

half-hour lecture, I went, not without some incredulity, to the smith's shop, with many other curious spectators, when we were eye-witnesses of the complete success of his art. This, too, had been a troop-horse, and it was supposed, not without reason, that after regimental discipline had failed, no other would be found availing. I observed that the animal seemed afraid whenever Sullivan either spoke or looked at him.* In common cases, Mr. Townsend adds, even the mysterious preparation of a private interview was not necessary, the animal becoming tame at once. We have here, therefore, another instance of most extraordinary and instantaneous ascendancy of one animal being over another, without any manifest medium of action, which we are occasionally, but not often, called upon to witness. That it could not have been force is clear; and though natural firmness and intrepidity may do much, they by no means appear to have been sufficient in the present case, and could, indeed, accomplish but little in the dark. Nor does there seem to be any mode of accounting for such a control so reasonable as that of a natural or artificial emanation from the fascinator, which we have already adverted to; and, if the last, obtained, perhaps, as in many of these instances, by illining or impregnating the person of the operator with the virtues of various plants unknown or little known to the rest of the world.

Thus far we may proceed safely upon the subject before us. But some theorizers have not rested satisfied here, and with much rhapsody of invention, have carried forward the same mysterious agency into the recesses of the intellect, and contended that it is by a similar kind of medium, or, sometimes, by a sort of elective attraction, operating invisibly through the moral world, as the imperceptible powers before us operate in the physical, that mind produces occasionally an instantaneous influence upon mind; whence, say they, we are at times impelled, by a certain indescribable sympathy, to feel more pleased with one person of less intellectual and perhaps even less moral worth, than with another person, whose endowments in both respects are confessedly superior: while others, pursuing the hallucination still farther, have gravely suggested, that it is possibly by some such medium that an intercourse is occasionally maintained between ourselves and the spirits of our departed friends; between this world and worlds around us. To hunt down such vagaries would indeed be a thriftless employment; and I only mention them to show that philosophy has its dreams and romances as well as history or even poetry; and that the principles of physics are as liable to perversion as those of ethics. Philosophy is a pilgrim, for the most part, of honest heart, clear foresight, and unornamented dress and manners; the genuine bride to whom heaven has betrothed him is Reason, of celestial birth and spotless virginity; and the fair fruit of so holy a union is truth, virtue, sobriety, and order. But should ever the plain pilgrim play the truant, as unfortunately in the present corrupt state of things we have reason to fear has too frequently proved a fact,—should ever Philosophy migrate from his proper hermitage, and in an hour of ebriety connect himself with the harlot Imagination, what can be the result of so unlicensed a dalliance but a spawn of monsters and miscreations; of hideous and unreal existences; of phantoms and will-o'-the-wisps, equally abhorred by God and man; treacherously hanging up their dim wildfire, in the pestilent bosom of mists and exhalations, and from their murky shades alluring the incautious inquirer to bogs and sloughs, and quagmires of wreck and ruin?

* Survey of the County of Cork, p. 433.

LECTURE VII.

ON SLEEP, DREAMING, REVERY, AND TRANCE; SLEEP-WALKING, AND SLEEP-TALKING.

We are proceeding to a subject of much difficulty in theory, though of the greatest familiarity in fact; and I freely confess to you, that although I have endeavoured to investigate almost every opinion that has been offered upon it, from the time of Aristotle to our own day, I have never met with any thing in the least degree satisfactory, or capable of unravelling the perplexities in which it lies entangled.

What can possibly be more opposite to each other than the two states of wakefulness and sleep?—the senses in full vigour and activity, alive to every pursuit, and braced up to every exertion,—and a suspension of all sense whatever, a looseness and inertness of the voluntary powers, so nearly akin to death, that nothing but a daily experience of the fact itself could justify us in expecting that we could ever recover from it.

And yet, while such is the lifelessness without, the mind, now destitute of the control of the will, is often overwhelmed with a chaos of ideas, rushing upon each other with so much rapidity, that the transactions of ages are crowded into moments, and so confused and disjointed, that the wildest and most incongruous fancies flit before us, and every thing that is possible becomes united with every thing that is impossible.

Such, however, are the ordinary means devised by Infinite Wisdom to revivify the animal frame when exhausted by the labours of the day; to recruit it for new exertions, and enable it to fill up the measure of its existence.

The order I shall take leave to pursue in discussing this abstruse subject will consist, first, in a brief examination of the more prominent hypotheses on sleep and dreaming that have been offered to us by ancient and modern schools: secondly, in a minute analysis of the feelings and phenomena by which these operations are characterized, agreeably to the series in which they occur: thirdly, in submitting the outline of a new theory to explain the entire process: and, lastly, in an application of such theory to a variety of other subjects of a similar and equally extraordinary nature.

Sleep may be either natural or morbid. The former is usually produced by whatever exhausts the principle of life; as great muscular excitement, violent pain, vehement use of the external senses; or great mental excitement, as intense thought or severe distress. Morbid sleep is commonly occasioned by compression or commotion of the brain, and is hence often the result of congestion, plethora, or local injury to the skull.

Compression and commotion, though less frequent, are more direct and obvious causes: and hence the greater number of physiologists believe compression to take place, also, though in a slight degree, in every case of natural sleep; and in reality to constitute the immediate, while sensorial exhaustion only constitutes the remote, cause of this phenomenon. They appeal to the lethargic effect of a full stomach in infants, and of drunkenness in adults, which they refer to congestion in the brain, in consequence of a greater influx of blood into this organ: and hence they reason that a similar sort of pressure is produced by some means or other in every case of sleep.

But what are the means of pressure thus referred to? And here a considerable difficulty is felt by every school of physiologists: and two distinct schemes are devised to get rid of it. By the one we are directed to the arterial system, which, we are told, becomes peculiarly excited and overcharged in the organ of the brain during wakefulness, from the activity of the internal senses.* By the other we are directed to the absorbent system, which from

* This explanation is partly, though not chiefly, adopted by the author of the elaborate article on sleep, in Rees's Cyclopædia; and has since been fully embraced by Mr. Carmichael, in his learned Essay on

the same activity is said to become worn out and rendered torpid in the same organ; and, hence, to be incapable of carrying off the fine fluid which is perpetually exhaling from the secret vessels into the ventricles of the brain.

Nothing, however, can be more unfounded than both these conjectures, and it is difficult to determine which of the two is the most so. But we are in no want of either of them, for we are in no want of the pressure which they are invented to account for. The principle of exhaustion alone will, I trust, be found sufficient to answer every purpose as a general cause of natural sleep; and, were it possible for us to add that of local pressure, the sleep would no longer be natural, but morbid.

Before we proceed farther, however, I will just hint that Dr. Cullen supposes the nervous fluid or power to be disposed by nature to an alternating state of torpor and mobility.* He does not admit that it is ever exhausted and restored as a secretion;† and hence in sleep it is only suspended: and in consequence of this suspension the exercise of sense and volition is suspended, also.‡ Narcotics do not, therefore, in his view, exhaust, but only suspend the nervous power or fluid, and thus induce sleep, which consists in such suspension. The apparently stimulant power of narcotics he derives from the vigilant exertion of the vis medicatrix nature,—the instinctive effort of nature to guard against such suspension of vital power as essentially mischievous, and, when carried to an extreme, fatal: and hence, narcotics are with him directly sedative, but only indirectly stimulant. He supposes both sleep and waking to take place upon each other merely by a law of alternation: an explanation that will satisfy few.

But the chief attention of physiologists, both ancient and modern, has been directed to the subject of dreaming, which has usually but erroneously been regarded as a distinct process from that of sleeping. Let us next, therefore, as briefly as may be, and before we enter into a direct analysis of the phenomena that successively arise, take a glance at a few of the conjectures by which *dreaming* has hitherto been accounted for.

Among the Greek philosophers we meet with two explanations that are worthy of notice; that of Epicurus, because of its ingenuity, and that of Aristotle, because it has descended to the present times.

According to the Epicurean hypothesis of sensation, all the organs of external sense are stimulated to their appropriate functions, by the friction of an effluvium or emanation thrown off from the body perceived. This doctrine, which still holds good, and is uniformly employed in modern times to explain the senses of taste and smell, was equally extended by Epicurus to those of sight and hearing: the former being supposed to depend upon an effluvium of exquisitely fine films, images, or species, as they were technically called, perpetually issuing in every direction from every existing substance, somewhat in the manner in which snakes and grasshoppers cast off their skins annually, but almost infinitely finer, and altogether invisible. And as these rush against the eye, they were conceived to convey to it a perfect image of the object from which they are ejected. While sound was supposed to be excited in like manner by particles of a peculiar kind thrown off from the sonorous body, and rousing the ears by their appropriate stimulus.

These effluvia of every kind were conceived to be so exquisitely attenuate that they can pass, as light, heat, or electricity does, through a variety of solid bodies, without being destroyed in their passage. The effluvia or pellicles of vision were supposed not unfrequently to arise from the very bodies of those that have been long buried; and to be capable not only of transpiercing the soil in which they are inhumed, and of stimulating the organs of external sight, but of winding through the substance of the flesh, and of stimulating the soul itself in the interior of the animal frame, especially when

Dreaming. See Transactions of the Association of Fellows and Licentiates of the King's and Queen's College of Physicians in Ireland, vol. ii. p. 48, 8vo. 1819, Dubl. His explanation of dreaming is that of Gall and Spurzheim, which the reader will find adverted to subsequently.
* *Materia Medica*, ii. 225. † *Ib.* p. 223. ‡ *Ib.* p. 226.

in a state of sleep, in which the external sense is closed, or of deep abstraction, in which it is inattentive; and thus of presenting to the soul in its naked state, as it may be called, pictures of objects no longer in existence. And hence these philosophers, with great ingenuity, though, as it now appears, with great incorrectness, undertook to solve many of the most difficult problems in nature; accounted for the casual appearance of spectres in the gloom of solitude and retirement, and directly unfolded to the world the "stuff that dreams are made of."

It is needless to point out the errors of this system, for it has long sunk into disuse, never to rise again. And I shall therefore proceed to the rival hypothesis of Aristotle, which, though equally unfounded in fact, has been fortunate enough to descend to modern times, and to have met with very powerful advocates in M. Wolff* and M. Formey.† It was the doctrine of Aristotle, that external sensations not only produce by their stimulus a variety of intellectual forms or images in the sensory, somewhat similar to the ideas of Plato, and for all practical purposes not very dissimilar to what is meant by ideas in the present day, but that these forms or ideas are themselves capable of producing another set of forms or ideas, though of a more airy and visionary kind:

As every shadow has itself a shade.

And to this secondary set, these slighter and more attenuate pictures of things, he gave the name of PHANTASMS. In the opinion of this philosopher, dreams consist alone of these phantasms, or mere creatures of the imagination, first excited by some previous motion or sensation in the brain, and afterward continued in a more or less perfect series, according to the power of the imagination itself. The only difference I am able to trace between this theory, as started by Aristotle, and as restarted by Wolff, is in the greater regularity that the latter assigns to the phenomena of dreaming, than the former does: M. Wolff believing them to be, in their commencement, excited by a sensation, and in their succession and series of representations to be as much controlled by a peculiar system of laws, as the motions of the heavenly bodies. Formey appears to carry this point a little farther: his language is, if the dream be natural, it must necessarily originate agreeably to the law of sensation, and be continued by the law of imagination; and hence he concludes those dreams to be supernatural, which either do not begin by sensation or are not continued by the law of imagination.

It may be sufficient to remark upon this theory, first that the phantasms of Aristotle have as little claim to entity as the species of Epicurus; next, that the assumption of a code of laws, or rather of two distinct codes of laws, to regulate the fleeting train of our ideas in dreaming, is in itself altogether visionary and gratuitous; and that if the term *chance* or *fortuitousness*, a very useful term and full of meaning in all languages, can with propriety be applied to any thing, there is no subject to which it can be better applied than to that of dreaming; in which the will, the only legislator and controller of our ideas, has withdrawn its authority, and left the brain to a temporary lawlessness and misrule; and, lastly, that the distinction which is thus attempted to be drawn between natural and supernatural dreams is not only altogether fanciful, but could never be of any possible avail, even if well founded; for, in order to distinguish between the two, it would be necessary to be intimately acquainted with those laws of sensation and imagination which are here stated to regulate our natural dreams, and the suspension of which produce dreams of a superior character.

We are touching upon a delicate, and, perhaps, a dangerous inquiry; but as it has been boldly handled in modern times, and made the foundation of a more daring speculation upon the subject, it must not be flinched from in our present discussion. That total absence of all natural law, which M. Formey

* *Psychol. Empir.* sec. 123.

† *Mém. de l'Acad. de Berlin*, ii.

supposes occasionally to take place in the act of dreaming, and to distinguish the supernatural from the natural vision, Mr. Andrew Baxter,* and, since his time, Bishop Newton, conceive to take place in every instance of dreaming; and hence, that dreaming is at all times, and on all occasions, a supernatural operation. These excellent men divide dreams into two kinds, good and evil; and conceive two kinds of agents, good and evil spirits, employed in their production; and, consequently, account for the one or the other sort of dreams, in proportion as the one or other kind of agents obtains a predominancy.

Now it must be obvious that this conjecture is just as destitute of all tangible basis as either of the preceding; that it can make no appeal to facts submitted to the senses. But, beyond this, its very foundation-stone consists of a principle that no man can readily grant who maturely weighs its full import; namely, that dreaming is altogether an unnatural operation; that nearly one-half of our lives is spent in a direct intercourse with invisible beings; and that during this moiety of his existence man is no longer a free agent; his whole train of thoughts and ideas being not loose and dismantled, but run away with by foreign compulsion, and the work of a demoniacal possession.

The difficulties into which such an explanation throws its adherents are incalculable. Let us confine ourselves to one more example. There can be no doubt that other animals have their dreams as well as man, and that they have them as vigorous and as lively. Every one has beheld his favourite dog, while asleep by the fireside in the winter season, violently stretching out his limbs, howling aloud, and at times starting abruptly, beneath the train of images of which his dream is composed. In what manner will such philosophers account for these various phenomena? Is dreaming a natural operation? or are good and evil spirits the natural attendants upon dogs and cats, as well as upon mankind? The one or the other of these conclusions must follow; and there can be no difficulty in determining which of them will possess the general suffrage.

That dreams, like every other occurrence in nature, may occasionally become the medium of some providential suggestion, or supernatural communication, I am by no means disposed to deny. That they have been so employed in former times is unquestionable; and that they have been so employed occasionally among all nations in former times is highly probable; and the peculiar liveliness with which the trains of our dreaming ideas are usually excited, and from a cause which I shall presently endeavour to explain, seems to point out such a mode of communication as peculiarly eligible. But I am at present attending to the natural phenomena alone, and can by no means enter into a consideration of such foreign interference, which, as it certainly has been, may still therefore be, for all we can prove to the contrary, occasionally introduced into them.

In what may be called our own times, there are many valuable writers who have turned their attention to this curious subject, and who concur in the two following important positions: first, that the faculty, or at least the action, of the will is suspended during the influence of sleep: and, secondly, that in consequence of this suspension or discontinuance, the trains of ideas which persevere in rushing over the mind, are produced and catenated by that general habit of association which catenates them while we are awake. The power of the will, it is contended, is not necessary to the existence of ideas, which, therefore, may continue while such power is in a state of abeyance; but which, if they continue at all, must take the general order and succession imprinted upon them by the law of association, excepting in cases in which such law is broken in upon a variety of incidental circumstances, as uneasiness arising from a surcharged stomach, or other bodily sensations.

Such are the two fundamental principles upon which the theories of Hartley, Darwin, and Dugald Stewart, are respectively built; and which, in various ways, and with almost equal ingenuity, they seem very satisfactorily to

* An Inquiry into the Nature of the Human Soul, wherein the Immortality of the Soul is evinced from the Principles of Reason and Philosophy, 4to. 1730.

have established. But there is still a very important question, and which, indeed, constitutes the chief difficulty of the subject, and that which none of them have attempted to answer, or, at least, have satisfied themselves upon, while making such attempt. I mean, whence comes it to pass that ideas can at all exist in the brain during sleep, or that all the internal senses are not as much locked up as the external senses, and the faculty of the will?

In the course of the present lecture it will be my endeavour to account for this most curious phenomenon. But we must first follow up, in the series in which they appear to arise, the train of circumstances which accompany sleep and dreaming. The entire study is highly interesting, but requires close attention, in order to its being fully comprehended. And when we have advanced thus far, we shall obtain a clew, if I mistake not, to those equally abstruse and intimately connected subjects, sleep-walking, revery, and winter-sleep; as well as to various other obscurities that ramify from the same source.

The fibres distributed over the moving organs of animals, I have already had occasion to observe, in a preceding lecture,* are of two sorts: those of the nerves, which are called sensitive fibres, and those more properly belonging to the muscles, which are called irritative fibres; which last, however, are always accompanied by a greater or less number of the former; by which, indeed, they become endowed with the sense of touch, as well as are rendered capable of contributing to the other external senses, and of maintaining a communication with the brain, from which the sensitive fibres issue, or in which they terminate.

Both these kinds of fibres become fatigued, exhausted, and torpid, in proportion to the length and violence of their exertion, and recover their power alone by rest. The weariness and flaccidity of the muscles of the arms or legs after extreme exercise, or exercise to which they have not been accustomed, may be adduced as a sufficient proof of the truth of this position.† In like manner, we neither hear, nor see, nor taste, nor feel, with the same accuracy, after any or all the organs of these various functions have been long upon the full stretch of action, with which we do on their first exertion in the morning. Increase or prolong this action, and their power will be still farther obtunded, till at length, like an over-wearied limb, they become perfectly inert and insensible, and give no account of whatever is passing around us; and it is this general torpitude or inaction of all the external senses, which we call SLEEP. By the exercise of the will, or by any other strong stimulus, this sleep or sensorial torpitude may be postponed; and, *vice versa*, by the consent of the will, it may be accelerated.

This, however, is sleep in its first or simplest shape alone: it is that which I shall take leave to call SLUMBER, and is the mere sleep, or torpitude of the organs of external sense; the will being drowsy, indeed, but still continuing in some degree awake: whence the sleeper, if he lie or sit in any uneasy position, exercises his muscles, which are still under the control of the will, and the position is changed. The other internal senses also, as those of memory, imagination, and consciousness, are in like manner, in a greater or less degree, awake; whence the mind is yet filled with ideas, that crowd upon one another with about an equal degree of regularity and confusion: and, if

* Series 1. Lecture x. p. 107.

† The principles of the theory here advanced were first given to the world, by the author, as far back as 1805, in the comment subjoined to his translation of Lucretius, where the poet is treating of the cause and phenomena of sleep; and may be found in vol. ii. p. 137—141 of that work. Several of the doctrines there laid down have been since advanced in various forms by different writers, though in some cases, very probably, without their having perused his explanation. Thus the immediate cause of sleep, advanced in the present passage, is that chiefly rested upon by the author of the article on sleep in Dr. Rees's Cyclopaedia, though he also adverts to an occasional increased action in the vessels of the brain as a concurrent cause. And thus much of the explanation which will here be found to follow, respecting the nature and phenomena of dreaming, have still more lately been offered to the world by Dr. Spurzheim, and adopted from him by Mr. Carmichael of Dublin, with the exception that they have interwoven such views with their peculiar doctrine of a plurality of organs in the brain; which, for reasons that will be given in a subsequent lecture (Series III. Lecture XIII.), the present author cannot admit; and does not conceive is by any means necessary on the present occasion. Such coincidences of opinion, however, and especially if they should be accidental, and not derived from his comment on Lucretius, give a considerable degree of confirmation to the general basis on which the theory rests. The lecture, as now published, was delivered in the spring of 1811.

we be spoken to in this state, we return an answer, which intimates, indeed, that we have heard; but, by its incongruity with the observations made to us, intimates also that the will has, in some degree, lost its control;—that it has become drowsy, and is affected by the slumber of the organs of external sense.

If the general exhaustion be not very considerable, as after dinner, or during the digestion of any other meal, the sleep may not extend beyond this first or simple stage of slumber; though it should be observed that, from the power of association, the internal and external senses have a strong tendency, if in health, to concur or catenate in one common state or action. When the one are in full vigour, the other are usually in full vigour also; and when the one become drowsy, the other incline to the same drowsiness. But if the general exhaustion be more violent than we are now contemplating, the internal senses will unquestionably concur in the effect, and evince, in some or all of them, an equal degree of sleep.

The first of the internal senses that becomes thus influenced is the will itself. It would be easy to show, if we had time, that the will is infinitely more disposed to catenate with the motions of the external senses than any of the other faculties of the mind. It hence gives way first of all, and sleeps along with the exterior organs, while the other faculties of the mind remain awake. We are now arrived at the second stage of sleep; and it is this which we call and which constitutes DREAMING. The will catenates in the sleep of the organs of exterior sense; but all the interior senses, except the will, are still awake. Hence we have ideas of memory, ideas of consciousness, ideas of imagination, ideas of reasoning: but, destitute of a controlling power, they rush forward with a very considerable degree of irregularity, and would do so with the most unshapeable confusion, but that the power of association still retains some degree of influence, and produces some degree of concert in the midst of the wildest and most extravagant vagaries. And hence that infinite variety that takes place in the character of our dreams; and the greater regularity of some, and the greater irregularity of others.

But the general fatigue and exhaustion may be still more violent; and it may also be produced by motions in which the internal senses have principally co-operated: and in such cases, not the will only, but the whole of the internal senses concur in the common torpor or inertness that is produced: and we now advance to a third state, which I shall beg leave to call LETHARGY: dead, senseless sleep, or a stage of sleep without thought or idea of any kind, but still natural and healthy; the vital organs, though none but the vital organs, still continuing their action.

It has been a question often proposed, whether the mind ever does, or ever can, exist without thinking? But it can only have been proposed by persons who have not paid a due attention to a variety of phenomena, which are perpetually occurring, and which must be conclusive as to the fact. The mind of an infant, or rather of a fetus, must anticipate the thoughts or ideas that are afterward introduced within it. In a complete paroxysm of apoplexy, no man has ever been conscious of a single thought or idea; in sleepy coma or lethargy in fevers, as opposed to restless coma, the same discontinuity of all thought and idea takes place uniformly; and we meet with it perhaps still more incontrovertibly in all cases of suspended animation from drowning, hanging, or catalepsy. I enter not into an explanation of this state of being; I only advert to the fact: though if we had time I do not think it would be impossible to suggest an explanation that might be satisfactory to every one.

Thus far we have left the vital or involuntary organs, those over which the will exercises no control, in a state of wakefulness, though none but the involuntary organs. For these, in the first place, are far less subject to exhaustion than the organs either of external or internal sense; their actions in a state of health being always more equable and uniform: and hence, secondly, from an independence most wisely ordained, and productive of the utmost benefit to the general system, they never catenate with any other actions, except in cases of extremity. Upon an application, however, of very strong stimuli, whether external, as those of severe pain or labour, or internal,

as those of disease or excessive grief, the vital or involuntary organs themselves are fatigued and exhausted; and when the exhaustion is complete, they also, like the organs of external sense, sleep or become torpid: in other words, DEATH ensues, the living principle ceases, and the spirit separates from the body. The resemblance, therefore, between DEATH and SLEEP is not less correct upon the principles of physiology, than it is beautiful among the images of poetry. SLEEP is the DEATH or torpitude of the voluntary organs, while the involuntary continue their accustomed actions. DEATH is the SLEEP or torpitude of the whole.

Every organ of the animal frame recovers from its fatigue or torpor by rest, provided the principle of life continues. Hence the organs of external sense, in a definite period of time, and a period generally proportioned to the degree of their exhaustion, reacquire their accustomed vigour, are *alive* to the influence of their appropriate stimuli; and the smallest excitement applied to any one of them throws the whole once more into action, in consequence of their habit of acting associately and by common consent. In other words, the man awakes from SLEEP; he rouses himself from the temporary DEATH of the organs of external sense. Were it possible for the principle of life to continue during a total rest or torpitude of the vital or involuntary organs, as it does during that of the voluntary, there can be no doubt that these also would, in time, recover from their exhaustion; and that the man would, in like manner, awake from the total torpitude, the sleep or death of the entire frame; but this in man, excepting under very particular circumstances, and circumstances I shall advert to presently, is impossible. The rule of nature is, that as soon as the vital or involuntary functions are discontinued, the principle of life ceases; the soul deserts the body; the laws of chemistry, hitherto held in subjection by a superior control, assert their authority; and the whole visible system falls a prey to corruption and ruin.

When the organs of external sense have recruited themselves by repose, I have already observed that the stimulus that rouses the one rouses at the same time the rest, from a habit of association. From the same habit, the torpitude produced by exhaustion in any single organ is propagated through every other, and the sleep becomes common to the whole: although it is also unquestionable that the whole are fatigued, or partially exhausted, in consequence of the general stock of sensorial power having been borrowed, in a considerable degree, from the rest, and expended at a single outlet.

The sensitive fibres of the organs of external sense are equally affected, and of course become equally exhausted, whether a stimulus be applied at the one end or at the other, the end terminating externally or that connected with the brain: and hence, internal excitements, as those of severe study, intense grief, undue eating or drinking, or febrile diseases, produce the same effect as causes operating from without.

In either case, the sleep or torpitude produced is sound or healthy under a certain degree of exhaustion alone: hence, mankind sleep most refreshingly after a moderate or accustomed fatigue, moderate or accustomed study, moderate or accustomed meals.

If the stimulus be a little increased beyond this medium, an undue and morbid proportion of sensorial power is secreted, which postpones, indeed, the torpitude or sleep for the present, but at the expense of the general strength of the system, and an expense to which the vital organs themselves contribute something: whence a far deeper and heavier sleep or torpitude ensues than would have ensued with a less proportion of fatigue. If such torpitude take place before the vital organs are totally exhausted, it is confined to the organs of sense alone, which hereby progressively recover their accustomed activity and vigour. But if the vital organs be also exhausted before the torpitude ensues, it will be propagated to themselves, the living principle will cease, and the sleep will be the sleep of death. Violent and continued pain or labour, as external stimuli, violent and continued fevers, violent and continued grief, a very inordinate debauch, as internal stimuli, are all liable to produce these effects; and the one or the other will take place in proportion to their excess and extremity.

If a stimulus affecting the organs of sense, at which end soever applied, be intolerably pungent or forcible, the sensorial power will be exhausted immediately, and the organ directly affected will become instantly torpid. Hence sounds, intolerably loud, make us deaf; excessive light blinds us; acrimonious smells or savours render us incapable of smelling or tasting. And hence an abrupt shock of joy or grief, a sudden and intense paroxysm of fever, large quantities of wine or spirits, as internal causes, produce morbid lethargy, palsy, apoplexy, which are only so many modifications of the sleep or torpidity of the sensitive and irritative fibres. If the same abrupt and violent cause be sufficient to act upon the vital organs, as well as upon those of external sensation, the torpor becomes universal, and the sleep is once more the sleep of death. It is in this manner that death is produced by a stroke of lightning.

As violent stimuli produce sudden and occasionally irrecoverable torpidity, either general or local, stimuli less violent induce a tendency to the same effect. Hence the nostrils of persons not accustomed to snuff are more forcibly agitated by its application, than those that have been in the use of it: the eyes of persons accustomed to sleep in the glare of the sun, find no inconvenience from exposure to the light of the morning; while those who usually sleep in total darkness are awoken by its stimulus. And so of the rest.

On this account a very small portion of light, of sound, or of exercise, are sufficient sources of exhaustion to those who are not in the habit of using great external or internal activity. Hence savages and quadrupeds, who use but very little internal activity, and no more external activity than is necessary to gratify their passions and satisfy their hunger, become torpid upon very slight excitements. Hence infants become exhausted upon still slighter excitements; as the exercise of being carried, the mere breath of the air, or the digestion of milk alone in the stomach; either of which, but especially the whole collectively, is sufficient to make them sleep soundly:—so soundly, indeed, that no common stimulus is able for a long time to rouse them from their torpor. In other words, it requires a period of many hours for the external organs to recover from their exhaustion. The smallest undulatory motion in the uterus, perhaps, or the very action of the vital organs themselves, may be sufficient to wear out, from time to time, the sensorial power of the fetus on its first formation: and hence the fetus sleeps, with few intermissions, through the whole period of parturition.

For the same reason, persons in advanced age are far less impressed by common stimuli than in any former part of their lives; from a long series of exposure to their influence, the organs of sense are become more torpid, and hence they require less sleep, and at the same time less food. The vital organs partake of the same disposition, and they are in consequence less liable to violent or inflammatory disorders. But the general torpidity increasing, the heart is stimulated with greater difficulty; a smaller portion of sensorial fluid is secreted by the brain; a smaller portion of nutriment is thrown into the circulation from the digestive organs; the pulse and every other power gradually declines, till at length, if ever man were to die of old age alone, he would die from a total torpor or paralysis of the heart. But debilitated as every organ is become long before such a period can arrive, the general frame is incapable of resisting the smallest of the more trivial shocks, whether external or internal, to which man is daily exposed: in other words, there is no reservoir of sensorial power to supply the local or temporary demand; and the man dies, even at last, from sudden exhaustion, rather than from progressive paralysis.

Sleep, then, is a natural torpidity or inertness, induced upon the organs of the body and the faculties of the mind, by fatigue and exhaustion; and in a physiological survey, consists of the three stages of slumber, dreaming, and lethargy. In slumber, the exhaustion is slight, and is almost confined to the organs of external sense, the will only inclining to their inertness: in dreaming, the exhaustion is usually more considerable, the will altogether associating in their inertness: in lethargy, the exhaustion extends to and

embraces the mental faculties. When the system is under the influence of disease, the usual course of the phenomena of sleep and dreaming is often disturbed and interrupted; and when the torpidity extends to the vital organs, the effect produced is death.

But the chief difficulty in the subject of dreaming remains still to be accounted for. How is it possible for thoughts or ideas to exist in the brain, and be continued, while the will, which usually regulates them, and the external senses which give birth to them, have their continuity of action broken in upon? I shall endeavour to explain this difficulty in language as familiar as I can employ.

A certain, but a very small, degree of stimulus applied to any of the cerebral fibres of the human body, whether sensitive or irritative, instead of sensibly exhausting them, seems rather to afford them pleasure; at least the fibres are able to endure it without becoming torpid, or, which is the same thing, requiring sleep or rest.

Hence every gentle sight, and every gentle sound, or any other gentle object in nature, to what sense soever it be directed; the still twilight of a summer evening; the mild lustre of the moon, interwoven with the foliage of forest scenery; the reposing verdure of a spreading lawn; soft playful breezes; the modest fragrance of roses and violets; the light murmurs of a rippling stream; the tinkling of a neighbouring sheepfold, and the sound of village bells at a distance, are all stimuli that produce no sensible exhaustion; and, on this very account, form some of the most agreeable images in nature. In like manner, the orbicular motion of the lips in a sucking infant is a source of so much comfort, and attended with so little exhaustion, that whether sleeping or waking, it will generally be found mimicking the action of sucking, when at a distance from its nurse; and, perhaps, not thinking of such action itself. A person who, from habit, has acquired a particular motion of any one of his limbs, a twirl of the fingers, or a swinging of one leg over the other, perseveres in such motion from habit alone, and feels no torpidity or exhaustion in the fibres that are excited, although it might be intolerably fatiguing to another who has never acquired the same custom.

It is probable, then, that thought, and the action of the vital organs, are of this precise character. We are totally ignorant, indeed, of the mysterious mode by which either the one or the other was produced at first; but we see enough to convince us that the stimulus is, in both cases, equally pleasing and gentle. And hence both actions continue without exhausting us, except when unduly roused; and form a habit too pertinacious to be broken through by any ordinary opposition.

Thought, then, is to the sensory that which the motions I have just spoken of are to the muscles which are the subjects of them. Both continue alike, whether we be reflecting upon the habit or not: but the habit of thinking is so much older, and consequently so much deeper-rooted, than that of any kind of muscular motion, except the muscular motion of the vital organs, that it is impossible for us to subdue it by the utmost efforts of the will: whence, like the action of the vital organs, it accompanies us, not only at all times when awake, but in all ordinary cases during sleep, and is the immediate and necessary cause of our dreaming.

Thought can only be exercised upon perceptions introduced into the sensory by the organs of external sense; and hence the chief bent of our thoughts must be derived, whether sleeping or waking, from the objects or perceptions that most deeply impress us. The train of thoughts, then, that recurs from habit alone, as in sleep or total retirement from the world, must generally be of this description: in the former case, however, by no means correctly or perfectly; because there are others also which have a tendency to recur, and neither the will nor the senses are in action to regulate or repress them. Whence, as I have already observed, proceeds a combination of thoughts or ideas, sometimes only in a small degree incongruous, and at other times most wild and heterogeneous; occasionally, indeed, so fearful and extravagant as to stimulate the senses themselves into a sudden renewal