eighteenth century*, New York, 1971 (University of Chicago Press 1958), ch. VII ‘Nosology’, pp. 193–226; see also K. Faber, *Nosography in modern internal medicine*, London, Humphrey Milford, 1922, p. 25.

<sup>8</sup> D. Guthrie, *A history of medicine*, rev. ed., London, Nelson, 1958, p.223.

<sup>9</sup> Garrison, *op.cit.*, note 4 above, p. 358.

<sup>10</sup> Guthrie, *op.cit.*, note 8 above, p. 233. See also J. K. Crellin, ‘William Cullen—his calibre as a teacher’, *Med. Hist.* 1971, 15: 79–87; R. N. Johnstone, ‘William Cullen’, *ibid.*, 1959, 3: 33–45; G. B. Risse, ‘“Doctor William Cullen, physician, Edinburgh”: a consultation practice in the eighteenth century’, *Bull. Hist. Med.*, 1974, 48: 338–351.

<sup>11</sup> King, *op.cit.*, note 7 above, p. 139.

<sup>12</sup> Even Cullen’s biographer dwelt at length on Brown’s work, although here the object was to destroy Brown’s credibility. See *Life*, vol. II, pp. 336–443. See also G. B. Risse, ‘The quest for certainty in medicine: John Brown’s system of medicine in France’, *Bull. Hist. Med.*, 1971, 45: 1–12; G. B. Risse, ‘The Brunonian system of medicine: its theoretical and practical implications’, *Clio Medica*, 1970, 5: 45–51.

<sup>13</sup> W. F. Bynum, ‘Health, disease and medical care’, in G. S. Rousseau and R. Porter (editors), *The ferment of knowledge. Studies in the historiography of eighteenth-century science*, Cambridge University Press, 1980, pp. 211–253, p. 222.

eighteenth century.<sup>14</sup> His neural physiology is again receiving attention, and much recent interest in Cullen has been prompted by recognition of his close intellectual and personal associations with David Hume and Adam Smith.<sup>15</sup>

The precise nature of Cullen's work, however, is still far from clear. Most important, the heuristic quality in Cullen's work, while it has been noted,<sup>16</sup> has not been fully developed. One could quote numerous examples of the extent to which Cullen constantly urged his students to adopt "... not ... Boerhaave's system, or Hoffman's [*sic*] system ... but a system you are to make for yourself ..."<sup>17</sup> His published works, I would argue, are the least important aspect of his work, because while they were undoubtedly intended as pedagogic aids for students, they were equally, and I suspect chiefly, prompted by financial reasons and to establish his place amongst his peers; common enough motives but in Cullen's case not the entire story. The frame of reference in which Cullen can more fruitfully be studied, I would argue, lies within the realm of his dynamic relationship with his students; all his work was intended as a means towards their improvement, and as subordinate to that end. It was through these channels that Cullen's real creativity flowed, and through which we will discover the positive purposes behind what was often an extremely diffident manner.

Cullen worked on a number of different fronts, and here I concentrate on one, his contribution to one of the central characteristics of the Scottish Enlightenment—the question of virtuous conduct.<sup>18</sup> The promotion of social virtue was, of course, an enduring preoccupation of Scottish philosophers: it is also true, however, that considerations of social interaction proceeded from perceptions of the inner, individual demands needed to develop the virtuous man. There is everywhere implicit in the work of both Hume and Smith assumptions of the utility, and thus the virtue, of that self-command needed to hold oneself, in society, in a judicious balance between excess and deprivation of the mind and emotions;<sup>19</sup> assumptions tempered, of course, by a recognition of the limitations placed upon us by the social basis of our understanding—custom, as Hume said, "the great guide of human life."<sup>20</sup> I would

<sup>14</sup> W. F. Bynum, 'Cullen and the study of fevers in Britain 1760–1820', in W. F. Bynum and V. Nutton (editors), *Theories of fever from antiquity to the enlightenment*, London, Wellcome Institute for the History of Medicine, 1980, pp. 135–147; D. C. Smith, 'Medical science, medical practice, and the emerging concept of typhus in mid-eighteenth-century Britain', *ibid.*, pp. 121–134.

<sup>15</sup> I. A. Bowman, 'William Cullen (1710–1790) and the primacy of the nervous system', unpublished PhD thesis, Indiana University, 1975; C. J. Lawrence, 'The nervous system and society in the Scottish enlightenment', in B. Barnes and S. Shapin (editors), *Natural order: historical studies of scientific culture*, London, Sage, 1979, pp. 19–40; Christie, *op.cit.*, note 2 above.

<sup>16</sup> Bynum, *op.cit.*, note 14 above.

<sup>17</sup> Royal College of Physicians of Edinburgh (RCPE) Cullen MSS #18 'Lectures on physiology', 5 vols., c. 1770, vol. I, p. 130.

<sup>18</sup> For opinions regarding its importance see J. G. A. Pocock, 'Cambridge paradigms and Scotch philosophers: a study of the relations between the civic humanist and the civil jurisprudential interpretation of eighteenth-century social thought', in I. Hunt and M. Ignatieff (editors), *Wealth and virtue*, Cambridge University Press, 1983.

<sup>19</sup> See N. T. Phillipson, 'Hume as moralist: a social historian's perspective', in S. C. Brown (editor), *The philosophers of the enlightenment*, Hassocks, Sussex, Harvester Press, 1979, pp. 140–161; Adam Smith, *The theory of moral sentiments*, edited by D. D. Raphael and A. L. MacFie, Oxford University Press, 1976, introduction.

<sup>20</sup> David Hume, *An enquiry concerning the principles of morals*, edited by L. A. Selby-Bigge, Oxford University Press, 1975, sect. V, part I.

wish to present Cullen as a teacher primarily devoted to demonstrating the urgency, through their relationship to disease, of these inner, personal demands.

Cullen always insisted that the study of disease was “the ultimate end of all our studies.”<sup>21</sup> He made this statement in the context of an introduction to a series of lectures delivered during the late 1760s and early 1770s, on his appointment to the chair of the theory of medicine. It was an important period for him; for the first time in Edinburgh he had achieved a medical chair from which he could develop fully his ideas on the question of disease. He had, it is true, taught a particular pathology since the 1750s in the clinical lectures he delivered in the Royal Infirmary, but now he had the scope to present a general pathology in which we find him proposing that with the exception of some morbid conditions of the mind, all diseases had a physical source, contracted often by the individual him/herself and again often through the agency of custom. Disease generally resulted from disorder of these sources, usually excess, usually of the passions. Control of these sources of disease, therefore, was Cullen’s principal therapeutic remedy.

To a large extent Cullen’s pathology, in fact, underwrote the practice of Stoic self-command which, by the end of his life, Adam Smith had come to identify as the principal virtue; “from it”, he wrote, “all the other virtues seem to derive their principal lustre.”<sup>22</sup> Smith’s opening remarks in a new section in *The theory of moral sentiments* entitled ‘Of the character of virtue . . .’, inserted into the sixth edition, published in 1790, can well stand as a general preface to the lectures given by Cullen on pathology and therapeutics discussed below. Smith wrote:

The preservation and healthful state of the body seems to be the objects which nature first recommends to the care of every individual. The appetites of hunger and thirst, the agreeable or disagreeable sensations of pleasure and pain, of heat and cold, etc. may be considered as lessons delivered by the voice of Nature herself, directing him what he ought to chuse, and what he ought to avoid, for this purpose . . . Their principal object is to teach him how to keep out of harm’s way.<sup>23</sup>

## II

William Cullen did not want the chair of the institutes of medicine, to which he was appointed in 1766. He wanted to teach the practice of medicine, and although that chair too had become vacant in 1766 when the incumbent John Rutherford retired, it was filled by John Gregory from Aberdeen.<sup>24</sup> In 1768, Gregory was prevailed upon to agree to a scheme whereby Gregory and Cullen held the two chairs jointly, each offering annual courses on alternate subjects.<sup>25</sup> Only Gregory’s untimely death in 1773 caused the two chairs again to be separated, Cullen this time succeeding in securing the chair of the practice of medicine.

<sup>21</sup> *Life*, vol. I, p. 260.

<sup>22</sup> Smith, *op.cit.*, note 19 above, Part VI, sect. III, para. II.

<sup>23</sup> *Ibid.*, part VI, sect. I.

<sup>24</sup> John Gregory, MD, FRS (1724–73), son of James Gregory, professor of medicine at Aberdeen (d. 1731) and cousin of Thomas Reid, professor of philosophy at Aberdeen 1746–49.

<sup>25</sup> *Life*, vol. I, p. 458.

The extended course-length during these years gave Cullen time to amplify his views, particularly on the concept of disease. He explained to his students his belief that medical study should revolve around pathology not, as he claimed had previously been the case in Edinburgh, physiology. Boerhaave, he said, spent six months on physiology and two months on pathology and therapeutics, and this “Leyden Distribution”, as he called it,<sup>26</sup> had been followed by the professor in Edinburgh. “Boerhaave’s close followers in this university,” he said, “for a long time managed in the same manner and I must be allowed to say I was the first Person who gave any tolerable share to the pathology and therapeutics.”<sup>27</sup>

Cullen organized his material into three distinct disciplines; a significant departure, he claimed, from the traditional disciplines of Physiology, Pathology, Therapeutics, Semiotics and Hygiene. Cullen incorporated Semiotics into Pathology, and Hygiene into Therapeutics, describing his new classifications of Physiology, Pathology and Therapeutics as “Life and health, the general doctrine of disease and the general doctrine concerning the means of preventing and curing ’em.”<sup>28</sup>

Three significant features of this organization need to be noticed. First, as already indicated, his pathology was primarily a general pathology, a discussion of the whole concept of disease and in particular of his “Doctrine of Causes”.<sup>29</sup> In keeping with his Humean epistemology, the *only* coherence Cullen could impose upon phenomena was through the general principle of causation. He repeatedly impressed upon his students, for example, that “matters are delivered acc. to their Conexion [*sic*] and Dependence.”<sup>30</sup> Cullen’s “Doctrine of Causes”, therefore, was central to his explanatory mode, and was designed to demonstrate that every diseased state was the fruit of a series of changes, or causes, which it should be possible for physicians to trace. “. . . every effect that we observe almost may be considered as part of a chain or series of causes which have in that series produced one another . . . and so far every part of the chain of cause may be said to be a cause of the last effect.”<sup>31</sup>

The second feature of this organization needing to be underlined, as Cullen did himself in this introductory discussion, is the fact that his chain of causation comprehended not only the “proximate” but also the “remote” causes of disease, the social and environmental factors, the “non-naturals” or, in his words, “all those circumstances which in series or in concurrence [*sic*] produce the proximate cause, and which then cease further to act on the body.”<sup>32</sup> Cullen wanted to bring “remote causes” more securely within the medical lexicon. He did not agree with writers who,<sup>33</sup> he said, argued that since they did not necessarily produce the disease, they could not be considered a “true cause”.<sup>34</sup> By comprehending “Hygiene” within Therapeutics, therefore, Cullen argued that he was incorporating consideration of the remote causes;

<sup>26</sup> RCPE, Cullen MSS, op.cit., note 17 above, vol. I, p. 3

<sup>27</sup> *Ibid.*, pp. 33–34.

<sup>28</sup> *Ibid.*

<sup>29</sup> *Ibid.* vol. IV, pp. 1–58.

<sup>30</sup> *Ibid.* vol. I, p. 113.

<sup>31</sup> *Ibid.* vol. IV, p. 18.

<sup>32</sup> *Ibid.* p. 33.

<sup>33</sup> Unidentified.

<sup>34</sup> RCPE, Cullen MSS, op.cit., note 17 above, vol. IV, pp. 23–24.

“[w]ith regard to Hygiene or the Art of preserving Health I have sufficiently explained myself,” he said, “and I say it is merely the study of the remote Causes of Disease whether predisponent or occasional.”<sup>35</sup>

Therapeutics, therefore, in this particular lecture format, was largely the study of the remote causes of disease. Cullen felt so strongly that consideration of the preservation of health should be more decisively medical, that he employed a subtle change of terminology, one which proposed health as the polar opposite of disease. Hygiene, it should be emphasized, meant the preservation of health. In order to identify hygiene more sharply as a medical concern, Cullen argued that the only means of preserving health was by preventing disease.

The common language is that “Medicine is the art of preserving health and of curing diseases”, but I have said “the art of preventing diseases”; for although I do not deny that the preserving of health is the object of a physician’s care, yet I maintain that there is truly no other means of preserving health but what consists in preventing disease. Every other idea is false, and has led to a superfluous, very often a dangerous practice. I say, that health properly understood, we cannot add to it, nor increase its powers. There is never room for our art, but when there is some defect in the constitution—some bias and tendency towards disease; and it is only by preventing this tendency, by correcting these defects, that is by preventing disease, that we preserve health.<sup>36</sup>

The third feature of Cullen’s organization was his insistence, like Hume,<sup>37</sup> that the proper relationship between all physical phenomena in the natural world was balance and harmony. He consistently eschewed explanation which employed hierarchical causative relationships. He placed the study of physiology first in his course, he said, but not because he wanted it considered pre-eminent. As he continually told his students, in many respects his pathology was hardly distinguishable from his physiology, in that all the processes and forces acting upon the human body in one set of circumstances maintained health, whilst in another set of circumstances they could produce disease. In the same way he found it entirely too arbitrary to assign primary importance to one particular organ of the body. All organs were, he said, inter-related, and “may be Considered Mutually as causes and effect. Thus the action of the heart cannot subsist without the power and energy of the brain, nor can the energy of the brain subsist long without the action of the heart . . . .”<sup>38</sup> An individual in a state of full health achieved perfect balance, he believed, both within his own physical structure and in relation to the rest of the natural world.

Cullen did not use the words “balance” or “harmony”. He used the term “standard of health” or “latitude of health”. Physicians, he said, had long been sensible that a perfect standard of health was impossible. He rejected Gaubius’ definition of disease—“A disease is that condition of the human body where it is rendered unfit to exercise the actions proper to it exactly according to the Rule or Standard of Health”<sup>39</sup>—partly on the grounds that it was too rigid. “. . . [I]t is plain that if I should establish a standard of health,” he said, “it would consist in a certain vigour of action

<sup>35</sup> *Ibid.*, vol. I, pp. 68–70.

<sup>36</sup> *Ibid.*, vol. IV, pp. 51–52.

<sup>37</sup> Hume, *op.cit.*, note 20 above, sect. VI, part I.

<sup>38</sup> RCPE, Cullen MSS, *op.cit.*, note 17 above, vol. I, p. 74.

<sup>39</sup> *Ibid.*, p. 14.

affixed to a certain time of life . . . ”<sup>40</sup> At the same time, however, it is clear he was not really happy making *any* definitive statements about health. It depended, he taught, not only upon age, but upon the constitution of each individual at any particular moment in time. The line between health and disease was shadowy; there were many variations and deviations of the human condition which could not be considered as a diseased state, because many malfunctions of the body were the result of wrong habit and practices, not specific diseases. Moreover, it is doubtful whether Cullen could ever be found formulating propositions regarding health in the passive voice, as is the case in the definition Cullen attributed to Gaubius. Health, for Cullen, was essentially a dynamic, cultural, and subjective state. “*Latitudo sanitatis* . . . [was] to be defined by the common sense of mankind.”<sup>41</sup>

We do not know precisely when Cullen first employed this model.<sup>42</sup> We do know that it received public endorsement by students attending his lectures on *materia medica*. Cullen had begun offering these lectures in Edinburgh in 1761, on the death of Charles Alston, and from that date until 1766, when Frances Home was appointed professor of *materia medica*, he lectured to such enthusiastic response that a private edition of his lectures was published in 1771 taken from lecture notes of 1761. They were published, according to the promoters, because they were based upon a plan “entirely new and original . . . and executed . . . in a manner which gained universal approbation.”<sup>43</sup> Cullen had organized *materia medica* not according to some system inherent in the substance itself, such as taste, smell, or botanical order, which he claimed was the common practice, but according to its physiological effect. He argued that the only valid basis for determining the proper use of *materia medica* was the particular state of the body on which it was to be applied, a state incorporating psychological as well as physiological considerations.

The operations of medicines depend somewhat on their own nature, but as much on the particular modification of the system to which they are applied. Instead, therefore, of spending time in examining the different figure of the particles of medicine, their sharpness, their oiliness [*sic*] etc., it will be more useful to say somewhat on temperaments.<sup>44</sup>

The response of the human body to external agencies was, as Lawrence has indicated,<sup>45</sup> the source of interest in neural functions in Edinburgh, but in the case of Cullen this does not mean that his physiology was of intrinsic interest standing alone. Notice his use of language in evaluating the use of physiological research. Physiology was both interesting and important, he said,

*even* [my italics] considered as a piece of pure speculation with regard to the mechanisms of animal bodies; but, when considered as capable of a very useful application, it becomes a subject of the

<sup>40</sup> Ibid.

<sup>41</sup> Ibid.

<sup>42</sup> Cullen’s biographer provides information indicating that Cullen’s ideas were already formed when he taught in Glasgow in the early 1740s, but the reference concerns his interest in neural function, not ideas about causation.

<sup>43</sup> William Cullen, *Lectures on the materia medica*, London, 1771, preface.

<sup>44</sup> Ibid., p. 9.

<sup>45</sup> Lawrence, *op.cit.*, note 15 above.

greatest importance, and this application is to explain the nature of the diseases of the body; and to explain the operation of Remedies and thereby to lead to a more certain means of curing diseases, than we could otherwise obtain<sup>46</sup>

Cullen's neural physiology was used to convey knowledge of the gross functions of the human body, and in particular to illuminate patterns of disease. In the lectures we are about to discuss, he was studiously diffident regarding the significance of knowledge of particular anatomical structures. He did not go into detail, for example, about the anatomy of the eye, but instead stressed its function.<sup>47</sup> Again, nerves themselves, he said, "are merely channels of communication" and hardly deserved particular study.<sup>48</sup> He was particularly dismissive of corpuscular theories outlining the composition of the fluids. He went to great lengths to dismiss, one by one, Gabius' theories of the loss of cohesion, the state of acrimony, the loss of water, etc., of the blood,<sup>49</sup> concluding "[t]herefore, once for all . . . I say the whole of this Corpuscularian Philosophy is entirely to be banished from our Chemistry and Physiology."<sup>50</sup>

While, therefore, Cullen displayed no interest in the ideas proposing particular anatomical mechanisms, this was not because of any antipathy to the mechanical model, but rather to its isolation from environmental causes. "Our system", he said, "is not a mere automaton, supported in its duration by any powers, whether of mind of body, subsisting within itself. It appears that we have constant need of some external assistance, of the impression of external agents."<sup>51</sup> He wanted to consider the nervous system in particular, he said, as "an animated machine, as suited to perform a variety of motions, as fitted to have communication with the other parts of the universe, to be acted upon by external bodies, and to act upon these . . ."<sup>52</sup> In discussing therapeutics, he said, "I intend to comprehend the consideration of every power acting upon the human body and capable of changing it . . . all the power Changing the Body may be referred to the action of other Bodies upon a man or to the actions of a man upon himself, [and] it is proper to subdivide these last as they are the operations of the mind or body more strictly . . ."<sup>53</sup>

### III

Cullen defined the human body for his students as a mechanism combining three systems: the simple solids, the nervous system, and the animal functions (the fluids). In his pathology lectures, he spent virtually no time on the simple solids, dismissing them in a few sentences indicating that he had already discussed the diseases of the simple

<sup>46</sup> RCPE, Cullen MSS, op.cit., note 17 above, vol. IV, p. 1.

<sup>47</sup> Ibid., vol. I, p. 248.

<sup>48</sup> Ibid., p. 249. On another occasion Cullen was a little more forthcoming. "Whether these Nerves", he wrote to a friend, "are solid strings, which vibrate from one extremity to another; or along which a fine elastic Aether moves; or if they are canals transmitting a fluid; hath long been, and still is a dispute which it is perhaps of little consequence to determine."

<sup>49</sup> Ibid., vol. IV, lecture 87, pp. 209–223, and lecture 92, pp. 287–299.

<sup>50</sup> Ibid., p. 295. Cullen has obviously changed his position on this question since the time he taught chemistry. See Donovan, op.cit., note 2 above, p. 113.

<sup>51</sup> Quoted in *Life*, vol. I, pp. 315–316.

<sup>52</sup> RCPE, Cullen MSS, op.cit., note 17 above, vol. III, pp. 8–9.

<sup>53</sup> Ibid., vol. V, p. 4.



solids when discussing their physiology.<sup>54</sup> We will take time, however, to recapitulate this material, since it contains important elements of his pathology.

The simple solid, said Cullen, was characterized firstly by a constant, although imperceptible, increase in bulk by the accretion of nutrition from the animal fluids, and secondly by a capacity to acquire strength and vigour. This latter function he called “mobility”, a word not meant to convey any properties of motion, but to describe the relative state and composition of the solid matter itself, its “cohesion”, “flexibility”, and “elasticity”, which became progressively more dense and rigid and less fluid and elastic as the human body progressed from foetus to old age.<sup>55</sup> He dismissed theories concerning the essential composition of the simple solid as a question “either not known or at least not agreed upon among Philosophers”, he maintained, “and therefore [is] not to be attempted here.”<sup>56</sup> For Cullen’s overall didactic scheme, he was interested only in the propensity of this matter to change. “We observe the properties [of the simple solid] are considerably different in different persons and in different circumstances”, he said, “and may be increased or diminished . . . We cannot often determine the Causes in general or the absolute measure and standing; we can only observe the causes of the increase or Diminution, and it is there that we are chiefly interested.”<sup>57</sup>

Changes in the simple solid were brought about as a result of the “original stamina” of an individual, its sex, its temperament, the amount of exercise taken, the temperature and quality of the atmosphere, the tension of the body, the amount and type of nutrition and various medicinal substances. Morbid affections of the solid parts, therefore, were the result of excess or deficiency of any of these factors. Excess mobility caused debility, which basically needed nutrients, tonics, stimulants, rest, and sometimes the therapy of coolness or exercise. A deficiency of mobility produced rigidity, which needed relaxants such as heat, sedatives, a less stimulating diet, and again exercise.<sup>58</sup>

Of the powers acting upon the simple solid, nothing, he believed, could alter the original stamina, and although he made no attempt to explain its fundamental origin—“There is little hope of finding wherein it consists”—he went on to speculate that most probably “original stamina” arose from the state of the simple solid.<sup>59</sup> Similarly, nothing could alter the sex of an individual, of course. Exercise, temperature, and the quality of the atmosphere were discussed in more detail later in relation to their effect on the nervous system. He was dismissive of the value of most medicinal remedies. Corrosives “or the means of destroying the texture of animal substances”, astringents or “the power of increasing cohesion”, and emollients “which diminish cohesion and increase flexibility of the simple solid” were all largely for external application and purely local in their effect.<sup>60</sup>

<sup>54</sup> *Ibid.*, vol. IV, p. 54.

<sup>55</sup> *Ibid.*, vol. I, p. 125.

<sup>56</sup> *Ibid.*

<sup>57</sup> *Ibid.*, pp. 113–114.

<sup>58</sup> *Ibid.*, pp. 113–124.

<sup>59</sup> *Ibid.*, vol. IV, p. 68.

<sup>60</sup> *Ibid.*, vol. V, pp. 85, 92 and 99.

The major force acting upon the simple solid, by increasing its size and bulk, and providing the best possible conditions for the development of vigour, was adequate and proper nutrition. Cullen touched on nutrition briefly in his physiology but indicated he would deal with the subject more extensively in his therapeutic lectures. There he admitted it was not common to include diet in a medical lecture, but argued that it was necessary because of its evident importance to the healthy development of the simple solid, and, as his philosophy of balance implied, all human behaviour was potentially pathogenic. "It is proper", he believed, "to consider the tendency of every Different Circumstance of the Human Manners."<sup>61</sup> The dynamic nature of health was further underwritten by the cyclical nature of the process of nutrition. The solid parts of the body were, he said, constantly being supplied with animal fluid, which was that part of our fluids containing nutritional matter. "There is no need to reiterate", he said, "that they are *constantly* indicated; the reason has been given before that such is the nature of the animal oeconomy that our fluids are constantly Degenerating, and if they are not thrown out of the Body they would soon be noxious to it, so that there is a constant demand for a fresh supply from aliment being Thrown in . . ."<sup>62</sup>

It comes as no surprise, therefore, to find that Cullen included food as an item of *materia medica*. It had constituted a significant item in his lectures on *materia medica* and he now incorporated much of that material into his therapeutic lectures. Cullen well understood general relative nutritional values; for example, "There is not so much nourishment in a certain quantity of turnip as in a like Quantity of Beef or mutton, the one containing a greater quantity of nutritional matter than the other."<sup>63</sup> In assessing the relative value of different foods, however, nutritional values played a minor role. In characteristic fashion, he did not offer his students indications of the relative value of different foods by tracing the physiological process by which food was converted into fluid form. Cullen again emphasized human over physiological responses. Food would be assessed, he said, by "the common experience of mankind",<sup>64</sup> relative to the environment and climate where any particular food was used. Its value would be determined by observing "the choice that has been made and [examining] the nature of it as well as I can", although he readily acknowledged that he could often not understand on what basis some food was preferred to another. There appeared, he said, to be "some instinctive likings and disgusts . . . [and] in this they are very little corrected by experience."<sup>65</sup> The conclusions Cullen arrived at from this method of investigation show him to have favoured a vegetable diet.

Cullen obviously wanted to convey the virtues of moderation in regard to diet. At the same time, however, he seemed to want to endorse the idea that there was a relationship between diet, *personal* (not environmental) cleanliness, and disease. Basically, he believed a spare diet was adequate for the purposes of life, although he recognized that the diversity of human experience made it unlikely such a generalization could be sustained.<sup>66</sup> The young and growing, and those involved in

<sup>61</sup> *Ibid.*, p. 81.

<sup>62</sup> *Ibid.*, p. 48.

<sup>63</sup> *Ibid.*, vol. I, p. 127.

<sup>64</sup> *Ibid.*, vol. V, p. 29.

<sup>65</sup> *Ibid.*

<sup>66</sup> *Ibid.*, vol. V, p. 74.

hard labour and exercise, needed the richest diet, he maintained, but this did not necessarily mean large quantities of meat. Excessive meat eating, he felt, was one of the banes of civilization, and hardly necessary to anyone, and particularly not before the age of thirty.<sup>67</sup> Most of the inhabitants of the world, he pointed out, lived on a diet of vegetables and farinaceous substances without any apparently harmful effects.<sup>68</sup> Except where habit had established a dependence, he concluded, he found no justification for the consumption of large quantities of meat. “In short”, he said, “I cannot perceive that animal food is anywhere necessary to health, except in the case of labour and Great Cold, and in all Cases its proportion must be very small, and milk joined with the Farinacia [*sic*] are probably sufficient for every Duty that Human Life requires.”<sup>69</sup> He recognized, however, that the exceptions he had made were important. Hard labour and extreme cold were two enduring elements in the lives of such people as the poor and soldiers, and he wondered whether a vegetable diet was not part of the reason why these groups were often the first to be affected by outbreaks of disease. They were also, he reflected, often the least concerned with personal cleanliness, but he left his students to speculate upon these observations themselves.<sup>70</sup>

Cullen’s arguments for a vegetable diet, again, did not rest upon gross nutritional values, although in his *materia medica* lectures he had spent a great deal of time demonstrating that most vegetables did in fact contain sufficient quantities of nutritional matter. His basic reservations about the consumption of meat rested upon its stimulant qualities. The relative value of food was to be determined, he argued, by its ability to be converted into animal fluid; thus “vegetables are more nutrient as they are more oily.”<sup>71</sup> Animal food was much less easily converted into animal fluid, and the extra work thus generated in the digestive system—the mechanical process of which in any event generated a certain amount of tension—served to increase the degree of tension to an unhealthy level. “We know that Digestion”, he said “constantly produces an irritation and sometimes in all its forms a Degree of fever, and in proportion to our food being more or less soluble it will be more or less stimulant by its continuing longer to operate . . .”<sup>72</sup>

The powers of stimulation and sedation were for Cullen the most important properties to be looked for in any powers acting upon the human body, because they acted upon the nervous system. Although he had argued that the functions of the body were mutually dependent, it is clear that he believed that it was in the nervous system that the generative sources of life lay. “Most powers”, he said, “acting upon living bodies do not act in the same manner or not at all upon dead Bodies, so that the Effects depend upon the powers of Life, upon sensibility and irritability in the whole or in the parts.”<sup>73</sup> These two qualities, sensibility and irritability (both highly sensitive to nervous influence), were for Cullen the most important qualities an individual

<sup>67</sup> *Ibid.*

<sup>68</sup> *Ibid.*

<sup>69</sup> *Ibid.*, p. 80.

<sup>70</sup> *Ibid.*, pp. 81–82.

<sup>71</sup> *Ibid.*, pp. 30–31 and 45.

<sup>72</sup> *Ibid.*, p. 37.

<sup>73</sup> *Ibid.*, pp. 9–10.

possessed. They were “the powers of life” and upon their correct balance the proper functioning of the whole human system depended.

Sensibility was the ability of the nervous system to receive sensations and thus to transmit will.<sup>74</sup> It was a general, mechanical concept at the same time entirely personal to each individual, which Cullen defined as “a certain fitness to be acted upon by impressions, to be so moved by the impulse of external bodies, as that a motion may be propagated to the Brain and produce Sensation and its various consequences . . . this fitness of the Sentient Extremities may be called their Sensibility . . .”<sup>75</sup> As in the case of the simple solids, excess or deficiency of sensibility constituted disease. “There is a degree of sensibility”, he said, “that is suited more especially to the oeconomy of every person, always allowing for the *latitudo sanitatus* but that is manifestly within the limits of a certain degree suited to the purpose of the Oeconomy, and if it is either more or less it may be considered as a disease . . .”<sup>76</sup> In another instance he referred to the “law of sensibility” which was the response of the individual to excessive passions or emotions. “It is the nature of the human mind”, he said, “to indulge every present emotion or passion and this would not be prevented from going to excess if it was not counteracted by some other Sensation, Consideration or motive . . . it is then that the law of sensibility takes place . . .”<sup>77</sup> Sensibility was, therefore, a tuning mechanism involving the body and the mind, individually set to suit the particular constitution of every individual, by which he or she was enabled to function rationally and temperately. “I say that it is probable that it is the constitution of the solid medullary substance of our fibres that gives the degree of sensibility, as we commonly find that a certain delicacy of the simple solid does accompany the increased sensibility of the nervous system.”<sup>78</sup>

“Irritability” was the term Cullen adopted from Haller to refer to a certain degree of “mobility” of the muscles, and like the concept of “mobility” of the simple solid, it is the most obscure of Cullen’s definitions. It is probably most accurately translated as a nervous power which the muscles possessed in addition to the power of vigour. These two characteristics of the muscles—mobility and vigour—were always to be found in inverse relation to one another; a person with excess vigour would have a deficiency of mobility, and vice versa. If it were expressed as a table it would look like this:

Excess vigour	was called Increased tone (strength)
Deficiency of vigour	was called Debility
Excess mobility	was called Irritability
Deficiency of mobility	was called Torpor

A person with a high degree of strength would also be susceptible to torpor, while a person in a state of debility would also be found to have a high degree of irritability.

The balance of sensibility and irritability was maintained by the same external powers which affected the simple solid, but with the important addition of the brain.

<sup>74</sup> *Ibid.*, vol. I, p. 78.

<sup>75</sup> *Ibid.*, vol. IV, pp. 62–63.

<sup>76</sup> *Ibid.*, p. 63.

<sup>77</sup> *Ibid.*, p. 135.

<sup>78</sup> *Ibid.*, p. 81.

Morbid conditions of the nervous system—"nervous diseases"<sup>79</sup>—occurred when this balance was upset by excess or deficiency of any of them,<sup>80</sup> and were countered by the application of an opposite to restore the balance. The brain had a peculiar function, in that it not only was acted upon by external powers, but was also classified as an external power itself, modifying the actions of the body and the actions of remedies.<sup>81</sup>

Powers tending to support or sustain balance in the nervous system, and counteract deficiencies, were called tonics and stimulants, and powers tending to undermine balance and reduce excesses were called atonics and sedatives. Tonics were powers that increased the ability of the muscular fibres to contract, thus increasing their vigour and irritability and producing increased tone, or strength. It was stimulants, however, which constituted by far the largest single classification of remedies. They were "powers which increase in the human body all the motions which are peculiar to it",<sup>82</sup> and this meant not only increasing "the mobility of the nervous powers more generally" but also "as increasing the motion of the animal power in the Brain . . . such [powers] as excite the action of moving fibres . . . and such as increase the motion of the blood and other fluids of the body."<sup>83</sup> Atonics and sedatives were powers that decreased the vigour or tone of the system.

Discussion of the stimulant and depressant powers were the most important and extensive part of Cullen's therapeutic and *materia medica* lectures, and throughout he discussed them with a degree of expansiveness and confidence lacking in his discussion of sedatives. He found fewer sedative remedies upon which to draw and was more tentative in calculating their effect. His greatest concentration once again was upon natural powers already observably operating upon the body to stimulate or sedate it, but he was not quite so dismissive of synthetic medicinal remedies as he had been when discussing the simple solid. "As we have found that the nervous power alone is capable of considerable and sudden changes", he said, "it is to this that our medicines should be chiefly directed."<sup>84</sup> He discussed various material substances to be found in the *materia medica* which had tonic and stimulant properties, but nevertheless his principal interest lay in materials which were already familiar to the human system. Wine was probably his most prominent medicinal stimulant, although opium occupied an almost equally prominent role.

The primary stimulant, Cullen believed, was sensation itself "for withdraw Sensation and the system falls asleep."<sup>85</sup> The second most basic stimulant was heat or cold; heat because "we know that a certain degree of heat is necessary to the support of animal life."<sup>86</sup> A certain amount of animal heat was generated by the human body independently of external heat, but the human body was in its "most proper condition"

<sup>79</sup> Cullen agreed with Robert Whytt, he said, that "in all disease the nerves are more or less concerned", but chose to narrow the focus to those diseases which affect "the functions of Sense and Motion", *ibid.*, vol. IV, pp. 55–57.

<sup>80</sup> *Ibid.*, p. 57.

<sup>81</sup> *Ibid.*, vol. V, pp. 9–10.

<sup>82</sup> *Ibid.*, p. 190.

<sup>83</sup> *Ibid.*, pp. 191–192.

<sup>84</sup> Cullen, *op.cit.*, note 43 above, p. 20.

<sup>85</sup> RCPE, Cullen MSS, *op.cit.*, note 17 above, vol. V, p. 202.

<sup>86</sup> *Ibid.*, p. 206.

when augmented by a certain amount of external heat. Too much external heat, however, reduced the cohesion of the solid parts and increased fluidity, thereby reducing tone, inducing relaxation and in the extreme producing debility. Too much heat could also contribute to the putrefaction of the blood. Cold was an important stimulant in its power to increase the generating power, as long as the stimulation was mild and did not demand radical change in the generating power. If this happened, then the generating power would be unable to cope, and an inflammatory spasm would occur in the blood vessels. Cold could also induce greater vigour by condensing the simple solid, thereby bringing the particles closer together and thus facilitating contractions.<sup>87</sup> Too much cold, of course, could induce debility. The ideal again was perfect balance. Extremes of either heat or cold were to be avoided, not only because of their simple detrimental effects, but because of the compound reaction of body to them by spasm. Thus climates were “more or less healthy as they are liable to less vicissitudes of heat and cold.”<sup>88</sup>

Another important source of tonic and stimulant effect was exercise. Exercise had “a special share in giving that rigidity to the animal solid”,<sup>89</sup> because motion of the muscles was the principal means by which liquid nourishment was concremented into solid form, thus making the simple solid more dense. Thus exercise gave strength and vigour.<sup>90</sup> Moreover, by strengthening the simple solid, the nervous system (“the inherent power of which is commonly in proportion to the firmness and rigidity of the simple solid”) was also strengthened. Thus there was “nothing more certain that under certain limits exercise gives strength to the moving fibres.”<sup>91</sup> Exercise had an equally beneficial effect on the fluids; it increased the circulation, which in turn increased the secretions and excretions, particularly inducing sweating and thus preventing excessive secretions.<sup>92</sup>

Cullen found powers that decreased stimulation and reduced vigour more problematic. Venesection, emetics, warm bathing, and opiates were all given due attention,<sup>93</sup> but it is clear he believed sedation was best achieved by the removal of stimulating agents. For example, when discussing the increased tension of the vessels produced by excessive meat eating, for which the usual remedy was bleeding, Cullen argued that the substitution of a weaker for a stronger provided a natural sedative effect. Also, in fever, only food with very low stimulating properties, or none at all, should be given, “and when I am affected with Cold”, he explained, “I do not find it necessary to Bleed, as the taking away my meat and wine proves sufficient.”<sup>94</sup> This remedial self-denial, or “the avoiding all the concurrent stimuli usually or unavoidably applied to the body”, constituted Cullen’s principal therapeutic remedy, and was his understanding of an “anti-phlogistic regimen”.<sup>95</sup>

<sup>87</sup> *Ibid.*, pp. 217, 220 and 237.

<sup>88</sup> *Ibid.*, p. 221.

<sup>89</sup> *Ibid.*, p. 32.

<sup>90</sup> *Ibid.*, pp. 239–240.

<sup>91</sup> *Ibid.*

<sup>92</sup> *Ibid.*, p. 242.

<sup>93</sup> *Ibid.*, pp. 170–190.

<sup>94</sup> *Ibid.*, pp. 45 and 47.

<sup>95</sup> *Ibid.*

All of these various stimulatory and tonic remedies were applicable equally to the body and the mind, but in addition, the mind itself could have stimulatory or depressant effects on the vigour of the body. Here again we have echoes of Hume, for whom the acquisition of the right frame of mind was an important ingredient in directing our behaviour judiciously.<sup>96</sup> In particular, the degree of attention the mind bestowed on any sensation had an effect on its sensibility. A “tone of mind”, a disposition “on the one hand to Joy, Gaiety, and hope or on the other hand to sadness, seriousness and despair”, could increase or decrease sensibility by affecting the degree of attention disposed to any particular sensation.<sup>97</sup> Cullen referred to this tone of mind on numerous occasions as a contributory factor to increased or diminished sensibility. He appears to have derived it from the classical “law of attention”, i.e. “that the greater pain prevents the perception of a lesser”<sup>98</sup> but characteristically he wanted to use it in a sociological, not an anatomical, framework. The degree of attention could also contribute directly to the material growth of the body, he argued. Animals were not only dependent for their vigour upon the bulk and growth of the body, but also “according to the state or manner in which animals are reared their growth is greater or less, and therefore the manner in which animals are brought up will have effect here.”<sup>99</sup> In assigning causes, Cullen again came down in favour of material causes. There was some dispute, he claimed, as to whether this “tone of mind” was attributable to moral or natural causes, and on the whole he tended to believe, he said, that it had natural causes—as fear was the result of lack of vigour; “but the Physician”, he went on, “must upon occasion be the Moral Philosopher also, and he will sometimes practise with little success unless he can apply himself to the Mind.”<sup>100</sup>

Cullen’s observation on the materialistic causes of fear stemmed from his great reliance on the powers of custom and habit. The principal physical effect of custom was to decrease the force of an impression, and consequently repetition diminished sensibility. Nowhere was this more apparent, he said, than in the power of repetition to diminish the power of those impressions which were the cause of fear. Timidity and trepidation he considered another of the burdens of civilized society. The inhabitants of a former age had to encounter every vicissitude of weather and environment, he said, and had thus had their sense of fear diminished, “whereas in the cultivated country, if the inhabitant is obliged to travel, roads are prepared for him; if he passed by a precipice, it is guarded by a parapet; he crosses the river by a bridge; he is guarded against the more severe attacks of the weather; and is therefore liable to a great deal of timidity while the other becomes hardy and bold.”<sup>101</sup> The contrast was equally remarkable, he observed, in the case of women “in a state of simplicity and in that of refinement”.<sup>102</sup> The former were exposed to all the hardships facing men and “meet with less indulgence from the men, who are of less delicate feelings”, while in the

<sup>96</sup> See Phillipson, *op.cit.*, note 19 above.

<sup>97</sup> *Ibid.* RCPE, Cullen MSS, *op.cit.*, note 17 above, vol. IV, pp. 168–171, 174 and 74.

<sup>98</sup> *Ibid.*, p. 144.

<sup>99</sup> *Ibid.*, p. 154.

<sup>100</sup> *Ibid.*, p. 143.

<sup>101</sup> *Ibid.*, p. 72.

<sup>102</sup> *Ibid.*, vol. II, pp. 72–73.

refined state they were carefully protected and guarded against everything that may hurt or even shock them. Consequently, timidity and trepidation were to be expected of them, whereas women of more simple experience suffered none of these handicaps. But the argument did not lead to advocating primitive life, however; both of these extremes were to be avoided. Once again it was all a question of balance. "We cannot keep things within their proper bounds, and readily run to excess, perhaps to the other extreme."<sup>103</sup> He returned to the question of fear on a number of occasions. Contrary to those who thought it entirely attributable to moral causes, he believed it was a result of physical disabilities. "I am disposed to think", he said, "that Courage is a natural consequence of a State of Vigour in the body, and that debility on the contrary is a cause of timidity."<sup>104</sup>

While Cullen on the whole stayed away from a discussion of epistemology with his students, he did consider the association of ideas in the context of some "errors of sense", which he believed could not be assigned to physical causes. "False imagination", "the perception of objects other than as they exist", and "perceiving in an altogether singular way" were largely discussed in terms of incomplete or erroneous relationships of ideas being made by the mind in recalling ideas through the faculty of memory. Although he tried to give a coherent and rational account for these inconsistencies, he recognized that even in health there was considerable difference of opinion between men as to what constituted a sound judgement, and once again he resorted to the yardstick of common practice, the opinion of the majority, as being the most valid authority. He said:

The objects about which men are conversant are for the most part the same and there is so much similarity in the operation of the human mind that the same relations are marked, so that there is a sameness of judgement established among different men in which they generally agree, so that we are most secure in ascertaining an error of judgement when there is a considerable deviation from the common sense of mankind, and such a deviation may then be considered as a disease.<sup>105</sup>

But, of course, at the same time, Cullen was immediately ready to qualify such a generalization. "But there is certain latitude admitted in judgement", he continued. "Men differ greatly from one another without either of 'em being reckoned delirious . . ."<sup>106</sup>

When Cullen came to consider the third system of the human body—the fluids, or natural functions—which he described as a mechanism by which food was converted into animal fluid and the residue secreted by various channels from the body, he made no secret of the fact that he felt disease seldom originated in the consistency of the fluids. He had little regard for existing opinions on the fluids. "Pathologists have been very improperly busy", he said, "in considering the affections of the fluids; that they have a share in the natural functions and that their deviations have a share in disease is true, but they are the most inconsiderable part of 'em."<sup>107</sup> The doctrine of "lenton"<sup>108</sup>

<sup>103</sup> *Ibid.*, vol. IV, p. 73.

<sup>104</sup> *Ibid.*, p. 170.

<sup>105</sup> *Ibid.*, pp. 414–415.

<sup>106</sup> *Ibid.*

<sup>107</sup> *Ibid.*, p. 194.



of Boerhaave and Bellini he thought “generally imaginary”,<sup>109</sup> and he mocked those who devoted too much attention and time to speculation on the means of changing the viscosity of the blood. “When I was first acquainted with Physic”, he said, “I found Physicians reasoned very boldly, they spoke of thickening or thinning the blood with as much clearness as a Scotch maid would speak of making pottage thicker or thinner.”<sup>110</sup>

As he had pointed out, he did not deny that morbid conditions of the fluids could result from incorrect consistency of the fluids, and he did not neglect discussion of all the numerous medicinal substances used to remedy wrong consistencies, but this general tone was dismissive of their value.<sup>111</sup> The proportion of the fluids to the solids, he believed, “is easily altered by diet and manner of life, therefore it is not a predominant part of temperament, and so medicines can have little effect on it.”<sup>112</sup> The state of the fluids also, in his opinion “might be disregarded as they depend on the state of the solids and the nourishment . . . any changes we can produce are so by diet, and therefore must be slow.”<sup>113</sup> Moreover, the distribution of the fluids “is scarcely to be altered, but by the gradual progress of life, and therefore is most of all out of the reach of medicines.”<sup>114</sup>

The most important cause of morbid conditions of the fluids, Cullen believed, was deviation from a correct degree of tension of the arterial system. Tension was an important corollary to the action of the will and movement, operating in exciting contractions of the muscles. The degree of tension required by the body was largely dictated by custom and habit. Thus “we find that it is necessary”, he said, “that the various tools or Instruments should be of a certain weight to the due and steady performance of action.”<sup>115</sup> The tension of the body was set by the circulation of the blood being maintained at a due and steady rate, by a regular supply of correct aliment, and by the continuing function of the excretory and secretory organs. He had already discussed how important correct diet was in maintaining the correct degree of tension in the body. “I’ve said that aliment”, he reiterated, “in general is stimulant insofar as the exercise of the stomach is a stimulous [*sic*] to the system, and induces more or less fever . . . and as it supplies the fluids and fills the vessels it will increase them by their tone and give a stronger action in the vessels of the system and the effects of this in giving strength is well known.”<sup>116</sup> When Cullen made the observation that “an English workman may do double the business that a Scotsman can do in the same time, there appears here the effect of a full meal . . .”<sup>117</sup> he was not, then, making an observation about nutrition. The principal regulator of the tension of the system, therefore, was “that which is given to the arteries by the blood propelled into ‘em, and this can be

<sup>108</sup> Methods of thickening the fluids.

<sup>109</sup> RCPE, Cullen MSS, op.cit, note 17 above, vol. V, p. 113.

<sup>110</sup> Ibid., vol. IV, p. 226.

<sup>111</sup> Ibid., vol. V, pp. 112, 113, 132 and 134–144.

<sup>112</sup> Cullen, op.cit., note 43 above, p. 20.

<sup>113</sup> Ibid.

<sup>114</sup> Ibid.

<sup>115</sup> RCPE, Cullen MSS, op.cit., note 17 above, vol. IV, p. 117.

<sup>116</sup> Ibid., vol. V, pp. 45 and 47.

<sup>117</sup> Ibid., vol. I, p. 118.

communicated to every fibre of the system,”<sup>118</sup> and most of the therapeutic remedies Cullen proposed to counter morbid conditions of the fluids consisted of some combination of diet and exercise to stimulate the circulation, and “anti-phlogistic” remedies to reduce tension.

#### IV

The general tenor of Cullen’s lectures was the integration of pathology and human behaviour in a manner most suited to promote virtue. When he told his students that the only means of preserving health was in preventing disease, Cullen was presenting them with the idea that health was the antithesis of disease. When, at the same time, he demonstrated as medical “facts” the idea that disease resulted in most cases from excessive, usually self-indulgent, behaviour, i.e. vice, which it was within the scope of the individual to control, Cullen made implicit the notion that healthy behaviour was virtuous behaviour. The virtuous man was the man who strove to live a healthy life, who kept out of harm’s way by recognizing and following nature’s demands for balance and moderation in all our activities.

How are we to assess the reception and circulation of such ideas? That is a difficult task, but it is clear that Cullen, like Hume, did attempt to present his ideas in a more popular form. Cullen left two unpublished manuscripts, ‘The art of health’, and ‘An essay on the hypochondriac disease’ in which his entire philosophy of health is presented.<sup>119</sup> The former is written in the style of a public address, to convey “such a set of principles only as are simple, sufficiently obviously and universally received and agreed upon.”<sup>120</sup> He would deliver them, he continued, “in a clear and simple manner free from all very subtle or intricate reasonings.”

In the manuscript, Cullen acknowledged the difficulties faced by medical practitioners in proposing preventive measures. The general opinion, he wrote, was that the preservation of health was not possible or even desirable; men were unwilling to submit themselves to the kind of regimentation required, because such practices would interrupt “the agreeable commerce of life . . . A person who seemingly in health enters into an anxious and therefore scrupulous attention to the preservation of it must commonly appear to be a frivolous, unsociable and contemptibly selfish person.” He agreed that in existing society these practices were not possible for the majority. He was, on the one hand, referring to the poor, who were “exposed to the hazards of disease for the good of their whole. Happily their manner of life and even their hardships are the best means of preserving their health. It is true that this is not universal and many men are doomed to employments more or less directly pernicious to health, but it is necessary for the good of the whole society, and the only compensation the society can make to them is the taking the greatest care of them, in disease and old age.” He had also in mind the ruling classes, “the Statesman and General with their several dependents” who, he argued, were equally restricted in the

<sup>118</sup> *Ibid.*, vol. IV, p. 118.

<sup>119</sup> Glasgow University—Cullen/Thomson MSS.

<sup>120</sup> The MSS are mentioned by Benjamin Rush in a letter to Cullen 22 December 1784, urging Cullen to publish it. It is not known where or if, Cullen ever presented it.

possibilities of self-regulation. “We must own”, he said, “that in the present constitution of human affairs they could not be carried on but by persons who must not only hazard but must even sacrifice both their health and life to the good of the publick.”

The “Art of health” was not possible, therefore, for these classes, but he argued that it was possible for those in the middle ranks of society. Likening the “Art of health” to the “art of moral prudence”, he thought it not only possible but necessary that ideas about the preservation of health should be transmitted “to those, who, relieved from servile labour or very assiduous employments have leisure to bestow on the study and are capable of learning the principles of it and applying these to particular cases and occasions.”

Cullen’s ‘Essay on the hypochondriac disease’ was not meant for public consumption. It was written in the form of a long (110–page) letter to an aristocratic patron; in it are numerous candid statements relating to the pursuit of happiness and virtue. His analysis of hypochondria—a disease caused by “[w]hatever weakens or disorders the Nervous System”<sup>121</sup>—and his proposals for its management, suggesting that not much hope was to be sought from medicinal remedies<sup>122</sup> (although he argued that this was a subject on which the patient should feel free to decide for himself) and that principal relief would be found in the kind of regimen he used, provide a prototypical example of therapeutics derived from the remote causes. We find Cullen recommending that diet “is to be determined by the Constitution, Appetite, and Exercise of every particular person . . . but it will be readily allowed that moderate meals are more likely to secure health and promote long life.”<sup>123</sup> We find him showing a keen regard for exercise; “[m]an was made for action”, he believed, and argued that indolence invariably led to ill health.<sup>124</sup> Similarly, the mind and the passions needed to be constantly engaged. “The exercise of the mind is pleasant”, he believed, “and excites the motion of the Spirits. The vacancy of the Mind is painful and checks the motion of the Spirits.”<sup>125</sup> Many of the passions “are useful in preserving its [the body’s] health and the rest serve to guard it against many accidents that might be hurtful to it.”<sup>126</sup> “Such is the connexion”, he continued, “betwixt Virtue, the health of the Soul and the health of the Body, that all the virtuous and moderate passions contribute to the health of the Body, and all the vicious and excessive are very hurtful to it.”<sup>127</sup> Of these, he considered Pride and Hope “almost always necessary to the peace of the Soul and the health of the Body.”<sup>128</sup> On these two emotions, he believed, “human happiness very much depends. All other enjoyments are short-lived and must have intermissions . . . these two passions too are liable to shocks and disappointments but when guided by

<sup>121</sup> ‘An essay on hypochondria’, p. 33.

<sup>122</sup> *Ibid.*, p. 38.

<sup>123</sup> *Ibid.*, p. 54.

<sup>124</sup> *Ibid.*, p. 62–63. “The Duties of Society require it, every man’s own interest demands it and health and pleasure are its companions and reward.”

<sup>125</sup> *Ibid.*, p. 80.

<sup>126</sup> *Ibid.*, p. 74.

<sup>127</sup> *Ibid.*

<sup>128</sup> *Ibid.*, p. 76.

tolerable discretion in a mind happily turned to them they prove a never failing source of Joy & Comfort.”<sup>129</sup>

The particular emphasis Cullen placed upon the emotions of pride and hope point to a qualification, however, in Cullen’s teaching away from a general analysis equating his teaching with Stoic quietism. It is clear that Cullen made a more than casual relationship between health and strength. The biological throw-of-the-dice “original stamina” played its part in contributing to health, and Cullen *assumed* the necessity of strength for truly healthy life. He referred repeatedly to “strength of mind”, “vigour of action”, and deplored the timidity and trepidation which he claimed was a feature of contemporary society, pointing to a lack of vigour in the body as the source of undue fear. “Vigour”, in fact, was one of the elements of the “powers of life”. “Sensibility” and “irritability” are given equal weight in Cullen’s neural pathology, sensibility monitoring nervous behaviour while “irritability” monitored physical strength. One can even argue that sensibility was of less importance than irritability, since at one point Cullen was arguing that strength underwrote the whole function of the nervous system.<sup>130</sup>

Cullen’s lectures on pathology and therapeutics demonstrate the extent to which he conveyed the values of Stoic self-denial in the form of medical “facts” regarding potentially pathological conditions of the human body. In injecting the value of strength into his analysis of the nature of health, however, Cullen invokes a combative element. Keeping out of harm’s way for Cullen, therefore, involved a measure of physical assertion inconsistent with a truly Stoic passivity and environmental determinism. He taught a medical philosophy of peaceful coexistence within society in which individual integrity had not been forfeited. David Hume would have approved.

<sup>129</sup> Ibid., p. 75.

<sup>130</sup> See pp. 135–136.