On overwork and premature mental decay : its treatment / by C.H.F. Routh.

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ITS TREATMENT.

BY

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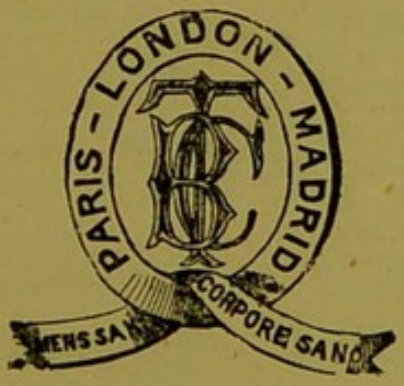

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PREFACE TO THE FOURTH EDITION.

Two considerations have encouraged me to issue a Fourth Edition of this essay on Overwork.

The evils to which I called attention are still rampant throughout the land. Times have been unusually hard—anxieties, perplexities, troubles, physical and moral, social and political, have been intensified. The result has been a great wreckage of human intellects. Insanity is undoubtedly on the increase.

Secondly.—I have been told that my previous remarks have been limited too closely to the male sex. That I have overlooked the sad effects of overwork in women and children. Among the former it is stated the result of overwork and worry, bring about greater havoc of mind and body than even among men, especially now-a-days when, owing to the want

of employment adapted to female workers, they have been compelled to perform many duties hitherto appertaining to men. Thus, although a few have been strong-minded and able-bodied enough to do so without injury, the great majority fail. They suffer more than weak men, and body and mind have been sacrificed. Again, I have been told that I have excluded boys and girls, and made insufficient reference to the over-pressure of schools, especially upon weak-bodied or weak-minded children. Hereby an injury is inflicted, not only on the children themselves, but upon their future offspring, and so entailing misery on future generations. These objections I acknowledge to be valid. I have endeavoured to remedy these omissions, and I have added a few more cases in confirmation. But the subject is a large one, and grows as the attempt is made to elucidate it.

The statistical data also, upon which much information could be obtained for comparison, unfortunately do not exist. The evils, however, of imprudent customs continue. They can no longer be ignored, either by physician or statesman. I do not believe, however, all has been said on this subject that can be said. But every man must act according to his

lights. Nor should a diffidence in his powers preclude his doing his best, and make him weary in well doing. On the contrary, the wise King, said "Whatever thy hand findeth to do, do it with thy might." Moreover, for those who have seen the error of their ways, and been taught to act prudently there is incalculable reward promised. "The excellency of knowledge is, that wisdom giveth *life* to them that have it." A true life, not a mere existence in misery, sickness, weakmindedness, and one unworthy of the name—but a renewed life, a life of power, vigour, and wisdom; a life which will enable a man to use without abusing those talents which God has given him, not only for his own good, but for the well-being of his fellow men, and for the glory of his Creator.

C. H. F. ROUTH.

52 Montague Square,
September, 1886.

ON OVERWORK.

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CHAPTER I.

If one of our ancestors of one hundred years ago were suddenly resuscitated and made to undergo the toil and mental labour of our days, he could not endure it. The life of an intellectual man who would keep on a level with his compeers of the present day would be equivalent to at least a dozen lives of a former age. The mental and physical powers to fight the battle of life successfully must be learnt from childhood, and must progress, *pari passu*, with the development of knowledge and civilisation. What is expected, indeed, even of boys in this competitive age, was not required of the wise, full-grown men of old. Take the example of a senior wrangler. Even Newton ignored the scope of mathematical science which a senior wrangler must now possess, and how hard such men must work and overwork themselves is evident from the small number of them who are able to outlive this ordeal and who become useful in

their generation. In our own profession competition is carried to a fearful extent. Formerly a young man had to pass through a very limited groove. Medical men were few and far between. Competitive examinations were unheard of. Examinations for degrees and diplomas required but a minimum of knowledge. It is, within the memory of some of the profession even now, that a student might become a surgeon after one year's study, and many others became general practitioners, before 1815, without any examinations whatsoever. Places of trust in our hospitals were often family sinecures. India-assistant-surgeoncies were reserved only for those who had friends in office. I well remember the time when two young men in a college, notorious only for their very infrequent attendance on lectures and their anything but temperate habits, after three months' cramming, passed the Royal College of Surgeons, and were appointed Indian assistant-surgeons, and sent to minister to our brave troops in that empire. But now how different the state of things! A man *must* know his subjects to pass. Five years of study and hospital practice at least are required, and many appointments are open to honourable competition. So that formerly where one Sir Henry Halford, and one Sir Astley Cooper could command, the first nearly the whole medical, the latter the whole surgical, practice of London, now there are scores in London whose knowledge surpasses that of these great men, and who consequently divide their practice. Halford

made his £31,000 in one year, and Sir Astley Cooper £22,000. Now probably no one man attains the half figure. The fact is, men "go much to and fro now-a-days, and knowledge is increased." But all this increased mental work has left its mark also on the present generation. The chief characteristics of the last decade (says Hirtel, p. 105, in his work on "Over-pressure of Schools") "are the enormous strides in natural science, and the immense development of all mechanical appliances—machines of all kinds, railways, telegraphs, &c. But with their general use has arisen a hitherto almost unknown state of restlessness and competition, in which he who cannot keep up must either succumb or be out-distanced. Simultaneously personal requirements have grown in number and extent, while the desire for luxury and enjoyment has increased enormously, and become exceedingly peremptory in its demands. Everything and everybody is impelled onwards; there is no rest or breathing-time either for the individual or general community. The consequence is that large numbers suffer from mental and bodily over-exertion and exhaustion. This is certainly a chief cause of the immense growth of anæmia and nervousness, which is so disastrous to the present generation. It is asserted from various quarters that, as nervousness becomes more common, mental diseases too are greatly on the increase. De Hasse has even gone the length of instancing certain phases of insanity which he ascribes directly to over-pressure in schools."

So far Hirtel; but I would go a step further. This is essentially a neurotic age—one in which the nervous powers of men, women, and children are keenly edged. The passions, over-excited by an uncontrollable acumen, whether for good or evil, lead to the development of the most extraordinary manifestations. The nervous sensibility rules like a tyrant, and, except where guided by a Higher power in a holy channel, leads through the disruption of everything that is conservative, pacific, or enduring, to that which is akin to decay, revolution, and destruction.

Interesting, however, as such general details and propositions may be, I have to consider the especial and disastrous effects of all this toil and overwork, which in after years has exerted continued and unfortunate influence upon the mind, and at last brought about premature mental decay. In this manner we shall be better able to judge how far these painful results are remediable.

In the first edition of this essay I restricted myself more closely to the results which follow overwork in those who study and work hard mentally both for themselves and others. My object was to prove that such overwork invariably gave rise to premature old age and mental decay; but I felt unwilling to treat the subject more broadly by extending my observations to allied kinds of overwork, which might bring about similar results. Then, again, I confined my remarks to these specified limits, because I felt the subject

had already been ably handled by my friend, Dr. B. W. Richardson, and I did not feel disposed to tread too closely upon his steps; but the subject has grown popular, and I have been asked to speak more fully and freely. This, therefore, must be my excuse for doing so on the present occasion, and my theme for consideration may therefore be stated as "On overwork and premature mental decay," considered specially in a moral point of view; some of its varieties, causes, symptoms and treatment.

Let me first define then what I mean by premature mental decay. This latter expression, in its simple meaning, is clearly a disintegration, a defective condition, a loss of mental powers previously known to be good and sound.

In the common course of things, it occurs after a considerable amount of wear and tear of every man's brain. It is the normal goal of old age. But it is said to be a premature mental decay when it occurs in a man before the time at which his intellectual vigour should have normally deteriorated. A mind thus weakened is no longer in equilibrium. It is, in fact, bordering on insanity, which has however come on prematurely. For clearly, if we understand by insanity, an unsoundness of mind which is the result of functional or organic disease, or rather of a particular class of such diseases which are known to impair, weaken, or pervert the mental faculties in various ways and in different degrees, then premature mental decay

is, after all, only a progress towards, if not an allied form of, a pending, although unmatured, insanity. Call it eccentricity, early old age, weak-mindedness, impaired reasoning power—in each and every such case the mind after all is unsound, and premature mental decay comes only to be a minor degree of, or a special form of, insanity. At any rate, none will be disposed to deny that the phenomena of premature mental decay constitute the long links of a chain, or the several steps of a ladder, which terminate, if undetected, sooner or later, in insanity. This admission is, after all, a very important one, because as kindred causes will be found productive of the two forms of disease, so we are through a full consideration of these, enabled to make not only an earlier diagnosis, but also to adopt earlier remedial measures, and thus obtain a better chance of recovery.

A consideration, at this stage of our inquiry, of the chemical constitution of the brain itself, tends furthermore to confirm this relation and to explain how readily the one state may pass into the other.

The brilliant researches and discoveries of Dr. Thudichum (Public Health Reports, New Series, No. 3) have demonstrated that the brain possesses peculiarities of chemical composition, and modification, which belong to no other known chemical compound, "It consists essentially of three groups of bodies. The members of one contain five elements, one of which is phosphorus, hence termed *phosphorized*

bodies. The members of a second group contain four elements, amongst them nitrogen, but no phosphorus, hence termed *nitrogenized bodies.* The members of the third group contain only three elements, carbon, hydrogen, and oxygen, present also in the other two groups, but no nitrogen or phosphorus."

It is to the first of these groups to which I must mainly refer. It is especially interesting, as showing the extraordinary susceptibility of change which the brain possesses, and necessarily the mind itself which must work through the brain agency. "The phosphorized bodies are three—cephaline, myeline, and lecythine. The first possesses a tendency to be oxydized, *oxydizability.* The myelines are not easily changed by an agent or influence, and possess, therefore, *stability.* The lecythines easily fall to pieces, they are afflicted with *lability.* Water combines itself with these bodies in a peculiar manner, by which they show their character as colloids, and it afterwards dissolves them in a peculiar and imperfect manner. The reagents with which the phosphorized bodies are able to combine, and from which they are dissociated by water, are acids, alkalies, and salts. They possess alkaline affinities for acids, acid affinities for alkalies, alkaloid affinities for salts. All these affinities are overcome by water in quantity, but the affinities for water are overcome by some metallic oxides, such as those of lead, copper, manganese, iron, and even to a slight extent,

by lime and potash. These latter compounds are dissociated only by strong mineral acids, and the compound can then be dialyzed out. More lately Dr. Thudichum has shown that these phosphorized bodies, in high temperatures, become less soluble and are thrown down, and to this he attributes many of those very serious changes which invariably follow in those cases where temperature above the normal is present. We have therefore here a diversity of affinities *such as is not possessed by any other class of chemical compounds in nature at present known,* and the exercise of these affinities being greatly influenced by the mass of reagent and the mass of water which may be present, the interchange of affinities may produce a perfectly incalculable number of states of the phosphorized, and consequently of brain, matter. It foreshadows in the chemical side the remarkable properties which nerve matter exhibits in regard to vital function. From this it also follows that nerve matter (if only characterized by the phosphorized bodies) must yield obedience to every, even the slightest, chemical influence which may reach it by way of the blood. It must take up metals, acids, salts, alkalies, and alkaloids presented by the blood. It can retain only oxides when the serum is again free from the combinants—a watery serum will waste the brain; a more watery one will make it swell, and displace mechanically within the physiological limits what it can; a still more watery one will make the brain

dropsical and produce all the conditions of *mechanical pressure* on the brain. All these processes are the necessary consequences of the affinities of the phosphorized substances, and these being known, the phenomena could be predicted, and they were not sufficiently known as phenomena, though hitherto destitute of an explanation. . . .

"These few examples show that the acquisition of chemical statics leads almost necessarily and very easily to mechanical dynamics of the brain, and these will in their turn furnish data for physiological and pathological conclusions" (p. 200).

But we must wait till these statics are more perfectly and completely understood.

The *nitrogenized* substances of the brain imitate, but in a lesser degree, the properties of the phosphorized, having similar affinity for water; but they are less soluble, and are firm compounds, not easily oxydized or decomposed.

The third group, the *oxygenized* principles, consist mainly of alcohols with very slight combining powers. The most prominent of which is cholesterine. Insoluble by itself in water, it is probably dissolved in brain matter by means of the phosphorized substances. Its bearing is therefore governed, and its *rôle* determined to a great extent, by these matters.

The above sketch, mostly in his own words, although a very inadequate portion of Dr. Thudichum's analyses, proves the extreme intricate-

ness of the brain arrangements chemically considered; and these, when taken in connection with its great complexity anatomically examined, so far point to the readiness with which the mind may be affected, if the functional and chemical organization be in the smallest degree interfered with. This is particularly the case if the phosphorized bodies are the sufferers. But the more exact application of these remarks will become more easily understood in the sequel.

These premises, however, once laid down and agreed upon, the discussion of our subject becomes greatly facilitated, and by its very alliances with the kindred monster—insanity—more easy of description and treatment.

Next, does the excessive mental toil of the present day affect the mind for evil? Does not the brain follow the general rule—employment makes perfect? Is not the full integrity and nutrition of the brain, upon which the efficiency of mental power depends (for spirit must act through brain), dependent, like other material parts, on exercise and action? For instance, if organs of sense, such as hearing, tasting, seeing, touching, etc., become more sensitive by employment—if the arm of a blacksmith will acquire increased power and development by its use, does not the brain improve likewise by exercise? I imagine under legitimate work it would, and the experience of schools proves this. And, indeed, the answer to this question may

be partly given by numerical investigations; for researches in this direction prove that if the common rule applies to legitimate mental work, it is quite another thing when we speak of overwork, combined as it almost always is with anxiety, or other contingent influences which operate for harm upon the brain. Dr. Elam states definitely, in his work on "Cerebria," that there has been a very large increase in the mortality from diseases of the brain. In the year 1839 there were 1,495 deaths registered from this cause, and in 1869 there were 5,517. Thus whilst the population of England has increased 30 per cent., the mortality due to this cause has been multiplied nearly fourfold.

In the same period the deaths from paralysis and apoplexy have considerably more than doubled, viz., from about 10,000 annually to 22,000. The deaths from insanity have also nearly doubled (On "Cerebria," p. 1).

Dr. Elam has further shown that this increase bore a direct relation to the social and commercial disorders of certain epochs. Thus immediately after 1845 and 1846, *i.e.*, in 1847, the registered deaths from brain disease increased to more than double, from 1,495 to 3,012, whilst the mortality in paralysis and apoplexy increased 50 per cent.

Then followed a period of calm which was accompanied by a corresponding improvement in nervine health, for from this year till 1852 there was no increase in the mortality from this class of causes.

Since then there has again been a gradual increase. In 1853, out of one million persons, 196 died from brain disease; in 1869, 254. Again, in 1866-7, years of great agitation, the average of deaths from this cause was 267, and this increase of mortality was confined to adult and advanced life. In early life there was no increase, occasionally a decrease. Thus hydrocephalus decreased from 463 per million in 1852 to 344 in 1869, and in the same period convulsions decreased from 1,371 to 1,190 per million.

The Registrar-General does not now divide deaths from nervous diseases into those due to spinal and brain affections, but still we are applying his statistics with equal force in 1885 as in our last edition (1878). Thus, excluding *convulsions*, we find diseases of the nervous system caused 30,477 deaths in England and Wales in 1860, and 49,666 deaths in 1883, which reduced to a death-rate to a million persons living, would be 1,531 in 1860 and 1,855 in 1883.

I am quite aware that Dr. Maudsley, in a paper on the subject (*Lancet*, Jan. 13th, 1872), and Dr. Clouston (*Brit. Med. Journal*, August 24th, 1872), in a paper read before the British Medical Association, have denied the accuracy of this statement, in great measure attributing the great numerical increase to the increase of population, better search after and segregation of the insane, and the inclusion of many as insane who in former years would not have been considered as such.

But we have later opinions than these. Sir J. Crichton Browne in speaking of these opinions as held by many persons interested in the subject of insanity (Report Relating to Public Elementary Schools, p. 13, 1884) says:—"Many years ago the Commissioners of Lunacy in England and Scotland committed themselves to the theory that the increase of insanity amongst us is only apparent and not real, and ever since they thus committed themselves they have gone on year after year repeating an explanation of the increase in the number of registered lunatics, which has year after year become more untenable. In their last published report, that for 1882, the English Commissioners in Lunacy say: 'It would thus appear that if we take the total population, the proportion of persons attacked with insanity is not at present on the increase, and that the increase in the total number of certificated insane persons maintained under care and control is due almost entirely to the accumulation of chronic lunatics.' Lord Shaftesbury, the late Chief Commissioner, is especially quoted as having maintained this view in a debate in the House of Lords (July 17th, 1883), and reference is made to Mr. J. W. Corbet, M.P.'s paper in the *Fortnightly Review* to which I shall presently refer, when these opinions are disproved."

I shall satisfy myself by giving the last report of the Commissioners in Lunacy on this point, and also such data as the Registrar-General, in his world-famed reports, afford us, where the element of

increased population is fully considered. To state that many are included as insane who were formerly not reckoned as such is, after all, only begging the question. If they have not been before included, it is time they should, and the progress of science has done well in enabling us to keep guard over agents for evil which before were elements of danger at liberty in a population.

Ratio per 1,000 *to total number of Lunatics, Idiots, and Persons of Unsound Mind, to Population each Year from* 1859 *to* 1883.

1859	...	1·86	1872	...	2·54
1860	...	1·91	1873	...	2·57
1861	...	1·97	1874	...	2·61
1862	...	2·02	1875	...	2·65
1863	...	2·09	1876	...	2·66
1864	...	2·15	1877	...	2·69
1865	...	2·18	1878	...	2·73
1866	...	2·24	1879	...	2·75
1867	...	2·29	1880	...	2·76
1868	...	2·35	1881	...	2·80
1869	...	2·45	1882	...	2.83
1870	...	2·74	1883	...	2·86
1871	...	2·49			

January Report for England and Wales, 1883, pp. 10 and 11.

These figures prove a gradual and general increase of mental disease, and so far are in direct opposition to Drs. Maudsley and Clouston.

Let us now consider the proportions of the insane in the three parts of the United Kingdom. Mr. Corbet, in the article in the *Fortnightly Review* before referred to, gives the following table, as showing the increase of insanity in the realm :—

Date.	Country.	Number of Insane.	Population.	Ratio of Insane per 1,000.
1862	England ...	41,129	20,336,476	2·02
	Ireland ...	8,055	5,798,967	1·36
	Scotland ...	6,341	3,062,294	2·1
	Total ...	55,525	29,197,737	1·81
1872	England ...	58,640	23,074,600	2·54
	Ireland ...	10,767	5,368,696	2·04
	Scotland ...	7,606	3,399,226	2·27
	Total ...	77,013	31,842,522	2·41
1882	England ...	75,072	25,798,922	2·90
	Ireland ...	13,444	5,294,436	2·54
	Scotland ...	10,355	3,695,456	2·80
	Total ...	98,381	37,788,814	2·84

The deaths in England from insanity were, in 1871, 3,547 out of 10,528 admissions in asylums; and in 1882, 4,424, out of 13,504 cases.

The following data, obtained from the Registrar-General's Reports for 1872, point in the same direction. They show the annual mortality from the several examples of brain disease to one million living in all England, in decennial and quinquennial periods from 1850 to 1869, and for the three single years of 1870, 1871, and 1872.

These tables confirm upon the whole those of Dr. Elam. Indeed, if we except the quinquennial period of 1850-54 up to 1869, there was a gradual increase; and although in 1872 we see a diminution, in all the other periods we have a progressive increase of

insanity from 26·5 per 1,000,000 living in 1850-59 to 43 in 1871; while the same general deduction may be drawn that this increase of mortality was confined to adult and advanced life, hydrocephalus carrying away in 1850-59 annually 409·9 and only 314 per million in 1872, and convulsions proving fatal in the former quinquennial period to 1,331·9 per million which in 1872 carried away only 1,109.

Disease.	10 years 1850-59.	10 years 1860-69.	5 years 1850-54.	5 years 1855-59.
Cephalitis ...	189·8	193·8	199·0	180·6
Apoplexy ...	450·8	481·8	454·2	447·4
Paralysis ...	452·8	499·8	440.2	465·4
Insanity	26·5	29·2	29·2	23·8
Brain Disease ...	201·8	253·5	192·4	211·2
Total	1,321·7	1,458·1	1,315·0	1,328·4
Hydrocephalus ...	409·9	357·7	434·2	385·6
Convulsions ...	1,331·9	1,261·7	1,352·6	1,311·2
Total	1,741·8	1,619·4	1,786·8	1,696·8

Disease.	5 years 1860-64.	5 years 1865-69.	1870.	1871.	1872
Cephalitis ...	182·8	203·8	222	213	221
Apoplexy ...	468·6	495·0	521	509	515
Paralysis ...	479·8	505·8	523	519	507
Insanity	28·0	30·4	39	43	35
Brain disease ...	248·2	258·8	249	248	238
Total	1,421·4	1,693·8	1,554	1 532	1,516
Hydrocephalus ...	368·6	346·8	333	323	314
Convulsions ...	1,276·0	1,247·0	1,192	1,121	1,109
Total	1,644·6	1,593·8	1,525	1,444	1,423

The following table, where all diseases of the nervous system, excluding convulsions, are given, tells the same tale.

Death-rate to a Million Persons Living, in Groups of Years.
(Registrar-General's Report, 1883.)

	3 years 1858-80	5 years 1861-65	5 years 1866-70	5 years 1870-75	5 years 1876-80	Year 1881	Year 1882	Year 1883
Convulsions	1,297·7	1,258·6	1,204 6	1,111·8	972·4	852	872	847*
Diseases of Nervous System	1,485·3	1·547·	1,606·2	1,716 8	1,805·6	1,748	1,772	1,845
Total ..	2,783·	2·805 6	2,810·8	2,823·6	2.778·0	2,600	2,644	2,702

The case of Ireland perhaps requires especial mention. The total number of lunatics and idiots returned in 1851 was equal to a ratio of 1 in 657 of the population; in 1861, 1 in 411; in 1871, 1 in 328; and in 1881, 1 in 281, showing the baneful effect of agitation. There is also a remarkable relation observed between the sexes.

"In 1841, the proportion between the sexes of sufferers from diseases of these organs was as 100 males to 97·7 females; in 1861 the proportion of the latter sex has risen slightly, but upon the present occasion these proportions had fallen to 93·6 females to every 100 males."

* Possibly one reason why convulsions have diminished in frequency of late years is in part the employment of two very effective curative agents, bromides and chloral.

In the ten years ending 1883 the average proportion between male and female lunatics was as 87 (male) to 100 (female), or as 2·54 and 2·92 per 1,000 of population respectively.

From another statement given we find that there were in Ireland :—

	1851.	1861.	1871.	881.
Lunatics	5,074	7,065	9,763	9,774
Idiots	4,906	7,033	6,742	8,639

Except, therefore, in relation to the different influences of sex, it is clear that both in England and Ireland insanity and diseases of the brain in the adult classes are on the increase.

CHAPTER II.

Let us now consider what are the evidences of premature mental decay from overwork. They are, in fact, the general symptoms of exhausted nervous power; viz., general debility of the body, inability to walk even short distances without fatigue, general feeling of languor, unwillingness to any active exertion; great tendency to sweat, specially at night, but induced during the day by the slightest exertion; generally an unsteady gait. The hand either on one or both sides is shaky. The writing as a result is often irregular and difficult to read. The vertebral column presses forward, and the man bends. The heart's action is weak, often irregular, accompanied with palpitation, and not unfrequently with symptoms of general indigestion.

A change is gradually observed to come over the *man's disposition;* and generally some peculiarity develops itself in the character, not previously noticeable in the affected person. It is not unusual in such cases to find an undue exaltation of some peculiar talent or property of the mind in a different

direction, or one totally opposed to former hobbies, and what strikes one more than anything in these changes is the suddenness with which these hobbies spring up.

A man may become intensely selfish and garrulous, who was formerly generous and reticent. He takes, without any apparent reason, likes and dislikes to those with whom he is associated, often his nearest relatives, whose motives he invariably misunderstands. He becomes subject to uncontrollable fits of moroseness or bad temper. A previously careful man becomes unusually liberal, even extravagant; a remarkably modest and prudent man puts off all reserve, and becomes intensely disagreeable in genteel society; a dull man becomes a poet; a deep, far-sighted politician will become a religious controversialist; a vacillating statesman will become a most obstinate opinionist; aman who, perhaps, never turned a note of music correctly, becomes a devotee to music. Sometimes the very *morale* is changed. For instance, there is an alternation in his manner of acting—one moment intensely joyous and excited, now greatly depressed—one moment friendly, the next hostile. Sometimes obstinacy develops itself to an intense degree, and nothing will move his determination; at another time he can be led as a child. Sometimes it is indecision of character, or in his opinions, which forms the prominent symptom, often the more remarkable because occurring in one heretofore known to be ever ready and resolute. Fre-

quently there is an utter inability to fix the attention on any one subject. In reading, the thread of the story or argument cannot be long followed. Again, sometimes not only is there an entire inability to arrange ideas in order, but the judgment is strangely perverted. This is clearly not from wicked intentions, as it often seems, but really from conviction. A few years ago, a London physician of great note contended that all cases of epilepsy were curable by tracheotomy. Later, another surgeon of great eminence believed that this and allied forms of nervous diseases were curable by clitoridectomy. These opinions gave great offence to the profession at the time, and rightly so, because they were erroneous and injurious. But here was no malice prepense, but disease, and the individuals were more deserving of pity than of persecution. And so far, in the second case, the *post mortem* appearances gave full evidence of the fact.

Nor is it surprising that sometimes a remarkable indifference to *veracity* becomes manifest in persons previously eminent for their truthfulness, and in some hitherto pre-eminently temperate persons a craving for alcoholic drinks from which they cannot refrain. In fact, a bastard kind of dipsomania in a moral, religious person, never before noticed or known to exist, develops itself. Ideas about morality and decency become less decided or painfully perverted, the more so as they are expressed in the most sudden and unexpected manner. But it is the failure of the

memory which is most deplorable. There is often a painful sensation of being obliged to force the brain to remember the slightest thing. This loss of memory indeed is often so marked, and more especially in *present* circumstances as opposed to those of the past, as to give rise to the greatest embarrassment. While a person is speaking, the whole train of thoughts is lost and not again recovered for hours. A person may go to fetch something in a neighbouring room, and on arrival there forget what he required.

This loss of memory may, however, not be in all subjects. It may be good in some branches of knowledge, but altogether absent in others. Recent events are especially forgotten as I have said before, but not always. Sometimes it is the very reverse, recent events are remembered, past events forgotten. A man may even lose the knowledge of his identity, birth place, age, residence, &c. These phenomena indicate brain exhaustion, and after all this sudden loss of memory even in healthy persons has occasionally been observed as a sign of present exhaustion. The late Sir Henry Holland once visited a number of German coal mines. He was a perfect German scholar, and able, it is said, to speak it as a native. While in the mine he both could understand and make himself understood. On being brought up to the surface again to his surprise he found he had forgotten all his German, and could only speak English. It was only after returning to his hotel and partaking of wine and food that the language

came back to him. The analogy between this temporary and the more chronic kind of loss of memory is, however, evident.

Sometimes *local nervous phenomena* develop themselves. There is often a dull headache and backache, a sensation of lightness in the head; patients often express it as a "head feeling empty," sometimes accompanied with a creeping sensation down the spine and extremities, great nervousness, and startings at the slightest noise.

I have noticed in some cases that there is an undue *excitability of the senses.* The *hearing* habitually dull becomes intensely acute, so that the noise of a door slamming in the streets becomes unbearable; even a pin may be literally heard to fall; the sound of music or a loud voice becomes very painful. Then the *sight* becomes alike impressionable. Even bright colours are not pleasant to look upon. *Scent* becomes odious, or the reverse, and the *taste* altered, as before stated, from its habitual likings. Benumbing feelings, the prickings or irritation of the skin, and, conversely, exalted hyperæsthesia generally, may appear. Occasionally these changes are so marked that the patient will invariably allude to them as symptoms giving him great anxiety.

It is remarkable that synchronously with this gradual deterioration of nervous power, two symptoms are observed to be almost invariably present. *Want of sleep* and *loss of virile power.* Both come on gradually, but very certainly, and their conjunc-

tion with loss of memory is always a very serious circumstance. In the first of these effects, if the case goes on it assumes more melancholy characters. Want of sleep brings its concomitants. The patient becomes extremely depressed and unhappy about himself. Very little makes him sob and weep, and he is miserably wretched.

Indeed, it is precisely in these cases of sleeplessness that we find hysterical symptoms presenting themselves in the man previously strong-minded and of powerful intellect. It would seem as if he became effeminate in many of his mental emotions, and the tears and sobs are only the common evidences of his weakened powers. Hypochondriacal to a degree, life is a perfect burden, and frequently the disease terminates in suicide. The case of a remarkably great man, a judge, who of late perished by his own hand, in which most of these symptoms were marked, will be at once recalled to the memory—an instructive, but a very sad example of overwork. The equilibrium of what was once a mighty brain no longer existed, and its function no longer regularly performed, culminated in insanity.

The *loss of virile power* in a man is always a source of trouble to him, but except in those cases where it is present from gout, or a result of spinal injury, or from a long-continued, exhaustive disease, and particularly if it occurs in a man who has not abused his powers, it is an ugly symptom and forebodes no good.

I am not sure whether here we have not a marked contrast between true cases of premature decay and genuine insanity. It is commonly observed that in many cases of insanity there is positively an exacerbation of all sexual impulses, while in simple premature decay it is greatly diminished. Alternately the same goal may be reached, and premature decay may pass into true insanity, still this difference at the outset of the two conditions is very remarkable.

And this necessarily brings me to consider the differential diagnosis between a case where this symptom is due to excess, and that in which it follows mental overwork. Imprimis, it must be admitted that there is a striking resemblance in these cases of overwork and premature decay and those produced by venereal excesses in both sexes, but more marked in cases of spermatorrhœa and prostatorrhœa, in the latter only when it is excessive, in the male. In both we have general debility, which is muscular as well as intellectual; fatigue, night sweats, languor, heavy, dull feeling in the head, frequently in the back, with occasionally the same creeping sensation. In both the gait is unsteady. In both the memory fails, and in a marked degree. In both there is intense nervousness, frequently with palpitation of the heart. Commonly insomnia occurs in both; urine deposits phosphates in abundance in both; but whereas in mental decay from overwork the nocturnal emissions are very rare, after venereal excesses they are common and may be excessive. Nor can I say

I have ever seen in cases of mental decay the epileptiform convulsions observed in cases of venereal excesses. The nearest to these have been sudden jerks occurring frequently during sleep, and affecting principally one side of the body.

But while we admit the complete distinctiveness of these two affections, we are forced to admit that there are cases where mental decay is a prominent symptom, and which appear to occupy a sort of border land between the genuine cases of spermatorrhœa and those of simple overwork. If we trace the early history of these cases, there is an entire absence of any sexual excess or loss. There may, indeed, have been unusual continence. The early symptoms have been entirely those of weakened intellectual power. The sexual losses have not followed till, it may be, months afterwards. Besides, these losses are in many cases not seminal at all. Prostatic juice alone escapes; no spermatozoa whatever are to be made out by the microscope. It is the result of constant irritation, which gradually localises the thoughts, and a loss tends to add to the weakness of the body. These cases would probably be analogous to those which occur in women, in whom mental weakness accompanies a constant and recurrent leucorrhœa. They have been well described by Mr. Henry Lee, in his Lettsomian Lectures: and, fortunately, are often readily remediable. Such an example is Case VI.

In the case of women, where this mental declen-

sion exists, especially in early life, I have found uterine and vaginal symptoms almost invariably present. In a few I have found it due to habits of imprudence. But I care not to dwell upon this last variety. The symptoms, like those of spermatorrhœa, are too obvious to require comment here from me. Two other varieties, however—one caused by too frequent child-bearing, or hyperfecundation, and the other by oversuckling, or hyperlactation—require comment.

In cases of hyperfecundation we generally find, in addition to the general symptoms of mental and bodily decay before referred to, that general debility is more marked; and we may even have marked anæmia, pallor, eyes drawn, black marks under the eyes, which often look swollen and puffy. There is generally also more languor and heaviness than in ordinary cases, and heavy sleep instead of insomnia is often observed. Everything seems a trouble to do. The appetite is essentially fastidious, and hysterical symptoms persist. Two organs especially seem to be interfered with, and become the seat of constant disturbances—the liver and the uterus itself. An absolute torpor of the former, a hebetude of body and mind, indigestion and constipation go together, and the worn-out, ancient, wizened face completes the picture. This state has been graphically described by Dr. Inman on married life, in the *Medical Mirror* for 1866, p. 585, as one commonly observed in married men who

are excessive in their conjugal relations, but it is equally applicable to a case of hyperfecundation in the female. The torpor of the liver acts injuriously in two ways. First, the organ is not sufficiently excretive of biliary matters from the plasma of the blood, which is thus left impure and inadequate to the proper performance of its functions, and the whole bodily and mental organs become impaired. But for a sort of compensating action of the kidneys, the disease would be highly dangerous. But the urine is in many such cases intensely loaded, not only with lithates and hippurates, but with bile also. Secondly, the absence of a sufficiency of bile deprives the bowels of much useful ingredient for digestion, specially of the stimulant of the bile, which by increasing the peristaltic motion of the bowel ensures a daily evacuation. Indeed, the constipation in some of these cases is so troublesome that no relief can be obtained except by powerful and regularly continued purgatives, which in the end increase the debility and add to the mischief by producing more indigestion and abdominal pain. Case VII is an example of this kind.

But exhaustion from hyperfecundation shows itself in another way, namely, in the quality of the offspring born. In women who go on breeding children very fast, and who are already much weakened thereby, it not unusually happens, that the younger children are diseased—not only feeble in body but weak in brain power. Instances have not

unfrequently come under my notice, where the elder children of a numerous family were strong and hearty, in full mental and bodily vigour, while the younger have been liable to fits, well-marked scrofula, water on the brain, etc., and have also shown such evidences of eccentricity as would almost justify a suspicion of mental unsoundness. It has been shown by the Irish tables for 1871, that those families containing the greatest number of deaf mutes consisted of four, five, six, seven, and eight children. Unfortunately the number of insane or diseased children occurring in large families is not given in any analogous table. The great frequency of hereditary insanity is, however, fully admitted. The interchange of drunken, epileptic, insane, and intensely neuralgic parents who bring into the world children affected with one or more of these peculiarities was well shown by the late Dr. Anstie. Unfortunately, these tendencies are little understood, still less regarded, where affection mainly influences marriage, but the injury to humanity is not the less persistent. The public may not be prepared to admit it, but where we have to do with hyperfecundation in either sex we know not how far a race of beings is being developed in whom special unsound propensities in connection with their defective corporeal development may be produced. Insane impulses to the commission of absurdities, it may be of crime, are in such suddenly brought to light, and morally or

physically punished with undue severity, when a more careful investigation would call for pity and medical treatment. "Quem Deus vult perdere prius dementat" is true, and men will often commit the greatest errors of judgment; but how far in these results the parent is to blame primarily, is yet, perhaps, best explained by the scriptural expression, "that the sins of parents are often visited upon the third and fourth generation."

But a woman who has borne too many children and too rapidly, suffers in another respect. The fecundatory organ, the uterus, or its appendages, becomes diseased as well. The cervix ulcerates, becomes intensely sensitive; the uterus heavy and congested. The lining membrane is inflamed. Whether the poor creature be pregnant or not, there is a constant leucorrhœa, if not menorrhagia; sometimes the former to a very great extent, with all the distressing bearing down and backaches, and difficulties of walking, which are so dreaded by many women who have once experienced them and which makes their daily duties so exhausting. It is a marked peculiarity, also, in these examples that besides the mental deteriorations before referred to, as common to all cases of overwork, the mind of such women whose affections have been enhanced by such continued living with delicate and tender children, becomes anxious to a degree. They always look on the dark side of everything. The slightest illness of one of her darling ones is magnified into a most

dangerous disease. Life's troubles are exaggerated in every way; she has no longer the equilibrium of mental power needed to fight the battle of life.

The other cause of mental decay which affects essentially women is *hyperlactation*. In general, the symptoms closely resemble those of hyperfecundation, only that the organs of the *senses* seem to suffer more, and that there is more anæmia and cardiac trouble. The loss of power in the eyesight is often one of the first symptoms complained of, always worse during and after suckling; and if this warning is neglected, it may go on to absolute blindness—a blindness, moreover, which may become permanent. The same is true with regard to hearing, though to a less degree; and the creeping sensations in the back and extremities, formication of the skin, may pass on to partial paralysis. More sensation is felt sometimes on one side of the body than on the other, and the same disparity may be observed in regard to the power of motion. The taste even loses its keenness, accompanied as it is with loss of appetite, and a feeling of intense sinking, if not nausea, at the stomach. The anæmia and general pallor of the skin is more marked than in cases of hyperfecundation. In the last example sometimes the very act of pregnancy brings on a transient plethora, although after the birth the descent to an opposite condition will be more rapid; but it is not so with a case of hyperlactation. The breast draws from the very life's blood; and as the measures usually adopted by such women afford no

compensation, the quality of the blood deteriorates more and more; the heart's action becomes very weak; fainting, headaches, neuralgias, it may be partial dropsies, follow, while the brain being imperfectly supplied with blood, and that blood deficient in its red particles, the mind becomes more and more weakened and deteriorated, till, in fact, mania may give the finishing touch to the picture.

CHAPTER III.

MENTAL decay from overwork is not confined to persons of advanced or middle age. I have seen it in children and boys who have been overworked at their schools. I almost smile, but am forced to add, I have seen it in babies whose precocious intellect has been unusually encouraged, whether by some injudicious parent or ignorant nurse. The over-excitement of over-intelligent infants has often been followed by tubercle of the brain or hydrocephalus. This is matter of common observation, and it looks very much as if the two circumstances were in relation of cause and effect.

But it is not with such young children that I have to do. It is chiefly with those cases more generally known as over-pressure in education. Few boys among the better classes have many cares other than those of their studies. Among the lower classes the case is different. Privation, want, improper clothing, and often unkind treatment at home, give them an early acquaintance with many worries, and deterioration in body and in mental faculties is the result.

Fortunately for me, these two aspects of the case have been already ably investigated—that of the better class of boys and girls by Dr. Hirtel, Municipal

Medical Officer at Copenhagen, in his work on the high schools in Denmark; that of the lower classes by Dr. J. Crichton Browne, in his Report on the alleged over-pressure of work in public elementary schools in England.

At the outset let me remark that a child is a growing being. Hirtel gives us a good table of this influence:—

Ages.	Increase in Height.	Increase in Weight.
9-12	5·71	19 lbs.
13-16	9·37	44 lbs.
17-20	2·43	23 lbs.

The period thus from 13 to 16 is that when a boy grows most, and when necessarily the strain is greatest on his body. It is a period in his life in which the body as the agency of the mind, and the mind as the future channel of his success in life, should be most carefully and wisely trained. A "mens sana" can only exist in a "corpore sano."

The physiological functions of the human body must also be well performed. The activity of the brain depends upon its proper nutriment by healthy blood; and the circulation itself, and the production of animal heat, during which processes alone nutrition can be carried on, depend on the activity of the lungs and their unimpaired force. Sufficient sleep is likewise a necessity.

In the adult, according to Mr. Hutchinson, the resistance to the ordinary breathing force (indepen-

dently of the elastic power of the lungs) is equal to the lifting up of more than 100 lbs. at every ordinary inspiration. And this elasticity of the chest walls which present this resistance is, in proportion to the size of the thorax, nearly as great in the infant as in the adult. But how much smaller is the muscular power by which this resistance is to be overcome (West on "Diseases of Children," 5th ed., p. 274). In addition we have another obstacle to be overcome, the elasticity of the fibrous investment of the lungs throughout its structure. This elasticity which tends to expel the air introduced in the lung during inspiration is in a male adult equal to the resistance of raising 150, and in the female 120 lbs. Children have a similar resistance in like proportion to meet—and with their naturally weaker muscular power they may fail entirely to fulfil the function, and so the blood is imperfectly aerated. The processes of nutrition are imperfectly carried out, wheresoever there is innate or acquired debility.

The baneful effects of insufficient food must therefore be operative for great evils in growing children. Now, in the classes spoken of by Hirtel we have children well cared for in regard to nourishment. In those discussed by Sir J. Crichton Browne, large numbers of our London waifs and city arabs, many of whom are often in want of the common necessaries of life, are included. It is not therefore to be wondered at if among such, many show evidences of premature decay.

In fourteen schools mentioned by Hirtel having a total of 3,141 boys, there were healthy 1,900 or 60·5 per cent., unhealthy or sickly 978 or 31·1 per cent., not returned 263 or 8·4 per cent.

Dr. Hirtel goes into the various classes in the schools, and gives the results in each. To follow him in these details is scarcely necessary here, particularly as his general conclusions are more concisely stated and more to the purpose, he adds: "If we now review the facts we have collected we find that a considerable proportion of children, 18 per cent. or about 1-5th are sickly and weakly on entering school, which shows that the children who come to school are weakly or have often a tendency to ill-health. For this the schools cannot be held responsible. But when this percentage of weakly children after a couple of years advances to 30 per cent., and suddenly rises to 40 per cent., shortly before puberty, this proves the injurious effects of school life either alone or in conjunction with developmental processes. Subsequently as the body recovers itself after its supreme effort of growth, the percentage of sickly children is only reduced to about 30 per cent. at which it remains throughout the highest classes."

He adds that, whereas the average proportion of sickly children is 31 per cent. for the total number of schools, it ranges between 25 and 35—in one school being as high as 39 per cent.

Speaking of the special diseases, out of 1,900 boys

at school Dr. Hirtel obtained the following results per cent.

Anæmia	12	Curvature of spine..	1
Scrofula	18	Diseases of the eye	4
Nervousness ..	19	Other complaints ..	10
Headache	24	Casual	5
Bleeding at the nose	9		

Total ..	Healthy ..	60·5
	Sickly	31·1
	Not returned ..	8·4

A result like this obtained among well-to-do scholars is sufficiently alarming.

It would be a great advantage if we were enabled to draw a comparison of the effects of schooling between boys belonging to the better classes, and those found among the poorer children, with such in fact as attend our ordinary board schools. That comparison is, to a certain extent defective, because the same diseases are not always given for comparison, but the general conclusions for both classes are quite as unsatisfactory, and point to the marked evil effects of overwork. In Sir J. Crichton Browne's report to the Education Department in reference to these schools, he tells us simply that the general result of his observations on the schools he had visited was, that occasional over-pressure in these schools did exist to some extent, and that it is even now exerting appreciable evil effects, which, if unchecked, are likely to entail very serious consequences in future generations.

The mistake is mainly this, that irrespective of the child's special talents (which it appears to me should be of the first importance to find out), they are all trained to obtain the same degree of knowledge on all the subjects taught, not to a moderate degree only, but to a maximum result.

The special evil influences in this training have been well shown by Sir J. Crichton Browne. They are first *detention* after school hours, say from 15 minutes to 1½ hour per diem., for 6 weeks to 2 months at a time. In some instances as many as 50 per cent. are so detained for 6 months in the year.

2nd. *Home lessons.* Although in board schools, as a rule, these are not very numerous, still they do exist, and as the boys are thereby often deprived of sleep, it is an irksome and injurious practice.

3rd. *Overtaxing the Intellect of Backward Children.* In a school there may exist say twenty to thirty clever children, forty to sixty average clever children, and twenty to thirty backward children. To work all these in the same manner, to expect as much as possible from each is clearly opposed to common sense. As one of the teachers observed to Sir J. Crichton Browne "not only do these dull children break down in health under our manipulations, but they grow more stupid, seeming to lose in general intelligence what they gain in mere technical knowledge of reading, writing, and arithmetic. Their last state is worse than their first."

But these backward children admit of being

divided into three groups—the dull, the starved, and the delicate. "Among the *former* may be reckoned many in whom cerebral and mental development has been arrested in early baby times; defects of form and mind due possibly to parents, inherited, or the result of mental disease, drunken habits, and other vicious propensities, epilepsy and such like from parents."

Among the *starved*, or half-starved, or imperfectly fed, clothed, and warmed, is it probable that they can keep up with those who are placed in every way in a better condition? Sir J. C. Browne tells us he visited one school, in which the mistress assured him as many as eight per cent. came without breakfast in the midst of winter. In another school he found the percentage of children who came also without breakfast in three different standards to be nine, ten, and seventeen; and some received only a piece of bread in the course of the day while at school from the mother who, in the meanwhile had been earning a few pence. Other children are left wholly unprovided by their parents and forage for themselves as best they may. One case is given where a boy immersed in the study of geography, not only had not had a breakfast, but his whole dinner consisted of two rotten oranges thrown away from a huckster's stall. I myself have seen the little arabs loitering about Covent Garden, seeking to pacify the cravings of hunger by picking up the refuse of fruits thrown away from the stalls, and the severity with

which they were driven away by those who ought to have known better, proved how little of the milk of human kindness they had in their hearts. The fed group includes the delicate children. The starved children must in course of time assume this character. What shall be said of the cripples, the consumptive, the strumous, those suffering from brain disease, suppurating glands, who should have so much more additional care and sympathy, but who are treated in exactly the same way, and worked at exactly the same rate as healthy children.

I have already shown the causes of insanity in the United Kingdom. Let us see how far any conclusion may be arrived at in regard to school ages.

1881. *Number of Idiots or Imbeciles, and Lunatics.*

	All ages.	0—	5—	15—	20—
Idiots and Imbeciles.					
Males	16,105	275	2,868	2,208	1,956
Females ...	16,812	176	2,002	1,704	1,690
Lunatics.					
Males	23,684	6	83	371	1,153
Females ...	28,102	6	81	386	1,087

Number of Insane Male and Female at successive age periods per million of persons enumerated of corresponding ages and sexes.

1881. Ages.	Total.		Lunatic.		Idiot or Imbecile.	
	M.	F.	M.	F.	M.	F.
0—	159	103	3	3	156	100
5—	993	700	28	27	965	673
15—	2,034	1,634	293	302	1,741	1,332
20—	2,777	2,284	1,037	894	1,740	1,390

I regret that I cannot give for comparison the similar results for 1851, 1861, and 1871. Annexed, however, is a list of the number of lunatics in asylums. Although it is not stated that the number quoted for 1881 is also for asylums, I quote them under that impression.

Inmates of Lunatic Asylums, England and Wales.

		All ages.	Under 5	5—	10—	15—	20—
1851.	Males ...	8,999	3	30	71	211	525
	Females...	9,804	3	16	35	143	488
1861.	Males ...	11,249	—	20	72	272	683
	Females...	13,096	—	11	46	241	705
1871.	Males ...	16,545	1	14	64	317	851
	Females...	19,245	1	8	37	308	906
1881.	Males ...	23,684	6	83	—	371	1,153
	Females...	28,102	6	81	—	386	1,087

This table however, only shows that the absolute number of cases of lunatics during the educational periods is much greater now than formerly.

To what can we attribute this increase of insanity, if it be not to the overpressure of boys and girls during the educational periods. Insanity after all is only a phase of the intensified neurotic diathesis or temperament of the age. The sthenic form of diseases which existed some fifty years back, has given place during the last thirty years to asthenic diseases. Bleeding well borne in the first period, became dangerous in the second period. Typhus and typhoid took the place of sthenic fevers and plethoric temperaments. These served to weaken the following generation,

and then intense study and great discoveries in science, as before said developed the strongly neurotic generation of the present day. Is not this precisely what we should gather from the experience of the school work of the present day. That the hydrocephalus, cephalitis, sleeplessness, headaches, and a host of other nervous diseases, dependent upon brain unhealthiness should result, might have been readily foretold.

The returns of the Registrar-General enable us to draw some conclusions from the first two diseases mentioned above, viz., hydrocephalus and cephalitis.

Rate of Mortality per Million Persons Living, 1861-80.		All ages.		Under 5 years.		5 to 20 years.		20 years and upwards.	
20 years	1861-80 ..	333	233	2·056	·934	156	176	8·4	92·
5 ,,	1861-65 ..	364	185	2·366	·677	138	150	3·3	84·
5 ,,	1866-70 ..	333	204	2·091	·774	150	163	5·	87·
5 ,,	1871-75 ..	314	237	1·906	·949	155	179	9·7	94·
5 ,,	1876-80 ..	324	294	1·912	1·272	177	206	14·4	102·
		1	2	1	2	1	2	1	2

(Quoted by Sir J. C. Browne.)

Statistics upon so large a scale, and upon diseases which do not kill, are not available for reference. But the same author has given us some tables, which may be here summarised for two affections—headaches and sleeplessness. The former is evidence of over brain pressure, especially when we notice that it is greatest after the daily heavy work is concluded. It is the proof of brain exhaustion. When this persists

in children it is always an ugly symptom. It is, like sleeplessness, a very early sign of brain disease. The second is an evidence of an overworked, as well as of an *ill-nourished* brain. We know what a serious indication it is in cases of drunkards or old age. It is the prelude of delirium tremens or *delirium cum tremore*. In his Report on the Elementary Schools Sir J. C. Browne shows the influence of the six standards of education in the production of these conditions.

Boys and Girls.	Headaches. Percentage.			Sleeplessness. Percentage.
Standard.	Morning.	Afternoon.	Evening.	
I.	14·5	21·	7·5	41·7
II.	13·3	23·3	9·9	50·3
III.	11·2	22·7	10·3	46·
IV.	9·3	24·4	13·1	31·5
V.	13·1	19·8	15·3	10·1
VI.	12·8	20·7	22·8	5·6

Then come those cases where the overworked would gladly sleep, but do not get a sufficient number of hours allowed for rest.

In the better class of schools, Hirtel shows that four per cent. in the mixed classes, 12 per cent. in the modern, and 18 per cent. in the classical classes, do not get sufficient sleep. The period varying from 7·5 to 9 hours, which for children is not sufficient, some of whom even work eleven hours, daily, and do not go to bed before eleven o'clock at night.

With girls the same is observed. Between seven

and nine years old, 4 per cent. had only nine hours sleep; 5 per cent. of the ages of ten to twelve had 8·5 hours sleep; and 19 per cent. of the ages of thirteen to sixteen, eight hours sleep. Average 8 per cent.

It has been impossible to define as accurately the number of hours the children of the elementary schools sleep. From the table above given, sleeplessness does not appear to act so injuriously on the elder children. One obvious reason is that they need sleep less than the younger children. But when we are told that in a school of 391 boys, 129 were sleep talkers and 28 somnambulists, this school being one in which home lessons were enforced, and that in a school of 432 girls 17 were somnambulists, and again that in one of 382, 20 were somnambulists, such sleep can scarcely be regarded as good and nutritious sleep. St. Vitus dance and chronic antics also appear to prevail in many of these schools, doubtless the result of over-pressure, although not reaching the extent of 20 per cent. as in some New York Public Schools" (*op cit.*). The occurrence of neuralgia among elementary schools in London, varying in the first five standards from 59 to 47·5 per cent., of squinting varying from 1·7 to 5·2, and of short sightedness from 2·5 per cent. to 5·6, are all evidences of the same character. The Government Commission on the state of health of the children in Danish schools of Copenhagen, reported the percentage of short sighted boys to be :—

No. of Class	I.	II.	III.	IV.	V.	VI.
Per Cent.	14·7	15·1	29·6	27·2	38·3	45·5

Showing that with increasing years and prolonged study that the disease increases.

Truth and justice compel me here to make some remarks on a subject I would fain not have referred to. In judging of the over-pressure in schools we must not omit to recognise the influence of unholy and evil habits which prevail in some schools, and which, after what I have said explain a good deal of the bodily and mental weakness among school children. Those who have read that extra-ordinary French work "La Premiere Flétrissure," can comprehend to what an excess such habits may be carried on and tolerated. I have heard a student from a French Elysee in more mature years, remark, ah! "ce que nous fesions la, c'etait des infamies." Schools even in England have been closed for the same reasons. All this is a sad commentary on the natural depravity of the human heart. I would it were not true, but I am thankful to add such instances with us as compared with many other countries, are few and far between.

The same overpressure is evidenced with regard to pupil teachers. "In the elementary schools of London they appear to be selected, both for the healthy vigour of their bodies and their superior intellectual power, and yet they degenerate in both respects from the nature of their occupation. The Code says that the pupil teacher shall work not less than three nor more

than six hours daily, and not more than twenty-five hours weekly, and yet *op citato*, it would appear that out of 388 pupil teachers of both sexes,

37	worked	25 hours.	17	worked	33 hours.
29	„	26 „	8	„	34 „
42	„	27 „	14	„	35 „
55	„	28 „	8	„	36 „
34	„	29 „	3	„	37 „
70	„	30 „	10	„	40 „
28	„	31 „	2	„	41 „
31	„	32 „			

But this by no means includes all the hours employed in study. They have to attend centres, *i.e.*, schools where they meet for being instructed themselves. They have to prepare themselves for these separate studies in addition.

The following table indicates this amount, also distinguishing those who take the half holiday on Saturday :—

388 *Pupil Teachers.*

Numbers of hours at which Pupil Teachers leave Off Study.			Time devoted to Study on Saturday afternoons.	
Hours.	On Centre Nights.	On Non-Centre Nights.		
8.30 p.m....	94	2	Take ½ holiday	99
9 „ ...	26	18	Work 1 hour	66
9.30 „ ...	81	39	„ 2 „	52
10 „ ...	121	131	„ 3 „	98
11 „ ...	50	142	„ 4 „	66
12 „ ...	16	56	„ 5 „	7
	388	388		388

And after all this over-work are the teachers better qualified to teach? Are they happier? Are they more free from anxiety? Are they physically healthier?

First, as regards their mental improvement, the reverse is observed. The Minutes and Instructions of the Educational Department state that it is deplored that pupil teachers at the close of their engagements should possess so scanty a knowledge of arithmetic, geography, grammar, and history. Their mental qualities have deteriorated.

Second, are they happy? "Their very expressions of countenance are saddened. Their brows and frontal regions may have expanded from mental exercise, but vivacity and vigour are gone. They feel work to be a greater exertion each week. The youth of mental energy is gone and given way to a premature psychical senility. The exhaustion of brain is evinced in every relation of life." Is it a wonder, therefore, that those in whom the centre of nervous power is so prematurely exhausted should be weak in physical power, and especially obnoxious to disease?

Upon this point we have a few examples given us by Sir J. Crichton Browne. Out of seventy-two cases of teachers which he collected, the ages being between fourteen and eighteen, the death or retirement was due to the following causes:—

	Number of Cases.
Consumption	22
Brain fever	13
Nervous exhaustion and headache	9
General debility	9
Loss of eyesight	4
Epilepsy	3
Insanity	2
Heart disease	2
Loss of voice	2
Neuralgia	1
Chorea	1
Dyspepsia	1
Uterine disease	1
Spinal curvature	1

Again, out of 456 cases, 271 were absent owing to ill-health for more than one day in the year, and sixty-two for more than one week, and 238 when interrogated, declared they were weaker and less healthy than when they first became pupil teachers.

As with the pupils so with the teachers, out of 80 cases selected, headache was a common affection. In the first year affecting 62·8 per cent. In the second 52·9, and in the third 71·4 per cent. It was also invariably most severe at night, out of thirty-nine cases the percentage of headaches was in the morning 7·9 per cent.; afternoon, 19 5; and evening, 37· per cent.

The various neuralgias gave analogous results, out

of fifty teachers selected 37·2 per cent. were affected in the first year, 56·1 the second year, and 61 per cent. the third. Again, out of 414 cases 12·8 per cent suffered from short-sightedness the first year, 15·8 per cent. the second year, and 19· per cent. the third year."

There are no class of teachers which call forth to my mind more pity than the class of governesses. For the most part they are ladies born and bred, and who have seen better days. The saddened change in their surroundings has already troubled their young minds. Perhaps the loss of parents as well as of fortune has embittered their position. Often inexperienced in the snares and wickedness of the world, yet obliged to wage the battle of life singly and unprotected. If they are good looking and elegant, perhaps those who employ them, belonging it may be to an inferior class and position, are unable to appreciate their womanly qualities, and for this very reason perhaps they may be treated with unexpected harshness. Hence the over sensitive mind of the governess is deeply wounded. Treated not unfrequently less respectfully than the hired servants, because the former are more easily replaced than the latter, they receive less consideration. Obliged to put up with the rudeness and incivility of spoilt children, and constantly to fight with them to make them study at all ; misrepresented, scolded, neglected, and yet obliged to bear it all with a meek and quiet spirit. Sent out at all weathers to take

walks with children, often unmanageable, and yet held responsible for their good conduct; the walks not moderate and reasonable, but prolonged and rendered more trying because of the unruly children, her day is one continued trial. Often racked by bodily pain, without sufficient sleep or rest, early in the morning till late at night, and last, not least, as a result of all this want of consideration, exhausted, fatigued, overworked, a womb disease is frequently developed, giving agony in the prolonged walks and anguish in the aching heart, and converting what was once a strong, happy healthy girl into a wretched withered creature, doomed ere long as an invalid to be laid by, it may be for many years.

It is true another side of the picture reveals a brighter prospect. There are many ladies who have feeling hearts, and whose souls are replete with kindness and consideration. Among such the condition of a governess may be a happy one; a friendly and motherly hand may lead them sweetly on, and help them in the battle of life. But at best the toil of a conscientious governess is a struggle, the life one of the greatest unselfishness and trial.

It would be bad enough if these evil consequences were restricted to the class we have been speaking of, but it has far more serious results in the future. "The nervous system of a woman," says Hirtel (*op cit.*, p. 106), "is far less truly energetic and is less able to endure sorrow and misfortune than that of the man of stable temperament. The nervous man is easily

affected by trifles, and becomes irritable and capricious, in short, he loses all the mental equilibrium and physical endurance which a healthy man possesses. Instead of a hearty and natural enjoyment of the blessings of life, a morbid craving for sensuous pleasure asserts its dominion over him, for an enfeebled nervous system requires constant stimulation. Women are more quickly affected because they have, as a rule, a smaller stock of physical strength than men. Many a woman who has to support herself by her own efforts, suffers from this anæmic nervous state. She is never quite well, never happy and contented, and is often obliged to give up the work she has undertaken, because her bodily strength fails her. And as regards the married woman, who has a house and children to look after, we all know how difficult it often is for her to fulfil the important duties which devolve upon her, not so much from want of will as want of strength. We all know how often a home under the guardianship of a woman thus enfeebled gradually exchanges its air of happiness and contentment for one of gloom and carelessness! The children's training suffers sorely in consequence; on the one hand they are petted by the anxious mother who is afraid of the slightest cold in the head, and thereupon wraps them up in great coats and comforters, and forbids them to go out if there happens to be the least wind, while on the other hand, when in the house, they are not allowed to stir lest they should make a little noise, but are enjoined to sit

still with a book in their hands, or to engage themselves in some other quiet occupation, because their mother cannot endure their exuberance and restlessness, which are inseparable from sound and lively child-life, where the natural tendencies is to do anything but sit motionless in one place for any length of time. The mother suffers from their noise, she is fatigued by their restlessness, by their running about and constant questions, and therefore she tries as far as possible to repress them. Thus the children are prevented from running outside and from stirring at home. They are petted at one moment and scolded without any justification in the next, their whole training is carried on without proper consistency and earnest method."

Put such a mother and such children, with small means and in apartments, how every mismanagement and misery in that house is intensified. If mothers fly to stimulants under this sort of life, if children run to rack and ruin under such tutelage, it is not to be wondered at, it is rather to be expected. The weakened mind of the parent, the breaking of a child's spirit, or its transition into one of revolution and resistance, must sooner or later complete the misery of that home. The children nurtured at home, under this misplaced affection, prejudiced overcare, and irregular discipline, once free will break forth into violence, unrestrained passion will lead to hideous vices. The mind of the child as well as the parents has undergone premature decay. The overwork here

is not due to mental developments towards virtue, but to progression towards vice in all its uncontrollable power and destruction.

There are a class of persons whom I cannot omit to mention, because they are mostly found among the best of men in the religious world. It has been said that no life is so easy as that of clergymen. They reach many of them patriarchal ages, because free from the usual anxieties of life and ever carrying on the even tenor of their way. I think this may be true for country clergymen and for rural districts. I am sure it is not true for many town districts. Incessant work, preaching, visiting, teaching, directing, early and late, frequent, if not continued, harass many a true working parish priest. I have heard many a clergyman maligned because he took too long a holiday, but with them it is a *sine quâ non*, if they are to recuperate their strength. Often it is not possible. With means so limited that they may often have scarcely wherewith to keep body and soul together, the anxieties of the battle of life coupled with their parochial duties are more than they can meet, and thus they break down in health and lose their capacity for work. (See Mr. T.'s case.) I once remember hearing a very distinguished nonconformist minister inveighing with great severity on the holidays taken by clergymen of other churches. He was then strong and hearty, and did not feel the need of them. Later on rheumatism and gout so afflicted him that he was

forced to leave his congregation for months and months together, and seek in the sunny regions of Italy for repose and rest. He was a splendid preacher, and words of holy wisdom seemed to proceed out of his mouth, but it might well be said in contrasting the customary recreations taken by more worldly persons, and his own increasing devotedness to his work, "that the children of this world are in their generation wiser than the children of light." He was an excellent biblical scholar, but he had forgotten that even the wise Solomon had a house also in the forest of Lebanon whither he repaired, doubtless for rest. Also that our blessed Saviour himself, often journeyed to the sea-side, or sought refuge in gardens, and high hills, in the midst of his great work doubtless to recuperate his strength as a man in the midst of his grand efforts to regenerate mankind. What is true of clergymen is true for a host of layworkers in connection with their Christian work. The city missionaries, the bible readers, the bible women, the lady visitors, have no sinecure in the work, which they willingly adopt of their own free will, and much more which is put upon them, because they are so willing, but which nevertheless is far above their strength. It is said they will have a greater reward hereafter. I do not presume to doubt or dispute this, but I do say, that had they used a little more method and more reason in their work, they would have maintained their strength, and possibly done

even more useful work. It is not because persons are holy, or saint-like that they cease to be men and women, and can afford to set at nought the laws of physiology and common sense, which God himself in his paramount wisdom ordained.

There is one more class which requires notice. Those men and women engaged in providing for the fashions of the well-to-do classes. The long hours of shop girls, and the long time they are obliged to keep in the erect position ; the sweating system practised on the very poor sewers and seamstresses to enable articles to be sold cheap. The use of heavy sewing machines and the impure air of many of the rooms they inhabit, aggravate their condition. In fact, it is the "Tale of a Shirt" in endless varieties. Such work, coupled with deficient food and clothing for themselves, crushes the spirit of many workers, and leaves them miserable invalids without rest or change, Many fall often into a premature grave, after they have unfortunately brought forth a weak and diseased progeny, too deteriorated to make strong men or women hereafter, and tending to fill our infirmaries and workhouses with stunted invalids, alike objects of pity and disgrace to the land.

ON THE CAUSES OF MENTAL DECAY.

After having reviewed some of the symptoms and results of overwork, we are now in a better position to consider more exactly some of the causes of pre-

mature mental decay. Here, also, we attain to a more exact knowledge of them by considering some of the causes of the twin brother, insanity.

Report of the Commissioners in Lunacy, 1883.

Causes of Insanity in Patients admitted into Asylums in England and Wales during 1882.

Total admission ... { Male ... 6,663 / Female ... 6,918 } 13,581

Dividing the causes, separate or combined, into moral and physical, we find as follows:—

	Male.	Female.	Total.
Moral causes	1,597	1,898	3,495
Physical causes	7,366	7,601	14,967
Total	8,963	9,599	18,462

N.B.—The excess of the totals of the several causes exceeds the whole number of patients owing to the fact that combination of causes may co-exist in any given case.

Dividing the moral causes under the following heads, we obtain further information:—

Out of 1,000 *Cases.*

	Male.	Female.	Total.
Overwork	89	67	156
Domestic Bereavement	45	107	152
Pecuniary Losses	98	39	137
Religious Excitement	24	40	64
Love Affairs	8	31	39
Fright and Nervous Shock	7	22	29
Total	271	306	577

N.B.—Some of these causes were associated with physical causes, such as intemperance and other excesses.

From a table given us by the Census Commissioners for Ireland in 1881, we have the number of insane persons and lunatics generally in all Ireland, in which the several causes of that unsound mental state are specified.

And here we can speak more fully of these causes under the four heads, moral or mental, physical, hereditary, and unspecified, are thus set forth :—

	Moral or Mental.	Physical.	Hereditary.	Unspecified.	Total.
1851	847	954	363	7,816	9,980
1861	815	708	455	12,120	14,098
1871	950	932	727	13,896	16,505
1881	1,748	1,540	871	14,254	18,413
Mean .	1,040	1,034	604	12,022	14,749

—from which it appears that physical causes are greater feeders of insanity than moral causes. It is also instructive to note the relative frequency of these moral causes. Out of 1,000 cases there were from—

	1871.	1881.
Grief	165·1 ...	147·5
Religious excitement ...	79·1 ...	89·1
Love and jealousy ...	67·4 ...	42 8
Reverse of fortune ...	57·9 ...	66.6
Terror	51·0 ...	89·1
Anxiety	24·4 ...	10·3
Study	22·8 ...	19·7
Unspecified excitement ...	14·3 ...	—
Undefined moral or mental causes	9·0 ...	—
Pride and ambition ...	6·9 ...	14·6
Ill treatment	2·6 ...	3·9
Political excitement ...	1·0 ...	—
Passion	·5 ...	—

Thus, study forms but a small per-thousandth compared to grief and religious excitement.

Again, we find it stated that with regard to education there were in Ireland per cent. :—

	Educated.	Uneducated.	Educated state not specified.
1851	37·1	62·5	·4
1861	39·2	58·6	2·2
1871	43·9	53·2	2·9
1881	46·1	53·9	—

it is manifest therefore, that education of itself is not so prolific of insanity as want of education. When, in addition, reference is made to the division by classes, we find there were 175 examples of insanity among the literary and educational class; 40 of these were from moral and mental causes; 18 from physical; in 16 the disease was hereditary; and in the remaining 101 no cause was specified. Of the 40 cases arising from moral or mental causes, 19 were attributed to over-study, 7 to religious excitement. The occupations of this class embrace 102 teachers, 64 students, and 9 businesses. Whence, I think, we may conclude that where over-study brings about mental decay, it is reassuring to find it is chiefly because some other active agency is also at work, and which materially aids the downward tendency. This cause I believe to be *worry*. Indeed, it is deducible from the table given above.* Grief and anxiety, especially the former, add immensely to the untoward deterioration of mental power, the cases of which, indeed, far exceed those recognised as due to known injuries and diseases of the head and spine, which respectively afford only 55 and 43. There is also another circumstance which is encouraging in these results, that the mental decay which occurs from overwork would appear from these tables to be often cured, as the number from this agency among the insane is not over-numerous.

* See Appendix also.

2. There can be no doubt, however, that one of the most prolific influences of mental decay is the constant pursuit without change of a particular subject. Excessive fatigue of a particular brain department, brought on by harping upon the same continual theme to the disparagement of all others, is most unwise. How, otherwise, shall we explain the decadence of those who, having passed a blameless, holy, and religious life, committed no excesses, have been ever prudent in their habits, and yet have gone mad? For instance, seventy-nine per thousand become insane from religious excitement. Upon this point the Census Commissioners for Ireland report: "On the present occasion (1871) the next most frequent among the moral or mental causes of insanity was religious excitement (second), to which 149 cases were attributed (79·1 per 1,000, all cases), the female sex numbering 100, and the male only 49. The cases arising in 1861 from this cause were third, and in 1851 fifth, in numerical order of those of a moral or mental nature, and on both occasions, as well as the present, the female sex was in the majority. We may naturally infer from the increase of the number of cases from 55 in 1851, and 110 in 1861 to 149 on the present occasion, as well as from the higher place it occupies, according to numerical order, that religious excitement is becoming a more frequent cause of insanity" (pp. 73, 74). This year the proportion is higher still, viz., 89·1, the actual numbers having increased to 293. This can be seen

from the following extract from the Report of the Census Commissioners for Ireland for 1881, and from the table on page 57. The total number of cases in which the cause was stated amounted in 1871 to only 2,609; in 1881 the number reached 4,159, of which 1,748 were attributed to moral or mental causes; 1,540 to physical causes; and 871 were returned as hereditary. Of the moral or mental causes, the largest number were attributed to grief (485); terror and religious excitement each (293); reverse of fortune (199); love and jealousy (141); and disappointment (130). None of the other items in this class reached 100.

If we reflect on this result we are forced to conclude that it never can be true that to pursue a religious course of life, or to be anxious and sorrowful sometimes, is wrong. It must rather be that these workers have pursued the one or endured the other to a foolish or mischievous excess. They have not sufficiently varied their mental travail. For as in the material, so it is in the spiritual. Variety of food is essential to the proper nourishment of the body. A dog fed constantly on white bread would die of starvation in three weeks; the same would be true of sugar, fat, &c., or other simple foods singly given. And even where the food is nutritious, if the same kind of food be long persisted in, the stomach comes at last to loathe it. So the rebellious Israelites found it with their manna—nay, it was made part of their punishment. "Ye shall not eat one day, nor

two days, nor five days; but even a whole month, until it come out at your nostrils, and it be loathsome unto you" (Numbers xi. 19, 20). So said the favoured Romish priest: "Helas! toujours perdrix;" and so it will be with any mind which, without change, is made to feed on the same spiritual food, however glorious and good. Perhaps this may be one of the reasons why evil and indifferent spiritual food is allowed to co-exist in the presence and by the side of the good spiritual food, It is the very contrast and difference that makes us appreciate the more that which we customarily cultivate. All work and no play will not only make Jack a dull boy, but also a stolid man. Old Jethro, the priest of Midian, was surely wiser in his generation than even the gifted Moses. "The thing that thou doest," said he, "is not good. Thou wilt surely wear away, both thou, and this people that is with thee: for this thing is too heavy for thee; thou art not able to perform it thyself alone" (Exodus xviii. 17, 18). I well remember a conversation I had with the late Dr. Golding Bird a few weeks before his death. He was then in the zenith of his popularity, and recognised by all as one of the ablest of our London physicians. I called upon him one morning with a relative to consult him. Several other medical men had preceded me. His rooms were full, and I had to wait three hours ere I could obtain admission into his study and consult about the case. I congratulated him on his success in practice. "Yes," he

said to me, "you are right; but I wish, nevertheless, to make your remark a text for a little parting advice. You see me at little over forty, in full practice, my rooms full. I am making my several thousands per annum"—I think he said seven—"and if I die to-morrow I do not leave as many hundreds to my family. All this I have done by sheer perseverance, increasing hard work, and no holiday; but I am to-day a wreck. I have fatal disease of the heart. I know I cannot live many months—the result of anxiety and hard work; and my parting words of advice to you are these: *Coûte qui coûte,* and never mind at what loss—take your six weeks' holiday. It may delay your success, but it will ensure its development; otherwise you will find yourself at my age, a prosperous practitioner, but a dying old man." Six weeks after this conversation he had put off his earthly tabernacle.

Here is a case in point quoted from a recent periodical:—

"OVERWORK.—The sad death of the Rev. ——, Dean and Senior Fellow of a College, Cambridge, by his own hand, last Saturday, adds another name to the list of those who have fallen victims to the failure of an overworked brain. Mr. —— was a most distinguished classical scholar, and his career at the University had been unusually brilliant. Since last Christmas, however, symptoms of nervous exhaustion plainly exhibited themselves; he had become irritable in social matters he could not

devote his attention to his work for more than two hours at a time; on one occasion his sight had failed him, and his nights were sleepless. His colleagues stated at the inquest that during the last term he was unusually hard-worked, some heavy examination papers being required from him. These facts throw a strong light on the catastrophe. Such untimely deaths ought, however, to make others timely wise, and we hope this sad lesson may not be altogether lost. We have no doubt that had Mr. —— given himself a little rest when the symptoms of nervous exhaustion first appeared, he would have been spared to complete an active and useful life. Unfortunately, in the majority of instances the first symptoms are neglected or compromised. 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 all active life is rendered imperative."—*The Lancet.*

Fortunately, many of our hard workers are more prudent. Custom, perhaps, more than personal prudence, is responsible for this result. It is notorious that clergymen and lawyers are generally long-lived—few are more hard-worked mentally, but few also have longer vacations.

3. I have spoken of worry as a powerful adjuvant of premature mental decay in a person suffering from overwork. I must make a short reference to *sexual*

excesses, or even sexual imprudences, to use a milder term, as an equally powerful accelerator towards mental decay in overworked individuals. I have often been struck at the combination of these in men occupying high positions, and the rapidity with which this continual action hastens an unhappy termination. I have noticed it especially in old men, generals, or men of science, who marry young wives. A strong hale old gentleman becomes a wreck perhaps within the year. I knew some years ago a man of science, whose works are well known and much appreciated. To see him at home was to see the most miserable man in creation. He was ever a very active man in his conjugal duties, and acted most unreasonably in this respect. But I could not arrest his extraordinary conduct, although I often cautioned him solemnly on the risk he was running. His wife, more sensible than himself, tried equally to restrain him, but to no effect. Fancying death imminent every day, or quarrelling on the slightest provocation, were some of his most troublesome characteristics. He has since paid the penalty of his imprudence.

The words of that distinguished and learned physician, Dr. C. J. B. Williams, on this subject graphically enunciate the truth. "Various hæmorrhages and discharges, menorrhagia, diarrhœa, leucorrhœa, and other things, if in excess, reduce the powers of life and the capacity to resist disease. No secretion, however, weakens so much or so irreparably, when in excess, as that of semen. In

many of the lower tribes of animals the males live till they copulate, and then die; the reproduction of the species is at the expense of the individual. That our species is not wholly exempt from this law of organised nature is apparent from the fact that immoderate venery is known to produce extreme debility and premature decay, and to dispose the body and mind to various diseases." ("Principles of Medicine," second edition, p. 13.)

Much will depend on the meaning of the word immoderate. But I believe that very little becomes an excess in a man who is actively working his brain daily, and without giving it adequate rest. It is tantamount to burning at the same time the candle at both ends.

4. Want of sufficient sleep is often a contingent cause of mental decay among overworked persons. I am not speaking here of want of sleep when it occurs as a result or symptom of an overtaxed brain, but when it is a cause. The habit may be acquired, but it will surely tell in the end. Early to bed and early to rise have long been praised as conducing to make men healthy, wealthy, and wise. But, alas! it is not possible in the present day. I often pity in this respect those engaged in printing and posting departments, our hard-worked members of parliament, our busy doctors, our young men at their studies and nightly vigils. But a man who really wishes to succeed must work, and when occupations or studies are so extensive the hours of day

do not suffice. I once knew a young man who, with good abilities and powerful intellect, had yet one failing—his memory was bad. He was thus compelled to work the harder. This was his rota for a year: He got up at 8. Breakfasted at 8.30. Began his work at 9, and, except half an hour at 1, was reading and working incessantly till 5.30. He then dined at 6 to 6.30. Then laid on his bed till 10. Then he got up, and worked the first six months till 2 a.m., the next six months till 4, keeping himself awake by strong coffee. On Sundays he certainly rested. He took a good degree, and passed better than many of his compeers; but for years he lost all his spirits, became temporarily deaf, and was so weakened that insanity, if we may so judge from a strong suicidal mania, threatened to occur. He fortunately completely recovered; but others have shared a sadder fate, and many a bright student has passed off into a stolid man, because he cheated his brain of its proper complement of sleep and refused to give it rest.

Educated Lunatics and Idiots According to their Occupation, Ireland, 1881.

Accountants	...	...	1
Agents	...	...	8
Officers	...	...	22
Artists	...	...	2
Barristers	...	...	5
Bookeepers	...	...	2
Engineers	...	...	11
Clergymen	...	...	28
Clerks	...	...	145
Travellers	...	...	2
Dentists	...	...	58
Gentlemen, &c.	...	...	83
Reporters	...	...	2
Managers	...		5
Merchants	...	...	20
Music teachers	...	...	2
Medical men	...	...	20
Solicitors	...	...	3
Teachers	...	...	68
			420

5. There can be no doubt that certain occupations predispose to insanity. The preceding table, taken from the Report for Ireland in 1881, shows this.

It is also a curious fact that we find more idiots and imbeciles among agricultural populations than among the industrial.

6. Sex has also much to do with these diseases. There are more lunatics as a rule among the females. In 1881 the numbers of male and female lunatics living per million was respectively 1,874 and 2,107. The tables given above (p. 56) prove that there are more female lunatics in asylums than male, and this was true for the years 1851, 1861, 1871, and 1881. As regards idiots, however, the numbers are reversed; for every 100 females it is estimated there are 123 male idiots. (Census of England, 1881 Report, p. 69.) I do not know the explanation of this difference, except it be that women endure longer acts of imprudence than men. In other words, retain their phosphorized elements longer under these painful circumstances than men.

7. As might be supposed, the number of cases of insanity increases with age. One table from the late Census in 1861 for England and Wales will suffice to show this. The simple reason for this will appear in the sequel. The percentage would affect a much higher figure if given, because the young far exceed the old in numbers in a general population.

Ages.	Male.	Female.
0—5	159	103
5—	993	706
15—	2,034	1,604
20—	2,777	2,284
25—	4,854	4,729
45—	6,519	7,822
65 and upwards	6,946	8,864
All ages	3,148	3,353

It is above forty-five that the preponderance is more marked among females, a fact readily to be explained, and one which assurance officers have long since recognised, that more women reach advanced ages than men.

Hitherto it was believed, and I think correctly, that premature mental decay was, like insanity, a progressive change as human beings became older. I fear it may not long be so, if overpressure in our schools continues. If the young with weaker frames are to partake of the anxieties and heavy work of more matured men, I fear minds will decay much earlier, and perhaps life be shortened, spite of all our wonderful sanitary improvements. Stupidity, dulness, and folly may yet become the frequent attributes of the young, who ought to be bright, clever, and wiser than their progenitors.

CHAPTER V.

SPECIAL GENERAL BRAIN CHANGES TO WHICH MENTAL DECAY IS DUE.

LET me pass now to consider more closely, to what special change this mental decay is due in the brain proper.

The brain is the organ of the mind. Its integrity must be maintained, its nutrition properly carried on, else it is like a bad instrument which has been devised to assist the senses.

Essentially, its chemical composition, as well as its structure, must be normal, else its function must be impaired. Without referring more closely to the very elaborate and highly interesting researches of Dr. Thudichum before alluded to, it will suffice to speak of that organ as consisting of a large quantity of water—over 75 per cent.—7 to 8 per cent, of albumen, 12 to 13 per cent. of phosphorized fat, and the rest 1 to 2 per cent. of extractive matter and salts.

It is a peculiarity of these fats that they are very

rich in phosphorus, and also contain sulphur. The abundance of these fats and their comparative restriction to the brain and nervous centres would imply *à priori* their special importance.

Now, I believe in many cases that premature mental decay is due to a deficiency of phosphorus in the brain. Yet the idea is not mine.

I was much struck years ago by hearing a casual observation made on this subject by my much esteemed and lamented friend, Dr. Forbes Winslow. His penetrating mind had long seen this connection. Many forms of mania, he said, were due to a deficiency of phosphorus in the brain; and if this be true, we can understand at once how hard work on the one hand, or venereal excesses on the other, should produce the same result.

The former, hard work, must exercise a certain amount of wear and tear upon the agent which it employs, and by which alone it can produce its action on and take back its reminiscence from the external world. In venereal excesses, again, the semen, which is rich in phosphorus, is evacuated so freely that to be formed in the required quantity the body must draw upon that portion of its organism which contains most phosphorus. That portion is the brain. The food we ordinarily take contains an insufficient quantity of phosphorus to supply adequately this waste. This excitement of function also must necessarily exhaust the nervine power.

This rôle which the phosphorized elements play in

the economy, I shall endeavour to prove, or, at least, to show the strong probabilities on which it rests, by considering *seriatim* the following points.

I. It is proved chemically that in proportion as a man grows old, or mentally weaker, or approaches to idiocy, in proportion does the brain contain less phosphorus.

II. There is reason to believe that the solidity of the brain is due to protagon, a phosphorus compound; and that those foods which are richest in phosphorus are precisely those which renovate more speedily weakened brain power.

III. The therapeutical action of phosphorus as wholly distinct from that of phosphoric acid, is found to be especially active for good in those diseases produced by softening of the nervous matter or loss of nervous power, as in certain forms of paralysis, skin affections, certain kinds of cerebral congestion, with great nervous debility and insomnia.

I. It is proved chemically that in proportion as a man grows older and mentally weaker or idiotic, so does the quantity of phosphorus in the brain diminish. I do not mean, be it observed, to apply this change to every variety of mental declension; nor do I seek to speak of all varieties of insanity in this communication. I wish to limit myself to that variety which is the result of premature decay. The morbid anatomy of such cases may not be so accurately made out. The brain may present the same general appearances, but it is in

the chemical composition we must chiefly look for a solution of the problem. We are all cognisant of the symptoms of mental decay in an old man, and oftentimes in these cases the attention is called to nothing very unusual in the pathological character of the brain. But it is far otherwise when we look to the chemical composition.

The following analyses of Heritier will exhibit this change at one view :—

	Infants.	Youths.	Adults.	Aged Persons.	Idiots.
Water	82·79	74·26	72·51	73·85	80·93
Albumen	7·00	10·20	9·40	8·65	8·40
Fat	3·45	5·30	6·10	4·32	5·00
Osmazone and Salts	5·96	8·59	10·19	12 18	14·82
Phosphorus ...	0·80	1·65	1·80	1·00	0·85

Looking to these analyses we are struck by two remarkable facts—the increase of osmazone and salts, and the decrease of phosphorus, which go together with the diminution of mental vigour.

It is to the decrease of phosphorus that I wish especially to refer at present.

II. There is reason to believe : 1. That the solidity of the brain is due to protagon, a phosphorus compound ; and 2. Those foods which are richest in phosphorus are precisely those which renovate most readily weakened brain power.

1. There exists in the brain and nerves a sub-

stance discovered by Dr. Oscar Liebreich, and named by him protagon (C^{116} H^{241} N^4 O^2 P). It gives rise to neurine (C^5 H^{13} N), glycerine, phosphoric acid, and a fatty acid, when treated by alkali; and this substance may be acted upon by alkaloids, and thus form a nerve substance having very different physical and chemical properties from the protagon in its unaltered state. (Bence Jones's "Lecture on Pathology and Therapeutics," p. 24.)

Whether softening of the brain itself, which occurs in old age, is due to a special deficiency of the phosphorus as protagon, remains yet to be proved; but with this softening we have marked mental decay. Protagon has the property when mixed with water of forming a strong jelly with it, 1-10,000th part being sufficient to insure this result. It is, in fact, one of the agents which *harden* the brain.

2. The quantity of food which is found most conducive to renovate weakened mental power is that which is rich in phosphorus.

After excessive fatigue, especially in those cases where the mind has been highly interested, and kept as it were a long time upon the stretch, phosphorized foods, such as crustacea, bivalves, and fish, are found to be especially active for good and restorative. Indeed, here, as in many other cases, popular experience has gone before science. Young ladies and gentlemen who have exhausted themselves by dancing and excitement, fly as if by intuition to the

lobster salad. The rake finds nothing so calculated to excite his fading sexual power as oysters and shell-fish.

And after all, this is only asserting for phosphorus what every day's experience proves to hold good for other agents, which constitute part of the chemical constituents of the human body.

It is quite clear that certain medicines taken into the body act also as articles of food, or rather as vehicles for making food nutritious. Sugar, for instance, in milk is a vehicle for dissolving carbonate of lime. Lithia has the same properties. Chloride of *potassium* is the chief ingredient of muscle, as chloride of sodium is of blood. The drain of the former, present in cholera, explains the muscular contractions in this disease, as also partly the tremors in low fevers. On the other hand, the absence of chloride of *sodium*, or common salt, gives rise to a variety of *scurvy* very common in Russia. Cod-liver oil produces fat. Iron increases the quantity of blood globules. Small quantities of iodine in the water we drink cure some cases, or prevents the occurrence of goitre. In like manner we may suppose that phosphorus may occasionally be called for as food. It is clear, at any rate, that it is contained in but very small quantities in ordinary food. Casein contains none, and dry albumen and fibrine contain only ·35 per cent., which is quite insufficient for the purposes of the economy—at least, under circumstances where there is a waste of this ingredient.

Cod-liver oil, itself the agent above all others which recruits strength of body and mind, owes its beneficial effects in many cases to the phosphorus which it contains in considerable quantities.

III. The therapeutical effects of phosphorus when taken, as wholly distinct from that of phosphoric acid, is found to be especially active for good in those diseases produced by softening of the nervous matter or loss of nervous power, as evidenced in certain forms of paralysis, skin affections, certain kinds of cerebral congestion, with great nervous debility and sleeplessness.

An objection to the direct use of phosphorus has been made that this agent can only be assimilated after conversion into a phosphate, and not as phosphorus; and Dr. Thudichum himself upon this subject remarks: "Early brain researches contain evidence of many inquiries after the form in which phosphorus is present in the brain; particularly search after phosphorus as such, or phosphorus in the metalloid form, was made. But it is almost certain," he continues, "that the phosphorized organic matters all contain phosphorus in the form of phosphoric acid combined with glycerine, and yield this nucleus by chemolysis as glycero-phosphoric acid" (*op cit.*, p. 209).

Dr. Thudichum, however, admits that "it is probable that some phosphorized matters contain phosphorus in two forms, of which the second, not yet fully known in particular, is not yet proved to appear as

glycero-phosphoric acid by chemolysis, but remains attached to one of the fatty acid radicals of the combination as cephalo-phosphoric acid" (*Ibid*).

Then, again, I am aware that in making this assertion I am at direct variance with the late Dr. Bence Jones. Dr. Jones does not believe that phosphorus taken internally assists in the formation of protagon, either in the nervous substance or in the blood globules, as it is shown by direct experiment to be oxidized in phosphoric acid. "Nor is there any evidence," he adds, "to show that the phosphoric acid can be in so many words decomposed, and the elements recombined in the body, or that the phosphorus promotes directly the nutrition of the brain and spinal cord" (*op cit.*, p. 296); and he endeavours to prove his proposition by the following considerations.

When phosphorus as phosphorus is taken in any large quantity by the mouth, or injected into the blood, its effect is to produce fatty liver, fatty muscles, and fatty heart. This effect may be rapid, as in a case related by himself in his lectures on pathology and therapeutics, and quoted by him from Rokitanasky. The patient died the sixth day after swallowing phosphorus matches. This effect may also be observed as the result of slow poisoning: in dogs, for instance, killed by small doses of phosphorus, and in whom a deposit of fat in the lower kidneys and muscular structure of the heart was found after death. Dr. B. Jones believes this effect

is the result of its conversion into phosphoric acid. "The immediate cause of this change is the arrest of the oxidation through the destruction or solution of the blood globules. Indeed, whenever organs in the body are deprived of the flow of red blood, fatty metamorphosis of textures follows, as in the neighbourhood of embolism of vessels, or in thrombosis of arteries of the brain" (*op cit.*, p. 177).

As a secondary result of this arrest of oxidation, the temperature falls.

Post-mortem examinations also tend to show that the brain is specially acted upon, as both it and its membranes are *bloodless* in death from phosphorus.

But to this I reply that these results scarcely justify the conclusions he has drawn from them. Eminent observers have proved that mercury given to dogs exerted no influence upon the liver. The experiments were most carefully made, and the conclusions philosophically drawn. Yet the fact is incontrovertible, a dose of calomel will produce a copious bilious stool, and remove bilious symptoms.

So here, if (excepting Dr. Jones's last conclusion, that it produces a certain amount of anæmia in the brain) we accept Dr, Jones's conclusions, it is manifest these symptoms are due to phosphoric acid, not phosphorus. How otherwise can we reconcile these lowering effects, with the known results of the internal administration of phosphorus in medicinal quantities? Phosphorus, on the other hand, is so

rapidly assimilated as such, especially when combined with a solvent, the excess only being converted into phosphoric acid, or so readily eliminated from the blood, as sugar or urea are, and appropriated elsewhere, that it cannot, under ordinary circumstances, be detected as such in the blood.

But apart from this explanation, there is incontestable evidence to show that phosphorus is not always converted into phosphoric acid to produce its specific effects.

1. The effects of phosphoric acid, which are those of a refrigerant, and resemble the use of ordinary mineral acids, are not those of phosphorus—a nervous excitant when given internally.

2. Then, again, the occasional occurrence of necrosis of the jaw-bone in work-people engaged in the manufacture of lucifer and congreve matches is not the result of phosphoric acid; because in those manufactories in which the atmosphere is impregnated with phosphoric acid, no such disease exists. The malady is, therefore, probably due to some compound of phosphorus having a lower degree of oxidation than phosphoric acid. Dr. Van Bibra refers it to hypophosphorous acid; but lays great stress on the fact that Schonbein's ozone is formed during the volatilization of phosphorus. Poulet has also shown that it passes off by the urine as hypophosphoric acid.

3 The beneficial effect of phosphorus and phosphorized diet, apart from phosphoric acid, in mental

decay, will become, however, more obvious if we consider more particularly its effects in disease. In this way we shall be better able to determine its medicinal usefulness in cases like those we are considering.

Those diseases produced by softening of nervous matter, or by aneuresis, are precisely those which are oftentimes cured by phosphorus. An analysis of its effects on disease proves—1. It is a renovator of nervous energy; 2. It may even *cure* certain forms of paralysis; 3. It cures those forms of eczema and analogous skin affections which are produced by functional paresis or debility of the sympathetic system; 4. It exerts a specific effect on the brain by producing sleep and restoring its intellectual power.

1. It is a renovator of nervous energy.

In the *Journal of Cutaneous Diseases* for October, 1868, phosphorus is spoken of as a renovator of nerve tissue and nerve force, and as possessing considerable claim for curing diseases of debility and exhaustion of nerve power—specially nutritive affections of the skin, and many of congestion. A case is there given of a young man exhausted by residence in India and syphilitic neuralgia with night sweats, who was cured in a very short time by it, and recovered his strength rapidly. ("Half-Yearly Abstract," vol. xlviii, p. 89.)

The relief from nervous prostration which follows in the case of worn-out libertines is remarkable,

Dr. Anthony Todd Thompson has alluded to the decided results following the exhibition of phosphorus. Given in doses of a quarter of a grain twice a day it restored the sexual function. This was especially observed by the Italian physicians. Alphonse Leroy and Boutratz recognised the aphrodisiac properties by experiments made on themselves. I may add I noticed some years back the same effect. Having, on the recommendation of the late Dr. McKenzie, given to a patient much weakened by severe illness, 10 grains of allotropic phosphorus three times a day, its aphrodisiac properties became so powerfully developed that I was compelled to stop the remedy.

2. It is stated to cure paralysis in certain cases.

In the *Lancet* for February 2nd, 1868, M. Delpech is stated to have obtained the best results from phosphorus in paralysis. Three cases are instanced, and with the exception of aphrodisiac results (such as erections which were produced), it greatly improved the mobility and sensibility of the paralysed parts in all the instances. ("Half-Yearly Abstract," vol. xlvii, p. 130.)

3. It cures those forms of eczema and other analogous skin affections which are produced by functional paresis or debility of the nervous system.

This effect will be best illustrated by (*a*) first referring to the production of skin complications as a result of *local* injury of nerves, and their (*b*) com-

parison with the cure of similar diseases where no such injury is traceable, by nervine agents, and specially phosphorus which last succeeds where other remedies fail.

(*a*) Professor Fischer, in the *Berlin Klinische Wochenschrift*, vol. viii, pp. 13, 71, in speaking of the local changes after severe nerve injuries in the extremities, says, "The first effect is one of hypertrophy and increased temperature and secretion in the parts supplied. The second of atrophy, lower temperature and more sweat. In the first stage we have rosy and polished integument, which, on section, appears particularly opaque and shining, and exuded serum containing many white globules, and the microscope revealing a profuse infiltration of small cells.

"At a later period we have eczema, especially at the borders of the nails and in the palms, which sometimes leads to the formation of small slowly-healing ulcers, and sometimes are healed after an intense outbreak of burning pain in the shining portions of the skin. There may be also *ecthymatous* pustules which make their appearance in succession or simultaneously at several parts of the body, and terminate in ulcers. In addition there is sometimes a thick scabbing of the epidermis, which follows in the course of the cutaneous nerves, leaving the inter mediate skin normal." ("Half-Yearly Abstract," vol. liv, p. 106.)

These remarks are interesting taken in connection

with some observations made by Dr. Handfield Jones in his Lumleian Lectures on Functional Paresis, or Weakness of the Sympathetic and Vaso-motor Nerves (*Medical Times and Gazette*, August, 1855). "These nerves appear to be especially liable to paresis, which occurs always at some period of their course in febrile and inflammatory processes—for example, well-marked low fever as a result of fatigue experienced by troops;" and he instances several examples, which almost appear to be a repetition of Bernard's experiments on the whole sympathetic system; the nervous power of which central system seems to be entirely consumed in the motor apparatus, giving rise to their temporary weakening. "Without affirming that the elements of the tissues are not in some way affected by the *cessation* of nervous influence, it is, I think, unquestionable that dilatation of vessels play a considerable part in many important and common phenomena of malarious disease. The cerebral congestion of the hot stage, the enlargements of the spleen or liver, the pneumonias, and the more rare ophthalmic inflammations, are evidently dependent in good measure on excessive determination of blood, produced, as we may most reasonably consider, by paralytic dilatation of the arteries leading to the part. The powerful nervine which cures or abates neuralgia, has the like effect on these vascular disorders, through its toning influences on the nerves regulating the condition of the vessels. Various common cutaneous eruptions

which are controlled so markedly by arsenic—for instance, eczema, impetigo, pemphigus—are also instances of this kind. From some enfeebling cause or other, the centres ruling the vaso-motor nerves of certain districts of skin, fall into a state of paresis, and straightway the part is flushed with blood, and secretion or exudation takes place, according to the vital condition of the capillary walls and of the glandular cell structure. A patient under Dr. Sibson's care at St. Mary's Hospital, with left side hemiplegia (the result of cerebral hæmorrhage), had for several days an eruption of pemphigoid character on the palsied hand and foot, and nowhere else. A case has been related to me by Sir R. Martin of a lady who had suffered from frontal neuralgia and malarious fever, and in whom a largish patch of redness used to appear at intervals on the right forearm, from which such an abundant moisture flowed that several handkerchiefs would be saturated in half an hour. Such an occurrence reminds one very much of eczema ichorosum, a variety described by Sir E. Wilson,* in which large quantities of fluid are discharged from the congested surface. He recognises debility in some form, assimilative, nutritive, or nervous, as the essential cause of eczema. Now, arsenic is scarcely inferior in its nervine powers to quinine, and it is clearly impossible to associate its marked efficacy in chorea and neuralgia

* Late Sir Erasmus Wilson

(disorders of the cerebro-spinal system) from that which it possesses in cutaneous eruptions, menorrhagia, and chronic diarrhœa (disorders to a great degree of the vaso-motor). Hence, he concludes that the original assumption that arsenic tends to increase and sustain failing nervous power, accounts not only for its curing neuralgia, for which it might be originally framed, but also for its efficacy in chorea, ague, some other eruptions, and menorrhagia, which are apparently very different phenomena" ("Half-Yearly Abstract," vol. xlii, p. 91.)

(*b*) These remarks made on the action of arsenic might be in measure repeated with more force for phosphorus, and in this manner the apparent contradiction in its effects reconciled. The same marked effects in the cure of skin diseases by phosphorus have been observed.

Dr. Eames, in the January number of the *Dublin Journal of Medical Sciences*, 1872, speaks of these effects. After referring to Dr. Burgess, who first recommended phosphorus as a skin remedy, and alluding to Drs. Broadbent and Tilbury Fox, who repeated these experiments, he goes on to say that "he considers phosphorus much more than a substitute for arsenic," as some previous writers have regarded it, and he alleges that it has been used with marked success in certain cases in which arsenic had failed. The mode of administration adopted by him was a solution of the phosphorus

in oil, and the dose of the solution was from m. v. to x. *ter. die.* after meals. Dr. Eames relates the particulars of several cases which were thus treated, and in all the results were successful. One was an instance of acne indurata of a most severe character, which had resisted all other local and general treatment; three of the cases were instances of lupus, two of scrofula derma. In psoriasis Dr. Eames found phosphorus very efficacious, even when arsenic had proved unserviceable; and he gives three cases in proof of this statement. A case of pemphigus was also cured by the use of phosphorus. Dr. Eames found that the drug produced a coated state of the tongue, sometimes symptoms of dyspepsia, loss of appetite, mental depression, and bodily weakness; but when these symptoms appeared the phosphorus was discontinued for a time, and mineral acids substituted. Most of the cases recorded by Dr. Eames had been treated by arsenic and other drugs before they came under his care, and he regards phosphorus as far superior in efficacy to that and other vaunted specifics in skin diseases ("Half-Yearly Abstract," vol. lv, p. 118.)

Of the beneficial effects of phosphorus in cases of acne, and specially those cases which have resisted other treatment, I can speak in equally commendatory terms. Young ladies and gentlemen in early life are often much disfigured by the eruption, and I may say that when the remedy

could be borne (which is not always the case), the effect produced has been marked. In the case of a gentleman about forty, whose whole body was a perfect sight by reason of the extensive acne pustulosa present, and to whom I had given arsenic frequently—indeed, on and off for years—and with benefit certainly, the substitution of phosphorus had almost a magical effect. Literally his skin became as a little child's, so completely was all appearance of the eruption removed.

4. Then, again, as to its specific effect on the brain. Dr. W. Hammond, the distinguished professor of New York, in his "Treatise on Diseases of the Nervous System," says: "Phosphorus almost always acts well in cases where there has been cerebral congestion, and it has been necessary to allay excitement of the nervous system by the use of bromides and oxide of zinc. At the end of about ten days it will be found that all symptoms of congestion, subjective and objective, have disappeared, leaving a little debility and mental depression. It then becomes expedient to give tonics and restoratives, and those which have a special action on the nervous system are to be preferred. Among them strychnia, phosphorus, and cod-liver oil stand first." Of phosphorus he says: "Phosphorus almost always acts well in such cases as those under consideration."

5. It is not surprising, therefore, that phosphorus should, in certain cases, prove a remedy for wakefulness. During sleep there is less blood

in the brain, and phosphorus, by relieving brain congestion, produces sleep.

On these premises, therefore, the deficiency of phosphorus in old age as compared to youth is explained, the solidity of the brain dependent on its pressure, the different therapeutical effects of phosphoric and phosphorus, and the especial influence of phosphorus as a renovator of brain energy—I think we may conclude that phosphorus plays a most important part in premature mental decay, both in regard to its products, and as an indication in the treatment to be pursued.

CHAPTER VI.

ON THE TREATMENT OF PREMATURE MENTAL DECAY.

LOOKING generally now to what has preceded, we are in a position to come to some conclusions as to the pathology of overwork, from whatever cause. The headaches, sleeplessness, general debility, formication, coldness of extremities, &c., all point more or less to partial congestion of the brain and spinal cord. To divert the determination or stasis of blood to less affected parts, and to render those affected, so to say, more anæmic, become the first indications of treatment. Secondly, as many of these cases of premature decay terminate in softening of the brain, we must adopt such measures as may retard or preclude this result. Thirdly, we must supply, amongst other things, an increase of the phosphorus which, we believe, is defective in quantity. And how these several indications may be best met we will endeavour to show.

In this investigation the subject necessarily divides itself primarily into two principal heads: I. The hygienic treatment, II. The therapeutical.

I. *Hygienic.*—In approaching, however, the subject of the hygienic treatment of premature mental

decay, there is one great influence we must not lose sight of. It is the power of the will. The *Times* (leader, 16th June, 1886) has the following trite remarks as a corrollary to other explanations of the suicide of the late King of Bavaria.

"Few things are more certain than the power which men have over themselves, if they will but exert it, to check the beginnings of insanity—a malady the declared and final stages of which are commonly but the outcome and conclusion of a long course of unreasonableness in smaller things. The tendency of modern research has been to remove madness from the category of romance, and to convert it into a very prosaic ailment, the foundations of which are laid, in many instances, by the surrender of those powers of self-control with which all men are gifted in some degree, and most men in a degree sufficient to render them, if they will be so, the masters of their own destinies."

Now I am quite sure in respect to one of the commonest diseases among women, hysteria, that few are the examples, if any, in which a strong will cannot overcome the tendency to an attack, but if such a sufferer is petted, caressed, pitied, when under the influence of the spell, such is the love of sympathy in a woman's tender heart that to obtain it she will encourage the tendency, and so surrender more and more the powers of self-control. Thus the enslaving habit is established and confirmed, and so a recurrence becomes more and more often

the order of the day. It is so also with some forms of epilepsy. I know a gentleman who was a confirmed epileptic, and yet he managed by force of will to master the tendency, and now is completely restored to health. Stringent directions in this respect to our patient, great encouragement to try and resist the tendency are part of the treatment which is most influential for good. A man may be weak-minded, but he is sometimes very conscious of it, and most desirous to acquire renewed mental power. Let us, therefore, endeavour to instil the brightest hopes in his bosom, let us encourage this cheering habitude of mind, and every day with every exertion he will gain power, and be emboldened. He will rely with greater faith on the advice we give him, and carry out our instructions to the full. We are placing, in fact, by such a system our patient in the most favourable conditions for recovery.

2. We must remember we have a diseased or at least a highly disordered brain to restore to a healthy condition. Let us assume the case of congestion of that organ. Now, the best way of diverting determination of blood, or congestive stasis, from a part, is, by *rest*, and a complete rest, and especially by abstention from all occupation resembling that upon which the mind has been overworked. This is a rock upon which many split. A friend of mine, an obstetrical physician of great eminence and practice, thought to take his holiday in Ireland, but in doing so could not resist the temptation of visiting the

Irish hospitals. His two months passed pleasantly enough, but not so the following winter. His body became soon covered with an eczematous eruption, he lost his nails, and continued ill till Swiss air and Swiss mountains, during his next holiday, restored him. It is important, however, to give a patient *some* occupation. To let a man who has been in harness many years, degenerate at once into perfect idleness is most unwise. I have seen this done, by some men who up to that day had been among some of the busiest workers. The sudden abandonment of all occupation was the immediate cause of the rapid failure of all their mental power; softening of the brain or apoplexy ending their days. But the work supplied should be altogether different from former occupations. Where a new fancy has been adopted, and is not likely to injure the person, it is well to encourage it. It calls forth into action new powers of the brain, while the previously overwrought parts have time to recover. I know a case where the weak man took to writing poetry. It was a perfect phrenzy. Day after day he wrote wondrous effusions, remarkable both for their beauty and pathos. I encouraged him. He completely recovered in a year.

A wise practitioner, when an exhausted worker comes before him, should seek to find what is the bent of his patient's mind, what would he like to do, in what direction are his tastes; and if his choice be not an utterly perverse one, he would do

well to gratify him. I am satisfied that as success will often follow a reasonable permission given, so uncompromising opposition will do much harm. It is only a routine based upon the exploded views of ancient mad doctors who ruled by severity and the lash, and often increased the evil, where kindness and mercy would have led to a happy recovery.

Such a plan of treatment is, after all, only carrying out the principle so accurately laid down by my friend Dr. B. W. Richardson, when he states, that the brain "is an organ that can rest in parts where jaded, and work in parts that are not jaded, at one and the same time."

It is obvious that the same effect of diminishing cerebral congestion, if our patient is not overweakened, can be brought about by a shower-bath. The shock so produced is not always pleasant, but it can always be diminished by raising somewhat the temperature of the water used. It has an exhilarating and bracing effect, and is sometimes found most useful.

3. It is well to act especially upon *the organs of sense*, and particularly to insure the tranquillity of those which give incorrect impressions, and only to put those objects before them which will tend to soothe the mind. Before that of *sight*, green fields are most conducive to rest. There is no colour which like green is so soothing to the eye. The *hearing*, likewise, must be soothed; noisy places

avoided. Sea change, so often, advantageous by reason of the bromine inspired, is to be avoided, if the waves be stormy or otherwise than in a state of calm. *Smell* and *touch*, likewise, are to be calmed; quiet, sweet-scented zephyr breezes are the best. A host of quieting mesmeric influences may be pro duced thereby, just as sleep can be induced by looking fixedly at any object, or hearing a monotonous voice, or feeling a gentle breeze playing on the face. *Taste* is gratified in like manner by simple, nutritious diet, but especially fish diet—and that fish diet, for the reasons before stated, of those varieties richest in phosphorus. Fish is generally well digested by individuals affected with this disease. Nature seems in many cases to yearn for it. There is a prejudice amongst many persons that crabs, but especially lobsters, are heavy, and not digestible, but I think this is an exaggeration. If taken, as it ottentimes is, *after* a heavy meal, then shell-fish would, like every other food, prove injurious; but if taken in moderation, and at the beginning of a meal, it will seldom disagree. The objection cannot apply, however, to a lighter fish diet, such as soles, whiting, cod, and other more digestible fish. It would be a curious physiological problem to solve whether fish-eaters are less liable to brain disease than others. It is a fact which is incontestable that uncompromising *roués* fly to shell-fish to supply their vigour, when they find it flagging. I have heard of one such unfortunate man, who has so far forgotten the object of

his creation here, that he lives only to gratify his sexual appetite. Blest with wealth, and incontinent to a degree, he has kept up his vigour and health. But his diet is almost exclusively fish. His beverage Burgundy. Sad as it is to relate such an example, it is a physiological fact, and admits of useful application in those cases where exhaustion has followed in a nobler track, and the brain especially requires specific food to renovate its powers.

4. Next to supplying the needful for variations of mental culture and internal comforts, we find physical exercise very conducive to recovery in cases of mental decay. Is it this part of a change to the country which contributes to the good results, or the change of air which does most for an exhausted man? I know not; but this I know, that those nations have risen highest in intellectual influence and civilisation, who have not neglected to educate the body to athletic sports, as well as to educate the mind in scientific inquiries. Intellect is debased where the body is too fond of ease, and vice will be sure to tread upon the track of indolence. But now-a-days I am not sure that it may not be overdone. I have met several such cases, and the games now played are, perhaps, too violent. Still, I am sure, in moderation, wholesome exercise and athletic occupations are exceedingly operative for good. If in no other way explainable, it is because it calls forth into active operation other parts of the brain which

preside over other parts of the body, and so those chiefly devoted to the intellectual, rest.

I am quite sure of this, that any customs which tend to invigorate the body, produce a pleasing glow over the mind. It is those trained to athletic games and sports that distinguish themselves most in acts of bravery in the battle-field. It is a great preservative against vicious habits, by using up any surfeit of strength in a noble and honourable way. I am sure that the very elegance of shape, the very grace which predominates among many of our young ladies is due to the gymnastics and calisthenics which fashion has encouraged. Disease and deformity are often cured by such measures. Their occurrence is thereby prevented. If moderation does not give way to excess, if variety in these athletic exercises is wisely carried out, not only body, but mind is strengthened thereby. It is in this way that drilling acts so beneficially. It gives harmony and precision to the movements of the body. It teaches order and regularity in the mental associations exercised thereby. It gives nobility to the gait, and erects the form. It is another link in furthering obedience, and giving proper regard to authority.

5. Alongside of these general athletics there are more soothing influences which should be recommended. Pre-eminent among these is music. It is a well-known proverb that "music hath charms to soothe the savage breast," but it is pre-eminently true. Yes, the raving maniacs are thereby lifted up

as it were out of their misery into almost a heavenly rest. It was said of Rubini who died in a madhouse, but retained the power of his lovely voice, that when he sang amid the motley crew by which he was surrounded, they stood as if entranced as they heard the sounds of his beautiful tenor voice filling their cells with its harmonious melody, and were lulled to a quiet peace of mind. It was so of old, when David sang before Saul when disquieted by his evil spirit; and songs will yet be heard when the sorrows of life are passed, when the angels and saints sing the Song of Moses and of the Lamb in the realms of Glory to add to the joys of the saved. Though the songs of time must be to the songs of heaven as a drop of water is to the ocean, yet they have a grand charm to soothe the tired and overworked man. More effectively than any other agency does music act upon parts of the brain before untouched, and thus affords the best of rest to those that have been over-fatigued. Here, again, however, excess should be avoided, and variety enjoined, for, in this world at least, even musicians have become insane, because the musical seat of their brain was overworked.

What is true of music is also true of other amusements—of art and science. To show a man who has lived on the same special occupation all his life that there are other sources of enjoyment and occupation that are also attractive and pleasing, is to open new fields of recreation and joy to his tired brain. I once knew a man who was madly in love with his wife,

who in no way reciprocated his affections, so that he became the most miserable of men. That man became comparatively happy by becoming a member of the Society of Arts. Another gentleman who was in the most depressed state of mind from over-responsibility as a foreman over a very large number of workmen, withered in appearance, decrepid in body, losing memory and strength, became by visiting musical and comic localities, all but completely restored to health and happiness of mind, and able to resume all his responsible duties.

Now let me here answer an objection which is often made, and especially by persons to whose moral and intellectual integrity and conscientious objections I cannot but pay the utmost respect. Should we recommend patients so affected to visit places of amusement, such as theatres, operas, balls, music halls, &c.? Is not the excitement of such places, the doubtful expressions used, the questionable costumes worn, the late hours, the heated atmosphere, the very clamour and noise in such places likely to prove injurious, and not beneficial? Now each case, it appears to me, requires to be treated according to its indications. What may suit one man may be detrimental to another. What may fatten one man may poison another. Let the medical man be consulted. Let us remember use is not abuse. One thing is clear. There is a choice in such amusements. Quality and quantity must be duly considered. What we have to do is to change the turn of a man's thoughts,

and to rest an overtired part of his brain. Here the doctor must be the judge.

In the case of children subject to overpressure, common sense dictates the hygienic treatment. Plenty of good food, fresh open air. At least ten hours' sleep; no studying at home, so as to interfere with hours of recreation and sleep; and enough exercise and amusement to compensate for the amount of work done, neither too much nor too little. Here a boy or girl's abilities, state of health must enter into the balance. The scholar's peculiar talents and tastes should be especially cultivated once the minimum of general knowledge required has been obtained. It is time lost, often irretrievably, to fatigue a scholar who has a special talent for classics with mathematical drudgery, and *vice versâ*. If a boy has a mechanical taste, or a love of drawing, music, or any other special branch of art or science, do not bore him by compelling him to learn Greek or mathematics, except so far as they are useful to affect the bent of his inclination. I am quite sure that, if this plan was generally carried out, genius of a special kind would be far more frequently the result of school tuition, and many an idle boy would turn out to be an active and industrious student, and would make his mark in his generation.

CHAPTER VII.

ON THE THERAPEUTICAL TREATMENT.

To remedy the sleeplessness, to promote the firm consistence of a healthy brain, several remedies have been at various times recommended. How some of these act beneficially is easily understood. The action of others is more mysterious. Those which experience has demonstrated to be most beneficial in this disease are the preparations of phosphorus, of arsenic, tinct. lyttæ, iron, strychnia, cod-liver oil, and nitrite of amyl.

(*a*) The preparations of phosphorus from what has been premised are doubtless among the most important. They are known to produce sleep if persisted in, and to produce what is here especially required, a certain amount of anæmia in the brain—a state essential to true sleep. Besides, they supply the deficient material for the proper consistence and action of the brain. The medical profession has at last, after a few incomplete and dispersed opinions, here and there scattered in medical annotations, fully seen the need of this, and the latest British Pharma-

copœia has recognised the need of officinal preparations of phosphorus, so long ignored, as a necessity in the present day. We have now a phosphorus pill, a phosphorus oil, besides the lower oxides of phosphorus, the hypophosphites of calcium and of sodium, which in their action on the economy so closely resemble phosphorus. All these have been included to supply the strong demand for such preparations, most of which had already been used so extensively by so many practitioners both at home and abroad. Until these innovations were made in the Pharmacopœia, I had sought out and used several preparations of phosphorus. But some of these appeared to be inert, and to pass through the body unchanged; others proved injurious. My difficulty was, therefore, to procure a safe phosphorus compound; but my friend Mr. King, of Crawford Street, who is also a most intelligent practical chemist, has succeeded in obtaining several, some of which I feel pretty sure will prove of unexceptional value as therapeutical agents.

Now, although with the compound now given us by the British Pharmacopœia the description of these preparations is not so necessary as formerly, yet, believing as I do that some of those I use have advantages over the officinal preparations, and because my experience of the use of phosphorus as a remedy was in my practice acquired by their employment, I think it is not out of place to repeat

what I have said of them in previous editions of this work.

In describing them *seriatim*, I shall specially refer to the action of the first of them—the sol. phosphori medicati (to which the ol. phosphoratum of the Pharmacopœia bears so close a resemblance), as exemplifying more clearly the action of phosphorus, and I shall allude to the differences observed in their operation under the headings of the several preparations.

1. The first phosphorus compound which I tried was one which I called the *sol. phosphori medicati.* It is prepared according to the formula of Dr. Hammond, of New York. I have already described it elsewhere. Twelve grains of phosphorus are boiled in 1 oz. of almond oil and filtered; half of this is mixed with 1½ oz. of gum arabic, adding 15 drops of some aromatic. The dose is 15 drops, containing 1-24th of a grain of phosphorus, given three times a day with meals. It may be given in the form of phosphorated oil, in the following formula:—

℞ Ol. phosphorati, ℥js.;
Mucil. acaciæ, ℥j.;
Ol. bergamot, ♏xl.;
M. ft. emulsio dos. gutt. xv. *ter die.*

As I have before remarked, this is not a preparation which everybody can take. It sometimes operates very energetically as a poison, producing even in doses of ten drops intense sickness, temporary loss of power in the extremities, and a deadly pallor—in

fact, it cannot be tolerated in these doses by some persons. It is more prudent to begin with five drops, gradually increasing the dose one drop daily, and in this way it can be brought up often to thirty or forty minims for a dose. I have found that in weak persons it is readily taken in five-drop doses with cod-liver oil, and in this manner readily assimilated. As much of the salutary effects of cod-liver oil is due to the phosphorus contained, it is probable this combination will in many cases add to its value. The effect of long-continued employment of this remedy is somewhat remarkable. It seems occasionally to produce an intense burning along the intestinal tract. Patients describe it as a coal of fire within them. This will, however, very soon disappear when the remedy is stopped; nor have I noticed any bad results to follow this symptom, which I look upon as evidence that the drug has produced its full effect, just as salivation may be said to denote that mercury has produced its full effect. Short of this it produces in persons who are habitually chilly and weak an agreeable sensation of general warmth in the body, the comfort of which has been so enjoyable to some patients that they do not like to leave it off. Its effect on brain power and sexual impetus is, as I before observed, very satisfactory. I have seen in very many instances a man who is very restless, nervous, irritable, wakeful, and with much loss of memory, gradually made quiet, more sleepy, and recover his powers of recollection. Here, also, I have noticed that several

of my patients who, having become weakened from any cause, and who had once tried the remedy, have voluntarily gone back to it; the usual remark made, "I am always right when I take the phosphorus," evidencing at least their faith in its virtues. It is not always prudent to give it in some varieties of spermatorrhœa. A large experience of the drug has afforded me examples of cases of this disease in which it increased the spermatic flow, though not with the same tendency to cerebral pain and confusion which a night's loss in many of these examples produces. It becomes necessary, therefore, to combine its employment with the use of local astringent injections of tannin, zinc, or iron within the urethra. This effect, however, is seldom observed until the remedy has been employed for some time. Its first effect is always beneficial, and there is generally a marked relief to the nervous symptoms usually observed in spermatorrhœa.

The same remarks apply to cases of neuralgia, especially of a chronic character, and in connection with uterine disease.

There can be no doubt, however, that this preparation acts uncertainly, and should be watched during the progress of its exhibition, While recommending phosphorus, therefore, as an excellent medical agent in these cases, I am bound to guard others against too heroic an employment of the remedy. I have already said that it is not every person who can take it, and especially if administered on an empty

stomach. It may produce occasionally most acute pain, a sensation of excitement on the brain, which, though transient, is agonising for the time, and great sickness and vomiting. But it is well to know that these effects may not recur after the second or third dose. Another effect occasionally produced is a burning sensation on the skin. After a time drowsiness is produced, and occasionally great dryness of the mouth, so as to lead to the suspicion that belladonna has been given. This last symptom is not of invariable occurrence, but when it does present itself it is very distressing. There is no doubt, again, that it clogs up the liver. Patients are apt to become very bilious, indeed, quite jaundiced, and in these cases the conjunctiva seems to be the first part affected even before the skin. A simple suspension of the drug for two or three days will cause all these symptoms to pass away, and then it may be again resumed with advantage; occasionally, of course, a brisk calomel purge is necessary.

Headache is occasionally a symptom observed, and if it persists after the second or third day, we may conclude the remedy will not be borne except after violent purging, or in very minute doses, if at all.

I have usually considered 1-30th of a grain of phosphorus quite a large enough dose to begin with, *i.e.*, about ten drops of this solution. But we should be prepared for sudden occurrence of the poisonous symptoms, sickness, vomiting, faintness, palpitation, and temporary loss of motor power. This solutio

phosphori medicati is of all preparations I have used that by which these poisonous symptoms may be most readily induced. Dr. Thompson has shown that this is due to a chemical decomposition of the *vegetable* oil, which does not apply to *animal* oils. I therefore now recommend the use of sperm oil, or neat's-foot oil, in lieu of the sweet almond oil.

2. The second is *phosphide of zinc*, also recommended by Dr. Hammond, of New York. This salt is a black, hard powder, and tasteless; it is the only combination of phosphorus which I have ventured to use in a solid state. It may be conveniently mixed with vegetable extracts, and it is a very elegant and useful preparation. My experience with this medicine is very extensive. I have never known it to produce the least unpleasant effect, and have rarely been disappointed in obtaining the full results to be expected from phosphorus in corresponding doses.

The chemical formula of phosphide of zinc is P_2Zn^3, and consequently one grain represents a little more than 1-7th of a grain of phosphorus. The proper dose is therefore 1-10th of a grain. I usually prescribe it in cerebral congestion according to the following prescription:—

℞ Zinci phosphodi, gr. iij;
Ros. conserv. q. s. ut fiant, pill xxx.
Dose, 1, *ter die*.

Instead of the conserve of roses, gr. x. of the ext. nucis vomicæ may be substituted if strychnia is not

being administered in some other form ("Half-Yearly Abstract," vol. lv, pp. 155-6).

It has been doubted, however, whether this compound is in reality what it professes to be, and not an insoluble compound which cannot be appropriated by the economy. I may remark first, that the chemical experiments made with it have been too insufficient to justify such a doubt, and secondly, because the objectors have never tried the remedy therapeutically. If rubbed in a mortar it emits a distinct phosphorus (garlic) odour, and burns vividly in a flame, just as phosphorus itself would. Therapeutically it acts powerfully as a phosphorus compound, but not so powerfully certainly as the sol. phosph. med. I have generally begun with half a grain after meals three times daily, gradually increased to one grain, and even more. Apart from the good which it does in those cases for which phosphorus is useful, I have found it cannot be long borne in some cases of spermatorrhœa, as also increasing the quantity of the unnatural flow.

I have before alluded to the efficacy of arsenic in cases precisely analogous to those in which phosphorus is found useful. This remedy seems often to act specifically upon the brain, producing much comfort and rest, and removing all pain. In neuralgia it is often most effective. In chorea some assert no remedy is equal to arsenic, where it often acts as a specific and it is said to possess the power of controlling determinations of blood to the head.

Exclusive of those cases, however, in which an ague element appears to enter, and in which arsenic is so effective a remedy, I have shown elsewhere, and have been here backed by the experience of others, that phosphorus sometimes succeeds where arsenic has failed.

3. It occurred to me, from seeing the beneficial effects of arsenic in many neurotic diseases, that it might be useful to obtain a compound of phosphorus and that metal. From the experiments made by Mr. King in this direction he concluded that the result was not to be obtained, the phosphide of arsenic proving quite insoluble.

However, after very careful consideration it was decided to try the effect of bringing phosphorus and arsenic together in a finely divided state in the presence of hydrochloric acid. This was found to be a difficult (indeed, a hazardous) operation, requiring great caution in manipulation. The resulting compound, however, proved very satisfactory. It has been called the *chloro-phosphide of arsenic*. It is free from offensive odour, capable of being largely diluted with pure water, and has then rather a pleasant taste. In its present solution it contains 1 grain of arsenic and 1·6 grain of phosphorus in the fluid ounce. The phosphorus and arsenic are so lightly held together that mere evaporation on hot coal is sufficient to disengage the former.

How, in the process of the formation of the chloro-phosphide, the hydrochloric acid acts is not clear;

but in the same manner as the citrate of iron—an insoluble body—becomes the soluble ferri ammon. citratis on the addition of ammonia, so the insoluble phosphide of arsenic becomes soluble on the addition of hydrochloric acid, as the chloro-phosphide of arsenic; the presence of iron in the arsenic, or lime in the phosphorus, is objectionable. The regulation of the temperature is also an important point in dealing with such a body as phosphorus. Disregard to this circumstance has led to batches of the preparation being spoiled, and to some danger; but it has not yet been determined at what temperature the compound is best prepared.

As might have been expected from its composition, the chloro-phosphide is very effective in cases of neuralgia and marked ague cases. It also seems to act more as a general tonic than the other preparations, increasing the appetite; and of the several preparations of phosphorus I have tried, it is the one which is the least likely to produce liver derangement. I have frequently noticed that patients who take the chloro-phosphide do not like to leave it off; indeed, I fear, however I may dislike to say it, that this craving for phosphorus compounds, once they have been taken and found beneficial, may become a habit, and in this respect resemble tobacco-smoking, or perhaps dram-drinking, The dose of the chloro-phosphide is from 15 to 20 minims three times a day after meals.

4. Phosphorus may be given as a hyphophosphite.

1-60th of a grain mixed with a fluid drachm of syrup, so that the dose should be about a teaspoonful. The only active ingredient in this syrup is hypophosphorous acid; and it should be kept in a cool, dark room, and in small bottles, for use. This compound resembles much a syrup which has been largely advertised. A weaker syrup than that prescribed in the Ph. Br. might be advantageous. The phosphorus, pure and finely divided, should be added with caution, and not beyond a certain limit.

This syrup is an exceedingly agreeable-tasting compound. This circumstance, in these fastidious days, will make it very popular. In practice, however, it appears to act less certainly as a phosphorus compound. The dose to begin with should be half a teaspoonful, gradually increased to two.*

A convenient way of giving phosphorus is in its allotropic form, suspended in water by mist. tragacanth. It is perfectly tasteless and inodorous, and I find by experience very active. A convenient way

* It may be as well to remark, at a period when phosphorus is likely to be largely given, that turpentine, preceded by emetics, is the antidote. Dr. Lichenstein has more lately called attention to this agent. The turpentine has been given in 12-drop doses in barley-water or milk. So far Lichenstein's experience confirms that of Personne, Andaus, and Köhler. At the same time, it is right to remark that Dr. Schultzen, who had observed several cases of poisoning by phosphorus (30 or 40), states half got well, although no turpentine was given, and he attributes the recovery entirely to the vomiting induced.

of taking it is in the same manner as ferrum Redactum is sometimes given. As much as will be contained in the cradle of a pen is put between two pieces of very thin bread and butter, and taken with two meals daily. At most, it is only a little gritty to the taste.

I have also used a new preparation of phosphorus lately. It is a syrup of the iodide of phosphorus, which is a clear translucent syrup, free from all taste and odour, also prepared by Mr. King, and very effective. Dose 30 drops in water.

Various other preparations of phosphorus are in the market, and have been recommended by others as very efficacious. I quite believe this, but I have only personal experience in those I have instanced.

I have spoken of tra. lyttæ as a useful remedy in cases of overwork. This was a medicine which was formerly in great vogue as a neurotic remedy, but like many others has ceased to be in fashion. Formerly, however, it was employed in epilepsy, chorea, even tetanus and mania. But I am satisfied that it is a powerful excitant to an exhausted nervous system. As it is a medicine, however, the general merits of which are greatly misunderstood, I may be pardoned here for referring to a case which well illustrates its efficiency, and the knowledge of which will at once show how useful it may be in cases of mental exhaustion. I quote the case in full from the *American Medical Times*, Oct. 25th, 1862 ("Half-Yearly Abstract of Medical Sciences," vol. xxix, p.

351). The case is related by Dr. Muse, physician and surgeon to United States General Hospital, New Orleans.

"B. W., æt. thirty, came under my care at this hospital, labouring under pulmonary tuberculosis. On Sunday, September 7, he became wildly delirious. Taking it in view of circumstances to be a case of tubercular meningitis, I treated it as such, and sedative treatment (qualified by supporting measures) was pursued, but without the least benefit, until symptoms of prostration with excitement became so unmistakably evident, that all direct sedatives were abandoned, and a plan of treatment from which they were scrupulously excluded, was adopted. On the evening of Tuesday, September 9, however, he began to sink—he had not slept for three nights; no nourishment since the first day could be retained for a moment on the stomach. He continued steadily sinking until the time of my visit on Thursday morning, September 11, when I found him moribund. Animal life might also be said to be extinct. The radial impulse was still perceptible, and diaphragmatic respiration was yet performed. The reflex action of deglutition could be excited only with the greatest difficulty, and the sphincters were all relaxed.

"Professor R. R. Browne, of New York, surgeon-in-chief at this hospital, had intimated to me a short time ago, that he desired me to administer tincture of cantharides in the first desperate case of impendi-

'death by asthenia' which should present itself in any of my wards. Although I did not consider this a fair case for an experiment, inasmuch as I hardly expected the patient to live longer, I, however, drew his attention to the facts. At his suggestion I commenced the 'heroic' use of tincture of cantharides in doses of 40 minims, frequently, though irregularly, repeated according to the effect produced. The result was wonderful. In an incredibly short space of time (in the order of time in which I have enumerated them) warmth returned to the skin, the sphincter muscles regained their normal degree of tonicity, the 'Hippocratic countenance' entirely disappeared, respiration was once more fully and equably performed, and every bad symptom vanished as if by magic. Within three or four hours I had administered between two and three drachms of the tincture. The patient enjoyed a refreshing sleep during the ensuing night. On the following morning he was in the calm possession of his mental faculties, took and retained amply sufficient nutriment, and was fairly on the high road to recovery. The tincture was given in diminished doses and at length withheld, and the patient on the Sunday following (Sept. 14) had entirely gained his previous condition of health, his recovery having been more rapid than his decline, and without the least symptom of strangury having once made its appearance. It is the opinion of Dr. Browne that strangury will never occur in these extreme cases of debility, and that

life may sometimes be saved at the least by this heroic remedy. In other cases he recommends it in combination in smaller quantities with other remedies when a pure and powerful stimulant is required."

I have quoted this case in full because our books on Materia Medica entirely ignore this influence of cantharides. And so it is that, although some practitioners have given it with great advantage in bad cases of whooping-cough or bronchitis where the patients were greatly weakened, in cases of premature mental decay with exhausted brain it has not been tried. But I find it very useful, in small doses, from 5 to 10 minims, with other remedies. Looking at it as a powerful brain stimulus I should never hesitate in a well-marked case to give an occasional full dose of twenty to forty drops, to act as a fillip to the system, and so far pass my patient over the Rubicon.

But the debility observed in most of these cases warrants also the employment of other tonics which experience has shown have much efficacy in restoring brain force. Strychnia, which stimulates the nervous system, and acts specifically on the organs of fecundation, is indicated among these. Quinine, as a matter of course; but as is well known, quinine produces often headache which strychnia seldom does. Dr. Milner Fothergill has, however, shown that the combination of a bromide salt or hydrobromic acid in very many instances prevents when

given in combination with the quinine these headaches. The same is true of the chloride of ammonium, which acts by stimulating the liver, and besides is well known to correct headaches, even in nervous cases. But strychnia is an excellent remedy for the indigestion which often prevails in these cases. Therefore, as a rule, I prefer the strychnine. It is scarcely needed to say much about the employment of iron. But in cases of hyperlactation on the one hand, and those combined with spermatorrhœa or prostatorrhœa on the other, its employment gives the happiest results. As an injection (℥ij of the tincture to a quart of water) it acts locally and arrests the exhaustive discharges.

The good effects of *iron* are especially well shown in the case of overworked boys, and among these I have found no preparation so effective as the superphosphate of iron, that form of it prepared by Mr. Greenish, and originally introduced by him. A gentleman who subsequently became senior wrangler and has acquired a notable position as one of the best mathematicians of the day, was at one period of his career as a student thrown upon his beam ends from headaches and general mental debility, and, I believe, would have knocked completely under but for the continual use of this remedy for years when at work. Since then he has maintained the highest position in the face of the heaviest brain work; and certainly, if Dr. Thudichum's dictum, that the phosphorised organic matters all contain phosphorus in

the form of phosphoric acid combined with glycerine, and yield this nucleus by chemolysis as glycero-phosphoric acid, be accepted in its full meaning, we can readily understand how the administration of superphosphate of iron should renovate the brain power, because it supplies one of the most important ingredients necessary for its functional integrity.

The most difficult cases to treat are those of hyperfecundation in the female, where venereal excesses, or uterine discharges have assisted, by inducing exhaustion, the work of mental decay. These examples do not bear phosphorus well. They are apt, especially in males, to increase the unnatural discharge, but in both sexes bring about a torpid liver and constipation which then becomes very difficult of cure. Absolute separation of the sexes should be enjoined—at least, extraordinary continence; but this is not so easy to enforce in persons who have acquired an opposite habitude of body, though they will be ready enough to admit the injurious effect produced. Local astringents, specially iron and tannin, should be used. The hydrochlorate of ammonia, in ℈j doses, and occasionally arsenic in moderate doses, I have found answer best. If phosphorus be given at all in these cases, it is best given in solution with cod-liver oil, which it is well known already contains a small quantity of phosphorus, and to which about eight or ten drops of the sol. phosph. medicati may be added. It is in this variety especially that bromide

of potassium is found to be useful. In the other varieties, although it often does produce sleep, it debilitates also; but in this variety, as it diminishes sexual vitality, it is a desirable remedy. Chloral, having the same effect, will be often found invaluable in these cases. Experience has shown that it has a specific influence on the genito-urinary system. It proves almost as effective in curing nocturnal emissions as it does incontinence of urine. But no remedy has appeared to me, if long persisted in, to produce more deplorable brain weakness. Like dram-drinking, it is craved after, and as its effects pass away it leaves a degree of mental depression, which renders the sufferer a most miserable creature. I think I may safely say that in persons who have acquired the habit of taking it, it has brought about of itself premature mental decay, as effectively as the heaviest overwork and worry could have done. If given, therefore, at all, it should be given under medical surveillance only. No patient should be trusted to use it indiscriminately. If an effective remedy, it is also a mental poison. For these reasons if a soporific is required I prefer morphine or digitalis. There is more wholesome fear of morphine than there is of chloral, and digitalis in large doses often produces quiet and comfortable sleep, and by acting powerfully upon the kidneys, rids the system of much effete matter, at the same time as it manifestly strengthens the heart.

Opium to calm the system, and ensure sleep is, we

all know, an invaluable remedy, but like chloral, it becomes a snare, whilst its constipative effects, and its arrest of secretion are mostly injurious in such cases. Two remedies have been of late introduced, paraldehyde and urethane. Both seem to act very like the bromide, and often produce almost natural and comfortable sleep by quieting the nervous excitement, although they do not often relieve pain. They have one advantage over the bromide, they do not produce eruptions. Twenty minims of the former, or 15 to 20 grains of the latter given at night ensure sleep, and the patient wakes refreshed as he would from natural sleep. Other sedatives, like hemlock or henbane may be used occasionally with advantage, but as these are also narcotic they are liable to produce dirty tongue, and clog the liver, and the sleep produced is certainly not so refreshing and natural as that produced by paraldehyde or urethane.

The nitrite of amyl, and nitro-glycerine are two remedies, which fulfil another and a contrary indication in some cases of mental decay, where we wish to rouse the heart's action, and revive our exhausted patient. Both are exceedingly powerful agents, and need to be used with much care. Nitrite of amyl has a peculiar odour, and although at first pleasant enough, if long persisted in soon becomes very objectionable to some persons. It is also a very penetrating odour, and persistent when spilled on clothing. Two or three drops placed on a handkerchief and inspired will sometimes and almost immediately take

away all consciousness. Fortunately, its smell is so strong and clings so closely to clothes that any attempt made with it for criminal purposes would be at once detected.

It is to Dr. B. W. Richardson that we owe its introduction into practice. For his well-known writings and experiments, as well as those of Drs. Lauder Brunton,* Arthur Gamgee,* Ludwig,† Saunderson,† Crochley Clapham,‡ Woodman,‖ and August Ladendorf,‖ Anstie,¶ Wigglesworth,§ Charles Smith,§ Funkel,** Lithgow,†† Forrest,‡‡ and several others, we may gather the following as some of its therapeutical effects.

1. It is proved (as evidenced both by the sphygmograph and hæmadynamometer) that it lessens arterial tension by producing paralysis of the vasomotor nerves from the periphery inwards, diminishing the contractility of muscles, and causing dilation of the capillaries, as seen in the web of the frog's foot. That in this way it *warms the extremities*, flushes the skin, especially the face, *arrests night sweats*, and *raises the*

* *Lancet*, July 27, 1867, p. 97.
† *Ibid*, March 5, 1870, p. 337.
‡ *Ibid*, Aug. 21, 1875, p. 276.
‖ *Medical Record*, Jan. 13, 1875, p. 18.
¶ *Lancet*, March, 5, 1872, p. 336.
§ *Ibid*, May 22, 1871, p. 743.
** *Medical Record*, Sept. 1, 1875, p. 14.
†† *Lancet*, Oct. 16, 1875, p. 556.
‡‡ *Medical Record*, March 10, 1875, p. 148.

temperature of the body from 0·2 Fahrenheit, sometimes even to 3·38 Fahrenheit.

2. It *accelerates the action of the heart, i.e.,* increases the frequency of its contractions, not, however, diminishing the amount of work done by the heart in a given time; and in this manner it acts as an antidote to chloroform, prussic acid, &c.

3. It *checks sickness and vomiting,* as, for instance, sea-sickness, by causing, in the same manner as Dr. Chapman's bags, *anæmia of the spinal cord.*

4. It *relieves local pain,* as in angina pectoris, cardialgia, gastralgia, *nervous cephalalgia,* and has been known to cure some cases of tetanus and epilepsy.

5. It *produces sleep.*

6. It checks very effectively excessive perspiration. No remedy is perhaps so effective as this agent to arrest those long continued night perspirations observed in consumptive patients, a symptom also common in men weakened by overwork.

Now it is manifest that among several of the symptoms here noted as curable by nitrite of amyl, (specially those I have set forth in italics in preceding paragraph) we find many of those which we are so often called upon to combat in cases of overwork. Experience, moreover, of its use in such cases confirms us in the safety and advantage of its employment. It only requires to be carefully given; but in what way may this be most safely done? I confess for my part I do not altogether like to recommend

its use by inhalation to my patients unless I administer it myself. It often produces its specific action so rapidly, and at times brings on so much headache, almost amounting to agony, so much flushing of the face, ere relief comes, that patients dread the ordeal, and become afraid of the remedy. Given, however, by the mouth in single minim doses, gradually increased to four or five, in a few cases I have given as many as nine, it acts well in water, and with much less cerebral disturbance. It is very quieting, and the sleep it produces does not leave, as a rule, on waking that lassitude and heaviness which follow opiates, nor the depression of chloral; but frequently on waking the patients are unusually frisky and have a good appetite. It is but right, however, to add that there is rather an unpleasant effect produced by the remedy in some cases, although I have not been always able to explain the reason. It seems to make them "talk funny" and feel giddy sometimes, and the headache induced becomes more or less permanent; but frequently one or more of these effects may last two or three hours, although only a single-drop dose has been taken. The persistence of this headache I look upon as an indication when it occurs that the system is infected with it, just as deafness is an evidence of cinchonism. Where these symptoms are present I have always abandoned its use, and the unpleasant results have disappeared. One other advantage of this remedy is that it arrests excessive and debilitating perspirations, so common

in many patients with mental decay, and warms up the cold and icy extremities which are usually also present.

Another reviving remedy, which I have also used largely, is a weak solution of dynamite—otherwise nitro-glycerine. In most of its effects it resembles nitrite of amyl. It lessens arterial tension, it accelerates, but mainly strengthens the heart's action, it relieves local pains as in angina pectoris, cardialgia, &c., exactly as nitrite of amyl, but it differs from it in not arresting perspiration, nor does it check vomiting. Its effect on the heart is perhaps more durable than that of nitrite of amyl. The solution I have used is the same as that generally employed, 1 per cent., and of this solution 1 minim three times a day in water. Like amyl it produces at first a sensation of giddiness and headache for a few seconds, but it does not produce flushings, nor does it as readily produce warmth in the extremities. As it is not volatile it can only be given by the mouth in water, and like amyl, the persistence of headache is an indication it should be stopped. Two drops is a large dose and should, I think, never be exceeded, although in appropriate cases I have given it every hour. By its influence I believe, under God's blessing, I have saved several persons with weak heart from impending death. As a reviving agent it is truthfully most energetic.

I annex a few cases in illustration.

Case I.—An officer, æt. about forty, was much

troubled about some pecuniary embarrassments. He was therefore obliged to work unusually hard at the profession he had selected, up very early, late at night. For the last eight months he had been gradually failing. He was weak in body; easily, and on the least exertion, put in a perspiration; his muscular power seemed gone; his appetite was very uncertain; his virile power gone also; his spirits were depressed; his temper irritable; his loss of intellectual power, however, was that which gave him most concern; he could scarcely remember the most trifling events. When going from one room to another for anything, he would forget altogether for what he went; sometimes he would not be able to remember it at all; sometimes after a conscious exertion of the brain he would remember it again, but unless he put it down at once on a piece of paper would probably forget it again in a few minutes; it was the same thing with names, dates, and engagements; his whole aspect betrayed a worn-out constitution. I learnt he had been as a young man rather gay, but had lead a steady life for ten or twelve years back, during which he had been married. As he walked he had lost the precise military erectness; he walked rather as one affected with a very slight degree of locomotor ataxia. I diagnosed the case to be one of simple overwork and mental decay. I ordered in the main a fish diet, chiefly of crustacea and oysters, and gave him first Parrish's food, and latterly combined it with ten grains of allotropic

phosphorus twice daily. His habitual amount of stimulant being but moderate I made no change in that. He gradually and sensibly improved, and in about three months he had regained all his muscular power and intellectual activity. His virility was perfect; his memory as good as ever.

Case II.—More acute form. Mrs. B., æt. forty-two, widow. Thinks she is labouring under "neuralgia" of the brain. Complains generally of headache, a "heavy feeling of brain." This comes on at varied periods, more suddenly as an "attack;" head is unusually heavy; then giddiness and sickness follow, and a little something like froth comes up; last attack was unusually marked; after the headache and sickness she became confused; was not quite insensible; could speak a word now and then; head feeling as if it would open and shut. When she came to, she noticed she had a slight shaking of the head. Has been worrying herself much lately, having a large family, small means, and troublesome creditors. She is obliged to work very hard, keeping late and early hours, and to superintend almost exclusively the education of her children; has a tendency to fall backwards; is intensely nervous, starting at the least noise; memory exceedingly defective, cannot remember a single thing for more than a few minutes; is very weak in body, very soon fatigued and overdone; is relieved by a little brandy, or by lying down, and keeping the head as low as possible; pulse soft and

weak, but slow; has taken from time to time a good deal of chloroform medicinally; digestion appears slow; feels a sinking, as from want of food, but has no appetite; catamenia occur very regularly, last six or seven days, very copious, have been so all her life; in her confinements has also lost a good deal of blood. This patient had been ably treated in the country, and taken the usual remedies, but to no effect. This case I diagnosed as one generally of deficient phosphatic element in the nervous centres. I ordered her a little bromide of iron and quinine, but as the sickness was so marked a symptom I directed her chiefly to attend to a fish diet, particularly crustacea and oysters.

I saw my patient a fortnight after. There was very little giddiness left, and only occasionally; still a slight tendency to fall backwards; she felt uneasy when she leant forward; all sickness was gone; had not taken nor needed any brandy; felt very decidedly better; to use her own expression, had eaten "no end of shell-fish and oysters;" pulse 80 to 84, regular; much stronger; memory greatly improved; no tremulousness left; in fact, her relief was so marked that she considered herself cured. She only complained of a little constipation. Ordered a pill of superphosphate of iron, colocynth and hyoscyamus āā gr. j., ext. nucis vomicæ, g. $\frac{1}{4}$ pill *ter die.* to regulate the bowels. This was a more acute case, yet, in the main, it readily yielded to the fish treatment.

Case III.—July 1. Rev. T. H. F, æt. about sixty, has been a clergyman for many years, preaching with notes only, but lately has become confused whilst preaching, forgetting the thread of his argument, seems also to have experienced lately want of power to grasp subjects. Recovers himself after a time, but the fear of this makes him very nervous; sleeps fairly, not troubled by dreams; lives in a damp, cold neighbourhood; loss of memory occurs frequently at other times than when preaching; no recollection, especially of names and figures; urine normal, no sediment; total loss of virile power; no backache, but a creeping sensation up from the nape of the neck; no loss of muscular power on either side; eyesight weak; no indigestion, cannot digest lobster; first sound of heart rather prolonged, especially at base; bowels regular in London, more so than in country. Ordered Parrish's food, oyster and other shell-fish, excepting lobster. As his teeth are bad, use a small digestive sausage machine.

July 31.—Much better. Had profited greatly from the treatment. The mental faculties much improved. States he is not the same man. He was now ordered allotropic phosphorus, g. x daily, after his dinner. My last account from this gentleman was that he had completely recovered.

Case IV.—Mrs. Y., æt. about forty-two, consulted me in November last for loss of mental power and strength. The catamenia had stopped twelve months, and she, too, had a large family, with small means,

and was much worried by creditors. Her memory is very defective, indeed, gone; she can't remember anything, not even where she puts away any article of dress. When she has a good night she is rather better for a few hours, and then the same state recurs. She is always worse if she has had her attention forcibly called to anything; is very restless at night; her feet being drawn up as if she was going to have a convulsion; is become shockingly bad-tempered, even violent on the slightest contradiction; feels very anxious and unhappy; bowels open; tongue clean; no leucorrhœa at present, although five months back she used to have it copiously for two or three days in lieu of the catamenia.

Ordered mustard to nape of neck; feet in hot water; half a drachm of bromide of potassium every night in water; sol. phosph. med. m. x, *ter die.* post cibos. A week after (Nov. 12) was generally better, except that she had one bad day.

On the 19th she was better, but she stated that she had taken the bromide very irregularly, finding she could sleep without it, and the head was much less giddy.

This patient I saw for several weeks after. The treatment was interrupted by a bilious attack, which obliged me to suspend the phosphorus; subsequently it was resumed. She is now greatly better; feels that the phosphorus acts as a sort of tonic, or rather, as she expresses it, can't sleep without it. Memory greatly improved; some days not so good, but the

intervals are longer, and generally her improvement is marked, and she is in fact convalescent.

Case V.—Mr. ——, a professional gentleman, consulted me some time back for general debility and loss of mental power, He had been a very studious man in his day, but also somewhat gay in his youth, He was accustomed to sit up late and study. For some time back his memory had become very defective; when speaking he would lose altogether the thread of his discourse; forgot where he put things; forgot people's names and dates; use wrong nouns and adjectives the very reverse of what he intended; he seemed, however, to retain all his powers of recognising the individuality of persons, although he forgot their names; in writing a prescription he did not forget the doses, but the names of the drugs, so that he was frequently at a loss to know what to write. On one occasion while travelling on foot in the neighbourhood of his own residence, he forgot altogether where he was, and was obliged to ask his way; in about ten minutes he recovered himself. There was no giddiness, headache, or defective muscular power, and all this while he was quite conscious of his identity, and remembered the names of some streets in the neighbourhood, so that he could manage to make his way homewards. He slept well, ate well, looked a little tired and haggard, but otherwise there was nothing remarkable about him. There was entire loss of virile power. All the senses were perfect.

This case was again diagnosed as a case of phosphatic want in the system. He was put on allotropic phosphorus, g. x. *ter die.*, and fish diet, specially crustacea and oysters. In three weeks he had recovered his tone; memory was much improved; virile power returned in full force. He is now an active member of our profession, in full mental vigour.

Case VI.—Mr. R. N,, æt. thirty-five, an author of note, and with considerable literary attainments, first consulted me in 1873. His was one of those cases which might have been mistaken for spermatorrhœa, with which disease, indeed, it presented some resemblances. His literary occupations were very extensive, and he had scarcely any leisure. He complained of great weakness, and mostly of some indigestion. He was liable to sick headache. His memory was greatly weakened. His powers of application became more difficult every day. He complained of backache, and occasionally there was a feeling as if something started in his back. Marked paroxysms of hysteria would come on from time to time. Occasionally he became so nervous that he could not bear to be alone Frequently he had very low spirits, and meditated suicide. Sometimes he was intensely restless, not knowing what to do. The slightest trouble was a dreadful annoyance to him. His sleep was much disturbed. Then his liver became very torpid, bowels greatly constipated. Soon his dreams began to assume an erotic character, and were accompanied

with frequent night losses. Ardor urinæ came on, with copious secretion of lithates, and very acid urine, though free from albumen. The erotic tendency began unfortunately to disturb him in the day. Although a very religious, good man, he dared not trust himself to read dubious police reports, and even the society of ladies excited him, so that he feared to go into society. Inadvertently erections would occur with a kind of discharge, but this proved to be only prostatic fluid. The state of this poor gentleman was deplorable to a degree, yet there was nothing in his previous life that could in any way account for his present mental sufferings. He had never been a gay man. He was exemplary in his conduct as a husband and a parent. Overwork and insufficient rest, together with considerable worry in his daily pursuits, were the only causes which could be traced in his case.

The treatment in this case was rather complicated, but measures were taken to improve the digestive powers and to insure sleep. Phosphide of zinc in combination with the valerianate and bromide of potassium were largely given. Astringents were ordered locally as injections. Later, steel was given. These measures combined with change of air, total abstention for a time from literary pursuits, specially those of an exciting nature, proved successful. The improvement of the memory and mental power was marked, and although not completely restored, he can

now control his feelings, and has been able to resume his literary labours with success.

Case VII.—Mrs. S., æt. thirty-nine, had been under observation for years. Married at 18, she had two children by her first husband; then was a widow for three years; then married again, and in fourteen years had eleven children, often at intervals of eleven and twelve months, and four miscarriages. She had had several attacks of puerperal mania, but there was no albuminuria to account for it Her grandfather and father had died insane There was also insanity in some of the collateral branches of the family. The children born in the early periods were healthy and strong—those born later were very weakly and puny. In her case many of the premonitory symptoms of mental decay existed. Loss of memory, restlessness, inability to apply herself steadily to her occupations, an occasional uncontrollable temper, worrying at the slightest annoyances, all gave indications in that direction. The liver became quite torpid, constipation of a very unmanageable character presented itself, hysteria of marked and the most perverse nature developed itself in the progress of the case. A host of very obstinate uterine symptoms soon added to the trouble. Copious leucorrhœa, with cervical ulceration, whether pregnant or not; when not pregnant, menorrhagia alternating with dysmenorrhœa, with the usual accompaniments of backache, bearing down, &c. Constantly on the sick list, only better one month to be worse the next, often miscarrying,

there she was, a sad instance of hyperfecundation, longing for rest, but unable to obtain it; perhaps as much a trouble to her physician as she was to herself.

As the several symptoms presented themselves she was treated for them, and always with some measure of success. The remedies which appeared to suit her best, after an attempt with phosphorus, which proved only partially successful, were arsenic, nitro-muriatic acid, and hydrochlorate of ammonium, which she took with much advantage. Her bodily strength improved synchronously with a recurrence of mental power, and she is now thoroughly convalescent.

Case VIII.—L. S., a literary gentleman, æt. about fifty, first consulted me in January, 1874. For the last twelve years he had pursued his avocation unflinchingly, and never taken a holiday. Latterly, he had noticed general enfeeblement of his body. Then he felt his mind give way. He found he had not the power to concentrate his ideas. His memory also became defective. Work, which at one time had been a pleasure to him, became very irksome. As he expressed it, he felt he had the mind of a man of genius, with the brain of an idiot. He had a fair appetite, but had not taken much fish. The organs of sense were unusually sensitive. His hearing only was a little defective, but there was clearly an excess of wax in the ear. His sight and taste unimpaired. He had consulted a medical man, who had ordered him Parrish's food, two teaspoonfuls three times a

day, and subsequently strychnine. These remedies had done him some good. He thought the former remedy excited him and exhilarated him, so that he felt he could face a cannon-ball. He could walk four miles without fatigue. Lately, however, he had gone back, and had not persisted in these remedies. There was now no headache; indeed, he had been remarkably free from this all his life. He was liable to feelings of cramp in several parts of his body. His virile power was weakened, but not gone. When very young he had suffered from spermatorrhæa, but had been well of this affection for years. Heart sounds normal. Occasional suffering from indigestion. Takes about two or three gills of brandy as his beverage, in water, in the week. Sleeps well, but is troubled by very unpleasant dreams. Feels his brain power, however, so weakened that he fears impending insanity. Ordered sol. chloroph. arsenic, ℥ss.; syrup of phosphates, ℥j., three times a day. after meals, in water; fish diet largely; cod-liver oil, ℥j., after breakfast, and after dinner, daily.

This patient continued under my care, although somewhat irregularly, Except an attack of rheumatic ophthalmia which supervened, and also a severe face-ache from defective teeth, he steadily improved. Change of air to the sea-side assisted him. He had occasional recurrences of his unpleasant sensations, but they were few and far between in comparison, and, so far as I learnt, seven months after the treatment, he wrote, and

believed, "on the whole, the improvements following on the treatment you have prescribed are truly wonderful."

Case IX.—The Rev. J—— had been engaged as a chaplain in connection with an embassy for many years. He was about sixty, but hale looking. He complained of excessive weakness of body, easily fatigued after any little exertion. He complained of uneasiness and heaviness about the head, backache, considerable abdominal pains round about the cardiac region. Mental work was a labour to him. His memory was defective; he had become very irritable. Latterly, especially in early morning and at night, he had had some giddiness and vertigo, accompanied with some numbness of lower extremities. He had been very anxious about his future. Heart sounds were normal, but weak; tongue clean.

He was put on allotropic phosphorus g. x. twice a day with meals. Sulphate of iron, valerianate of zinc, of each two grains. Powdered aloes, ext. nucis vomicæ, of each gr. $\frac{1}{3}$. Fish diet as frequently as possible. This treatment, combined with change and rest, completely restored him in about a month or six weeks, and he was able to do duty with singular ease and success. Indeed, except a slight attack of rheumatism, which occurred a year afterwards, he has continued well ever since.

Case X.—Mrs. M——, æt. forty-five, mother of a large family—the children very troublesome—with very small means, has been very anxious. She has

exerted herself to the utmost to make both ends meet, and overtasked her strength. She complains of a dull headache, generally worse in the morning and evening, but induced at once by over-exertion, or if she becomes much preoccupied by anything. At night it is sometimes so bad that her feet draw up, and she feels as if she were going to have a convulsion. She has become very irritable and ill-tempered; cannot put up with any contradiction. What distresses her most is her loss of memory. She can absolutely remember nothing. Catamenia absent for one year. Some leucorrhœa and backache. Makes a good deal of water. Her digestion at times very troublesome, intense gastrodynia being present. She is very low-spirited, full of anxiety for the future, too weak to take exercise. Pulse 88, weak. Tongue clean. Is a little deaf of one ear, but all other organs of sense are in good condition.

This patient was ordered sol. phosph. med. m. x. *ter die.* post cibos. Hot pediluvia. Fish diet as often as practicable; and ʒss. of bromide of potassium and g. x. of bromide of iron in water, every night, Mustard leaf to nape of neck: Under this treatment she gradually improved. The phosphorus was increased to 15 and 20 drops for a dose.

She did not, however, progress as fast as I could wish—requiring over a year's medical supervision—having had several little relapses, besides an attack of tonsillitis. But she was sadly worried and unable to take proper change. Notwithstanding these draw-

backs, however, she did steadily improve, and is now at last convalescent. The effect here is the more satisfactory as her worries continue, but she has more mental power to bear with them. Her temper has ameliorated. Her memory very much improved. Her whole aspect denotes moral and physical improvement.

Case XI.—N. D., æt. about fifty, consulted me for mental declension. He has been a man of great mental powers, and very fond of work, in which he had exceeded. As early as thirteen he overworked himself at his studies, and subsequently, after ordination at some very poor parish, he married, and soon afterwards evinced great peculiarities. Loss of memory especially developed itself. He would forget where he was going, and often fainted in the streets. The smallest amount of stimulant would madden him, and he would act most violently, but would not have the slightest recollection of what he had done. He took a long voyage at sea by medical advice, and was greatly benefited thereby. Soon afterwards, and especially after much mental worry, he relapsed again. He then had moments of cerebral excitement. He would talk in extempore poetry, but unconsciously. Would preach a most eloquent sermon, and yet forget all about it. He even was guilty occasionally of kleptomania, but unconsciously. He had two children—one a girl, very nervous and peculiar. The boy was healthy. Things got so bad he was placed in an asylum

for some months, and he appeared to recover completely.

When I saw him he was in a nervous, agitated state. He said he felt very exhausted, and broke out in heavy perspirations after preaching. He was liable to involuntary seminal emissions at night, partial paralysis of muscles, trembling of legs and arms and about the nose, and a kind of pulsation in the tongue. He told me that in the asylum in which he had been placed the heart was said to be diseased; but, although it was certainly weak, I could find no morbid sounds. A full and deep inspiration, however, produced some pain in the region of the heart. He had also been told that he had had one or two attacks of epilepsy. He had generally slept well. He had, although accustomed to preach, a good deal of nervousness, and once or twice had experienced a choking sensation in so doing.

I placed this patient on Tr. ferri. sesq. m. xx and Tr. digitalis m. x *bis die.*, and with two meals I directed him to take ten grains of allotropic phosphorus, and at night a draught of ʒss. of bromide of potassium and ten grains of hydrate of chloral. I advised also rest from his labours, which were very assiduous, and, as I thought, too numerous for one in his condition.

He improved, however, in many respects. His memory became more retentive ; pulse stronger and very regular. The nocturnal emissions entirely ceased, and he was enabled to get through his

work fairly well. Some anomalous symptoms were however, noticed. He was much more drowsy. Had occasionally a headache on rising in the morning, and violent jerks in his sleep. There was also an occasional sensation of working at the stomach. A good cholagogue purgative, and the restriction of the sleeping draught to half the quantity, removed these anomalous symptoms, and he appeared very much better. Only on two occasions in the morning he was seized with giddiness, and reeled about as if drunken for a few minutes. These symptoms were referred to biliousness, and so treated.

My patient, however, felt himself so much better and so relieved that he abused his powers. I may summarize the amount he did until he broke down. In five weeks' time, generally five days so occupied in the week, he preached thirty-four sermons or addresses. During nineteen days of this period he had the entire charge of the parish, and performed services in the church single-handed, and had the responsible part in five other services. All this exclusive of visits paid to schools five days in each week, and visiting the sick.

It was no wonder to find that he broke down. While at church during a service he became vertiginous and confused, and was compelled to give up. Entire rest and change became now imperative, and were at once resorted to. I saw him again in about two months. He was quite restored.

He looked well. His memory was excellent. All night losses had ceased. He felt quite well. Except an occasional feeling of biliousness he had nothing to complain of.

I put him upon hypophosphite of soda and sumbul, and I have every reason to believe he is completely restored.

This case is remarkable in many ways. Unprofessional persons might have grounds, perhaps, to take an uncharitable view of the symptoms observed, but I believe the case to have been one of indubitable mental debility, brought on by overexertion.

Case XII.—Mr. J. S. called upon me complaining of a general break-down. He was a man under authority, had worked incessantly for years, taking scarcely any holiday. Lately he had been much worried, owing to some difficulties in his business. He was a single man and had not led an immoral life, but lately had lived rather more highly than usual; his appearance was flushed; his face red; eyes bloodshot, and his sight was defective. He heard well. His memory was very bad. He also had a good deal of headache and vertigo, which stooping increased. His power of taste was good. He had a good deal of palpitation. Had once smoked a good deal, but had given up that habit. Although he lived highly, he was never intoxicated. The heart sounds were weak, but healthy. Pulse 84, good and regular. His digestion was bad; his

tongue, nevertheless, clean. He frequently woke at night with erections, and had occasional night losses, and a slight mucous discharge after passing a motion from the urethra. Virile power completely gone. His bowels had been irregular, but were not so now. There was no backache, but often pains in the hips and lumbago. Urine clear, sp. g. 1021, very full of phosphates. He did not sleep at night at present, but about two months back had been in a very drowsy state, having slept an entire day and night. The subsequent day he felt a little poorly, but had no recollection of the state in which he had been in the preceding twenty-four hours.

This case was first treated by a blister to nape of neck and smart purging. I put him subsequently upon the ordinary phosphorus treatment, selecting the liq. chlorophosphide arsenic, m. viij., *ter die*, and varied the anodyne at night. Fish diet. Some hepatic symptoms supervened in the course of the treatment, which required the suspension of the phosphorus for a time. and the employment of cholagogues rather freely. The amendment showed itself by the more frequent recurrence of days in which he felt quite well, although he had occasional relapses; but these last became fewer and farther between. In about six weeks he was another man. He had recovered his memory and power. He slept perfectly and was in every way restored, and, I heard very shortly afterwards, married.

Case XIII.—Mr. C. N., æt. sixty-two, consulted me in March, 1876. He was an engineer in large business, with several thousand men under his orders; working night and day, and with heavy responsibilities. Five years ago he thought he had had an attack of paralysis; at any rate, since that period his left arm was very weak, and also his left leg. There was no headache, but marked loss of memory, with great depression of spirits. His sight and hearing were equally good on both sides; indeed, he could read occasionally without glasses. He was intensely nervous and easily upset by anything. He had been of late very much worried and anxious about his business. There was no arcus senilis visible on his cornea; indeed, his eyes were remarkably clear and bright. There was no morbus cordis. Respiration was normal. There was a certain thickness in his speech as he spoke, especially at first—much increased when agitated by any cause. Tongue was very dirty. He micturated very frequently, and the urine was offensive. Was liable to diarrhœa. Could not sleep more than three hours of a night, and then he woke exceedingly fidgety.

I placed my patient on syrup of the iodide of phosphorus *ter die.*, and bromide of potassium and sumbul at night; fish diet; complete rest of mind and body. I also advised him to occupy himself in seeing some of the London sights, in reading amusing works of a light character, and

if he could, to go and see some comedy or farce, to give a new current to his ideas.

The first favourable effect noticed was an improved digestion; sleep also was afforded, and the urine lost its offensive odour. His sight also had markedly improved. He did not need glasses, and his arm was, he thought, decidedly stronger.

In about three weeks' time some hepatic symptoms supervened, and his speech was decidedly worse. There was also slight salivation, which was ascribed to the iodine in the combination with phosphorus. A grain of calomel, with $\frac{1}{4}$ of podophyllin, and two of aq. ext. of aloes, were now given, and a tannin wash for the mouth. The patient was some time getting over this salivary irritation, but he certainly improved in spirits and strength of the arms, and walked more easily. He felt stronger, and his memory had improved. The intense depression of spirits was also much removed.

He so far had recovered in the course of three months that he returned to his employment. He slept also much better. He was able to enjoy some amusements, which he had not done for a long time. He himself, at any rate, appeared much gratified at his ameliorated condition, and I could only regret that his necessary duties compelled him to leave me at this early period of the treatment.

Case XIV.—Rev. T. H. I., a nonconformist clergyman. For the last eight or nine months has had sleep-

lessness. Till lately he could sleep five hours. Last week only one or two hours. He felt he had overdone himself in taking another clergyman's work. Before this had been troubled greatly in mind, with want of faith in his Creator. To produce sleep he was therefore compelled to have recourse to strong narcotics. One night, while under strong religious excitement, he seemed suddenly to receive a new light, and fell asleep for a few hours without the accustomed remedies. Generally his memory was much impaired. He was unable to concentrate his mind even in his reading of the bible. Had not been able to preach for two months. Very rarely he had nocturnal losses. Sexual desire was extinct. Tongue very dirty, bowels irregular. Water high coloured. Pulse regular. He had often a dull pain at the back of his head, which sometimes was accompanied with burning heat there. His physical power was weakened. Sight impaired, objects looking hazy, and lines running into one another. He has taken stimulants, but very sparingly, sometimes a little claret. Has smoked formerly to excess, but now takes no wine of any kind, and has given up smoking. Heart sounds are weak. Liver not enlarged.

This patient was first freely purged and put upon the chlorophosphide of arsenic ℥x twice a day. Perfect rest enjoined. Fish diet. Tr. valerian, sp. ammon. fœtid. aa ℥ss in water occasionally when feeling tired. There was some improvement.

but it was not well marked, and in three weeks he disappeared.

Four months later I was suprised to see him enter my study one morning. He then told me he was more nervous than ever, and had been unable to preach since last seen. He had got very feverish, and had gone to Matlock, where he was poulticed and got better. Subsequently being exhausted by a journey made at Matlock, he had gone to Scotland and put himself under the care of a quack, who he states nearly killed him. He now only sleeps one hour in the 24 as a rule. The night before last, however, he had fallen asleep in his chair and had slept ten hours, but last night only two. He has no headache, but since treated by the quack is subject to nervous twitches.

He was ordered an alterative pill night and morning of hydr. perchl., podophyllin āā gr. 1-12th; ext. cannabis Ind. gr. ½, and a mixture of tr. eucalyptus, ℥ss; tr. cannabis Ind., ℥j, mist. camph., ℥j: liq. pot. arsenitis, ℥v.; pot. bromid., gr. x. twice daily. Fish diet frequently. He greatly improved under this treatment, getting more sleep and gaining strength, and having better spirits. A month after he reported himself as hundred-fold better. Sleeping generally well. Occasionally a little aqueous extract of aloes was added to his pill, which relieved him of piles. He was unequal to do much visiting work. Felt his mind

stronger in the memory, especially after morning ablutions, but he did not always take in what he was reading. He also suffered from tightness across his forehead. A liniment of lin. opii. chloral, and camph. equal parts, was ordered to be applied to the forehead.

At the beginning of the third month he was convalescent. He slept well, was able to preach with great facility, much more so than formerly. He very rarely had a sleepless night, and was only occasionally bilious.

Five months after he reported himself as absolutely cured, and he has since for a period of five years been able to perform all his duties very comfortably.

Case XV.—The following lady came to consult me on some business matters, but her description of her feelings was so vivid, and her symptoms so characteristic of incipient mental decay in women that, although under the circumstances I was not at liberty to treat her, I have appended this portion of her case as a forcible example:—Mrs. L. S——. This was originally a case of fibroid tumour of the uterus, for which she was treated, with the result that the tumour became much smaller. After this, with the necessity of attending to her household arrangements, which were apparently in great disorder, consequent on the loss of her husband, the supervision of friends, diminished means, and unruly children, she relapsed in the following condition as described by herself.

"I never feel well, except the first hour and a half after I first wake in the morning, and before 11 o'clock in the day my head is swimming, and I feel shaky and bewildered, and a horrid exhausted kind of sensation. I am told that I do not try to be like other people, but my friends, with all their kindness, cannot understand how shaky and ill I feel, and won't believe me when I say so. They irritate me by suggesting I should be better if my children were taken from me, as I found it too difficult to manage them. This I feel to be very cruel treatment. Even as I say so, I feel quite agitated and tremulous. Without any children I should be wretched. If I could only get a governess to assist me, but if I propose this I am said to be lazy and affected, because I cannot bear their worry and noise alone. I feel so awfully bad sometimes, especially if I have any particular mental strain. Pecuniary troubles beset me, I forget things, where I have put my purse. I go into a shop to get something, I forget what I want. When I have not much to do for a day or two I begin to feel better, but my anxiety upsets me, or opposition, and makes me tenfold more miserable and nervous, and less able to perform my duties."

Case XVI.—Mrs. C. H——, æt. forty-eight. A very stout lady. A widow for the last seven years. Ten years ago was under a distinguished gynæcologist, since dead, and was then labouring under congestion of the ovaries, but is never comfortable in her pelvic organs. She dates her first attack twenty-seven years ago,

after the birth of a child. She has had five children, and several mishaps. She had rheumatic fever when much younger, but the heart, although weak, was stated not to be otherwise affected by it. The catamenia are very irregular, sometimes copious, sometimes absent. When the catamenia are not present suffers a good deal from leucorrhœa, which is copious, and often offensive. She is very moderate in her habits, but suffers occasionally very severely from indigestion. Her mind is greatly distressed. She is full of worries and anxieties, which are much aggravated by limited means. Her head is in a very confused condition, full of very queer sensations. There is a tingling creeping sensation all over her body, from the brain down to the lower extremities. Uneasy heart sensations, palpitations, feeling as if she would fall down unconscious. Sometimes she loses all recollection, memory seems gone. She feels, in fact, as if her brain were paralysed. Occasionally it is intense headache, and the presence of a number of persons in a room so confuses her that she feels as if she would fall in a fit. She is very weak on her legs, sometimes staggering in the street as if intoxicated, very soon feeling exhausted after exertion. Her face sometimes becomes intensely scarlet, and then pales again. Occasionally very sick, urine turbid. The special organs of sense appear unaffected. The uterus is large, extending as high as umbilicus; liver also enlarged. Heart sounds weak, but without

valvular disease. There is a good deal of uterine pains due to congestion and ulceration.

This case continued under treatment for nearly a year. The local uterine affection and the hepatic troubles had to be treated. Her domestic anxieties did not diminish, and the progress of the case was thereby much retarded, but ultimately she improved greatly, and was enabled to mix in society again, and resume her domestic duties.

And here I must draw my remarks to a conclusion. I trust I have said enough to prove that overwork, as productive of premature mental decay, is not a mere idea, but a stern reality, arising mainly from want of rest, insufficient variety of employment, and a too violent pursuit after the attainment of success In confirmation of which I would make three final reflections, each of which tells an important lesson.

First, the lesson of creation. Day was created first—light, emblematic of knowledge, and giving opportunity for work—but it was immediately followed by night. "Work while it is to-day, for the night cometh when no man can work," is, then, as true in a natural as in a spiritual sense. Exertion, progress, advancement, are necessary, and we must acquire knowledge and wisdom to fight the battle of life successfully. This is our daily work. But rest for the vital powers is equally imperative. This should be our nightly comfort. Only when work

and rest follow one another can success result, else were the world unfitted for man.

But, secondly, another lesson is taught us by the multitudinous varieties with which this world abounds. It is by change, difference, and contrast, in our surroundings that harmony in place of discord, beauty in lieu of deformity, and peace instead of unrest, are brought about. We have heavenly revelations to comfort and encourage us. We have three kingdoms—the animal, vegetable, and mineral—with their endless diversities, in which to exercise our intellects, and to raise them to a worthy level. Let the mind, therefore, feed on variety, and enlarge its usefulness and power.

But, lastly, man lives in time. Everywhere limit, finiteness, meet him here. There must therefore be a goal to his powers of progress and exertion. His full development belongs not to time. Let him not aim too high. This world must be used, not abused. The immutable decree applies to him as well as to oceanic power. He, too, may not transgress his bounds. "Thus far shalt thou go, and no further."

APPENDIX.

CAUSES OF INSANITY FROM THE IRISH TABLE

To 1000, *all cases.*

N.B.—The moral causes are distinguished by an asterisk.

Grief	165·1
Intemperance	151·5
Epilepsy	82·3
* Religious excitement	79·1
* Love and jealousy	67·4
* Reverse of fortune	58·0
Terror	55·7
Injuries to head and spine	55·0
Diseases of brain and nervous system	43·0
Childbirth	37·2
Fever	31·4
Climate	30·3
Sunstroke	25·0
* Anxiety	21·7
* Study...	22·9
Excitement unspecified	14 3
Carried forward	939 9

Brought forward	939·6
Venereal excesses	10·0
* Moral or mental causes undefined...	9·0
Disordered menstruation	7·5
Pride and ambition	7·0
Hysteria	6·3
Rape and seduction	5·8
Syphilis and mercury	5·0
Dyspepsia	3·2
* Ill-treatment	2·6
* Political excitement	1·1
Immoderate use of tobacco	1·1
* Passion	·5
Malformation of head	·5
Heart disease	·5
	1000·0

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