Fagged Out: Overwork and Sleeplessness in Victorian Professional Life

Sally Shuttleworth

At the current time it is difficult to escape accounts, both popular and scientific, of the problems created by our 24/7 culture in the global digital age. Centres for research into sleep and sleeplessness are springing up in universities everywhere, and research programmes into the impact of loss of sleep, or the disruptive potential of digital devices, are rapidly increasing. Underlying much of this work is the anxiety that healthy sleep patterns are being disrupted by transformations in lifestyles and work patterns, facilitated by the new technologies. These fears are not without historical precedents, and in this paper I look at the anxieties expressed by the Victorians as they sought to come to terms with the social transformations of the industrial age, and with the problems of sleeplessness which they associated with the increasing speed of life and the burdens of work in the era of the telegraph and steam-printing presses, and the arrival first of gas and then electric lighting which turned night into day. Significantly, although the poor were frequently housed in appalling conditions which must have disrupted their sleep, concerns about sleeplessness almost invariably focused on the middle classes, and particularly the problems of overwork experienced by the professional man. The paper explores the beginnings of experimental sleep research, from the 1850s onwards, and the intersection of medical and cultural concerns with the over-activity of the brain which was thought to lie behind problems of sleeplessness. It also explores issues around what came to be known as chloralism, an addiction to a popular remedy for sleeplessness which parallels in many ways current issues relating to sleeping pills. In the final sections it looks at both medical and popular discussions of the problems of sleep, and the forms of diet and regime recommended for healthy sleep, including a discussion of the problems experienced by school children in an over-pressured system of education. The paper opens, however, with a detailed case study of sleeplessness, and its treatment, in the life of one particularly eminent professional figure.

In December 1882, William Gladstone (who was then in the midst of his second term of office as Prime Minister) started to have problems sleeping. By January he was seriously concerned, and starts to record his sleep patterns in his diary: Jan 2, 'Last night my sleep was further cut down to 3 … 4 hours. Hardly enough oil for my lamp I fear'; Jan 3, 'Sleep improved from 3 ½ - 4 ½ hours: too little for me, though it has served for greater & better men'; Jan 4 'A much more successful night – up to six hours'[1, p. 391]. It is not only the hours he records, but also his judgements as to his moral or character failings, in his inability to perform this task. On the 5th he gives in, and telegraphs to his friend and devoted doctor, Andrew Clark, to join him at Hawarden (his country estate in Wales). Almost magically, even before the doctor arrives he sleeps 8 hours, and the night following his arrival 'almost strangely, out of eleven hours in bed I slept full nine'. What follows is clearly a record of his medical consultation (a particularly valuable document, with regard to the history of medicine, since what records we have of consultations tend to be from doctors, rather than patients):

1. My practice of regulating action by brain.

2. Single sign of brain-resentment heretofore – neuralgia now & then, at the close of the Session.

3. Slight indication of breach in sleep during the autumn sittings.

4. Aggravated since come here. No notice taken until this week.

5. This week much further aggravation; best night 6 hours, worst (Friday) 2 hours.

6. Some neuralgia in the last three days but not bad. [1, p. 393]

He continues that his bodily health and functions had not been affected, apart from slight confusion of the brain; he had cut down on business, and preparing for a visit to his Midlothian constituency, but to no effect.

It is evident in which direction Clark was taking this consultation: over use of the brain, through 'too great and too prolonged a strain of work' was producing 'brain-resentment' (an unusual term at that time), but also nervous problems such as neuralgia (a form of acute pain in the nerves which could occur in any part of the body). His prescription is decisive: cancel the trip to Midlothian (where Gladstone would have had to face the daunting task of giving 'my generous constituents the opportunity of comparing fully & in detail my declarations before the election of 1880 with my conduct since' [1,p. 393]; almost complete abstinence from work, and a change of place. By January 17 Gladstone was on the train to Cannes, to stay at Lord Wolverton's grand residence there. On arrival he records how he is 'stunned by this wonderful place & so vast a change at a moments notice in the conditions of life'. His recovery appears almost immediate: on January 20 he writes to Clark to tell him how well he is sleeping and how invigorated he feels, and expresses his desire 'to do full justice to this experiment by prolonging my stay as much as I may' [1, p. 397]. The use of the term 'experiment' adroitly emphasises the scientific nature of this otherwise questionable behaviour. In fact Gladstone stays for six weeks, not returning until the end of February, when parliament had already been in session for two weeks. Extraordinarily, during this period Britain was effectively governed from Cannes. Gladstone's best explanation of the episode occurs in a letter to the Italian Minister of Foreign Affairs, Pasquale Mancini, on February 10:

> Through my long political life sleep has been a mainstay, and the failure of it, for the first time between November and January last led me [to] take what is rather a violent measure for one holding my office, and to place myself here for some weeks. The air of the place, and exemption from business carried as far as it could be, have done me great good' [1, p. 405].

A couple of weeks' disrupted sleep, and 'violent' measures were called for; the brevity of the suffering, and the extremity of response highlight the significance accorded to sleep, and its proper performance, in Victorian professional life. Sleeplessness was the dark shadow which underpinned the long-hours culture of the era, made possible by gas light, and intensified by the arrival of telegrams at all hours. As in current times, heroic long hours at work were a cause both for celebration and alarm: hard working professionals were seen as role models, but also as potential sufferers of ill health, of both mind and body.

Gladstone's case was not unusual; he joined numerous other politicians, doctors, clergy and other professional men who had been bundled off to the South of France by their doctors as a remedy for the ravages wrought on the constitution by sleeplessness and overwork. There is a seeming paradox here; the Victorians were dedicated to what Thomas Carlyle had described as the 'Gospel of Work', yet increasingly from the 1860s it became acceptable, and even expected, that

professional men would take extended time off from work, usually at a seaside resort, to recoup their vital energies. Sleep, or rather lack of it, was one of the key indicators, and causes, of this loss of essential vitality. Anton Rabinbach in his classic work *The Human Motor* (1990)[2], highlighted the discourses of energy dynamics applied to human as well as economic and industrial life in the nineteenth century, but paid surprisingly little attention to sleep; more recently, Kroker, Scrivener and Reiss have remedied this deficiency [3,4, 5]. The mid-nineteenth century witnessed not only growing concerns about the changing forms and pace of life under industrial capitalism, but also the rise of physiological psychology and increasingly materialist understandings of the mind and body, accompanied by new forms of experimental measurement.

Early Sleep Experimentation

The English physician Henry Holland, writing on sleep in the 1840s, remarked that it was remarkable how little we knew, 'notwithstanding the perpetual experiment which life affords upon the subject' [6, p. 369]. From the early 1860s this situation started to change dramatically with the development of laboratory experimentation (as opposed to the random experiments of 'life'). In England, the surgeon Arthur Durham conducted experiments on dogs (trepanning them and then inserting a glass disk so that he could observe the brain whilst they slept), a method then adopted by the American surgeon and neurologist William Hammond, who had, during the 1850s, been studying sleep by the less invasive method of examining a patient with a cranial fissure. Durham and Hammond overturned previous theories to suggest that the flow of blood to the brain was reduced during sleep (rather than increased, as had previously been held) [7, 8]. From this observation it was a short step to the idea that 'brain workers', or professional men who overtaxed their brain, were more likely to suffer from sleeplessness, as they were less able to slow down their mental processes when courting sleep. These theories were quickly taken up in the popular press. Thus the *Cornhill* carried an article in 1866 on 'Sleep' by the physician George Fielding Blandford which translated Durham's work for a general audience, arguing that the brainwork of professional men such as physicians, lawyers, artists or speculators, was one of the key causes of sleeplessness, and should be dealt with by change of locality and the cessation of work: 'If we have been toiling till midnight, and then with heads full of our subject, go to bed to lie down and take no rest, we must give it up or take the consequences. It will not do to lie awake, day after day, till three or four o'clock in the morning. We cannot counteract this state of things: the brain is over-worked and over-stimulated, and the stimulus which keeps up the active functional circulation must be removed' [9, p. 234]. The *Spectator,* responding in turn with an article on 'Sleeplessness', argued that 'sleeplessness is, we suspect, one of the most frequent and most annoying concomitants of civilized life'. The author suggests that 'Any system which really increased the average capacity for sleep would benefit nervous diseases, increase the habitableness of great cities, and probably diminish perceptibly the average of lunacy' [10]. As in our own era, scientific research into sleep was linked into popular concerns about the demands of professional and city life, and anxieties about a growing epidemic of mental disorders [11].

Histories of sleep research often tend to start in the 1950s or 1920s, thus ignoring nineteenth-century precedents. The importance of studying sleeping subjects was introduced, for example, by the eminent French psychiatrist, J. E. D. Esquirol, who argued in the early decades of the century that mental patients should be observed during sleep if their maladies were to be properly understood [12]. Another example would be the widespread Child Study Movement of the late

nineteenth century, the foundation of current sciences of child development, which similarly argued, for very different reasons, that true understanding of child behaviour could only be attained by extending the hours of study to include the periods of sleep [13, chps. 11 and 14]. Sleep also became a focus of attention in the emerging field of neurological research, as developed by John Hughlings Jackson in England, and Angelo Mosso in Italy. Mosso (1846-1910) , the inventor of the ergograph to measure fatigue, and also the 'human balance' which has been acclaimed as the forerunner of the MRI scanner [14], worked with a series of patients who had had injuries to their skulls, leaving a hole through which the brain could be observed. He devised an instrument which could measure and record what he termed the 'brain's pulse', both when patients were awake and asleep.

In his work, *Fear* (*La Paura*), written for a general audience, Mosso writes of the excitement felt by the researchers as they clustered together to record 'this mysterious life of sleep'. Watching the automatic recording of pulsations by the light of a small lamp, 'We scarcely dared breathe. The one who was observing the instruments communicated with the other, who was watching over the patient, by pressing his hand. Looks full of interrogation and wonder would meet, and exclamations had to be forcibly repressed' [15, p. 73]. The description captures the emotion and difficulties of research which now so rarely form part of the scientific record – the wonderment, and exhilaration at the success of the experiment, which could only be communicated by touch, due to the need for absolute silence so that sleep was not disturbed. Mosso's star patient was Bertino, who had been hit on the head by a falling brick, and left with a hole in his forehead (Fig. 1, [16, p. 68]) In the short period before the wound closed over, Mosso conducted extensive research with him, collecting what he termed the 'autographs' of the brain: 'Let us see how the brain writes when it guides the pen itself' [15, p. 77]. Where Hammond and Durham had been able to observe externally the movements of the brain in sleep, Mosso advances research to a whole new level, offering direct insights into the workings of the mind and brain, which had resisted all previous philosophical and scientific attempts to wrest its secrets. Now the brain would write its own account, without the need for intermediaries.

Mosso was particularly fascinated by the movements of the brain during sleep, publishing the first image of the 'Pulse of the Human Brain during Sleep' (Fig. 2, [15, p. 78). He discovered, to his surprise, that even though Bertino appeared to be in deep sleep, his brain registered an immediate response to any external sound, and the excitation increased if his name was uttered, and even more so if he was spoken to severely:

> At the slightest noise a wave of blood disturbed the surface of the brain. If the hospital clock struck the hour, or someone walked along the terrace, if I moved my chair, or wound up my watch, or if a patient coughed in the next room – everything, the slightest sound was accompanied by a marked alteration in the circulation of the brain, all immediately traced by the pen which the brain guided on the paper of my registering apparatus. [15, p. 78].

The brain itself becomes here an autonomous subject as it 'guides' the recording pen. Mosso's findings fed into his wider work on fatigue, and his arguments, which echoed those of his contemporaries, that the increasing hours and greater intellectual demands of nineteenth-century work culture, for both professional workers and school children, were producing exhaustion, and lack of health giving sleep. His book, *Fatigue*, is full of worn out doctors, academics, and children,

contributing to the 'over-pressure' debates in education which took place in Europe and America in the 1880s and 1890s [13, chp. 7; 15, chp. 5]. Politicians also figure largely, as sufferers from pressure and 'cerebral fatigue' which culminates in insomnia or poor sleep. For the exhausted parliamentary representative, 'Sleep is of little use to him, for he dreams continually of the debates and of political affairs. This is one of the most serious symptoms of cerebral overstrain. When our day's occupations pursue us in our dreams and we feel insufficiently rested in the morning, there is no need to consult a doctor; we must take a holiday or greater evils will follow' [16, p.332]. The observation is in line with Dr Andrew Clark's advice to Gladstone: thwarted sleep required immediate remedial action, preferably in a holiday from work, and in a new location.

Sleeplessness as a Disease of Modern Life

One of the key figures in these debates was the English medical and public health reformer Dr Benjamin Ward Richardson whose work, *Diseases of Modern Life* (1876), gave expression to many of the health-related anxieties of the era [18]. Sleeplessness is a running theme in the book, which covers a range of socially produced diseases, whether from 'worry and mental strain', 'impure air' or the use of narcotics (including remedies for sleeplessness). It figures most directly in the chapter on 'Disease from Late Hours and Broken Sleep' which features the young destroying themselves by a life of late hours. Of particular concern were 'those unearthly balls and evening parties where the young of both sexes are called together to dance into utter prostration of mind and body, until the daylight dawns and the sun rises to expose the tawdriness of the ball-room and the helplessness of the half-dreaming, sleepless, pale, shivering revellers' [18, p. 438]. The rave and club culture of our own era had its equivalent for the Victorian upper classes. As a physician, Richardson stresses not only the physical exhaustion thus induced, but also the mental prostration resulting from this overturning of the diurnal order. The young are seen not as wilfully flouting natural rhythms, but made rather victims of their culture, mindlessly obeying the injunctions to dance. The revelations of the dawn, exposing both the tawdry nature of the ballroom, and the helplessness of these sleepless, shivering revellers, anticipates that future point, which will come all too soon, when their dance of life will be over, their health wrecked by too many sleepless nights.

Richardson also targets those who believe they are invincible, not needing to obey the laws of nature. Men who continually cut short their sleep to four or five hours, boasting that 'time was made for slaves', whether young or old, will eventually be caught out, having irredeemably wrecked their health [18, p. 436]. There is a direct parallel here with contemporary arguments that Margaret Thatcher's famed four or five hours a night was directly linked to her subsequent development of Alzheimer's disease [11, p. 162]. Richardson's chapter also features students who ruin their lives by excessive study, poring over their books well into the night, and professionals too devoted to their work. In this latter case the example is that of a doctor, 'one of those indomitable members of my own profession, who too readily sacrifice life to duty' [18, p. 440). Sleep can be sacrificed for heroic, as well as frivolous reasons, but the result in all cases is ill-health, and even early death. Exhaustion from prolonged sleeplessness, Richardson suggests, affects the workings of the heart, and he offers also the instance of those who 'while losing their natural rest, are engaged in working against time' [18, p. 241]. His example here is of 'newspaper reporters and night pressmen' who are forced to work at pressure, through the night. Anticipating current research on the health problems associated with working night shifts [19, pp.28-44], he argues that pressmen working late into the night start to experience feelings of faintness, and haziness, which they repeatedly shake off until

they are discovered, too late, to be suffering from 'exhausted brain and irregular circulation' [18, p. 241].

Richardson also warns of the dangers of taking 'powerful narcotics' in an attempt to induce sleep [18, p. 241]. In an 1879 article in the *Contemporary Review* on 'Chloral and Other Narcotics' he outlines how, when choral hydrate was first brought to England in 1868, he was tasked by the British Association for the Advancement of Science with investigating its properties. Although chloral hydrate had been first synthesised by Liebig in 1831, its properties as a sedative and hypnotic drug had only just been discovered by Liebreich. Richardson reported to BAAS in 1871 with considerable alarm on the dangers of chloral but was, he notes, ignored, so that by 1879 he looks back with dismay on the rise of a new disease which he terms 'chloralism', which had not yet reached women or poorer classes but was very much a disease of middle-class men: 'commercial, literary, legal, medical, philosophical, artistic, clerical'. Chloral had become a self-defeating means by which high-achieving men sought to maintain their pace of work by artificially inducing sleep. A scientific discovery had produced a new social and mental phenomenon 'amongst the most cultivated representatives of a highly cultivated people' [20, p. 721-722]. As with the discussions of sleeplessness, the abuse of chloral was itself seen as an indicator of the problems produced by the latest advances in 'civilisation'.

The Dangers of Chloral

The Victorians were alarmed both by the growth of sleeplessness itself, and also by the development of addiction to remedies designed to combat the problems of sleep disorders, in direct parallel with current concerns with the huge growth in prescriptions for sleeping pills [19, pp. 282-90]. Initially, as Richardson suggests, cases were largely of professional men (and often doctors as the *British Medical Journal* pointed out), trying to maintain an impossible work schedule, but the habit quickly spread to women, and other classes [21]. One of the most famous cases of death by chloral was that of the eminent scientist John Tyndall, FRS, who had been using the drug to try and combat his insomnia. On March 20 1886 the *Lancet* recorded that, 'Sir William Gull informs us that Professor Tyndall has for a long time suffered from sleeplessness, which at length, with hard scientific work, has much prostrated the nervous system. It is to be hoped that he will now take a long rest, which is so much needed for his restoration' [22, p. 562]. Medical and social interest in the health of Tyndall was clearly deemed to outweigh patient confidentiality. Tyndall did indeed take numerous breaks from the pressures of work to combat his insomnia during his career (usually in Switzerland where he built a house) but to little avail. He became increasingly dependent on choral and died tragically in 1893, from an accidental overdose of the drug administered by his wife, Louisa.

Other prominent cases of chloral dependency included the medical man, and future writer of children's adventure stories and health advice literature for boys, Gordon Stables. In 1874 he published in the popular periodical, *Belgravia*, a rather lurid account of his own struggles with chloral addiction, 'The Confessions of an English Chloral-Eater', which took both its title and Romantic literary style from Thomas de Quincey's famous work, *Confessions of an English Opium-Eater* (1821). Stables recounts how, in 1871, when working long hours as a physician's assistant and getting very little sleep, he came across praise of hydrate of chloral in a medical journal, which suggested it offered refreshing sleep with no side effects (in the early days it was indeed highly

recommended within the medical press). He quickly procured some and was soon taking larger and larger doses, whilst his health and ability to do his job quickly declined. The crisis came when he realised he had accidentally sent a bottle of liquor of arsenic to a baby. He resigned his post, but his battles with chloral continued, indeed intensifying rather than decreasing after the death of a medical colleague and friend from chloral addiction: 'I was in the world, but no longer of the world' [23, p. 186]. On the point of suicide, and after two doctors had failed to diagnose his case correctly, he was rescued by a third. In full De Quincey mode, he describes in graphic detail the horrors of his nights as he attempts to quit. His 'Confessions', he notes, are part of the duty he owes to society, written 'in the sincere hope that it may save not a few from one of the most lingering and awful of all deaths, and avert misery and death from many a family in England' [23, p. 179]. *Belgravia*, it should be noted, was edited by the sensation novelist Mary Elizabeth Braddon, and Stables' 'Confessions', are of a piece with the sensation fiction published in the magazine's pages which highlighted the hidden world of suffering and misdeeds, concealed behind the facades of middle-class respectability. In Stables' case, as a junior doctor he was not only struggling with the pressures of his job, putting his health at risk, but also in danger of accidentally killing his patients.

Although overblown in style, the 'Confessions' reinforced the arguments to be found in medical and popular literature alike regarding the twin dangers of overwork and sleeplessness, and the problems of artificial remedies. Under the heading 'Overwork' the *Lancet* recorded in 1875 the 'sad death of the Rev. Arthur Holmes, Dean and Senior Fellow of Clare College, Cambridge, by his own hand' who thus 'adds another name to the list of those who have fallen victims to the failure of an overworked brain'. Holmes was a distinguished classicist, but the pressures of work and sleeplessness led to nervous exhaustion; colleagues testified at the inquest that at the time of his death he had been more than unusually burdened with examination marking. The *Lancet* takes the opportunity to draw a lesson regarding the dangers of overwork, and the need to take a break as soon as the symptoms appear. Instead, in most cases, the 'sleeplessness is combated with narcotics—chloral to wit; and the flagging energies spurred on with stimulants and tonics, till at last, *currente rota funis eat retro*, a catastrophe like the present is the result, or the entire withdrawal from active life is rendered imperative' [24, p. 587]. Even the quiet life of a clerical don was not immune, it seemed, to the excessive pressures of modern life, and concomitant sleeplessness. Where we worry about student mental health, sleeplessness and the use of stimulants, particularly at exam time, it seems Victorian academics were also cracking up under the pressures of exam marking, and resorting to narcotics. The case was taken up (but without naming the victim) by the physician C. F. H. Routh, in his campaigning book, *On Overwork and Premature Mental Decay: its Treatment* (which grew from a pamphlet in 1873 to a lengthy book in the fourth edition of 1886) [25 p. 35]. As the title dramatically suggests, a culture of long hours, and little sleep, could reverse the benefits of education, and lead to a steady loss of mental power, and a premature senility.

Other interventions in these debates included, *The Disease of Sleeplessness. By a Country Clergyman who has Suffered and Prevailed* (1877). In the 'Confessions' genre of advice literature, this work draws by association on religious authority and clerical respectability to reinforce its messages with reference to the dangers of sleeplessness and the use of artificial remedies. Hydropathy is recommended (with a cold bath and brisk rub down), and if necessary, opiates, but never chloral, which was clearly the cause of his own suffering. Chloral, he notes, has become very fashionable but brings in its train 'dreadful evils': 'Let this, therefore, notwithstanding the numerous tempting advertisements recommending its use, be shunned by all as they would shun the serpent's

sting' [26, p.11]. Medical advice here mutates into sermon. Over the next decade concerns about the use of chloral in patent medicines grew, as cases were confirmed of death from preparations such as the widely advertised Hunter's Solution of Chloral. The case of an elderly lady in Diss, Norfolk, who had gone against the advice of her doctor, and purchased a large quantity of this solution by mail order from Universal Stores in London, and was then found with the empty bottle next to her deathbed, was widely reported [27], and led to questions in parliament. Under the 1868 Pharmacy Act, patent medicines were excluded from the provisions designed to control the sale of poisons; thus while chemists were strictly controlled, Mr Hunter's Solution, which was double the permitted strength, 'was sold with impunity by grocers, stationers, and co-operative stores' [28]. Such cases inspired popular investigative reporting. In two articles in *Macmillan's Magazine* [29, 30], Dr Henry W. Hubbard described how he had been summoned to the bedside of an otherwise healthy businessman, who had died from an accidental overdose of chloral. The extensive and habitual use of 'seductive, drowsy drugs' was, he claimed, one of the 'unobserved undercurrents of domestic life of our times'. Setting out to demonstrate the easy accessibility of such drugs, he sent a twelve year old girl out to grocers, oilmen, linen drapers, and other shops advertising the availability of patent medicines, and she quickly acquired sufficient quantities of drugs to have 'converted any parish in London into "a city of the dead"' [29, p. 243]. What is more, the Medicine Stamp Act, by which patent medicine producers paid money to the government, meant that such bottles came with a government stamp, so that the unwary were lured into believing that the contents themselves were licensed. Hubbard lists numerous cases of accidental death from chloral, often of city men and stockbrokers trying to conquer their sleeplessness. He offers a particularly lurid account of his first case where, attached to the lip of the bottle of chloral lying by the body, 'was a mutilated Government revenue stamp' [30, p. 500]. The mutilated stamp stands in for the mutilated life, and all the victims of a system where the sale of such poisons was '*facilitated and fostered for the benefit of the imperial exchequer*' [29, p. 244]. In an age of laissez-faire government and economics, the attack is peculiarly strident, highlighting the ways in which the unfortunate dead were threefold victims: of the pressures of modern life which generated their sleeplessness; of the blandishments of the advertisements for chloral which graced the pages of newspapers and magazines; and of the government who profited from the sale of such unregulated substances.

According to an advertisement in the family magazine, *Bow Bells Almanack,* for 1872, 'SLEEP – Calm, peaceful, and refreshing, however disturbed the system may be, is certain to ensue after a draught of HUNTER'S SOLUTION OF CHLORAL' [31, p. i]. Sandwiched between adverts for household linen, books and sewing machines, the solution of chloral appears of a piece with the domesticity promoted in the magazine. Increasingly, however, chloral, like the sleeplessness it was meant to prevent, came to be seen as one of the banes of modern life, with addiction itself a symptom of the harried mind and nerves of the modern subject [32, p.17]. One of the most famous cases of addiction to chloral at this period was that of the poet and artist Dante Gabriel Rossetti, who suffered several episodes of overdose, and whose failing mental and bodily health as a result of chloral addiction was a subject of much public comment. With the publication of his letters and a memoir by his brother William in 1896, which treated his addiction in minute detail and with painful candour (in the verdict of his cousin Ford Madox Ford), the subject was once again the centre of public discussion [33, 34, 35]. Ford argues that Rossetti started to take the drug as an 'innocuous remedy', but 'the habit was carried to such an extent that, as Rossetti himself put it, it became a commercial necessity – that is to say, want of chloral meant insomnia, and want of sleep

powerlessness to work' [34, p. 470]. The formulation succinctly captures the vicious cycle of addiction, and the perceived links between the conditions of modern life, sleeplessness, and drug addiction. Rossetti turns to chloral not for aesthetic, but 'commercial' reasons: he knowingly barters his health, entering into a Faustian economic exchange at the extreme end of the capitalist free market, so that he can receive in return a form of sleep which will enable him to undertake his own form of economic labour.

The arguments of the era regarding the relationships between sleeplessness, drug taking, and the new demands of city living were captured in an open letter to the *National Review* in 1892 by a doctor, entitled 'Modern Life and Sedatives' [36]. Discussing the huge quantities of sedatives consumed by the public, he notes, 'There are few who do not know ill-advised and enthusiastic persons who are always insisting on giving everyone a dose of the last new specific against headache, or sleeplessness, or some of the various nervous disorders common to our advanced civilization'. Although doctors were strongly opposed to such self-medication, they had to recognise that 'the desire of sedatives is a symptom of some disorder. The whole question is one of vital importance. For modern life is so rapid, town life is so unnatural, the absence of pure light has such a depressing influence upon all the vital functions, that there is an amount of mental gloom among vast numbers, in all classes of society, which has given rise to a great increase in the death-rate from nervous diseases'. [36, pp. 723-24]. The diagnosis of the ills of modern life is here extended to all classes, not merely middle-class males. Interestingly, in view of the recent research on circadian rhythms, as outlined by Foster in this issue and elsewhere [19], Robinson singles out 'the absence of pure light' as one of the primary causes of this mass rise in nervous disorders. It is both the speed and the 'unnatural' forms of modern life which are affecting the overall health of the populace: 'There is a lack of ease, a want of peace, an impossibility of rest that effectually prevents the easy working of the body which we know as health' [36, p. 724]. For all the alarmist rhetoric, the rise in the nineteenth century of preventive medicine, and the new field of Public Health research, as exemplified by Richardson and others, led to holistic forms of understanding of the relationships between mental and bodily health, and mind, body and environment which were to some extent lost in the development of the more atomised forms of specialised medicine which emerged over the twentieth century.

Medical Analyses of Sleeplessness

Although the late nineteenth century witnessed serious advances in fields such as neurology, when it came to medical discussions of sleep and sleeplessness, there was direct continuity between specialist writings in medical journals, and materials intended for a wider audience, as we saw in the case of Mosso. Joseph Mortimer-Granville, for example, wrote both a popular work *Sleep and Sleeplessness* (1879), and an article for the *Lancet* (1880) outlining a proposed classification system for causes of sleeplessness, divided into 36 different forms relating to both mental and sensory states [37, 38]. His primary argument, that the symptom of sleeplessness should not itself be regarded as the disease, and that the causes should be sought out and the patient treated appropriately, ran between both works. Writings on sleeplessness in the *British Medical Journal* and the *Lancet* during the last decades of the century employed the same tropes and themes to be found in more popular writings. Thus Dyce Duckworth's 1873 article on the causes and treatment of sleeplessness draws on the scientific work of Durham and Hammond, but also outlines the arguments concerning modern forms of life emerging in the popular media: 'Literary men suffer

from insomnia oftentimes as the result of brainwork, executed at the small hours of the morning, and sometimes because of bodily exhaustion superadded from sheer want of nourishment. Brain-work, in addition to the tax upon the ordinary powers by the pursuit of a profession, is, I believe, highly exhausting to the majority of those who practise it, especially amidst the calls, turmoil, and high pressure of life in a metropolis' [39, p. 747]. The observation draws on recent discoveries that 'brain work', like manual labour, required energy, and forms part of the social privileging of that emerging category, the 'brain worker', whose labours (and ensuing insomnia), exceed those of the lower orders.

In similar vein, an 1878 article in the *Lancet* on the causes of insomnia (a term that was now coming more into use), based on a lecture to medical students, highlights the situation of the young student preparing for an examination who becomes sleepless from mental strain (and too much strong tea, coffee and tobacco). Such labour becomes self-defeating when he finds he is finally unable to face the examination for which he has struggled so hard to prepare. Alternatively 'our patient may be a young professional man. He has commenced practice, or rather to wait for practice, as a barrister, a solicitor, a surgeon, or a physician'. He finds himself without clients or patients, however, and struggles with anxieties, disappointments, and acute money worries, and all the while 'he has been working early and late in his study, denying himself due sleep and exercise, in trust that he might thus so skill himself as to secure the longed-for practice. At last he has fairly broken down.' In desperation 'he comes to us for help because he can scarcely sleep at all, and he feels he is going mad' [40, p. 857]. I have included this case in detail since it speaks so directly to current concerns about student mental health, burnout, and the precarity of life for the young on entering the labour market. (I am also writing at a time when the World Health Organisation has announced the inclusion of 'Burn-out' in its International Classification of Diseases, although as it was swift to point out, following all the headlines welcoming the recognition of burn-out as a medical condition, it is included as an 'occupational phenomenon' and is '**not** classified as a medical condition') [41]. For the Victorians, by contrast, the medical and occupational could not be neatly separated, but were firmly intertwined. The article, by James Sawyer, was originally delivered at Queen's Hospital, Birmingham, to medical students at the associated Queen's College, where Sawyer was Professor of Pathology. Based, one might surmise, on problems his own students had encountered, it painted a painful picture of the future awaiting those about to enter the profession. Sleeplessness was not just a medical condition, Sawyer argued, but had direct causes in the conditions of the labour market.

Recommended Sleep Regimes

Medical and popular interest in the problems of sleeplessness was accompanied by a rash of self-help books, and advice literature, some of it odd, to our eyes, but for the most part surprisingly in key with current medical advice. As with the case of Gladstone, holidays and complete change of scene were regularly recommended by physicians, preferably away from a city [39, p. 748]; exercise should be taken every day in fresh air, and tea and coffee should be drunk sparingly, and never after 6pm [42, p. 719]. The author of *Sleep and How to Obtain It*, (part of George Black's 'Long Life' series of health advice books), advises, 'Persons who complain of insomnia should put a padlock on the teapot, and never, on any occasion, use it late at night' [43]. Interestingly he suggests that coffee is less disruptive, but the safe and preferable drink was cocoa: the ascent of cocoa as a healthful night time drink dates from this period (it was also produced by Quaker manufacturers, Fry's, Cadbury's

and Rowntree's, and heavily promoted by the supporters of temperance). Much attention was paid to diet, and the timing of meals. Following William Beaumont's discoveries about the processes of digestion in the 1820s and 1830s, books on sleep often offered lists of food stuffs and the times they took to digest, so that readers could adjust their diet accordingly, and not eat heavy pastry, for example, before sleep [37]. Opinions were divided, however, as to what was the best digestive preparation for sleep, with writers often turning to folk wisdom: 'After dinner sit a while, after supper walk a mile' [44, p. 802]. There was general agreement that there should not be a heavy meal shortly before bed, but also concerns that the body should have sufficient energy for the night. Thus Duckworth in the *BMJ* for 1873, advises that one must not 'go to bed fasting', and recommends for those who are obliged to stay up late due to 'undue pressure of work, mental strain or anxious watching', the imbibing of 'beef-tea', particularly 'Mr Darby's extract' (the ground is thus prepared for Bovril which was first established in the 1870s and swept the board as a supposedly health giving food or drink)[39, p. 748]. Concerns focused particularly around literary men or brain-workers, whose brains might continue working even as they tried to sleep, consuming valuable energy. In a revival of what Roger Ekirch has argued were pre-industrial models of segmented sleep [45], Eccles suggests in 1894 that the restlessness and insomnia resulting from the 'irresistible forces which civilized man has brought to bear on time and space', overturning natural rhythms, could be partially overcome by 'taking a light meal after the first sleep' [44, p. 804]. The marketing of Horlicks, Bovril and Cocoa as drinks to sustain the body during the night were to reach their apotheosis in the 1930s with Horlicks' major marketing campaign around what they termed, with a stroke of advertising genius, 'night starvation'.

Other sensible and recurrent advice for sleeping included establishing a set routine, good ventilation in the bedroom, loose clothing and bed covers, and ensuring the bedroom was neither too hot nor too cold. One interesting addition to this literature in the last decades of the century was the warning against what were called in England 'alarum' clocks (such clocks were first patented in America in 1876 by the Seth E. Thomas Clock Company, and mass produced by the 1880s). George Black, in his introduction to *Sleep –How to Obtain* It, portrays them as one more instance of the pressures of modernity which disrupt the natural rhythms of the body: 'Full and sufficient sleep should be taken whenever it can be had, and neither alarum-clocks nor persons to call one should be had recourse to unless in cases of emergency' [43, p.vi]. Davis, in his chapter, 'On Being Called', humorously depicts the 'ingenious bedstead' shown at the Great Exhibition in 1851 which, 'by means of clockwork had the property of turning its occupants rigorously out of bed "to order"' [43, p. 64]. In place of such bodily disruption, or the use of an alarum clock, he argues that people should use their '*will*'; by thoroughly making up the mind to rise at a certain time in the morning, this would follow naturally, and quickly become a habit [43, pp.65-67]. As with current developments with sunrise or bodyclock alarms, the aim was to establish a natural transition between waking and sleeping, but with the thoroughly Victorian addition that such a transition could be created by an exercise of will.

Victorian Yoga

Interestingly, it appears Victorians were also encouraged to employ breathing exercises akin to those currently popularised in yoga and mindfulness programmes to reduce stress and encourage healthful sleep. In 1842, Dr Edward Binns published *The Anatomy of Sleep; or, The Art of Procuring Sound and Refreshing Slumber at Will* (a work which, in keeping with the theme of modernity, was

the first to be printed by the 'New Patent Composing Machine', thus creating, as Binns observes 'an epoch in the history of typography … and literature')[46, 47]. The work offered an overview of historical and scientific approaches to sleep before finally disclosing the secret of procuring sleep, as discovered by Mr Gardner, who seems to have invented for himself the term 'hypnologist' ,and to have practised in London in the late 1830s [48]. According to Binns, Mr Gardner had been thrown from a chaise and suffered severe spinal injuries; after continuous pain for many years 'in the stillness and solitude of a sick room, in torture and remorseless wakefulness', and trying all known remedies, he discovered his system of 'monotonism' (the principle of monotony), and a system of breathing which would bring about sleep [46, pp. 7, 356, 391-92]. The patient was to fix attention on the action of breathing, and the progress of the breath through the body and 'to imagine that he sees the breath passing through his nostrils in a continuous stream'. [46, p. 391]. Although the *Lancet* greeted the system with some scorn in 1842 [49], it clearly gained traction, since it was highly recommended by James Sawyer in 1900 in his 'Clinical Lectures on the Causes and Cure of Insomnia' printed in the *British Medical Journal* in 1900 [50, p. 1629], and was also praised by Davis in *Sleep – And How to Obtain It,* with a precis which brings the practice even closer to current yoga practice: 'the person should imagine that he could see his breath enter his mouth, proceed down his windpipe and enter his lungs, and then return and exit through his nostrils; and it was averred that by the time the person had *thoroughly realised* every part of this system he would fall asleep' [43, p. 60]. It is unclear whether there was any Indian influence on Gardner's thinking, but one can track in various texts considerable interest in sleep practices noted during imperial encounters. The *Spectator*, for example, notes that all Anglo-Indians assert that a cool head is necessary for sleep; the writer suggests the use of a water pillow, in place of that 'particularly nasty Western contrivance, the feather or down pillow, which heats the head' [10, p. 856].

The principle of monotonism, or repetition, as outlined by Gardner, became firmly established in both popular and medical accounts of how to procure sleep, including 'slowly counting imaginary sheep as they pass through an imaginary gate' in the *Lancet* [51, p. 217], or reciting the Lord's prayer (for mind numbing rather than religious reasons) [10, p. 855]. One article suggests, ingeniously, that saying the Lord's prayer is helpful because the kneeling posture and bowed head created a more gradual transition from the horizontal to the vertical, and thus 'conduced to the tranquillity of heart action and slowness of circulation necessary to sleep' [44, p. 804]. In the last two decades of the century there was a rash of articles exploring the problems of sleeplessness induced by the pressures of the modern age, with magazines printing letters from readers on their self-devised stratagems for sleep. A whole sequence of letters ran in the *Spectator* during July and August 1888, for example, with one notable contribution from 'A Hard-Working Journalist', who observed that there were two causes for his sleeplessness: an overexcited brain, which then led to his eyes being 'in constant movement, although the eyelids are closed'. His remedy was to fix the eyes downward to facilitate sleep [52, p. 1097]. It would seem this was an unwitting identification of REM, occurring in the wakefulness-sleep transition [53].

Overwork and Sleeplessness in Schools

Alongside overworked journalists, politicians, literary and professional men, the other category of great concern with regard to sleeplessness was that of school children. From the time of Dickens' portrayal in *Dombey and Son* (1848) of the great 'forcing apparatus' of Dr Blimber's school, which destroyed any possibilities of natural development or sleep, there had been a growing

outcry against the burdens placed upon school children, which intensified with the introduction of competitive examinations, and compulsory schooling [54, pp.162, 180-82, 206]. Doctors, teachers, and public health campaigners united in their complaints against a system which saw children working at their books long into the night, wrecking both health and sleep [13, pp. 131-40]. In an address to teachers in 1893 on 'Work and Overwork in Relation to Health in Schools' the physician Clement Dukes argued that pupils were suffering due to the pressures upon them and the long hours required, with pupils rising at 6am and evening work often extending to 10pm. He argued that they should have the same protection as factory children, and that there should be an equivalent 'Eight Hours' Bill' for schools [55, p. 9]. Teachers, particularly pupil teachers, were also suffering, with astonishingly high death rates, which he attributes to overwork and sleep deprivation. Drawing on research by the veteran public health campaigner, Edwin Chadwick, he outlines the hours of sleep required for the young (11 hours at 10, decreasing to 9 at age 19), and also the recommended hours of school work (12 hours per week between 5-8, rising to 40 hours at 16-17, and 50 at 18-19) [55, pp. 39, 61]. The 9 hours of sleep at 19 is clearly higher than current expectations (although other sources seem to suggest around 8 as the expectation for adults). What is clear is that our own anxieties about the pressures on the young, and the effect of school requirements on health and sleep patterns, have clear precedents in the nineteenth century. For the physician T. Pridgin Teale, in his wonderfully titled book, *Hurry, Worry and Money: the Bane of Modern Education* (1883), there was a clear connection between the competitiveness, and pressures of the age, and the problems experienced by school children. He gives graphic accounts of the ill health, of both mind and body, of the young, as a direct result of the introduction of competitive examinations, and the system of 'payment by results' by which the money a school received was directly dependent on the pupils' success in examinations. Such pressures, he suggests, produce 'a lowered morale, which by its direct appeal to selfishness and competition, tempts our rising generation to look upon knowledge as a means of surpassing one another in a race for gain, and, by the increasing tyranny of innumerable examinations renders the work of true educationalists more and more disheartening' [56, p. 3]. In this analysis, the long hours worked by children, and the loss of health through sleep deprivation, was itself part of a wider systemic social problem which was transforming not only the education system itself, but also the moral values of young and old alike.

In an address to medical students published in the *Lancet* in January 1900, the distinguished physician Sir William Broadbent welcomed in the new century with the observation that 'Sleeplessness is one of the torments of our age and generation'[51, p. 215]. Although the language itself is not likely to be replicated in a current scientific paper, the same sentiments are to be found in innumerable newspaper articles as they translate recent scientific research into arresting headlines. The rhetoric of 'an epidemic of sleeplessness' has taken hold [57, 58]. As this paper has shown, the parallels between Victorian responses to problems of sleep and those of our own age are striking. From the problems of sleepless politicians to those of overworked school children, and from the dangers of sedatives to those of nightshift working, there are significant similarities between the anxieties of the Victorians with regard to sleeplessness and those of our own era. Although current understanding of the physiology of the brain has advanced immeasurably since the time when Mosso first recorded the pulse of the brain during sleep, the questions posed, and the associated social concerns, are not dissimilar. For Mosso, his physiological research was directly linked to his concerns regarding the pressures of overwork and excessively long hours in professional life, and in schools. We no longer talk about 'brain exhaustion', but contemporary science is

increasingly confirming Victorian observations that a lack of sleep could cause a range of psychiatric and nervous disorders. Routh's alarmist claims in *Overwork and Premature Mental Decay* are seemingly now being confirmed in findings that, as Walker phrases it, 'sleep disruption and Alzheimer's disease interact in a self-fulfilling, negative spiral that can initiate and/or accelerate the condition' [11, p. 158]. Similarly, Benjamin Ward Richardson's observations with regard to the heart problems and other health issues experienced by occupational groups who were forced to work, rather than sleep, through the night anticipate current research on the dangers to health of shift work (see Foster in this issue). Contemporary research on circadian rhythms, and associated work with schools to find the right balance of work and sleep (as illustrated by Illingworth in this issue), also echo the concerns of Victorian physicians with sleep deprivation in the young, caused by inappropriate regimes of schooling. Finally, our own problems with over-prescription and rising levels of addiction to sleeping pills also have precedents in the Victorian era, as the analysis of the abuse of the sleep remedy, chloral, has shown. Rossetti's observation that he took chloral for commercial reasons – in order to procure sleep so that he could then continue to be economically productive – highlights the complex interaction of economic, social and psychological factors affecting sleep which we are only beginning to address. In the area of regimes of sleep one might expect there to be a world of difference between the Victorian era and our own, but research suggests instead that we are in fact moving backwards to rediscover some of the advice of this earlier time: to lower the temperature of the room, cut down on tea and coffee, and certainly not take it after 6pm, and carefully regulate diet. Even mindful breathing, it seems, has a Victorian precedent.

Sleep deprivation as a category of experience occupies an uncertain position, hovering between the medical and the social. While nineteenth-century findings with reference to the problems of sleeplessness are unlikely to contribute directly to contemporary science, they offer a valuable perspective on the ways in which an earlier society, also facing radical transformations in social and economic life, sought to understand the consequences for both mental and bodily health. Sleeplessness, or insomnia as it came to be called, acted as a symbolic focus for those concerns, a vivid indicator of the ways in which the pressures and stress of modern living were believed to be impacting on individual bodies and minds. Writing at a time before strict specialisation set in, nineteenth-century physicians had the advantage of being able to range widely in their writing and thinking: one finds in the medical records a willingness to explore the intersection of social, economic, physiological and psychological factors which might produce the conditions of sleeplessness, and their consequent pathologies. With the development of increasingly specialised science in the twentieth century, such breadth of approach was often lost or obscured: it is, however, now being replicated in the increasingly interdisciplinary forms of sleep research. Sleep Institutes often bring together a range of expertise and disciplines; it is to be hoped they will also add historians to the mix, as they seek to unravel the complexities of sleep.

References

1. William Ewart Gladstone, *The Gladstone Diaries: With Cabinet Minutes and Prime-Ministerial Correspondence, Vol 10: January 1881-June 1883*, H. C. G. Matthew, (ed.), Oxford Scholarly Editions Online.

2. Anson Rabinbach, *The Human Motor: Energy, Fatigue, and the Origins of Modernity* (Berkeley and Los Angeles: University of California Press, 1990).

3. Kenton Kroker, *The Sleep of Others and the Transformations of Sleep Research* (Toronto: University of Toronto Press, 2007).

4. Lee Scrivner, *Becoming Insomniac: How Sleeplessness* Alarmed *Modernity* (Basingstoke: Palgrave Macmillan, 2014).

5. Benjamin Reiss, *Wild Nights: How Taming Sleep Created Our Restless World* (New York: Basic Books, 2017).

6. Henry Holland, *Medical Notes and Reflections* (2nd edn, London: Longman, Orme, Brown, Green and Longmans, 1840).

7. Arthur E. Durham, 'The Physiology of Sleep', *Guy's Hospital Reports*, 3rd series, (1860), VI, 149-73.

8. William A. Hammond, *Sleep and its Derangements* (Philadelphia: J. B. Lippincott, 1869).

9. [G. Fielding Blandford], 'Sleep', *Cornhill* 14 (August 1866), 226-37.

10. Anon., 'Sleeplessness', *Spectator* (August 4, 1866), 854-56.

11. Matthew Walker, *Why We Sleep: The New Science of Sleep and Dreams* (London: Allen Lane, 2017).

12. J. E. D. Esquirol, *Des Mentales Maladies* (1838), *Mental Maladies: A Treatise on Insanity* trans. E. K. Hunt (1845: repr., New York: Hafner, 1965).

13. Sally Shuttleworth, *The Mind of the Child: Child Development in Literature, Science and Medicine, 1840-1900* (Oxford: Oxford University Press, 2010).

14. Angelo Mosso, *Circulation of Blood in the Human Brain,* ed, with commentary, by Marcus E. Raichle and Gordon M. Shepherd, trans. Christiane Nockels Fabbri (Oxford: Oxford University Press, 2014).

15. Angelo Mosso, *Fear* (1891; translated from the fifth edn of *La Paura* by E. Lough and F. Kiesow, London: Longmans, Green and Co, 1896).

16. Angelo Mosso, *Fatigue* (1891; translated by Margaret Drummond and W. B. Drummond, New York: G. P. Putnam's Sons, and London: Swan Sonnenschein, 1904).

17. Amelia Bonea, Melissa Dickson, Sally Shuttleworth and Jennifer Wallis, *Anxious Times: Medicine and Modernity in Nineteenth-Century Britain* (Pittsburgh: Pittsburgh University Press, 2019).

18. Benjamin Ward Richardson, *Diseases of Modern Life* (London: Macmillan, 1876).

19. Russell Foster, *Circadian Rhythms: A Very Short Introduction* (Oxford: Oxford University Press, 2017).

20. Benjamin Ward Richardson, 'Chloral and other Narcotics', *Contemporary Review* 35 (July 1879), 719-39.

21. 'The Dangers of Chloral', *British Medical Journal* ((April 1, 1871), p. 349.

22. 'Professor Tyndall', *Lancet*, March 20, 1886, p. 562.

23. Gordon Stables, M.D., 'The Confessions of an English Chloral-Eater', *Belgravia*, 26 (April 1875), 179-90.

24. 'Overwork', *Lancet,* (April 24, 1875), 587.

25. C. H. F. Routh, *On Overwork and Premature Mental Decay: its Treatment*, 3rd edn (London: Ballière, Tindall and Cox, 1878).

26. *The Disease of Sleeplessness. By a Country Clergyman who has Suffered and Prevailed* (London: E. W. Allan, 1877).

27. 'Poisoning by Chloral Hydrate', *Pharmaceutical Journal and Transactions* (Oct. 15, 1881), 332-33.

28. 'Patent Medicines. –Observations', *Hansard* (HC Deb 12 May 1882 vol 269 cc594-9).

29. Henry W. Hubbard, 'The Poisons of the Day: A New Social Evil', *Macmillan's Magazine* 46 (July 1882), 238-44.

30. Henry W. Hubbard, 'Patent Medicines',*Macmillan's Magazine* 47 (April 1883), 499-504.

31. *Bow Bells Almanack*, London: John Dicks, 1872.

32. Harry Hubbell Kane, *Drugs that Enslave: the Opium, Morphine, Chloral and Hashisch Habits* (Philadelphia: P. Blakiston, 1881).

33. William Michael Rossetti, *Dante Gabriel Rossetti: His Family-Letters, with a Memoir* (London: Ellis and Elvey, 1895), vol. 1.

34. Ford M. Hueffer (subsequently Ford Madox Ford), 'D. G. Rossetti and his Family-Letters', *Longman's Magazine* 27 (March 1896), 465-74.

35. W. J. Stillman, 'Correspondence: Dante Rossetti and Chloral', *Academy* (March 19, 1898), 333.

36. Tom Robinson, M.D., 'Modern Life and Sedatives', *National Review* 19 (July 1892), 723-28.

37. Joseph Mortimer-Granville, *Sleep and Sleeplessness* (London: David Bogue, 1879).

38. Joseph Mortimer-Granville, 'A Plea for the Classification and Detailed Study of Mental and Sensory Causes, or Forms, of Sleeplessness', *Lancet* (August 28, 1880), 333-36.

39. Dyce Duckworth, 'Observations on the Causes and Treatment of Certain Forms of Sleeplessness', *British Medical Journal* (Dec. 27, 1873), 747-49.

40. James Sawyer, 'Clinical Lecture on the Causes and Cure of Insomnia', *Lancet* (June 15, 1878), 857-58; (June 22, 1878), 889-90.

41. World Health Organisation, 'Mental Health: Burn-out an "occupational phenomenon": International Classification of Diseases. https://www.who.int/mental_health/evidence/burn-out/en/. Accessed May 31, 2019.

42. 'Sleeplessness', *British Medical Journal* (Sept. 29, 1894), 719.

43. F. Davis, *Sleep and How to Obtain It*, new edn. (1888; London: Ward, Lock, Bowden and Co, 1894). George Black 'Long Life' Series.

44. A. Symons Eccles, *National Review* 23 (August 1894), 797-805.

45. A. Roger Ekirch, *At Day's Close: Night in Times Past* (New York: Norton, 2005).

46. Edward Binns, *The Anatomy of Sleep; or, The Art of Procuring Sound Refreshing Slumber at Will* (London: John Churchill, 1842).

47. Jeremy Norman, 'Binns' "Anatomy of Sleep": The First Book Known to have been Typeset by a Composing Machine'. http://www.historyofinformation.com/detail.php?id=3202. Accessed June 5, 2019.

48. Mrs Hofland, 'Sleep, the Want of Sleep, with their Contingencies', *The Lady's Magazine and Museum* (July 1837), 435-39.

49. 'Sleep', *Lancet* (Oct. 22, 1842), p. 142.

50. James Sawyer, 'Clinical Lectures on the Causes and Cure of Insomnia', *British Medical Journal* (Dec. 8, 1900), 1627-29.

51. Sir William H. Broadbent, 'A Clinical Lecture on Sleeplessness', *Lancet* (Jan 27, 1900), 215-17.

52. 'A Hard-Working Journalist', 'Sleeplessness', *Spectator* (August 11, 1888), p. 1097.

53. Róbert Bódizs, Melinda Sverteczki, Eszter Mészáros, "Wakefulness–sleep transition: Emerging electroencephalographic similarities with the rapid eye movement phase". *Brain Research Bulletin*, 76 (2008), 85–89.

54. Charles Dickens, *Dombey and Son*, ed. Andrew Sanders (1848; London: Penguin, 2002).

55. Clement Dukes, *Work and Overwork in Relation to Health in Schools* (London: Percival and Co, 1893).

56. T. Pridgin Teale, *Hurry, Worry and Money: the Bane of Modern Education* (London: Simpkin, Marshall and Co, 1883).

57. Ian Johnston, '"Catastrophic" lack of sleep', *Independent* (24 Sept, 2017: 'Catastrophic' lack of sleep in modern society is killing us, warns leading sleep scientist | The Independent. Accessed June 7, 2019.

58. Denis Campbell, 'Britons told to get a good night's sleep', *Guardian* (25 Feb., 2018): https://www.theguardian.com/society/2018/feb/25/britons-epidemic-sleeplessness-damaging-health. Accessed June 7, 2019.