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SLEEP-WALKING

AND

HYPNOTISM

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In Memoriam

WILLIAM SAMUEL TUKE, M.R.C.S.,

Ob. April 20.

MDCCCLXXXIII.

*Tuosne ego, O meæ spes inanes, labentes oculos,
tuum fugientem spiritum vidi?*

*Quis dilata studia miretur, quæ potius non abrupta
esse mirandum est?—QUINTILIAN.*

P R E F A C E.

THE paper on "Sleep-Walking" was read at a meeting of the Metropolitan Branch of the British Medical Association, held at Bethlem Hospital, March 12th, 1884. It is published for the same reason that induced me to bring it under the notice of the members of the Association—the desire to obtain by an extended circulation more facts bearing upon a subject of so much interest, not to medical men only, but to others.

The artificial induction of a like condition of the brain is so intimately connected with the inquiry into its nature and character, that I have added some observations on the mental state of persons who have been subjected to the hypnotic process, which were read at a meeting of the Medico-Psychological Association, also held at Bethlem Hospital. The writer's interest in artificial somnambulism as a psychological study, extends over many years, and he published an article in the *Journal of Mental Science*, in 1865, under the title "Artificial Insanity, chiefly in relation

to Mental Pathology," in which he drew attention to the important bearing of the phenomena comprised under "Braidism" upon mental affections. The experiments of Mr. Braid attracted, it must be confessed, very limited interest among medical men in England, the conspicuous exceptions being Dr. Carpenter and Professor Laycock.¹ It was with great satisfaction, therefore, that the writer witnessed at the Salpêtrière, in 1878, the direct application of the process of Braid, by M. Charcot, to patients under his care, and found him able to confirm the experience of the Manchester surgeon, and to amplify it in several particulars. The writer has referred to these experiments in a pamphlet, which appeared in the following year, but he has thought it best to give in the present little work a more detailed description of the results obtained at the Salpêtrière.

It is, however, the primary object of this brochure to draw renewed attention to Sleep-Walking, and for this purpose he directs the special notice of the reader to the list of questions at page 47.

Some repetition in the several sections has been unavoidable, as they form distinct essays.

D. H. TUKE.

LYNDON LODGE, HANWELL, W.,
April 20, 1884.

¹ It must not be forgotten that prior to Mr. Braid, Dr. Elliotson drew attention to the same phenomena under another name.

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X ment to adopt! One-third of our existence is passed in sleep, and it would be strange if this unconscious life, in which the will, but not necessarily action, is suspended, were not one of serious importance both medically and legally.

An additional reason for the study of sleep-walking is to be found in the light it throws upon the phenomena usually called mesmeric, to which it may well form an introduction. It is desirable to study facts of this description which are entirely spontaneous, and so to speak natural, before proceeding to the investigation of those which are artificially induced, while these in their turn reflect light, as we shall see, upon those of spontaneous origin. It is obvious that on the vexed question of animal magnetism, the bearing of natural somnambulism is most important, as the condition and acts of the sleep-walker cannot be attributed to a magnetic fluid passing from an operator to the subject.

There have not been wanting those who have thrown doubts upon the genuineness of most, if not all, cases of sleep-walking, beyond the very simplest acts on the part of children in getting occasionally out of bed, just as Cullen attributed cases of catalepsy and trance to imposture. Even Casper,¹ after observing that it is very uncommon in adults, suggests critical doubts about cases in which it is alleged that persons play music, write, climb, and swim during sleep. He remarks, as has been so often remarked in regard to all popular superstitions, that the nearer we approach our own times the fewer are the instances of walking in

¹ *Forensic Medicine.* New Syd. Soc. 1861.

sleep, which fact, he says, points to credulity or imposture in former days as the true explanation. I do not think I need endeavour to prove the existence or occurrence of spontaneous somnambulism, although some may be disposed to question the probability of the particular instances to which I shall allude.

That spontaneous somnambulism may be simulated, no one will deny, and several curious examples might be given; it is unnecessary to cite them here.

Referring to the questions contained in the Circular,¹ I may briefly say that their object is to elicit information bearing on the causation of somnambulism, its relation to other nervous affections, especially epilepsy, the state of the sensory and motor functions, the method of treatment found most successful, and the prevention of accidents incidental to sleep-walking. In presenting the results obtained, I shall briefly refer also to the essential nature of sleep-walking, and to the criminal acts performed by sleep-walkers.

The term itself—sleep-walking—and still more its synonym somnambulism, is frequently employed in a broad as well as a narrow sense, one which its etymology does not justify. Thus, the condition of profound lethargic sleep, or trance, in which no movement of the muscles is possible, is usually comprised under this head, as it is by Professor Ball.² It is too late now to restrict the employment of the word to the act of sleep-walking. We

¹ See page 47.

² In an article in the *Dictionnaire Encyclopédique des Sciences Médicales*, 1881.

must, as in many other instances, use the term in a wide and narrow sense. It belongs, in the nosology of Cullen, to the *oneirodynia*, in common with incubus or nightmare; but this division does not include trance and catalepsy. Common to all is the loss of healthy, conscious will, so that *abulicæ* might well characterize this great class of affections, while a twofold division would sufficiently indicate those affections arising during, and those arising independently of sleep. Or it may be sufficient, with Prichard, to comprise, under the broad heading of "ecstatic affections," trance, catalepsy, sleep-walking, and sleep-talking, for in all the subject stands outside his normal mental condition, in accordance with the meaning of the word *ἑκστασις*. An automaton is substituted for the true volitional self. The will is the slave of a dream or a suggestion.

In ordinary sleep-walking we see certain centres or tracts of the encephalon in functional activity, while others are asleep, profoundly asleep, and temporarily paralysed; or, to adopt the language of Heidenhain, the ganglion-cells of certain regions of the cerebral cortex are inhibited. This profoundness of the sleep in well-marked cases—this "nervous sleep," as it has been called—is one of the remarkable features of somnambulism, easy as it is to understand how the circumstance of a particular muscle or sense being called into play during sleep depends upon the particular motor or sensory centre which may chance to be awake, and upon the downward track which is most readily traversed by the transmitted current.

We may say, indeed (looking at this condition from the mental side), that the intense concentration of

the attention on the all-absorbing dream which is being acted, prevents the consciousness of all sensorial impressions, except those immediately in relation to it. And, physiologically, we may say that there comes into operation the familiar law, that exaltation or excess of function of one part induces corresponding depression and loss of function of the rest; but when we have said all this, we must feel, in the presence of a sleep-walker, that in the unconscious yet exquisitely co-ordinated acts he performs, in the vivid wakefulness to some impressions, and the death-like indifference to all others, we witness a marvellous phenomenon, one which has attracted attention since the days of Hippocrates and Aristotle, the former of whom wrote—"I have known many persons during sleep moaning and calling out . . . and others rising up, fleeing out of doors, and deprived of their reason until they awake, and afterwards becoming well and rational as before, although they may be pale and weak;"¹ and the latter said—"Some are moved while they sleep, and perform many things which pertain to wakefulness, though not without a certain phantasm and a certain sense, for a dream is after a certain manner a sensible perception."²

No doubt in almost all instances somnambulistic

¹ ἔν τε τῷ ὕπνῳ οἶδα πολλοὺς οἰμώζοντας καὶ βοῶντας, τοὺς δέ καὶ πνιγμένους, τοὺς δέ καὶ ἀναίσσοντας τε καὶ φεύγοντας ἔξω καὶ παραφρονέοντας, μέχρις ἂν ἐξεγρέωνται, ἔπειτα δέ καὶ ὑγιέας ἔοντας καὶ φρονέοντας ὥσπερ τὸ πρότερον, ἔοντας τε αὐτοὺς ὠχρούς τε καὶ ἀσθενέας. (περὶ Ἰρῆς Νούσου. Lipsiæ, 1827. Edit. Dietz.)

² κινούνται δ' ἐνιοὶ καθεύδοντες καὶ ποιοῦσι πολλὰ ἐγρηγορικά, οὐ μέντοι ἄνευ φαντάσματος καὶ αἰσθήσειώς τινος· Το γὰρ ἐνύπνιον ἐστὶν αἴσθημα τρόπον τινά (περὶ Ὑπνου).

acts are what they are commonly represented to be, acted dreams, and are examples of involuntary ideomotor action. In some instances the dreams themselves are excited by external stimuli, and the resultant acts are therefore reflex. Or again, certain acts may be performed during sleep which do not excite ideation at all, and may constitute dreamless, sensori-motor, or purely excito-motor acts; and it is only in these cases that the comparison often made of a sleep-walker to a frog deprived of its cerebral hemispheres applies.

In whatever terms we choose to describe the supposed condition of the brain and cord in somnambulism, we must recur to the views enunciated long ago by Unzer and Prochaska in Germany, and Professor Laycock in England, in regard to the reflex action of the cerebral as well as spinal centres, consciousness being present or absent, and altogether non-essential to the acts performed. As we all know, the will may be powerless, and these cerebral reflexes be excited in the most lively manner, by appropriate stimuli, external or internal. The increased reflex susceptibility observed in the frog whose cerebral lobes have been removed is analogous, although the simile does not go on all-fours, as I shall take occasion to point out. The inhibition of certain cerebral centres, with the consequent suspension of their functions, along with normal or increased activity of ideas, is another way of expressing what Dr. Henry Monro formulated many years ago to explain mental aberration in general. He said that the cerebral masses, having lost their static equilibrium, exhibit in their functional activity two opposite conditions, positive and

negative, viz., irritable excess of nervous action, and partial paralysis—a formula which, however applicable to the loss of mental equilibrium in insanity, is still more happily illustrated by the phenomena of somnambulism. What may be the vascular condition accompanying these states, and whether the primary disturbance is vaso-motory or cortical, are questions which arise in this connection. There is no reason why this disturbance should always have the same origin. I take it that it sometimes arises from the vaso-motor centre of the encephalon, or from localized vascular disorder, and that at other times it originates in the cerebral tissue itself, the result in any case being an irregular distribution of blood.

I need not repeat here what I have said on a former occasion,¹ as to the application of Spencer's doctrines by Dr. Jackson to epilepsy and mental disorders, further than to say that if the theory of a discharge or liberation of energy—a "dissolution" in contradistinction to evolution—holds good of strictly pathological events, it applies also to the temporary, and what we call physiological, changes involved in dreaming and in sleep-walking. A physiological liberation of energy of one portion or centre of the brain, and the persisting stability of another part, which, freed from control, may come into active play, correspond to the positive and negative states of Dr. Monro. In induced somnambulism, the process of Braid owes its success to the exhaustion of a part of the cerebral cortex, while others unexhausted respond all the more acutely to stimulation.

¹ See *Journal of Mental Science*, October, 1881.

We cannot regard the simplest forms of somnambulism as other than physiological, at any rate, as not more pathological than dreaming, which is universally regarded as the consequence of the physiological condition of co-incident activity and repose of different portions of the cortex of the cerebral hemispheres. It is not extraordinary that dreaming should sometimes be sufficiently vivid to excite movements. Still, somnambulism is, not without reason, classed under the neuroses, and in its severest forms it approaches perilously near nocturnal epilepsy; as, on the other hand, the condition of mental automatism which may succeed epileptic fits closely resembles that of the sleep-walker. The saying of Trousseau,¹ that every nocturnal accident ought to make us think of epilepsy, has only too much truth in it, though I am far from saying that the fact of a child walking in his sleep indicates a tendency to serious nervous trouble or epilepsy. One of the questions in the circular is intended to elicit information in regard to the occurrence of nervous disorders in the family of the sleep-walker. Unfortunately, this is a matter on which it is very difficult to obtain reliable facts. People are very chary of communicating them, even in the strictest confidence. The replies, consequently, are too few to constitute proofs of the relationship in question. Still, so far as they go, they illustrate this connection, and with them I shall combine the question as to heredity. Thus, one medical correspondent writes that one of his brothers was slightly addicted to sleep-walking, and was for several years, up to nine or ten years of age, subject to violent night-

¹ Quoted by Dr. Echeverria in *Journal of Mental Science*, January, 1879.

screaming. One sister walked a little in her sleep, and had three attacks of chorea. Another sister, when very young, was given to hysterical screaming. The father was troubled with megrim. Another correspondent states that his sister and grandmother were subject to sleep-walking, as well as himself. A third that her great grandfather was a sleep-walker. Again, a barrister, who has taken great pains in filling up the circular, states that one of his sisters and a brother walked in their sleep, and that his mother used to sleep with her eyes open and fixed. In these replies there is reference made to chorea, hysteria, and megrim, but not to epilepsy.

I have not found, I may add, in the cases of epilepsy admitted into the National Hospital for the Paralysed and Epileptic, so frequent a history of sleep-walking as I had expected. Its occurrence in patients while in this hospital is by no means frequent, but, of course, most of the patients have passed the age when somnambulism is commonly observed. Again, at Bethlem Hospital I have not often been able to obtain a history of sleep-walking. A fortnight ago a female patient was admitted, her insanity being mainly hysterical in character, in whom it was found that both she and her sister had walked, when girls, in their sleep. There are certain forms of insanity which, no doubt, are closely allied to spontaneous somnambulism on the one hand, and hysterical mania on the other; as, for example, in the boy whose case was reported, in the *Journal of Mental Science*, by Dr. Coupland, in 1880; and, again, there are cases of mental stupor which are essentially somnambulistic and cataleptic in their character. They do not so much resemble ordinary sleep-walking as

the somnambulism which arises spontaneously in the day. The difference in some instances is simply this : that what is a physiological condition in the one has passed on to a pathological condition in the other, with no longer merely localized vaso-motor spasm, but the prolonged blood stasis and œdema following upon its persistence.

Among idiots and imbeciles, sleep-walking would not seem to be by any means common. As many are epileptics this may seem surprising, but I suppose that their dreams are not quite so vivid and purposive as in normally constituted brains, though, as we shall see, they are by no means free from dreams. Certainly their inability to direct their attention intelligently and persistently to one point, renders it almost impossible to hypnotize them. The condition of their muscular system also may prevent noctambulation in those who have dreams.

Dr. Ireland, in reply to my inquiries, has sent me only one case, and that was in a most intelligent imbecile, who was subject to severe epileptic fits. He had dyschromatopsia, being quite unable to distinguish colours. He could speak freely on ordinary subjects. One evening he walked upstairs in a state of somnambulism, and went to the right bed. One day, in the school, he suddenly ceased attending to what was going on, then left his seat, and walked about, regardless of the remarks of the other boys, and what was said to him. When he woke he was quite oblivious of what he had done. He also walked in his sleep in the night, but woke so quickly that Dr. Ireland was unable to see him in time.

Dr. Fletcher Beach has, at my request, directed his attention to the frequency of somnambulistic acts among

those under his charge at the Darenth Asylum for Idiots and Imbeciles, and says that the attendants do not know of a single case. One boy, who is more intelligent than the others, told Dr. Beach that another boy got out of bed one night and offered to fight him, and that the boy's eyes were open. He put this boy back to bed, and asked him next morning what he wanted to fight him for, and the lad replied that he had nightmare. As to dreams, one boy has told his attendant of comical things he has dreamt about. That some do dream is clear from the fact that they wake up with a start, and are often frightened. Talking while asleep seems, Dr. Beach says, fairly common. The night superintendent often, while visiting a ward, fancies she hears a boy calling her, and on going to his bed, finds the boy talking in his sleep.

Dr. Echeverria makes a statement which I cannot but think is somewhat too strong, and, indeed, if it were true, I should despair of obtaining any answers to my circular. He says that "somnambulism generally forebodes, when it does not betray, insanity." He adds what I do not doubt to be the case—
"Dreams, assuming the shape of incubus or nightmare, are very frequent in the earliest stages of insanity, and they constantly agitate the sleep of epileptics" (*Journal of Mental Science*, Jan., 1879, p. 574).

It is very important, in some instances, to diagnose between insanity and somnambulism. A few years ago I knew a case in which a gentleman, not long after his marriage, found, in the early morning, that his wife had disappeared from his side. In the search which was immediately instituted, her body, in her nightdress, was discovered in the sea, not very far from the house. The question arose, had she left her bed

in her sleep and fallen into the water in a state of somnambulism, or had she deliberately and awake committed suicide in a fit of temporary insanity? The theory of somnambulism was at first confidently held on what seemed plausible grounds; but eventually the balance of evidence was against this conclusion, and the friends had reluctantly to believe that the act was one of *felo de se*.

Other still more serious cases arise, in which alleged homicidal and criminal assaults have been committed,¹ and the question of responsibility has depended for its determination on the possibility or probability of certain acts being performed in a state of unconsciousness, or at least suspension of volition.

The following, related by a lady of my acquaintance, may seem a trivial incident, but it illustrates forcibly enough what danger may arise to others from the actions of sleep-walkers. When a girl, aged about twelve, she walked in her sleep, the only occasion, as she believes, in her life. She was at the time at school, and had had a quarrel with a schoolfellow on the previous day. She arose from her bed in her sleep, whether or not after a dream is not known, and proceeded to the bed of the other girl, and then violently pulled her hair. The assaulted girl called out lustily, when assistance arrived, and the unconscious assaulter was discovered to be in a state of somnambulism.² On

¹ Lord Culpepper's brother, famous as a sleep-walker, and whose portrait, by Sir Peter Lely, is given in Lodge's *Historical Portraits*, was indicted at the Old Bailey, in 1686, for shooting one of the guards and his horse. The defence set up was somnambulism, and he was acquitted, after his counsel had called in his favour nearly fifty witnesses to bear testimony to the marvellous exploits he performed during sleep. See Macnish's *Philosophy of Sleep*.

² This case recalls the oft-repeated story of the monk, who

awaking she knew nothing whatever of what had occurred.

The case of Fraser, who killed his child on the night of April 9th, 1878, is so full of psychological and legal interest, that I cannot avoid referring to it here. He was a steady, respectable man, a saw-grinder in Glasgow, and twenty-eight years old. He had been a dull child. Long after he was a boy he was troubled with incontinence of urine at night. His mother had epileptic fits, and died in one. So did her father. She had a sister, and this sister a son, who were insane. Fraser had a brother who died in infantile convulsions. Lastly, the child (eighteen months old) whom he killed, had had convulsions six months before.

entered the prior's bed-room during the night, with his eyes open, but fixed, and with a large knife in his hand. With scowling features and determined mien, he proceeded straight to his superior's bed, to which the prior fortunately had not yet retired, and inflicted three stabs, which penetrated the bed-clothes and a mat which served the purpose of a mattress. He then returned to his own room, with features relaxed and smiling. The next day, when questioned by the prior, he confessed that he had dreamt that his mother had been murdered by the prior, and that her spirit had appeared to him crying for vengeance. Transported with fury at the sight, he seized a knife, and ran directly to the supposed assassin, in order to stab him. Shortly after he returned to his bed he awoke, covered with perspiration, rejoiced to find that it was only a dream. This narrative rests on the authority of Foderé, who heard it from the prior himself, Dom Duhaget, who was sitting in his room when the monk entered and proceeded to his bed, *dans un état de sonnambulisme*. When the prior showed the monk the wounds he had inflicted on the bed, the latter threw himself on his knees in tears, and implored his pardon. The precaution was taken, after this occurrence, to secure the door of the monk's cell every night. It is curious that those who relate this story almost always forget to tell the reader whether the prior was in bed when the assault was made.

Fraser's sleep had always been of an unsettled kind, disturbed by dreams, nightmare, and talking or walking in his sleep. Anything that either excited or depressed him much in the day would affect his dreams and tendency to walk. When a boy of ten or so, when he was accustomed to fetch milk from a farm near, he once got up in the night asleep, dressed, got the pitcher, and proceeded to the farm as was his wont. Once he went during the night to a timber-yard, and occupied himself in moving logs, till awakened by the rain. Again, when about one-and-twenty, his father's family living near the water, he often warned his half-sister, of whom he was very fond, against falling in. At night he frequently went to the landing-place, in his sleep, and into the water, loudly calling her, and even grasping with his arms, as if rescuing her from drowning. The girl would be roused from her sleep by hearing her name thus called. It sometimes happened that the water awaked him, but not always, for he has gone back to bed fast asleep.

He used to remember nothing in the morning of what had occurred; but if awakened at the time, he recalled his dream, and retained a recollection of it next day.

Dr. Yellowlees, who reported the case which I am condensing, describes the nocturnal seizures to which he was subject at the time of the fatal occurrence as follows:—"Having fallen asleep as usual, great terror suddenly seizes him, and he starts out of bed under a vivid feeling that some dreadful evil is impending, that the house is on fire, that its walls are about to crush him, that his child is falling down a pit or, most frequently of all, that a wild beast has got into the

room, and is about to attack him. Roaring inarticulately, and in an agony of apprehension, he tears his wife and child out of bed to save them from death; or he fiercely chases the wild beast through the room, throwing the furniture about in order to reach it, and striking at it with whatever he can use as a weapon; or he suddenly seizes his companion by the throat, under the idea that he is struggling with the beast. The beast is a wild dog, horse, wolf, or other animal, and often some creature of the imagination more terrible by far" (*Journal of Mental Science*, 1878, p. 454).

In this case the eyes were wide open and staring. He avoided the furniture in his chase, took up chairs to throw at the beast, and in his fury has injured himself. As in other cases, no doubt his sight was directed only to the objects in immediate relation to the dominant ideas of the dream he was acting.

It was not his child only that he had attacked. Father, wife, half-sister, fellow-lodgers, and a fellow-prisoner in the gaol were at one time or other desperately assaulted by him, always impelled by the delusion that he was engaged in mortal combat with a beast. When he fatally attacked his child, he "saw a large white beast fly up through the floor and pass towards the back of the bed where the child lay; he grasped at the beast, trying to catch it; succeeded in seizing it, and springing out of bed, he dashed it on the wall or floor to destroy it." The cries of his wife brought Fraser to himself, and he then manifested the greatest distress at what he had done.

Dr. Robertson, of Glasgow, and Dr. Yellowlees, gave evidence for the Crown, but regarded the man as irresponsible for an act committed in a state of somnambulism, or, as they held, insanity. Dr. Clouston, of

Edinburgh, was called for the defence, and took the same line as regards irresponsibility, differing, however, from them in the view they took that "Fraser's state at the time was one of 'insanity.'" This was more than a mere difference of words, for if technically insane Fraser ought properly to have gone to a criminal asylum. Dr. Yellowlees boldly invented the term *somnomania*, and held that the sole difference between it and delusion, or insanity, or epileptic violence, was that it occurred during sleep, and involved only a temporary arrest of volition, instead of the more prolonged loss of control which results from organic mischief. Dr. Echeverria conversed with me on the case at the time, and expressed himself strongly in favour of the view that Fraser's attacks were those of nocturnal epilepsy.¹ The finding of the jury (suggested by the judge) was in accordance with the view that he was not insane, but was irresponsible from being in a state of somnambulism, and the man was discharged. He engaged to sleep in future in a room by himself. But if he was not insane he was as dangerous as a madman, and one thinks more stringent means ought to have been taken to guard against his doing any one injury.

Dr. Yellowlees was in favour of his being treated for a time in an asylum, and liberated eventually on condition that he should be placed under special surveillance. I need hardly say I should not wish to see a man punished for a homicidal act committed during sleep. Yet what did the celebrated Foderé say as to the criminal responsibility of somnambulists? He pronounced them to be culpable. "It seems to me," he writes, "that a man who has committed a bad

¹ See also his able article on "Nocturnal Epilepsy," *Journal of Mental Science*, January, 1879.

action during sleep is not wholly inexcusable, since, in accordance with most observations, he is only executing the plans which occupied his mind when awake. He, in short, whose conduct is always in relation to his social duties, does not belie his character when he is alone with his soul. He, on the contrary, who only thinks of crimes, deceit, and vengeance, displays during sleep the recesses of his depraved inclination, which external circumstances had restrained when awake. If such a man, then, commits a crime, and he is a suspicious character, one is justified, it seems to me, in considering this crime as a natural consequence of the immoral character of his ideas; and one should judge this action as all the more free, in that it has been committed without any constraint or particular influence. Far from considering these acts as insane, I regard them as the most voluntary that can be witnessed in human nature." Professor Ball, while not agreeing with this startling contention of Foderé, observes that "it is assuredly the testimony of a pure soul which evil passions have never troubled." He thinks the true excuse of the somnambulist is to be found in the circumstance that in dreams the moral sense is always asleep; an opinion, however, which I am not prepared to admit. It is sufficient to maintain, in defence of the sleep-walker who commits a crime, that he is unable to control his actions, is an involuntary actor, and therefore not the free agent which M. Foderé would have him to be.

The case of Fraser was said to be unique at the time, but several very similar ones have occurred, and the wonder is that they are not more frequent.¹

¹ See the case of Esther Griggs, reported in the *Manual of Psychological Medicine*, 4th edit., p. 266.

In the *Moniteur* of July 2nd, 1868, a report will be found of a pupil in a seminary at Saint Pons, who, in the night, rose from bed, and, armed with a knife, proceeded to the bed of the teacher in charge of the dormitory, whom he attempted to injure with several thrusts of the knife. These, however, only penetrated the sheets and the mattress. Aroused by the sound, and the sense of some one touching his shoulder, the teacher awoke and sprang up. He seized the arm of the pupil, and called for aid. The scholar, whose fixed expression at once convinced the assailed sleeper that his assailant was in a state of somnambulism, was removed to another room without being aroused, and there he slept till the morning. When informed by the teacher of what had occurred, he was unable to recall the circumstance. He expressed his sorrow, and was anxious to go home. M. Despigne, of Marseilles, to whom I am indebted for this case, cites another from an American journal of 1870 : A youth, during sleep, fell into somnambulism, and in this condition went into the bedroom of a child, and killed it. He was sent to prison, and when there had a similar somnambulist seizure, in which he made an attempt on the life of another prisoner.

X I may here state, in parenthesis, that cases are on record of persons even attempting suicide during sleep-walking, so that the perils of sleep-walkers to themselves and to others are neither few nor unimportant. In a remarkable case of sleep-walking (Madame X.) published in 1860 by M. Mesnet,¹ a determined attempt at suicide was made in his presence. She took the string of her apron, carefully tested its strength, made a loop at one end, mounted a chair,

¹ *Archives Générales de Médecine*, Fév., 1860.

and securely fastened the other end to the top of the window. Having made these preparations, she was quiet for a time as if lost in thought, knelt down, made the sign of the cross, and engaged in devotion some minutes. She then rose, went to the window, mounted a stool, placed her neck in the noose, and suspended herself. M. Mesnet allowed her to hang as long as it was safe to do so, and then cut the cord. The patient, when rescued, indicated by her expression the vexation she experienced at having her intention frustrated. She had made a previous attempt, in her sleep, by throwing herself violently on the floor, after failing to precipitate herself from the window. She also attempted one night to poison herself. She filled a glass with water, threw several coins into it, and secreted it, after writing her adieus to her family. Next night, when in a similar state, she took the glass, but, prostrating herself before the crucifix, changed her mind, and wrote another letter to her family explaining her change of purpose. This patient, when awake, was dejected, not without domestic reasons, but never attempted or threatened suicide except in sleep.

The view Dr. Yellowlees took in Fraser's case accords with the opinion of the late Dr. Ray on the relation of somnambulism to insanity. He observes—
“Psychologically considered, somnambulism appears to be not very remote from mania, the difference consisting in some circumstances connected with the causes that give rise to derangement of the faculties. In the latter the pathological affection of the brain is continuous. In the former it appears only during sleep, by which its effects are greatly modified. When the maniac finds himself restored to health, he

looks on the period of his derangement as on a dream crowded with grotesque images, heterogeneous associations, and ever-changing scenes. So the somnambulist, on awaking, is conscious only of having been in a dream, the events of which have left a more or less vivid impression on his memory." (*The Medical Jurisprudence of Insanity*, 2nd edit., p. 394).

On the whole, although the evidence at my command is not conclusive, we may regard the relationship between decidedly well-pronounced somnambulism and other nervous affections as fairly intimate, and hold that a neurotic constitution is a predisposing cause of sleep-walking.

Other predisposing causes or conditions are *age* and *sex*. We can have no hesitation in regarding childhood and puberty as the periods at which the system is most liable to attacks of sleep-walking. The youngest of whom I have a note was six years old, the eldest sixty-one.¹ It is exceptional for the habit to continue after twenty. Macario records a case of sleep-walking in an old woman of eighty-one.

As to sex, several authors, including Macario, state that males are more subject to this affection than females. My own experience, so far, has been the reverse. I may observe that Dr. Echeverria finds that nocturnal epilepsy is more common among females than males.

Among *exciting* causes (whether moral or physical) I find that in one case night-terrors and screaming followed upon ringworm and an abscess in the ear.

A medical friend writes that in his own case the attack of sleep-walking very often occurred after

¹ This was the case of a lady who was bed-ridden at the time. She got up and walked in her sleep, to the great surprise of her friends.

absorbing work up to the last thing before going to bed, also after exciting days of sight-seeing. At one time coffee at supper was followed by nightmare, to which he was very subject. 7

A lady, in filling up the circular, observes that suppers did not appear to affect her in any degree, whilst anxiety or too close application to lessons had a decided tendency to produce it. X

A gentleman, who also refers to suppers, says they had no effect whatever in inducing sleep-walking.

The condition of the health might well be supposed to have something to do with the habit. Thus, a lady sleep-walker states that it occurs when she is not very well; but others state distinctly that, so far as they are aware, their state of health has no obvious connection with it; while a gentleman says—"When the body is in a low state, I find I am less subject to walking in my sleep." This case was complicated with chorea, and attacks of spontaneous somnambulism occurred in the day as well as the night. X

The influence exerted by the particular thought uppermost in the mind the previous day in determining the acts performed, in consequence of inducing a vivid dream, is no doubt great. Thus, a girl at school, overworking herself at Euclid, got up in the night and looked for her books. Again, a lad of eight, very fond of his rocking-horse, got up in his sleep, went into the nursery, and mounted it. The motion of the ride awoke him, and he was much astonished to find himself thus engaged. X

A gentleman informs me that one evening his sister, on going to bed, took with her, in good humour, a magazine which she knew he was wishing to read. She read it in her chamber for some time

before she went to sleep. In the course of the night she got up in her sleep, and conveyed the journal into her brother's room and laid it on his bed. In the morning she had no remembrance whatever of having done so. Perhaps a sense of sisterly duty prompted her, even in her sleep, to perform this act, unless it be true that conscience is asleep in dreams.¹

X With these brief references to the causes of sleep-walking, I pass to the condition of the somnambulist in regard to the senses and common sensation.)

More accurate observations and experiments on natural sleep-walkers, in order to test carefully the condition of the senses, especially vision and hearing, are required.

X *Vision.*—In replies to a question in the circular respecting the openness of the eyes, along with the avoidance of objects in the way of the walker, I find only one instance in which the eyes were observed to be shut. One gentleman writes—"My eyes have been noticed open, with a vacant, stony gaze, and the pupils appeared dilated." Another correspondent writes—"My eyes were open; I always avoided obstacles, and was never awaked by striking against anything." A third—"Eyes are said to be open and vacant."

It is constantly observed that the objects seen by the sleep-walker are interpreted in accordance with the dream he is acting. Thus a friend of mine writes—"While certainly some of the objects appear as they really are, others are adapted to the dream; for example, the bed-posts appear to be trees."

There are cases in which the power of seeing in the dark is very striking—a nyctalopia comparable to that of the owl, &c. There can, indeed, be no doubt

¹ See example to the contrary (Madame X.), page 19.

that the visual sense is often very acute, and that this, along with a dilated pupil, permits the sleep-walker to see objects with an amount of light which is practically darkness under normal conditions. In avoiding furniture he is greatly assisted by acuteness of touch when it is in immediate relation to the idea upon which all his nervous energy is concentrated.

Dr. Guy, in his book, *The Factors of the Unsound Mind*, goes so far as to speak of things being clearly seen by the sleep-walker, not only when very faintly illuminated, but "when cards or sheets of paper are interposed between the eye and the object to which it is directed" (p. 78). I am unable to confirm Dr. Guy's statement. What happens is apparently due to the muscular and tactile senses, and in some instances perhaps to the subject retaining in his mind a vivid representation, a mental image of the writing which he had previously made. It is true that a somnambulist may write well although a sheet of paste-board is interposed between his eyes and the writing-paper. If he has not crossed a *t*, or dotted an *i*, and is requested to supply the omission, he may do so with great precision. But if the paper be shifted, his corrections are no longer in their right places on the paper, but wrong to the extent to which the paper has been moved.

Madame X. (p. 18) wrote letters most accurately in a room so dark that her physician could not distinguish the objects in it. That she depended, however, upon her sight was shown by the fact that when an opaque body was placed between her eyes and the paper, she stopped writing and was much disturbed.

The influence of tactile sensibility in guiding the hand in writing and in exciting ideas—an excellent

example of reflex action of the cerebral hemispheres—was demonstrated in an experiment tried by M. Mesnet on a French sergeant when in a state of somnambulism.¹ He came in contact with a table, over which he passed his hands, but finding nothing, he opened a drawer, and took out a pen, touching which at once awoke in him the idea of writing. He rummaged the drawer for paper and an inkstand, which he placed on the table. He got a chair, and began a letter to his general, commending his own bravery, and asking for a medal. This letter was very incorrectly written, but not more so than in his ordinary state. To test whether the facility with which he wrote was in any degree due to sight, a thick metallic plate was placed so as to completely intercept vision. He did not at once cease writing the line he had begun, but wrote a few more words in an almost illegible manner, with the strokes jumbled together; then he stopped, without betraying any impatience. When the plate was removed, he completed the unfinished line, and commenced another. Again while he was engaged in writing, water was substituted for ink. He continued to write so long as the pen made any marks, but when there was nothing but water, he immediately perceived it, stopped, wiped the pen, rubbed it on his coat, and began again, with, of course, the same result. He still more carefully examined the pen, and made another unsuccessful attempt, but it never

¹ Condensed from M. Mesnet's report of the case of a soldier whose head was injured by a ball at Sedan, and who, when under Dr. Mesnet's treatment in the hospital of Saint-Antoine, Paris, was subject to attacks of spontaneous somnambulism. See *De l'Automatisme de la Mémoire et du Souvenir dans le Somnambulisme pathologique*, 1874.

occurred to him to examine the ink-pot. In this instance sight was evidently employed, but it was as certainly not used except in regard to the particular subject upon which his attention was absorbed, and with which he was brought into relation by the sense of touch. So that M. Mesnet holds that, with this qualification, the patient did not see, although not wholly insensible to the reflection of brilliant objects. Before passing from this experiment, it should be stated that the sergeant had taken ten sheets of paper, and was writing on the first when M. Mesnet quickly removed it; he went on writing the same paragraph on the second sheet, and when he had written ten words this sheet was also abstracted, and he finished on the third sheet the line commenced on the preceding one, exactly at the point where his pen remained placed. M. Mesnet successively removed the third and fourth sheets, and on the fifth the sergeant signed his name at the bottom of the page. He was then observed to look at the top of this blank sheet, re-read (mentally) all that he had written, moving his lips at each word, placing at different points on the unwritten page, here a comma, there an *e*, here a *t*, following carefully the spelling of each word, which he applied himself to correct as best he could; *and each of these corrections answered not only to the word requiring correction, but to the corresponding spot on the sheet where it occurred*, and which M. Mesnet held in his hand; the explanation apparently being, as this physician supposes, that the image of the writing remained, or, as Mr. Galton would say, the writing was visualized. As he re-read the words in memory, they were projected, as hallucinations, upon the blank sheet before him.

As to the *auditory* sense, a gentleman writes—"My hearing is good;" another—"I can hear what is said, and reply to questions;" a third—"I could hear, but couldn't see." Only one informant writes—"I did not hear when spoken to." In Mesnet's sergeant, the loudest sounds were totally unperceived.

In reference to the *olfactory* sense, several correspondents write negatively in regard to smell; one, however, says—"So far from this sense being abrogated, I have often dreamed of smells in my attacks. One of my commonest actions when asleep is to dream of an escape of gas, and then rise and look all over the bed and room for the gas-pipe, the smell being most clearly perceived, but the house in which I live having no gas laid on." Mesnet's patient had no sense of smell whatever.

Gustatory.—None of the answers to my questions make mention of the sense of taste.¹ M. Mesnet's soldier did not distinguish any difference between wine, vinegar, and assafoetida.

With respect to *tactile sensibility*, some sleep-walkers awake on being touched; and one correspondent observed—"I often dream that I am touched, and this always awakes me." On the other hand, many sleep-walkers may be not only touched, but may be carried back to bed without being aroused from their sleep.

M. Mesnet found in the case of the French sergeant that although sensibility to pain was abolished, the sense of touch was acute; in fact, it was, as he observes, "the only sense which remained (in addition to the

¹ See the case of E. H., p. 58.

muscular sense) to place the patient in relation with the external world. The delicacy with which he passed his hands over objects, the use which we have known him make of touch on innumerable occasions when we have been present, bear witness to the fineness and subtilty of this sense above its ordinary exercise in normal conditions of health." (*Op. cit.*)

Insensibility to Pain.—Experiments made on the sensibility of sleep-walkers leave no doubt that they are insensitive to pain when absorbed in acting the dream which possesses them; but it so happens that none of my own cases illustrate this.

Muscular Sense.—It is obvious that the muscular sense must be acutely alive. No proof of this is required beyond the ordinary acts performed by sleep-walkers, without mentioning the wonderful feats attributed to them in the records of somnambulism.

Motility.—One of the best examples of the power of executing intelligent and somewhat complicated movements occurred in a medical man well known to me, who, when a little boy, would get out of bed, go to a cupboard and select one of his toys, and present it deliberately to one of the family.

A young gentleman in my own circle will take elaborate pains to undo the fastenings of a window, and would precipitate himself if not prevented either by awaking in consequence of the effort, or the cold air, or by being forcibly drawn back. A common act of his is to go downstairs, open the front door and look out into the garden, then return, and

after locking the door, get into bed. "As far as I can make out," he says, "all my movements in sleep are as active as when I am awake."

A gentleman informs me that his son, who used to walk in his sleep, appeared to have but one object in view, that of finding his razors; taking them out of their case, and placing them in another situation—a drawer, I think. He was cured of the habit by simply removing the razors; when he could not find them he returned to his bed, and did not repeat his walks. He knew nothing of these occurrences, and was never informed of his proceedings.

In one of my cases a boy walked in his sleep to the bedroom window, which was on the third story, and many feet from the ground. He opened it, got out, and fell down on the flag-stones in the yard below. His fall was heard by a neighbour, who ran to his assistance and took him up. His hip-joint was injured, and he was lame for some months. Strange to say, he received no other injury from the fall; and he recovered perfectly.

Serious, and even fatal, accidents during sleep-walking are by no means so rare as is supposed. Not long ago a fall nearly proved fatal to a woman living in Osborne-terrace, Bromley. It seems that she had thrice been discovered walking in her sleep, and once she got out into the garden in her night-dress with a lighted candle in her hand. About three o'clock in the morning her husband, a commercial traveller, missed her from bed, and on a search being made, she was found lying at the bottom of the kitchen stairs, bleeding from a serious scalp wound. When she recovered consciousness, she said—"I don't know how this happened. I must have been in my

sleep, and have fallen." An extinguished candle was found at the foot of the stairs, and the candlestick was clenched in her right hand.

Mental Condition.—One of my correspondents sends me a remarkable instance of a girl learning her lessons in her sleep. How this came about I must briefly state. Her father, who had held a good position as a country gentleman, died in debt. The mother was in great distress, and having given up her country house, sent her daughters to a day-school, telling them that they must profit to the uttermost by the teaching which she could so ill afford to give them. They were much impressed with their mother's words, and set to work industriously. They took their school books up to bed with them, intending to learn the lessons set them. In the morning when they awoke, one of the daughters found, when fully awake, and applying her mind to her lessons, that she had learnt them all already. Now, this happened morning after morning, and the mother puzzled herself over the mystery in vain. One night, however, she happened to be visiting, and did not return home till very late. The moon was shining brightly on the window of the room where her daughter slept, and she descried her daughter's form. She went quietly upstairs, and entering the room, found her daughter seated at the window in her night-dress only, and sound asleep. Her lesson-book, which was in her hand, was the subject of her earnest but unconscious study. The mystery was solved. She was trying to obey her mother's desire "to profit to the uttermost" by the instruction given her.

I confess that I accepted this remarkable statement

with some hesitation in the first instance;¹ at the same time it is not more extraordinary than working out a problem in Euclid, as in the following instance. The process of committing to memory is, indeed, not so high a mental act as this. A school teacher, now living, had conducted a geometry class among the boys for some months, and gave them, as an examination exercise, to prove the 47th problem of Euclid, Book I., taking nothing but the axioms and postulates as granted. Many tried it, but only one succeeded in the contest. For some time he was baffled with one stage of the proof, and retired to bed with his mind full of difficulty. Late that night, the teacher, in going round the bedroom before retiring to rest, found this boy kneeling on his bed, with his face to the wall, and pointing from spot to spot, as if following a proof in a figure on a black board. He was so absorbed in his occupation that he neither noticed the light of the candle nor answered when addressed by name; in short, he was asleep. He was not disturbed, but was left still proving his problem.

Next morning, before he left his bedroom, the teacher said to him—"Well, John, have you finished your proof?" His reply was—"Yes, I have. I dreamed it, and remembered my dream this morning, and got out of bed as soon as I could see, and wrote it out at the window."

In such a case of somnambulism, the comparison made between the sleep-walker and a frog de-

¹ I have met recently with a passage in Abercrombie's *Intellectual Powers*, in which he says—"There are many instances on record of persons composing during the state of somnambulism; as of boys rising in their sleep and finishing their tasks which they had left incomplete" (p. 239).

prived of its cerebral hemispheres is only partially true, for ideation is obviously involved.

Dreaming and Hallucinations in relation to sleep-walking and screaming.—As might be supposed, and as indeed I have already intimated, there is in the answers I have received, ample evidence of the action of the ideational centres in somnambulists, and the direct influence of a vivid dream upon the actions of the sleep-walker and the screamer.

One girl almost always dreamt that the room was full of boiling water, and that she was trying to escape from it. Another saw a figure, namely, a shepherd with a lady's bonnet on his head; and, what is interesting in her case, the hallucination often remained on the following day. She would stand still, and on being asked the reason for refusing to move, would reply that there was the shepherd in the bonnet in her way.

A lady informs me that an act performed by her daughter during sleep was connected with a dream in this wise: She dreamed about a shipwreck, and she awoke finding herself out of bed. In the morning she found she had wrapped a large shawl carefully round the candlestick which was in the chair by her bedside. She then saw clearly that the explanation of the act lay in her having succoured a shipwrecked sailor, for whom the candlestick had done duty.

The physician whose personal experience I have already quoted says—"My sleep-walking has often been associated with dreams. The subjects are generally one of the three following: (1) Fire in the house, (2) burglars, (3) damage to, or death of, some near relative.

Another writes—"Dreams seem always to be associated with my sleep-walking, and it is the almost invariable accompaniment of the dream, *i.e.*, I always put into practice the thing dreamed. Once I dreamt I was drowning, and I jumped out of bed, rushed into the passage, and called for help over the stairs."

A barrister sleep-walker writes—"On one occasion I came downstairs in my night-dress to warn the family not to drink the beer, as I had seen a crow fall into it when it was brewing. This was, of course, only a dream, as no such thing had really occurred." He adds—"Very vivid dreams are always associated with sleep-walking in my case. I always dream when I sleep, if only for a moment, and always did so." "I compose poems and solve problems in my dreams, and feel great delight and satisfaction in so doing; but when I awake I find the poems often without any meaning, and the solutions of problems are trash and false. I have also words and sentences of horror in my dreams which are nonsense. Moreover, I often wake with an impression of the enormous size of the furniture of my bedroom."

Speech in Sleep-walkers (Somniloquy).—Some somnambulists speak with great facility. One writes—"I am quite capable of carrying on a conversation with any one." "I often talk during my sleep-walking, both when addressed, and also when alone. For example, when sleeping with any one I make up a long story to prove that I am not asleep, that being my great object when I am asleep, as I feel convinced in my own mind that I am awake. When alone I talk also." (He is heard by his family.)

The same gentleman's sister says—"I have usually

dreams appropriate to the actions performed. I sometimes am under the delusion that I have swallowed a pair of scissors or a pin, and have a slight cough at the time." A form, it would seem, of globus hystericus.

A medical friend (Dr. Yellowlees) writes to me—"I know an individual who, when a boy, was found one night standing up in bed and furiously shaking the bed-post. The explanation was, that he had been reading *Uncle Tom's Cabin*, and believed, in his dream, that he had got hold of Legree! When a student he was amazed one morning to find that he had the fire-irons beside him in bed, and could only explain it by remembering that he had dreamt that robbers were going to break into the house, and that he had intended to confront them with the poker." Substitute for the bed-post a child in the bed or room, and clearly this might have easily become a criminal case.

Under the head of speech I may cite a well-marked case of singing in sleep, for which I am indebted to Dr. Bastian. It is at the same time an example of somnambulism occurring in the daytime. The patient was a young lady, aged twenty-seven, who had always been rather delicate, and was seen by Dr. Bastian in 1880. For the preceding four years she had suffered much from pains in the head, especially at periodical times, when the pains often continued for six or eight days. These headaches were scarcely ever accompanied by sickness. A severe headache came on one morning nearly four years before she was seen by Dr. Bastian, and in the afternoon she was found lying on the bed in her room, singing songs, hymns, etc., in quick succession, in a loud,

D

clear voice. She could not be roused, and paid no heed to questions until the attack passed off. It usually did so in from four to six hours. For the first three years she experienced such attacks at intervals of from one to three months; but for nine months they had been much more frequent, generally two or three times a month. She sang continuously, even though left in the room alone. Dr. Bastian states that it has often been remarked that she sings decidedly better in these attacks than when in her ordinary condition.¹ After the attacks she slept soundly for thirty minutes or more. The pain in the head was felt principally over the right eyebrow, and it always preceded the singing fits. Some pain had been felt in the left ovarian region, for four or five months before she came under observation. There were, however, no definite signs of hysteria. Pulse 80, weak, but regular. Complained much of cold hands and feet. A mixture with some quinine and iron, and a bromide draught to be taken at bedtime, were prescribed. One afternoon soon after seeing her, Dr. Bastian received a telegram asking him to go and see this young lady, then suffering from one of her attacks. He found her lying in a dark room alone, singing, in a loud clear voice, song after song, without even a momentary pause. She took not the least notice when spoken to, or when ordinary efforts were made to arouse her. Her skin was cool (temperature normal) and her face pale. Pulse small, weak, 96. When told, in a loud voice, to open her eyes, there were sometimes slight quivering move-

¹ In the disoussion which followed the reading of this paper, a medical man mentioned the case of a sleep-walker who played on the violin much better in his sleep than when awake.

ments about the eyelids, but that was all. When pricked with a needle she did not stop singing, but there were slight facial movements indicative of feeling. So also when attempts were made to separate the eyelids, there was distinct resistance; the pupils were found to be equal and of medium size. A very hot stupe, applied over the cardiac region, produced no change in her condition or cessation of the singing. This attack continued for rather more than five hours.

One of the most remarkable among the deeds performed by sleep-walkers communicated to me, occurred in the person of a mental physician when holding the post of assistant medical officer in a large asylum, and attested by the unexceptional evidence of another physician. It is a splendid instance of unconscious reflex action of the brain—the train of events originating entirely from without.

On one occasion, when making his usual morning visit in a detached ward occupied by the more excited patients, he was about to leave, when the nurse said—

“You haven’t seen the new patient, sir.”

“What new patient?” said Dr. Blank.

“The patient you brought over during the night, sir.”

“I brought no patient over during the night,” was the reply.

“Dr. Blank,” said the amazed nurse, “I’ll let you see the woman!” Whereupon she opened the door of a room, and showed him a maniacal patient.

The fact was that Dr. Blank had been roused from bed, had dressed, and had gone downstairs and examined the admission papers. He had received the patient, and as she was much excited, had gone out of doors to this detached building to arrange about a

room for her ; yet in the morning all this was utterly forgotten. Nothing but seeing the patient there would convince the doctor that the event had occurred, and even seeing her did not recall the very faintest recollection of her admission.

It does not appear that he had made any entry of the admission in a book, but, of course, he must have conversed with those who brought the patient to the asylum.

Before leaving this very striking example of mental operations performed in sleep, and entire absence of recollection of them next day, I may add, that if Dr. Blank thus forgot real occurrences, he sometimes imagined events that had *not* occurred. My correspondent informs me that one evening he handed him a letter across the writing-table, saying, "Read that." "I found," he says, "that it was a letter announcing to the relatives of a patient, in proper and sympathetic words, that the patient had died during the previous night."

I was much surprised, and said, "I didn't know that patient was dead."

"Neither is he !"

"Then why on earth did you write that letter?"

"I don't know," replied Dr. Blank ; "I felt sure he was dead, and wrote it ; but as I was closing it for the messenger, I said to myself, 'But is that man really dead?' So I went to see, and he's *not dead* !"

Dr. Blank must have sometimes passed, in the daytime, into a state of reverie akin to somnambulism, probably after dwelling upon some profound metaphysical subject, as when he gave the solitary and sententious prescription which so nonplused the night watch, who came to ask what could be done with an

extremely noisy woman. "Tell her," said he—"tell her to go and take cognizance of herself!"—and nothing more could he utter.

Recollection of Acts performed by Sleep-walkers.—I will now briefly refer to the degree in which sleep-walkers remember, on awaking, what has occurred during the attack.

Dr. Carpenter remarks, in his *Human Physiology*, that "nothing which occurs during the state of somnambulism is ever retraced spontaneously, or can be brought back by an act of recollection." And again, he observes, that "the phenomena of sleep-walking differ from those of artificial reverie or electro-biology in this essential feature, that they occur in a state of consciousness so far distinct from the ordinary waking condition as not to be connected with it by the ordinary link of memory" (9th edition, p. 693, 1881).

Let us see how far these statements are confirmed by the experience of our cases.

In a sleep-walking patient at Guy's Hospital, under Dr. Wilks, it was found that she remembered nothing, not, for example, that she had written with pen and ink very shortly before she awoke. Mr. Price, the house-physician, has obliged me with the following note¹:—

"E. H. was in the habit of constantly walking in her sleep. This somnambulistic condition was practically a spontaneous hypnotic state, all the phenomena I have related holding good in the sleep-walking condition. The only difference that I noticed between the two was that when sleep-walking, the patient was rather less amenable to directions given her, and appeared to be somewhat obstinate.

¹ For description of this case in its hypnotic relations, see p. 52.

"She would sit up in bed, stare vacantly around her, answer questions, and, as when hypnotized, declare she did not recognize even the most familiar faces. She would suddenly fall back in her bed, striking her head severely against the head-board. This, I think, accounts for the localized tenderness on admission, if not for the occipital headache as well. She would walk about for hours: go to the pantry for the tea-things, take round the eggs, etc., and place them on the patients' lockers, as she was in the habit of doing in the daytime when assisting the nurses. She was somewhat difficult to awaken from this condition; the application of cold water was utterly useless. On one occasion I threw a large basinful of cold water over her, without causing the least sign of waking, not even a shudder. Blowing twice or thrice on the conjunctivæ sufficed to rouse her. She came to just as any one would in waking up from sleep. On one occasion I seated her (in her sleep) at a table, roused her, carried on a short conversation with her, and got her to write her name; then within a minute hypnotized her, and aroused her again. When awakened the second time, she declared she had not the slightest recollection of having written her name a minute before on the paper in front of her, the ink on which was scarcely dry."

The boy somnambulist, known to Dr. Yellowlees, could not recall the acts he had performed, or that he had left his bed, though he appears to have remembered the dream which occasioned his attack on "Legree."

Dr. — writes of himself—"Next morning I can partly remember my nocturnal actions. I don't always remember the initial stage—*e.g.*, the getting out of

bed. I have had at least one walking performance without any remembrance of it at all, probably more. At least twice I have found myself bruised in the morning without knowing anything of the cause."

A lady correspondent writes—"I never recollected my nocturnal actions, and can only give information of them from what others have told me of them."

A young gentleman whom I have attended for sleep-walking not only recollects perfectly having been up in the night, and the actions performed, but remembers the time, as ascertained by looking at his watch, for which purpose he lights a lamp, this being no doubt induced by having to go off by the train next day, and being fidgety about not waking in time. This patient makes the important observation that he does not remember having walked in his sleep the previous night if he does not wake during the act. As a rule, he does wake partially, but is still haunted with the idea for a considerable time after waking.

My barrister correspondent says he can often remember all that he has done.

His sister, also a sleep-walker, can recollect well her nocturnal acts.

From these examples it will be seen that the statement that somnambulists never remember what has occurred during their walks is too unqualified. At the same time, the fact that the memory is in many instances entirely absent is one of the most interesting phenomena of somnambulism, and the explanation of these two separate existences, especially when, as sometimes happens, the consciousness of the one state is resumed in the next attack of somnambulism, has given

rise to various explanations. That reflex cerebral acts, unattended by consciousness, should not be remembered on awaking, is, however, natural. The events which take place are entirely outside the individual's conscious personal existence. The Ego does not participate in them. Of course, when no ideas are aroused, nothing will be remembered. On the other hand, just as when we are awake we may be conscious of reflex acts if our attention is directed to them, so in sleep, consciousness may be sufficiently aroused to register and subsequently recall the actions performed. More commonly, however, if any remembrance survive, the dream is remembered, and the motor action is not. Seeing that in double consciousness the automatic acts of the sleep-walking state are remembered when there is a recurrence of the attack, there must be a conscious life *quoad* the acts performed, which is not continued into the waking state. Some attribute the amnesia which usually marks sleep-walking to the exhaustion of those portions of the brain which have been called into abnormally intense action—the polarity or receptivity for impressions being exhausted—but this explanation does not seem to me to be called for. Apart from sleep-walking, the phenomena of abstraction or reverie, in which acts are registered which are not present to the consciousness at the time, but are unexpectedly recalled by after events, serve to illustrate the singular fact of double consciousness in somnambulism.

Treatment.—The last point to which I shall refer is the practical question of treatment. Its importance constitutes a strong reason for medical men bestowing more consideration on sleep-walking in the future than they have done in the past. In replying to the circular, one correspondent observes—"Any one who

could find more certain remedies for this distressing ailment would indeed be a benefactor."

I meet with much difference of opinion as to whether children who develope this inconvenient habit, or scream in their sleep, should be treated as naughty, or should be tenderly dealt with.

In the case of one family known to me, in which two young members screamed frightfully, and one of whom used to get out of bed, gentle means were first tried, and a light placed in the room, without the desired effect. The habit was broken in one instance by the little girl of eight being brought downstairs and put in a corner; in the other by being taken into a room below, where the old people were sitting.

The head-master of a large school informs me that an epidemic of sleep-walking broke out in his seminary some years ago, and that other means having failed, he poured two buckets of cold water over one of the boys in bed when he was beginning his ambulations. This measure stopped his habit effectually, and not only so, but broke that of the other boys in the school.

One of my correspondents, a schoolmaster for forty years, informs me that he has from time to time met with cases of sleep-walking among his boys, and that he cannot recall a single instance in which he has failed to effect a cure. He thinks he owed the idea to some observations in Upham's *Mental Philosophy*. He thus writes—"Shortly before the sleep-walker's usual time of going to bed, I call him on one side, and say in a serious and decided tone, 'Henry, I find you were out of bed, and making a disturbance in your room last night.' 'Sir,' he replies, 'I was asleep; I know nothing about it.' Then I say, 'I will say nothing

more about it on this occasion, but such a thing must not occur again.' 'But, sir, I could not help it, I was asleep.' 'Well,' I respond, 'you hear what I say. I would not advise you to let it occur again.' The boy leaves me, possibly with the feeling that he is being somewhat hardly dealt with, but with an established operative motive for checking the tendency to somnambulism, a motive which doubtless will continue to actuate him, even in sleep."

A physician writes of himself that at one time he used constantly to place obstacles in front of his bedroom door, and with the most beneficial effect; probably, he adds, by imposing on the higher centres a strong inhibitory task. "On no single occasion when I did this, can I remember to have had any sleep-walking during the succeeding night."

One sleep-walker states that his grandmother was, when young, a sleep-walker, and that she was cured by being well whipped on the spot.

On the other hand, a young gentleman who has been a persistent and dangerous sleep-walker, and for whom I have prescribed the bromides without much, if any, benefit, is at present relieved by having a night-light constantly in his bed-room. At one time he took morphia on account of having a cough, and found that it had "a wonderful effect in causing dreamless and consequently undisturbed nights," but unfortunately the effect passed off in a little while. Belladonna seemed to have a beneficial influence for a short time, but was of no lasting benefit. In this case, scolding only caused fear of detection, and when caught, deception. When the door was locked as a preventive measure, he knocked loudly at it, until the family was roused.

Another sleep-walker (the barrister) says—"I was cured by the administration of half-a-dozen raisins, soaked in brandy, on retiring to rest, which from my subsequent experience I am satisfied will cure most people." We can hardly suppose that the brandy, still less the raisins, had much or anything to do with the cure. If it were not merely a coincidence, it is probable that the patient had great faith in the remedy, and that the expectation that he would not walk in his sleep, made him slumber without rising from his bed.

I know the case of a girl at school addicted to sleep-walking, who rose one night and proceeded to another bedroom, where she opened the window, and was with difficulty prevented by two of her schoolfellows from precipitating herself below. Now, she was treated as a naughty girl, but without a beneficial result. She was also tied to her bed, but this had only the effect of irritating her. The fact was she slept alone, and when she was allowed to sleep in a room with other girls she was relieved of the habit. She was, I should add, a nervous girl, for whom school learning was too great a strain.

In this connection I may observe that a German physician, Johannes Bohn, who wrote a dissertation upon sleep-walking in 1717, in which he said that many at that time fiercely called its existence in question, speaks of those authors who, like Blancardus, recommend exciting the senses of the sleep-walker by shouting at him, by objurgations, and by blows, so as to deter him, by producing a deep impression on his brain, from walking in his sleep again; and he refers to the well-known practice of placing a bucket full of cold water by the side of the bed for the somnam-

bulist to walk into ; but Bohn himself preferred fastening the leg or wrist of the person to the bed, and he also recommends blowing snuff through a tube into the sleep-walker's nostrils, and gives the case of a young nobleman who was cured by this means alone.

I may say, that however imperfect this investigation has been, it shows that in regard to the treatment of sleep-walking, there is undeniable evidence of benefit being derived from producing a strong impression on the mind of the somnambulist, in the way of calling into force the higher and controlling centres of the brain.

As the abnormal condition of the sleep-walker lies in part in the lower centres performing their functions in sleep, while volition, and to a limited degree ideation, are temporarily in abeyance, it is not surprising that when absorbing mental work has exhausted the supreme cortical centres, the basal ganglia may still fully respond to stimuli, whether external or internal. It is a striking and at first sight contradictory fact, however, that some prominent idea remains in even vivid activity, and stimulates the motor centres from within. It might have been supposed that a brain exhausted, for instance, with Euclid, would, more especially on this subject, have been dead asleep ; but it is not so. It would seem as if the prolonged exercise of the voluntary direction of the thoughts to a particular study—the strenuous use of the attention—exhausted the will-power, but allowed the ideas with which the mind has been chiefly exercised to flow on automatically, thus giving rise to dreaming, and easily arousing into action the sensori-motor and spinal centres.

There is, as we have said, a loss of normal equi-

librium between the various encephalic centres, which, though it may in some instances be due to irregular vaso-motor action and blood-supply, is, as a rule, purely dynamic in its character.

If this be the correct *rationale* of sleep-walking, it is not surprising that a powerful moral influence or shock should prove useful in restoring the equilibrium, relieving the will of its paralysis, and exciting mental control. I suppose that in the case of the boy threatened with punishment if he walk again in his sleep, the impression on the brain works in such a way that when the tendency arises to repeat the act, the will is more easily aroused, and determinately asserts itself. Just as when any one has forcibly impressed on his mind at bedtime that he is to rise at an early hour, the brain automatically works to that end, and the slightest sound awakes him and excites the dominant idea, so the threat to the child leads to the prompt exercise of control in the initial stage of somnambulism, and prevents his leaving his bed.

So again, the throwing cold water upon a boy when actually walking in his sleep, acts for the future in the same way as the threat. Whether it is well to cut an attack short in this heroic manner is another question. It is remarkable, however, that the replies to my inquiries do not speak of seriously mischievous consequences following this mode of dealing with the affection ; on the contrary, it appears to have proved, in some instances, an effectual cure, if it failed in others.

In conclusion, it may be observed that the most important and interesting questions respecting sleep-walking are the condition of the brain, and the vaso-motor nerves (and centre) supplying this organ ;

the relation of sleep-walking to nervous diseases, especially epilepsy; the degree in which sleep-walkers can see in the dark, and are guided by the muscular sense and touch; the measures which ought to be taken with sleep-walkers who have committed homicidal acts; and the moral and medical (including the prophylactic) treatment of sleep-walking. My object will have been attained if, in addition to contributing some cases and reflections towards the elucidation of these inquiries, I succeed in inducing those who are in possession of any facts of value bearing on my theme, to communicate them to me.¹

¹ I am glad to be able to add that one practical consequence has followed the reading of this paper before the Metropolitan Branch of the British Medical Association. Dr. Mahomed proposed, and it was unanimously agreed, that information on the subject should be sought by the Committee for the Collective Investigation of Disease.

SLEEP-WALKING.

*Circular of Inquiry.*¹

Age

Sex

Occupation

1. Have other members of your family shown a tendency to sleep-walking? If so, what was their relationship to you?

2. Do you know of any cases of nervous disease in your family?

3. Have you a nervous temperament, or otherwise?

4. Do you know whether you are readily susceptible to the so-called "mesmeric" or hypnotic influence?

5. What was your state of general health when subject to somnambulism?

6. At what period of life was sleep-walking first noticed? Under what circumstances did it arise, and in what particular manner?

¹ The value of the answers would be greatly increased if drawn up by a medical man.

7. Has its course been continuous or interrupted, and has it now ceased?

8. What actions do you usually perform while sleep-walking? Mention any striking incidents that have occurred.

9. State, if possible, your condition during these acts as observed by others (openness and use of eyes, state of pupils, power of hearing, common sensation, etc.).

10. Next morning, can you recollect your nocturnal actions, and your state of mind at the time? Have you observed whether dreams have been associated with sleep-walking, and if so, whether they were appropriate to the actions performed?

11. Have the phenomena of double consciousness been manifested in your case?

12. Have you observed whether in dreams any particular class of sensations or ideas is habitually absent? (As, for example, that you never dream of things *smelt* or *touched*.)

13. Mention any actions you have performed which are ordinarily associated with considerable intellectual activity (arithmetical calculations, literary or musical composition).

14. Do you ever talk during sleep-walking, and if so, is it only when addressed?

15. Has it been observed by yourself or others, that sometimes certain movements cannot be performed, while others are being performed? (As, for example, that a hand or a foot seems temporarily paralysed.)

16. When your eyes are open while walking, do you know whether your actions have been influenced by objects which, if awake, you would have seen?

17. Do you usually awake before returning to bed?

18. Does the occurrence of sleep-walking cause a feeling of fatigue next day?

19. Has it been needful to adopt precautions against your placing yourself in dangerous situations, or committing acts dangerous to others?

20. Have you noticed whether you are specially apt to walk in your sleep after any particular event or condition? (*e.g.*, late supper, fatigue, illness.)

21. What drugs, if any, have been administered, and with what success? If apparently successful, has the omission of the medicine led to a recurrence of sleep-walking?

22. Has any manner of spending the preceding day appeared to prevent the sleep-walking?

23. Has any severe repressive treatment been tried, and if so, with what success? (*e.g.*, scolding, placing cold water tub in the way.)

24. Have you been subject to nightmare ?

25. Have you been accustomed to talk in your sleep ?

Can you send me the name and address of any persons who would fill up this circular ?

Signature (or initials)

Address

The replies to the above, numbered according to the questions, to be forwarded to Dr. Tuke, Lyndon Lodge, Hanwell, W.

CASE OF SPONTANEOUS
AND
INDUCED SLEEP-WALKING.

I HAVE briefly referred, in the preceding pages, to a case of sleep-walking in Guy's Hospital. I am under great obligation to Dr. Wilks and his late house-physician, Mr. Price, not only for allowing me to examine the patient and test her in several ways when in a state of somnambulism, but for placing at my disposal the notes made by the latter gentleman while she was in the hospital. I have already utilized most of those notes which relate to sleep-walking; the following mainly refer to her condition when hypnotized. I shall refer again and again to the case in the section on the mental condition induced by hypnotism, but I may remark here that nothing could better illustrate the mutually instructive way in which sleep-walking and artificial somnambulism serve to elucidate each other. No one who has seen anything of cases of hypnotism would doubt the genuineness of the symptoms presented by E. H., had he seen her when at Guy's Hospital.

CASE OF SPONTANEOUS AND INDUCED SLEEP-WALKING
AT GUY'S HOSPITAL, UNDER THE CARE OF
DR. WILKS.

(*Communicated by J. A. P. Price, B.A., M.B.*)

The patient, E. H., was admitted into Guy's Hospital, December 19th, 1882, under Dr. Wilks' care. She was sixteen years of age, by occupation a general servant, and came into the hospital on account of headache and sleep-walking.

When nine years of age she commenced to have "fits." These came on during the day or night without any warning; she would fall down, bite her tongue, and remain unconscious for a short time; on waking up she had no knowledge of what had occurred. At first the "fits" were two or three daily, but during the last four years, far less frequent—only two or three yearly. She has now been free from "fits" for a year.

She has frequently suffered from vomiting and sickness, independently of food, and has complained of retching on getting out of bed in the morning. She says that her heart beats quickly on going upstairs.

She states that she is noisy—makes a noise in her sleep—and occasionally gets out of bed and walks. She is a well-nourished, somewhat anæmic-looking girl, tall for her age; she has a dull, heavy look. On the left elbow and on the inner side of the left thigh are small scars, stated to be the result of abscesses. The lymphatic glands are not enlarged.

She breathes quickly and deeply when the least

excited, and this she readily becomes, even when examined with the stethoscope, the heart-beat being quickened at the same time.

The mental faculties are clear.

The knee-jerk is sluggish in both legs; more so in the right than in the left leg; at times even absent in the former. She complains of occipital headache, and her scalp over the occipital region is tender.

Whilst in the hospital she suffered from constipation. She was cheerful, very fond of playing with the children in the ward, good-tempered, and willingly gave a helping hand to the nurses. She frequently complained of the headache and occipital tenderness mentioned on admission. Her appetite was moderate, and at times indifferent.

She frequently walked in her sleep, and strongly resisted all attempts to put her back into bed. The next morning she would have no knowledge of what she had done during the previous night, and would complain of feeling tired and sleepy. She never resumed, in a subsequent somnambulistic state, anything she commenced in a previous one.

Her family history was only ascertained with some difficulty, and that imperfectly. Her mother, she said, was dead, and as far as we could learn her father had had something to do with the mother's death. She rarely spoke of her father, merely stating that he was dead to her; whether a state criminal or not we could never ascertain. Of her brother she spoke in terms of affection. These facts bear upon the subsequent description of her symptoms. During her stay in the hospital no organic disease was discovered, and she left, on March 16th, 1883, in the

same condition as she entered, except that her headache was less constant. Her sleep-walking persisted.

The following is, as far as it goes, an accurate description of the hypnotic or induced somnambulistic condition presented by the patient.

In order to induce hypnotism, a watch was used on the first few occasions, being held about eighteen inches away from the patient, and on a level with her eyes. Subsequently other objects, such as a pencil case, stethoscope, etc., were used for the same purpose, and it did not make any difference whether the object to be gazed at was held above, below, or on a level with the patient's eyes.

After gazing for less than a minute at the watch, the eyes became fixed, and remained so when the watch was removed. On being asked if she could see the watch, she replied in the affirmative, and on being told to catch hold of it she grasped the air, stretching out her hand to the spot where the watch had been lately held.

She was then told to hold out her hand and place it palm downwards on the palm of the hypnotizer, and when told that she could not move it therefrom, she seemed utterly unable to do so. In this way she was led round the room by the operator, quite unable to resist following him, and was even brought to her knees when the hand of the latter was lowered to the ground. A sudden movement on the part of the operator's hand left the patient's outstretched, the movement apparently being too quick and unexpected to be followed. Whilst the arm was thus outstretched, a pencil was placed in the palm, and the patient was led to suppose that it was red hot (the absurdity of a red hot wooden pencil never struck the

patient). It was immediately dropped. When, however, previous to the pencil being placed in her palm, she was told that she could not move her arm from its outstretched position, she was quite unable to get rid of the supposed red hot article, and her features expressed the feeling of great pain; when the pencil was taken away, and she was asked whether she had been burnt, she replied "yes," and pointed to her palm when asked where. Rubbing the spot, and telling her it was thus cured, soon satisfied her.

She performed, when asked, any movements; if asked to shut her eyes or mouth, she did so, and failed to re-open them, though trying hard to do so. Similar results were obtained with the limbs, etc. When told that she could not breathe, she held her breath for a short time—not much longer than any ordinary individual could—and soon commenced to breathe again with deep inspiration. When told she was dead, if in the upright position, she would fall backwards on to her glutei first of all, and then on her back, like a person who wishes to avoid hurting herself. On one occasion she was left thus lying for quite half an hour.

In her open mouth, which she had been assured she could not shut, a lump of sugar, suggested to be poison, was placed, whereupon she twisted up her features, and seemed to be in great trouble, neither uttering a word, nor attempting to eject the sugar. The latter, however, was promptly expelled when told that she could shut her mouth. Any movement performed in front of her she would imitate. She mimicked laughing and sobbing, passing suddenly from one to the other.

When asked to sing, she sang some child's song.

probably learned years before. She possessed no knowledge of any such song when certain of its lines were quoted to her during her ordinary wide-awake state.

When seated at a table, she was asked to play the piano (*i.e.*, the table in front of her). She awkwardly fingered the table, like a person who had never learned to play, as in her own case, and on being questioned, said she was playing a quadrille. When requested, she would dance and jig about. On being told to read, she invariably held the book given her upside down, and read paragraphs from some child's school-book, chiefly of words of one syllable, in a slow, drawling manner, like a child who had not long learned to read. As in the case of the song, she seemed to be unconsciously recalling her childhood's experiences. She could, when in her normal condition, read well. A cushion was given to her, and the idea impressed upon her mind that it was a baby, whereupon she nursed it in a natural manner. When told the baby was hungry, she, of her own accord, took up a biscuit, which happened to be on a table close at hand, chewed a small portion, and then endeavoured to thrust the thus softened morsel into the cushion. On striking the cushion violently, and leading her to suppose that the baby had been killed, she screamed, and was deeply grieved, but was soon pacified by being told that the child was alive and well. It was with some difficulty that she was induced to part with the supposed baby—that is, as long as she believed it to be a baby, and was not told that it was only a cushion; to persuade her to the latter belief was in itself not the matter of a moment. She was given an antimacassar, and it was called a

bonnet, and she was told to put it on and go for a walk ; this she did, tying the article under her chin. Soon afterwards she was told to take off her bonnet, and did so, of her own accord hanging it upon a nail, to get at which she had to step on a chair ; the nail had not been observed by any around, and the place was strange to the patient.

A piece of paper, with pen and ink, being placed in front of her, she was told to write a letter to her master. The pen had to be given her the right end up, otherwise she dipped the handle into the ink. She wrote utter nonsense, finishing the note with a name other than her own, and addressing it incorrectly. Her writing, like her reading, was child-like. In her normal condition she wrote a good hand. When writing, a piece of paper was held in front of her eyes. She hesitated a second, contracted her brow, made no attempt to remove the interposed sheet of paper, but wrote on in an unconcerned manner ; not, however, in a straight line as before, but straggling in a downward, slanting direction across the page.

When asked her name and age, she never answered correctly, but gave different names and different ages at different times. Some of the names given were those of people she knew. Her address she never gave correctly. She greatly disliked being told she was a servant, and said she was a lady.

She declared she knew none of those around her, not even those with whom she was most familiar, as the sister of the ward, the nurses, or myself, as house-physician. She professed ignorance of names in the same manner. When told to do so, she would walk about the ward, with which she was familiar, with

the vacant stare which she usually presented throughout the hypnotic condition, and avoided obstacles in her way ; in a gas-lit, unused, and unfamiliar ward, she kept constantly knocking against the bedsteads on either side of her.

When assured she was deaf, she paid no heed to anything that was said to her, and it was necessary to shout into her ear in order to rouse her from her supposed deafness. Her dislike to her father, and her fondness for her brother, were retained during the hypnotic condition. She struck violently a bystander whom she supposed, on suggestion, to be her father, and kissed the hand of any person she believed to be her brother.

On one occasion, when in the hypnotic condition, the patient was given her ordinary tea ; she was first asked which she would prefer—brandy, tea, or coffee. She expressed great disgust at the idea of brandy, and chose coffee in preference to tea ; the latter was, however, given her, under the pretence that it was coffee. The first mouthful she swallowed was hot, yet it did not seem to inconvenience her. A piece of bread and butter was given her to eat as bread and butter first of all, and then, under the idea that it was cake, she swallowed the make-believe cake with far greater avidity than she did the bread and butter. On being roused from the hypnotic condition, she asked for her tea, and would not believe that she had already taken it. She was supplied with a second tea, and ate it very contentedly, making a good meal.

The foregoing facts were observed on different occasions, and in most cases were several times elicited with the same results. I need not say that precautions were taken to avoid our being imposed upon.

I should state here, that she was easily roused from the hypnotic condition by blowing on the conjunctivæ once or twice, less easily by slapping her cheeks, very readily and promptly by means of a fairly strong Faradic current. When roused, she expressed, and I have no doubt correctly, absolute ignorance of all that had passed when she was in the hypnotic state.

A short account of the condition of the special senses and muscular rigidity during this induced condition must be given to complete the case.

The *pupils* were a little dilated at first, but soon resumed the normal condition. The eyes were kept wide open (except when told to close them, and for an occasional blink), staring, until the tears ran down the cheeks. Her eyesight was good for certain objects, and the pupils reacted to light.

Sense of smell seemed to be absent.

Taste.—Quinine, sugar, and salt were given her to taste; the first she pronounced to be flour, the second something gritty, and the third sand.

Both smell and taste were naturally good.

Hearing was good.

Sensation. — Analgesia complete; conjunctivæ touched without blinking; swallowed hot tea as mentioned. A pinch or prick on the skin caused no change in the size of the pupils.

Reflexes.—Knee-jerk unaltered;¹ no ankle-clonus.

Muscular Rigidity.—The arm, when voluntarily extended, was somewhat rigid, and became markedly so on stroking it from above downwards. On stroking back and legs, and placing her so that the head rested

¹ i.e., same as in unhypnotized state (page 53).

on one chair, whilst the heels rested on another, the body kept quite stiff and horizontal for some minutes, the muscles ultimately relaxing.

It was suggested that the patient was deluding us, in fact, that the whole proceedings were on her part a sham. This I do not for a moment believe. She herself was most anxious to be cured of her sleep-walking, as it debarred her from going back to the situation which she had left. But apart from this, the precautions we took to prevent imposition rendered it impossible, had she desired it.

How far the above phenomena were mixed up with the so-called hysterical condition I do not know, unless we are to regard as such the anæsthesia during both spontaneous and artificial somnambulism.

THE

MENTAL CONDITION IN HYPNOTISM
(ARTIFICIAL SOMNAMBULISM).

I HAVE for years been strongly impressed with the interest and physiological importance of hypnotic phenomena, but I frankly confess that often as I have endeavoured to form a clear idea of the cerebro-mental condition of the hypnotized, I have felt misgivings as to whether I had fully succeeded; at any rate, I feel sure that I, for one, am not justified in speaking dogmatically as to the physiology or psychology of hypnotism, and as we go along we shall, if I am not mistaken, be disposed to hold some views as possibly, others as probably, and only a few perhaps as certainly true.

The data upon which we have to attempt to form an opinion or construct a theory are—

I. The conditions necessary to induce the state in question.

II. The objective symptoms of the hypnotized person so far as we can observe them; and

III. The subjective state experienced and described by himself in those instances in which memory, more or less distinct, is retained of what has been present to the mind during the hypnotic condition.

I am fortunate in having obtained from several competent gentlemen who have been hypnotized a description of their own feelings during the state when conscious, one being Mr. W. North, B.A., Lecturer on Physiology at Westminster Hospital, and for three years Sharpey Scholar at University College, London; another, Mr. M——, a medical student at St. Thomas's Hospital; the other a clergyman; all able coadjutors in this inquiry.

Although the mental condition present in hypnotism is the title and object of my paper, I shall touch upon the matters comprised under the first and second sections before entering upon the third, as they bear more or less directly upon the ultimate question discussed.

I. As to the conditions necessary to induce the hypnotic state.

As is well known, staring at a disc or some well-defined object is a very frequent method employed for this purpose, but we know that other methods are effective, as the monotonous sensory impressions produced by passes, by counting up to several hundred figures, by listening to the ticking of a watch, etc.

In a milder form we do the same sort of thing constantly in trying to go to sleep; in fact, I am often surprised that persons do not sometimes throw themselves into an actually hypnotic condition in attempting to go to sleep.

The principle common to the various modes of hypnotizing is, on the physical side, the stimulation, more or less prolonged, of a sensory nerve in close relation to the brain, calculated to ultimately exhaust some portion of that organ, and on the mental side

the riveting the attention on one idea. Looking at an object is not essential, for the blind man may be hypnotized, and in susceptible persons the merely expecting to be hypnotized is sufficient to induce it, the expectation in this case involving the concentration of the attention to one point.

Mr. North, in his notes, says—"I have not the smallest doubt that, at first, I succeeded in abstracting myself, as it were, from surrounding circumstances. I had been reading very hard for days past on the subject of intestinal digestion in relation to the bacteria produced, and I pictured to myself the interior of the intestine and its contents; then I tried to picture a special form of bacteria, and while I was engaged in contemplating its changes of form I seemed to lose all consciousness of persons around me."

On a subsequent trial being made (see p. 69) he looked at his boot, and thus describes the process:—"I ultimately succeeded in fixing my attention on six points of light reflected upon my boot, and having some minute resemblance in position to the constellation Orion. After looking fixedly at this for what seemed to me a very long time, the idea of the constellation vanished, and its place was taken by the outline of the lower part of the face of a friend. All I could see was his beard and mouth and part of his nose and one cheek; the rest was abruptly cut off by a broad, black area; the details were tolerably vivid."

The voluntary surrender of the will—the subject placing himself passively in the hands of the operator—is also an important factor in nearly all the processes. It is the initial step to the subsequent surrender of the will of the subject to that of another;

but the concurrence of the will is not absolutely necessary in those who have been already hypnotized and are highly susceptible to sensory impressions, especially if these are associated in their minds with the hypnotic sleep. MM. Charcot and Richer, whose researches in hypnotism are well known, have shown that the subject may be surprised, and even rendered cataleptic, the moment his attention is in the least arrested. He is seized, and, as it were, instantaneously petrified, whatever efforts he makes to resist the influence. M. Richer constantly induces hypnotism by throwing a brilliant electric light upon the face of persons not expecting it, or by suddenly striking a gong which had been concealed. Sometimes it has happened that others have passed into this cataleptic condition who happened to be on the spot, or near, for whom the experiment was not intended. An amusing illustration of this occurred one day at the Salpêtrière, and occasioned a scene which, as M. Richer says, in a communication with which he has favoured me, was *assez plaisante*. One of the patients was suspected of stealing some photographs from the hospital, but she indignantly denied the charge. One morning M. Richer, after having made some experiments upon other subjects, found the suspected thief with her hand in the drawer containing the photographs, having already concealed some of them in her pocket. M. Richer approached her. She did not move; she was fixed—she was transformed into a statue, so to speak. The blows on the gong made in the adjoining ward had rendered her cataleptic at the very moment when, away from the observation of all, she committed the theft. M. Richer awoke her by blowing on her face. Her

confusion can be imagined. It was no longer possible to deny her larceny. Were burglars but hysterical or neurotic, what a grand resource would the police have in hypnotism !

II. As to the objective symptoms of the hypnotized.

These necessarily vary with the stage or type, and before proceeding further I must here observe that it is essential to bear in mind that no description of symptoms, whether bodily or mental, applies to all the stages or classes of hypnotism. I may remind you that Charcot and Richer, and, following them, Tamburini and Seppilli, recognize three fundamental types—the cataleptic, the lethargic, and the somnambulistic. In the first the limbs retain the positions in which they are placed, for a considerable time, without effort ; in the second (the lethargic) the muscles which are relaxed are found to have the remarkable property of contracting in a most definite way under gentle mechanical applications ; in the third (the somnambulistic) the state of the subject answers much more to what is popularly understood as the so-called magnetic or mesmeric sleep. Contractions of the limbs can be induced, but they are of a different character from those in the cataleptic form, or the excitability of the muscles in the lethargic state.

In face of the simulation so frequently practised, it is especially important to note the objective symptoms in hypnotism, but in describing them now I more particularly desire to give a complete picture of the symptoms presented in hypnotism, for I shall not strictly confine myself, as I have said, to the mental condition, seeing how much the state of the body elucidates that of the mind.

Pupils.—There are, when the subject regards the operator's disc, the natural effects of increased accommodation, strabismus, and contracted pupils; and even after removal of the disc, the eyes often have a peculiar appearance from a very slight strabismus, and the hypnotized person is unable to read a paper without bringing it near to him.

After the first effect of looking at an object has caused the pupils to contract, they become dilated if the individual passes into the hypnotic state. Often I have observed them widely dilated and sluggish, an indication of the functional activity of the medulla oblongata as regards the sympathetic.

On measuring Mr. North's pupils before and during the sleep we found them three and six millimetres respectively.

Mr. Braid says that the pupils, after being greatly dilated and highly insensible to light, subsequently become contracted, but still insensible to different degrees of light.

Tamburini and Seppilli find the pupils dilated and insensible to light, but Heidenhain adduces their sensibility to light as a proof that the corpora quadrigemina are not affected by hypnotism.

Cerebral Circulation.—Have we any means of determining the state of the cerebral circulation in hypnotism?

Sometimes there are indications of flushing and discomfort of the head, and Mr. Braid says that he occasionally observed the face so much flushed, and the action of the heart so tumultuous, that he aroused the subject, but certainly anything like serious cerebral disturbance appears to be very rare.

Heidenhain, in the first instance, believed the

vessels to be contracted, and that the anæmia caused the sleep. But as those who are hypnotized are often flushed instead of being pale, he began to doubt this. Then he asked Professor Förster to examine the vessels of the retina with the ophthalmoscope. The operation was difficult, for the bright light soon aroused the subject. However, he succeeded in obtaining a sufficiently distinct view of the retina to make out that there was no contraction of the vessels. Heidenhain maintains that it can hardly be supposed that the vessels of the cerebrum and eyes are in an essentially different condition, and therefore finds another proof that the brain is not anæmic in the hypnotic sleep. There would, however, be a difference of opinion on this point, some not regarding the condition of the retina as to vascularity as a test of the state of the circulation in the brain.

That fulness of the cerebral vessels is not inconsistent with the condition of brain in hypnotism is, however, shown by the fact on which Heidenhain most relies, that persons can be hypnotized who have inhaled nitrite of amyl, as happened to his brother, and Dr. Kröner, on whom Heidenhain tried the experiment of combining amyl and hypnotism with the result I have stated.

Brown-Séquard has shown, by inducing unconsciousness (inhibition of mental functions) from irritation or lesion of a certain point in the medulla oblongata in animals, while the cervical sympathetic was divided, that the result is not due to contraction of the cerebral vessels.

Respiration and Circulation.—The respiration and the pulsations of the heart are, as a rule, much quickened at first.

The pneumograph has been employed by Professor Tamburini, of Reggio Emilia, and some of his tracings are striking. He finds the frequency of respiration to be doubled at first, and the inspiratory pause suppressed. Heidenhain says he has seen the number of respirations in fifteen seconds rise from four to twelve, or even from three to sixteen.

M. Richer, at the Salpêtrière, has made similar tracings, and finds them very significant. They are useful, also, as a test of simulation. He says that with the cataleptic subject the tracing is uniform in character from beginning to end. With the simulator, on the contrary, it is composed of two distinct parts. At the beginning, respiration is regular and normal; in the second stage, that which corresponds to the indications of muscular fatigue, irregularity in the rhythm occurs with deep and rapid depressions, manifest indications of the disturbance of the respiration caused by the effort to simulate.

The quickened action of the lungs and heart was strikingly shown in the case of Mr. M——, of St. Thomas's, when I saw him hypnotized by Mr. Hansen a few weeks ago.

He writes—"After gazing for a few minutes at the disc that Mr. Hansen had given me on first going on the stage, I was beginning to fall comfortably asleep, but as soon as he began passing his hands over my face I felt a sort of oppression coming all over me; respiration became difficult, my heart was beating violently, and I felt a great increase of temperature." And of a much later period of the experiment he writes—"My heart was beating as fast as ever, and my temperature was still high. Respiration continued to be difficult."

In Mr. North's case¹ we observed the breathing and action of the heart were, on the contrary, calm. A pulse tracing was taken by Mr. Victor Horsley, but there was nothing to indicate any noteworthy change in the circulation.

Professor Tamburini has made careful tracings of the pulse as well as the respiration. He found the character of the pulse was unaltered, but it was increased in frequency.

I may add that Mr. Braid found the rise in the pulse from the simple muscular effort made to keep the legs and arms extended for five minutes to be about 20 per cent., while in a state of hypnotism it was 100 per cent. By rendering all the muscles limber, the pulse, he found, fell to what it was before the experiment, or even below it.

Muscles.—M. Richer has made tracings of the muscular contractions of the arms in a hypnotized person who is cataleptic, which show the difference between the cataleptically rigid arm, and one held out by a person not hypnotized. I mention this, although beside my immediate object, because when we tested the subjects in this room by holding out our own arms, the difference was not so great as might have been expected; but had we had a myograph at hand the test would have been decisive. In fact, the myograph, the pneumograph, and the sphygmograph are most valuable means placed at our disposal by modern invention for obtaining trustworthy records of the objective symptoms of hypnotism.

¹ This was on the occasion of a more recent experiment, at Mr. Horsley's house, when we carefully observed Mr. N.'s condition while in the hypnotic state.

Mr. Price, in whom on one occasion the hypnotic state was slightly induced, particularly observed the seeming inability to perform ordinary muscular movements. He thus describes how he felt—"On one occasion, between twelve and one at night, after a hard day's work in the wards, one of the house-surgeons attempted to hypnotize me. I was seated in an arm-chair, and concentrated my whole attention on the object he held before me. After some short time (about five minutes) I felt very sleepy, and my eyelids closed. I was then told I could not open them. I felt myself making every effort to do so, but utterly failed for a short time, when all of a sudden I succeeded. It seemed to me that all my efforts were in a wrong direction; that I was, in fact, using wrong muscles—the frontalis in place of the levator palpebræ. This may seem absurd, but I simply state here my own feeling at the time. On the same occasion I was told to hold my arms outstretched in the horizontal position. I did so, though I felt at the time that it was quite within my power to refuse. I kept my arms thus outstretched for about a minute, as I thought, and then let them drop to my side, feeling very tired. I was afterwards told that they were in the horizontal position for more than five minutes. I have thought it worth while to record this personal experience of the hypnotic state, brief as it was."

Reflex Action.—I need not insist here upon the well-known fact that reflex actions are more easily excited in animals when the cerebral lobes are removed, and that, therefore, if we assume, as we are bound to do, that portions of the cortex are rendered functionless in hypnotism, and that its controlling, inhibiting power is weakened if not suspended—

it is only natural that rigidity of the muscles should be easily produced reflexly by sensory stimuli. We were not, however, prepared to expect—and Heidenham forcibly points this out—that the susceptibility continues for long after the hypnotic condition has passed away.

Then there is a milder contraction of the muscles produced by stroking or other mechanical means, which I have already referred to under the term neuro-muscular hyper-excitability. Charcot and Richer have found they can produce contractions of isolated muscles in this way as definitely as Duchenne did with galvanism. These most interesting effects have been photographed, and exhibit various facial expressions admirably.

On the evening when Mr. Hansen experimented in this room,¹ some of you will remember that in the case of a boy he produced well-marked distortion of the mouth by stroking the muscles on one side with his finger, the boy being then aroused from the hypnotic state, though remaining abnormally susceptible to reflex action.

In some stages of hypnotism the subject can bear with ease a very heavy weight, owing, in this instance, not to the mental impression that a heavy weight is a light one, but to the rigid contraction of the muscles. Thus Mr. North, for example, was placed with his head on one chair, and his heels upon another, and he says—"I heard Mr. Hansen

¹ Bethlem Hospital. As regards the boys acted upon on this occasion, it has been thought safer to make scant use of the experiments, and no reliance has been placed upon their statements. The facts stated would be unaffected by the discovery that simulation had been attempted.

express his intention of sitting on my legs. I remember wondering whether my posterior knee-ligaments would stand it, and making up my mind not to interfere, *i.e.*, to let my outer self do as it liked. I remember being surprised when the strain came, for though probably fifteen stone, it felt like a large pillow, of no weight at all."

In a considerable number of cases I have observed the tendon-reflexes to be the same as in the waking state; in some instances exaggerated. It appears to depend upon the particular stage or type. It is stated by Richer that in the lethargic type they are much exaggerated, in the cataleptic type diminished, and in the somnambulistic type normal.

Tamburini and Seppilli found the patella-reflex exaggerated in a case reported by them.

It is difficult to explain why, in the supposed depressed condition of the hemispheres, the reflexes are not exaggerated in all these types.

The power of co-ordinating movements is perfect in the stage in which the muscles are not flaccid. Mr. Braid says of hypnotized persons—"The power of balancing themselves is so great that I have never seen one of these hypnotic somnambulists fall" (*Hypnotism, or Nervous Sleep*, page 56).

In the lethargic state the body sinks down, the limbs become flaccid, hanging down, and if raised they fall again heavily.

In the somnambulistic state, resolution of the limbs is not so marked as in the lethargic state.

Galvanic Reaction.—I have so few observations on this point that I can make no general statement. In one case, hypnotized at Bethlem Hospital, Mr. Lawford, the clinical assistant, makes the following

note :—"The muscles in the rigid arms of Mr. B——, who was fully conscious, reacted to a Faradic current, much as in an ordinary arm, and with a current of 30 cells the rigidity disappeared."

M. Richer, however, has found that galvanizing the muscles of a subject rendered cataleptic by hypnotism does not in the least degree modify the nervous condition. The catalepsy is not affected, although, strange to say, a puff of air has usually an immediate effect in rendering the muscles flaccid.

In the case of the girl at Guy's,¹ Mr. Price has found that she readily feels a fairly strong interrupted current when applied to the tips of her fingers, and a strong current very quickly wakes her.

III. I now come to the subjective symptoms—those experienced and described by the hypnotized person after he has returned to his normal mental condition, as to his sensations, consciousness, volition, and intellect.

In considering this section we must be careful to bear in mind the very different mental states comprised under the term hypnotism. I have already said that Charcot and Richer, as also Tamburini, recognize three grand types—the cataleptic, the lethargic, and the somnambulistic—although they admit that these classes are based upon very hysterical subjects, and that in ordinary cases they pass insensibly one into the other, and are not nearly so distinctive as these terms indicate.

Sensation of pain is, except in a very early stage, almost always deadened or quite suspended. Of

¹ See page 51.

course, in the case of any subject in whose veracity one did not feel confidence, one would not draw any inference from apparent insensibility to pain; but there is ample evidence of analgesia being induced by hypnotism without resting on doubtful instances. No one would now deny hypnotic insensibility.

Mr. North, in his memoranda, says—"A pin was plunged into the ulnar side of my hand nearly up to its head. I heard the preparation made to do it. I felt the operation begin; there was hardly any pain. It felt simply as though some one was pressing an ordinary wooden match, or some blunt instrument, against my hand. When I was roused I distinctly felt pain in my hand, and it hurt me considerably to withdraw the pin."

On the second occasion (see p. 69), the muscular rigidity which we induced caused great pain. Mr. North also says that the light hurt his eyes when I raised the lids to examine the pupils.

In the case of the girl at Guy's, there was marked analgesia, but she exhibited all the signs of pain when she was told that the prick of a pin is painful. In this way one can produce alternate analgesia, and hyper-algesia at will.

Tactile Sensibility.—In the early days of mesmerism, it was regarded as a proof of the insensibility to pain alleged to exist in that state being feigned, that the sense of touch was unaffected. Now that the sensation of pain and tactile sensibility are shown to be physiologically distinct, the fact no longer excites suspicion or surprise.

Muscular Sense.—As is pointed out by M. Richer, the muscular sense may be the source of automatic

movements perfectly co-ordinated, which produce the action of which the position of the limbs is the image. For example, the cataleptic patient is made to stand upon a chair with the hands taking hold of the folds of a curtain, as if climbing it; immediately the subject scales it, or tries to do so.

Special Senses.—(1.) As regards the sense of *smell*. We applied strong ammonia to a boy when hypnotized, and he bore it close to his nostrils for a much longer time than any of us could bear it; but at last it aroused him. In regard to another case, I cite from notes kindly made at the time for me by Mr. Lawford, clinical assistant at Bethlem:—"After being hypnotized by Mr. Hansen, he apparently did not smell or feel the ammonia fumes; at least he was not aroused by them."

The girl at Guy's, when tested by Mr. Price, did not recognize the presence of eau de Cologne on a pocket-handkerchief; and on other occasions was not able to recognize odours.

Tamburini and Seppilli applied spirits of ammonia to the nose, when the sleep was profound, without any effect.

In some states of hypnotism, on the other hand, the vastly heightened sensibility of the olfactory nerve is remarkable.

There was hyperæsthesia of smell in a case of M. Taguet's (p. 77). He threw down a number of objects—gloves, keys, note-books, and coins—belonging to different persons present. After smelling the articles, the patient stopped before each person, smelt them also, and by this sense discovered the owners.

(2.) *Sight.*—In an early stage—one, however, which may persist without passing into a deeper

one—the sight seems to be partially affected. The subject appears to see, though confusedly, that which is immediately around him, and with which he is in direct relation, but to have a very vague perception, or none at all, of what is beyond this range. Mr. M——, the St. Thomas's student, says (speaking of his experience of the early stage)—“When Mr. Hansen asked me to look at his eyes, I could not recognize in him the same man I had seen a few minutes before; his eyes seemed to me as if they were rays of light thrown on a prism. I could distinctly see a play of colours. Still I was in my full consciousness.” The clergyman whom I mentioned as being hypnotized, describes his visual sensations in very much the same way. He says—“I could see the operator's eye becoming luminous, like a ball of fire, then annulated, then changing colours.”

To return to Mr. M——. When later on in the sleep I asked him to write his name, he did so, and he informs me that he could not see the letters distinctly as he wrote them. At a still later stage, when Mr. Hansen threw something on the floor, and induced Mr. M—— to think a baby was drowning in the water, the latter, with his eyes wide open, threw himself down to rescue it; but he assures me he could not see anything whatever at this time, and that he had then lost his consciousness. He may, however, have seen, as some sleep-walkers see, although wholly unconscious of it when aroused from their sleep. In fact he must have *heard* Mr. Hansen, and yet cannot remember it now.

We have seen, with the girl at Guy's Hospital, that, when induced to write a letter, she wrote

better when nothing was placed between her eyes and the paper, and that when walking in a ward to which she was not accustomed she fell against anything that came in her way, and would have injured herself if not looked after. In her own ward she avoided the objects in her way, just as if she were awake.

In a case reported by M. Ch. Feré, placing a pen in the hand had not the same effect as in the spontaneous somnambulist of M. Mesnet (p. 24), as it soon fell from the subject's grasp; but if while holding it words were dictated in a loud voice, they were written, though irregularly. The name, however, was written so well that it was scarcely possible to distinguish it from the subject's autograph when awake.¹

M. Richer has observed that although the eye of the cataleptic subject is fixed, and appears to see nothing (never quitting the imaginary point to which he seems attached), if an object be placed in the axis of vision and it is gently oscillated, the gaze of the subject is soon seen to be attracted to it, and able to follow all its movements; the rest of the body may remain cataleptic, but the eyes turn in all directions in spite of the experimenter, and generally the head follows the movements.

M. Taguet, in reporting to the *Société Médico-psychologique*² a case of "Hypnotism with hyperæsthesia of sight and smell," shows that in this instance it was preternaturally acute. Objects placed at the back of the forehead, so as to be out of the range of her sight, but so situated as to be

¹ *Archives de Neurologie*, No. 16, 1883, p. 127.

² See *Annales Médico-psychologiques*, Mars, 1884, p. 325.

reflected on a large card to which her eyes were directed, were at once recognized by her as clearly as if the card had been a mirror.

(3.) As regards *hearing*, the subject evidently hears well whatever is said to him, though in some instances he appears to hear what the operator says much better than what others say, or even hears no one but the operator. The girl at Guy's hears one person as well as another. Mr. North says that while he was placed on two chairs, his head on one and his heels on the other, he heard Mr. Hansen express his intention of sitting on his legs. He also heard music in the room.

Mr. M—— states that he heard distinctly what Mr. Hansen said to him. He heard him ask him to open his mouth, to strike Mr. Hansen's chest, to follow him, and so forth. Speaking of his condition just when he went off, he says—"The persons around me, and the sounds they made, seemed distant, and it was only when some unusual sound was made that I took the trouble to notice it."

Tamburini and Seppilli state that they have constantly found hyperæsthesia of this sense even in the most profound sleep. The subjects heard the footsteps of persons approaching the room in the distance, which the experimenters could not perceive.

(4.) *Taste*.—This sense seems suspended, and whatever taste is suggested is adopted by the subject. With the girl at Guy's, her tea tasted like coffee when she thought it was the latter.¹ Heidenhain observes—"I could put hot pickles in the mouth of a hypnotized person, and on my making masticatory movements, he would proceed to chew them. Only

¹ See also p. 58.

on awaking would he perceive the hot taste" (*Animal Magnetism*, p. 15).

In a case reported by Tamburini and Seppilli, quinine placed on the tongue produced unpleasant sensations in light hypnotic sleep, and no sensation at all when the sleep was deepened.

We found that Mr. North tasted plum jam.

I pass now from the sensations to other mental states ; and I would repeat that we must recognize that very different conditions are comprised under the term hypnotism, and that to speak of this or that psychical character being present in hypnotism would be misleading without this qualification.

1. There may be no unconsciousness whatever, and the subject may *appear* very much like other people. A certain susceptibility to impressions on the mental side, and to rigidity of the limbs on the physical side, may be all that marks the state of the subject.

Is it that the cerebral cortex is just sufficiently weakened in function to have lost its supremacy, without parting with its more secondary offices ? Indeed, the mind may be so roused that there seems no abnormal mental manifestation whatever, and yet volition over the reflex rigidity set up by sensory impressions on a limb may be suspended. If it be asked, why, in ordinary sleep, when the cortex is rendered so entirely functionless, we cannot excite the same reflex rigidity ? the answer, I suppose, is that the sleep has extended beyond the cortex, and involves the basal ganglia.

2. Let us take a deeper stage of hypnotism ; one in which there is decidedly more alteration in the mental functions themselves. The subject has more completely lost voluntary control over his actions and his

trains of thought, and whatever he is told to do he does in obedience to the mandates or suggestions of the operator. Thus, if he is asked his name, he replies correctly, articulating the word without the slightest difficulty ; but if he is authoritatively told that he cannot possibly do so, he makes only futile efforts to say it. The question arises, does he really forget his name, or does he, while remembering it, lose the power of using his muscles of articulation, from the belief impressed upon him that he cannot articulate his name ? It would seem rather due to the temporary loss of memory of the name, essentially similar to the condition of a man who, in a normal state, when suddenly asked some one's name, especially if from any cause nervous at the time, clean forgets it, and the more he struggles to recall it, the more he becomes embarrassed. Has no one, even among the medical psychologists whom I address, whose minds are of course in an all but perfect state of mental training, ever rung the bell at the door of a friend's house, and in the interval which elapsed between this act and the appearance of the servant, passed into a reverie ? Then, perchance, having to remember the name of the person upon whom he is calling, he first fears he has forgotten, and then really does forget it, to his own discomfiture and the perplexity of the janitor.

Those who were present in this room during the experiments I have referred to, may remember how a young man of the name of Batt, although under the influence of Hansen, was resolved to disprove the latter's assertion that he could not say his name, how he made valiant efforts to say it, and did so several times, but how, after some ridiculous grimaces, the

"Batt" first became B, and then only silent gesticulations remained at his command. Although he had forgotten his own name, he at once gave Mr. Hansen's correctly, showing that his muscles were not paralyzed. This man was not a subject of Hansen's, although he had been acted upon by him before; in fact, Hansen supposed him to be a medical student, which he was not.

The hypnotized person may, however, not only be in this mental state of temporary amnesia, but he can be also rendered unable to use his articulating muscles. There is complete temporary paresis of these or any muscles the operator chooses to impress upon the subject's mind he cannot use. Darwin's success in rendering several persons unable to sneeze after actually taking snuff, is an illustration of a parallel condition.

In a subject who has passed completely into this deeper stage of hypnotism, what is his condition as regards consciousness? Mr. North, in his graphic manner, says, when speaking of a period after he was decidedly affected by looking at the disc—"I was not unconscious, but I seemed to exist in duplicate. My inner self appeared to be thoroughly alive to all that was going on, but made up its mind not to control or interfere with the acts of the outer self; and the unwillingness or *inability* of the *inner* self to control the *outer* seemed to increase the longer the condition was maintained."

At a later stage Mr. North says—"I am told I spoke German to Mr. Hansen, and was not complimentary in my remarks. I should not like to say whether I was conscious of what I did, or no. I think I was somewhat." At a still later stage he

but one self asked the other self, "What will you die of?" He says the only answer that could be found was that arising out of his thirst. "Water on the brain or serous apoplexy." The other self responded, "Agreed." "And," says my informant, "in my dream I died. The malignant part of myself rubbed its hands and said, 'Well now, we'll have a post-mortem,'" and a post-mortem was made. He saw his own calvarium removed, and the discovery made that there was no brain at all, only a miserable bag of membranes. In consequence he realized (he says) for the first time, "what a swindle he had been all his life!"

Mr. M——, of St. Thomas's, retained his consciousness during the greater part of the time he was hypnotized. "I knew perfectly what was going on," he writes; "but at the beginning of the fifth experiment I lost all my consciousness. I don't know what my operator did or said, except I remember he asked me to nurse a baby which had been ill-used and was crying, and when he told me that, I began to hear distinctly the cries of the baby, but on awaking from my state and told all that I had been doing, I could not believe it, as I had not the slightest idea of it."

I now come to speak of *volition*.

There is obviously no spontaneity in the subjects of hypnotism.

Sir William Hamilton observes that while we are wholly unable to conceive a being possessed of feeling and desire, and at the same time ignorant of any object upon which his affections may be employed, and unconscious of these affections themselves, we can conceive a being possessed of the power of

recognizing existence, and yet wholly devoid of all feeling of pain and pleasure, and of all powers of desire and volition. That which was merely a conception with Hamilton is actually witnessed in an early stage of hypnotism.

How completely volition may be suspended, and the subject become a mere automaton, is shown, and most graphically described by both Mr. M—— and Mr. North.

The former writes, referring to his mental condition after entering the hypnotic state—"I tried to get out from this state, but my efforts were vain. I felt it was too late, and I saw that I was entirely at the mercy of my operator. I then felt a sort of dull feeling, and saw that it was now out of my power to use my own will. Mr. Hansen first shut my mouth, and asked me to try and open it again." (I must add that Mr. Hansen at the same time assured Mr. M—— that he could not do so.) "But it was utterly impossible for me to do it. I felt that all the muscles concerned in this act were in a state of rigor. In the second experiment he asked me to strike his chest. I succeeded the first time, but afterwards I felt my arm repelled from him. I knew that he was near enough to me, but still each time my hand was about a couple of inches from his chest, it was pushed backwards by a power much beyond my strength." It will be seen that Mr. M——'s complete subjection to Mr. Hansen led him to conclude that there was an objective force influencing him, whereas the real interpretation of the phenomenon is a purely subjective one, viz., that he believed he could not strike Mr. Hansen, and therefore could not, his brain being reduced

to the peculiar condition brought about by hypnotism. The same explanation appears to apply to the next experiment. Mr. M—— proceeds—"Mr. Hansen ordered me to follow him. I tried to remain in my place, but Mr. H. had such an influence over me that I felt dragged after him. I felt a great power was attracting me to the operator." The next experiment is particularly interesting, as showing how completely a hypnotized person may have lost his control and passed into a state of automatism, and yet not believe the fact insisted upon by the operator as the reason for performing a particular act. The act is performed because the actor cannot help performing it; he is an automaton. Mr. M—— says—"In the fourth experiment Mr. Hansen told me that my hair was on fire. I touched my head and saw that he was wrong. He then told me to put my head in cold water, directing me at the same time to a gas burner. I felt it was not water. I felt the heat, but yet I could not refuse putting down my head and trying to wash it."

The clergyman whom I saw hypnotized, and who wrote down for me a description of his sensations, experienced the same feeling as Mr. M——, and interprets it in the same sense. He writes—"The attracting and repelling the subject was a very successful experiment. I could describe it only as a gentle power drawing or repelling the body. For stopping the speech the operator must have formed a battery between the jaws. It was but feeble, but sufficiently strong to make it pleasanter to let them remain shut than to try to open them."

But although the will is so strikingly subject to the operator, there appears to be a limit, for even

with the girl at Guy's, who did almost everything told her, we could not induce her to drink a cup of tea when it was suggested that it was brandy. Mr. Hansen declares that a fine moral sense survives the suspension of the higher intellectual functions.

Under the head of "Automatism at Command," Heidenhain relates how he made his brother, when hypnotized, do many things he certainly would not have done when awake. Thus, a glass containing ink was given him, and it was suggested to him (or rather he was requested) to drink some beer. He began to drink the ink at once. When ordered to thrust his hand into a flame he did so. Lastly, "he so unmercifully cut off with scissors his whiskers, which he had assiduously cultivated for a year, that on awaking he was greatly enraged." This was rather hard lines for the poor brother, I must say, but then it was in the cause of science—and hypnotism.

Susceptibility to Suggestions.—Of the characteristics of the mental condition in hypnotism, this extreme susceptibility to outside suggestions is most surprising. The individuality of the hypnotic subject being deleted for the time, he represents the logical consequence of the organization of men in society who are practically will-less, who are at the mercy of every suggestion, however absurd, and every crotchet, however wild and unpractical. This ideoplastic state finds its analogue also among the actually insane, the tyrant of their organization—that which tyrannizes over their thoughts and lives—being some fixed idea or a disordered perceptive centre, or in the absence of these, the unwholesome susceptibility to the influence of others, as in the case of the unstable hysterical

girl who adores every curate she meets with, and would willingly do anything he tells her to do.

The effect of suggestions made to the girl at Guy's Hospital is strikingly exhibited in the report of the case of E. H. (page 51). On the idea being suggested to her that her hands were being cut off, nothing could induce her to use her fingers. She used the hand as a stump. Mr. Price has attempted, after waiting a short time, to catch her unawares, by asking her to hold or pick up something, but without success. Frequently he has found, however, that the effect of a command of any kind wears off before many minutes.

The influence of suggestion in inducing a state of ecstasy is so well marked, that if an artist were to wish to have before him a study of an ecstatic, he could not do better, from an art standpoint, than hypnotize his model, and induce the beatific vision, which elevates and refines the expression in so wonderful a manner.

Hallucinations are, indeed, so easily induced, that hypnotism offers a wide field for illustrating the analogous conditions familiar to us in mental diseases. I cannot enter in detail on this tempting aspect of the subject now;¹ a few words must suffice.

The hallucinations induced during the hypnotic sleep may continue for some time after the subject is awake, just as contraction of a muscle will sometimes persist for hours after the sleep has passed away. Further, the delusion created by the operator may be retained in some instances afterwards. The localized cerebral impression survives in spite of the return of

¹ See paper on "Artificial Insanity," *Journal of Mental Science*, July, 1865.

the intellectual functions, and of the subject's having regained possession of his senses and consciousness, so as to appear in these respects as fully himself as before the experiment. Yet the person does not the less persist in rambling on the one point in relation to the hallucination or delusion.

Thus a person, to cite an actual example of a woman at the Salpêtrière, described to me by M. Richer, will continue to see a bird of which the image has been evoked during the hypnotic sleep. Upon any other subject her intelligence and her special senses are not in fault, but in spite of the assertions of those around her, she maintains that there is really a bird there, that she sees it, that she touches it, with so profound a conviction, that to her it seems that all who assert the contrary are only mocking her. This cerebral impression may persist for some time, but it is gradually effaced. It disappears along with the delusion with which it was associated. It is then curious to see this patient try and find out how the bird has disappeared, and inquire whether she has not been the sport of a dream, without, however, being able to explain to her satisfaction what has happened.

It has been shown by M. Ch. Feré that these hallucinations are so real, and are so definitely referred by the subject to the particular spot indicated by the operator, that when a portrait is impressed upon the mind, and associated, for example, with the surface of a table, and the patient is awaked, the image is masked by placing an object upon this spot, or if the suggestion made by the experimenter attaches it to a sheet of cardboard, reversing the latter prevents the subject seeing the imagined por-

trait, and turning it upside down has a corresponding effect upon his perception of the face. So again, lateral pressure of the eyeball,¹ or placing a prism before the subject's eye, causes diplopia, as would happen were he looking at a real object. Hallucinations of smell, hearing, and taste are as remarkable, and what is of most interest to psychologists, may persist after the subject is aroused, for they bear directly upon the nature of the hallucinations of the insane, as insisted on in the article which I wrote about twenty years ago, scarcely daring to hope at that time that such additional proofs would be afforded of this connection, and that many able physicians would pursue the inquiry. At the period referred to, it was difficult to induce any one to take an intelligent interest in the subject of hypnotism, or to admit that it might throw light upon psychology and physiology.

I have seen a lady when hypnotized presented with a number of strips of brown paper, the idea being suggested to her at the same time that they were flowers. Of these she at once made a nosegay, and smelt them frequently, as if enjoying their fragrance. As when she was aroused, she was wholly unconscious of what had occurred, there was no means of ascertaining whether she fancied at the time that she smelt the imaginary nosegay or not, or whether the action of putting it to her nose was the automatic motor action arising from the idea organically linked with it.

Similar automatic actions or changes of facial ex-

¹ M. P. Despine made the same observation in a man affected with spontaneous somnambulism with ecstasy and hallucinations. See his *Etude Scientifique sur le Somnambulisme*, 1880, page 328.

pression can be induced without a word being uttered by the operator, simply by directing the look in particular directions calculated to excite ideas associated with the position of certain muscles, or again, by the silent gestures of the operator. I have seen this to perfection in some persons recently operated on in London, and M. Richer¹ has made a series of experiments of this kind. Thus he finds that when the look is directed upwards the expression becomes radiant, and there are sometimes signs of a gay hallucination; when, on the contrary, the look is directed downwards, the expression is sombre, and there may be indications of a terrible hallucination. Under the influence of hallucinations thus provoked, the cataleptic state may cease completely, and the subject walk about and follow the object upon which the look is directed, assuming attitudes in relation to the hallucination which may have been suggested. But when the fixed object is rapidly withdrawn from the field of vision, the eye immediately resumes its original fixity, and the general cataleptic condition returns in all its force. A gesture on the part of the operator is servilely obeyed by the cataleptic. Upon a sign given by the finger, the subject, without opposing the slightest resistance, rises, sits down, lies on the ground, rises again, walks, and stands still.

There are other phenomena of automatism which are more complex, and require for their production the unconscious operation of the memory. If the eye be directed to anything whose use is known to the subject, the cataleptic almost immediately emerges from this condition, in order to proceed in some degree irre-

¹ The illustrations which follow have been kindly communicated by him to the writer.

sistibly to the act for which the object is intended. With patients susceptible to this mode of automatism (for all are not) the experiment has been varied in a thousand ways at the Saltpêtrière, and has always yielded the same results. A bonnet is placed in the hands of the subject; she turns it about with her fingers, and soon places it upon her head. If next a jacket is given her, immediately she dresses and buttons it carefully; or a glass, she drinks; a broom, she sweeps; fire-tongs, she goes at once to the fire, takes off the wood or coals, then puts them back; an umbrella, she opens it, and seems to feel the storm, for she shivers. What happens if the object placed in her hands is suddenly removed? Why, she immediately becomes cataleptic.

There is no doubt that by being frequently hypnotized, a person more readily performs certain acts; his muscles more readily contract, and so forth, although he is unconscious, and is not intentionally improving upon previous exhibitions. As M. Richer points out, such a phenomenon, so far from being a proof of trickery, is but an illustration of organic memory.¹

That the higher centres exercise their functions to a certain extent in some stages of hypnotism is doubtless true, notwithstanding their depressed condition. The hypnotized person, who is told his hair is in flames, and convinces himself, by putting his hand to

¹ "Hypnotism offers," observes M. Richer, "the most remarkable example, if I am not mistaken, of organic memory. Certain modifications, introduced into the nervous system, are preserved there, and are reproduced without any participation of the consciousness. With the exception of one particular (absence of consciousness), the resemblance between the two memories, the organic and the psychological, is perfect" (*Letter to the Writer*).

it, that this is not the case, performs a mental process; in fact, works out a syllogism, however simple it may be. Mr. North, again, while hypnotized, began to walk backwards, upon which a gentleman said to him, "Mr. North, can you not walk forwards?" This led to a distinct, though very simple, use of the logical faculty. "I remember," says Mr. North, "arguing out in my mind, wearily, that it followed from this that I was walking backwards."

We asked Mr. North, when hypnotized (the second time), some simple questions in arithmetic. When asked to subtract, he added. He says—"I half understood the questions, but felt too lazy to do more than the *easy* operation of addition. The question you asked as to 100 and 25 was very confused. I seemed to see the figure 100 thus:—100ooooo25." When going off, Mr. North's ideas were in some respects intensified. He says—"I tried to realize the features of several persons in whose company I had been on the previous evening, and succeeded in producing *a most vivid impression* of three or four of them. Minute details seemed almost tangible." The features of a little girl were exquisitely distinct. In fact, what struck him most in going off, was that instead of passing into oblivion, as in ordinary sleep, he passed into one of greater mental intensity.

3. I pass on now to a different and a deeper stage of hypnotism—that to which the term somnambulistic should be applied—one in which there is complete unconsciousness of what is passing around, and the subject on being aroused remembers nothing of what has occurred during this sleep-waking state, for waking as well as sleeping it is, since the subject responds to questions, can write letters, can eat and drink, sew well

(if a woman), and can walk about, though not always with safety. She may also be completely under the influence of the operator, but is not able, as the subjects of the earlier stage are, to attempt to oppose his mandates; in fact, she has no wish in the matter. A very good example of this condition of artificial somnambulism is seen in the girl at Guy's Hospital. When I saw her in this state she was made to do almost whatever we suggested. She could be rendered stone deaf, and the curious fact here was that although she did not appear to hear what we said to her, the moment we said, "Now you can hear," she was released from the spell. How could she, when she was deaf, hear us say that she *could* hear? This, which appeared at first sight almost a suspicious circumstance, is really consistent with what we are maintaining to be the mental condition of a hypnotized subject. The girl was not really deaf, as regards sounds, but only believed herself to be deaf, and believing herself to be deaf heard only when she thought she could hear.

We gave this girl her tea during the time she was hypnotized, the tea being changed, through suggestion, into coffee, and her bread and butter into cake. After she was roused she was quite unconscious of having had it—her visceral sensations not sufficing to inform her that she had had her tea as usual.

A similar experience occurred to M. Lasègue (whose able extempore discourse at the International Medical Congress in 1881 will not be forgotten by those who heard it) at the Necker Hospital, Paris. He begged a young female patient, whom he had hypnotized, to dine while in the artificial sleep. Her family had that day sent her a plate of roast beef, with which she was much delighted. She ate her favourite dish with

great relish, and said she should be very glad if she could always enjoy her meal as much. She was aroused from the sleep in the midst of her enjoyment, and her eyes were at once turned to her beloved beef. Great were her surprise and vexation to find the plate empty, and when she was convinced she had dined in her sleep, her eyes moistened, and she bitterly reproached the doctor for having prevented her tasting her food.

An ophthalmic surgeon (the late Mr. Critchett) had a patient suffering from glaucoma, who, for two years and a half before her death, was fed while rendered unconscious by hypnotism—and then only. She had no remembrance of having taken food, and even solemnly asserted that she had not done so.

It would seem probable, if not certain, that the hypnotized person, unless perhaps when he is in a profound sleep, receives the sensory impressions made upon his brain, but that in his condition of reverie or abstraction he does not consciously recognize them, and therefore does not remember them. It will often happen that the subject, who cannot after waking recall what he has done, has the scene brought suddenly to his mind subsequently, just as happens to ourselves in regard to dreams; showing in both instances that the impression has been registered in the cortical perceptive centres, although not consciously perceived. With the hypnotized, the powerful concentration of the attention diverts the thoughts and ideas into one channel to the exclusion of others.

The influence of sensory impressions in causing responsive movements in a hypnotized subject when he appears perfectly unconscious, and on waking says, and no doubt says truly, that his mind is a complete blank

as to the past, was well shown in a boy I recently saw hypnotized.¹ He repeated automatically everything said to him; he moved wherever the person who was *en rapport* with him moved, and in short was an echo of everything said and done. Although illiterate, he repeated Greek or German lines when they were said to him, and so on. But nothing happened, of course, if anything was interposed between his senses and the external stimulus. I may add that on one occasion this automatic mimic could not be roused, and the operator was unable to escape from his echo or shadow till four o'clock next morning, when the former exclaimed in despair, "*Well, I shall go to sleep.*" The subject responding, "*Well, I shall go to sleep,*" remained quietly in the chair, and appears to have really passed into ordinary sleep.

It must be observed that the loss of will and the loss of consciousness are not equally suspended, for the loss of consciousness may be slight, while the loss of will-power is complete.

It must be remembered that consciousness is an accident, so to speak, not an essential element in all our mental acts. For the exercise of volition as ordinarily understood, consciousness is no doubt required, but the converse is not true, for we see there may be consciousness without volition, both in paralysis and in hypnotism. Again, although the cerebral cortex is essential to consciousness, the perceptive centres of the cortex may be called into action without consciousness. In the girl at Guy's we must suppose that not merely the basal ganglia were in function, but that her speech centre, her graphic and other perceptive centres,

¹ I am indebted to Professor Barrett, of Dublin, for the opportunity of seeing this case.

were so also. It is not, therefore, merely a question of the cortex of the hemispheres as a whole, on the one hand, and the ganglia at the base of the brain on the other, but of different localized areas in the hemispheres themselves as well. The reflex action of the cortex, apart from consciousness, as insisted upon by Professor Laycock, is as great a fact as the reflex action of the basal ganglia, the medulla and the cord.

In addition then to the perceptive centres of the cerebral cortex which may be unaffected by hypnotism, there may be, as we have seen, certain mental functions in operation, although the will is abrogated.

An able French writer on hypnotism in the *Revue Philosophique* (M. Ch. Richet)¹ brings this out very strongly, and observes that all is not said when one pronounces the word "automatism," and compares the hypnotized person to the pigeon of Flourens deprived of its brain, and plunged into a dreamless sleep, "for the somnambulist has a perfect memory, a very lively intelligence, and an imagination which constructs the most complex hallucinations." If this be a somewhat exaggerated description, no doubt in some instances there is, along with depression of the will, exaltation of ideas—in some cases, of the memory of long past events; and therefore there must be a certain functional activity of the cerebral cortex, at the time when the will is suspended; in other words, we have the reflex cerebral action of Laycock along with organic memory; but the French physiologist appears to be unaware of Laycock's doctrine, and announces as new that "we must admit, side by side with somatic

¹ *Revue Philosophique* (Ribot), Nov. 1880, page 478.

automatism, a psychical automatism. As there are reflexes of the medulla oblongata, so there are also cerebral, psychical, reflexes.”¹

I have on a former occasion referred to Laycock's theory of the condition of the encephalic ganglia in mesmeric sleep, where he points out that the great fact common to it and allied states is that the will and consciousness are suspended, and the brain is placed in the condition of the true spinal or reflex system, recognizing here two functionally opposite conditions as simultaneously present—the suspension or negation of certain, that is the highest cerebral functions, and the unantagonized positive reflex action of others. As Hughlings Jackson justly observes on this opinion—“If attention be too much taken up with the words ‘odyle,’ ‘mesmerism,’ and ‘electrobiology,’ the reader may overlook the fact that, however nonsensical be the doctrines those words cover in the mind of the populace, the sentence quoted [from Laycock] shows a broad principle of great value in the investigation and classification of disease; that there is a reduction to a more automatic condition, or, in other words, there is a duplex condition, negative and positive.”²

Brown-Séquard holds that in the combined diminution and augmentation of nervous power—the inhibition and the dynamogenesis—which occur in artificial somnambulism from peripheral impressions, there is not simply a displacement of force, for they are not always equipollent. By “genesis” Brown-Séquard does not mean to imply the production of force or

¹ *Op. cit.* page 480.

² *The Medical Press and Circular*, April 20, 1881.

activity, but the transformation or augmentation of force already present.¹

Those who have read Heidenhain's book on hypnotism, know that he holds that the cause of the phenomena of hypnotism lies in the inhibition of the activity of the ganglion cells of the cerebral cortex, by prolonged stimulation of the sensory nerves of the face, or the auditory or optic nerve.

There appears to be nothing in the views held by the highest authorities on inhibition,² against the possibility of a sensory nerve inhibiting the supreme centres, and Laycock's doctrine would fit in with this mode of producing arrest of volition as well as any other; but if we suppose, as we certainly are at liberty to do, that certain higher centres are rendered inactive simply because they are exhausted, the result as to loss of controlling power is the same.

"It will be found," says Mr. Braid, "that all the organs of special sense, excepting sight, including heat, and cold, and muscular motion or resistance, and certain mental faculties, are at *first* prodigiously exalted. . . . After a certain point, however, this exaltation of function is followed by a state of depression far greater than the torpor of *natural* sleep" (*Neurypnology*, page 29).

I agree with Mr. Romanes in the observation he makes in his preface to Heidenhain's book, that "the truth appears to be that in hypnotism we are approaching a completely new field of physiological research, in the cultivation of which our previous

¹ *Recherches Expérimentales et Cliniques sur l'Inhibition et la Dynamogénie*, 1882.

² In this connection, see the able papers on "Inhibition," in *Nature*, by Dr. Lauder Brunton, March 3, *et seq.* 1883.

knowledge of inhibition may properly be taken as the starting-point. But further than this we must meanwhile be content to collect facts merely as facts; and without attempting to strain these facts into explanations derived from our knowledge of less complex nervous actions, we must patiently wait until explanations which we can feel to be adequate may be found to arise" (p. xii.).

To sum up the chief points relative to the mental condition present in hypnotism:—

1. There may be consciousness during the state of hypnotism, and it may pass rapidly or slowly into complete unconsciousness, as in the somnambulistic state; the manifestations not being dependent upon the presence or absence of consciousness, which is merely an epiphenomenon.

2. Voluntary control over the thoughts and actions is suspended.

3. The reflex action, therefore, of the cerebral cortex to suggestions from without, so long as any channel of communication is open, comes into play.

4. While consciousness is retained, the perception of reflex or automatic cerebral action conveys the impression that there are two Egos.

5. Some of the mental functions, as memory and imagination, may be exalted, and there may be vivid hallucinations and delusions, which may persist after waking.

6. Unconscious reflex mimicry may be the only mental phenomenon present, the subject copying minutely everything said or done by the person with whom he is *en rapport*.

7. Impressions from without may be blocked at different points in the encephalon according to the

areas affected and the completeness with which they are hypnotized; thus an impression or suggestion, whether by gesture or word or muscular stimulus, may take the round of the basal ganglia only, or may pass to the cortex, and having reached the cortex may excite ideation and reflex muscular actions, with or without consciousness, and wholly independent of the will.

8. There may be in different states of hypnotism, the opposite conditions of exaltation and depression of sensation and the special senses.

POSTSCRIPT.

In the foregoing pages I have referred to two observations made on Mr. North. In a third,¹ Mr. Horsley took notes of the phenomena, and for their use I am indebted to him.

As there was headache and other discomfort subsequently, it was thought undesirable to repeat the process.

In the third, as indeed in the previous trials, Mr. North found he could succeed best by fixing his attention on a prominent point to begin with, and then dwelling on the chain of ideas which were successively called up by association in his cortex cerebri.

A bright metal circular tambour was placed between his toes. He gazed at this steadily, and from seeing the brightest point, "imagined" he saw successive bright rings, and then gradually formed the

¹ Undertaken at the special request of the Psychical Research Society.

lines of faces familiar to him, and those which belonged to people whom he had met at a supper party a few nights before, and one face in particular, of an intimate friend. This latter form remained clearly defined in his mind until it gradually faded into a dim, cloudy haze, which was followed by semi-unconsciousness. In this state he replied incompletely to questions addressed to him for some time, and then gradually became rigid, in which condition the unconsciousness appeared to become deeper, and he took no notice of what was said, although he probably formulated a dim consciousness of the meaning. In the rigid stage he developed severe muscular contractions, and from this state he could only be roused by cold douche, etc.

The post spasmodic stage was one of exhaustion, in which he gradually recovered consciousness, complained of thirst and sometimes aching pain (once very severe) in the muscles that had been contracted.

This experiment was made under unfavourable conditions, as Mr. North had greatly exerted himself during the day, getting diagrams, sending off things by post, etc. After arriving at the room¹ where the trial was made, and talking to several people for some time, he sat still in a chair for twenty minutes. The pulse² was 80, at times rather more frequent than at others ; force regular. Respirations 16 ; thoracic as well as abdominal. Pupils 5 mm. re-acting to light.

Experiment commenced at	...	9.18 p.m.
Limbs relaxed	9.21 „
Respiration 30 (initial symptom)...	9.21	„
„ 24	9.28 „
Muttering German. Pupil 5 mm...	9.33	„

¹ Dean's Yard, Westminster.

Slight analgesia. Pin-prick steadily pressed, apparently not felt ... 9.36 p.m.
 He was asked three times six, replied "Nove,"¹ and when asked again replied "Credo nove" ... 9.46 ,,
 Leg fell off chair; half awoke.
 Asked 2×20 , replied 40. Asked 7×35 , replied "Quaranta due" 9.48 ,,
 Pulse 76 10.15 ,,
 Insensitive to hard pressure of pin 10.18 ,,
 Asked where he was. Said, "Lass mir allein."
 Pupil 7-8 mm.

Special senses :—

Taste.—Salt solution (strong). Said it was sugar. Recognised sugar water.

Smell.—Did not recognise tobacco; thought hyacinth was nitro-benzole.

Woke at 10.47 p.m. after a series of clonic and tonic spasms.

Details of spasms :—

- (a) Rigidity of whole body.
- (b) Opisthotonos.
- (c) Pleurosthotonos.

No pain in muscles. No headache; only felt dazed and tired.

Pupils 6 mm. Re-act to light.

Details of consciousness :—

Conscious of spasms.

Total analgesia during the latter two-thirds of experiment, but consciousness of "pressure."

At 11 p.m. walked straight home, then wrote letters. Made some tea, drank it; felt refreshed. On going to the post, put country and town letters in wrong boxes.

¹ Had been working at Italian for some weeks.

Returning home, felt very much bored but not sleepy ; sat up trying to write. Sentences were clumsy failures. Could not think. In the night slept, half dreaming (never dreams in normal state). When he lay in bed, he saw the same face that presented itself in going off at 9 p.m. the previous evening. Italian words constantly occurred to him. Was restless, and felt a tendency to right pleurosthotonos. A little cramp in legs. Got some sound sleep. When letters came in the morning felt utterly miserable, and could not muster strength to get up and read them. Did not get up till 2. p.m. Went to University College ; appeared tired and dreamy ; felt as if he had forgotten things that occurred during night. Did not feel inclined to call in Gower Street at 10 a.m., as he had been particularly told to do while in the hypnotized state. Could multiply and divide. Pupils 5 mm. Next day conducted *vivâ voce* examination for three hours, but still had a cerebellar headache ; relieved by alcohol. Worked unwillingly, but once started went on.

For two days after the experiment Mr. North found that close attention to the subject gave him the same impressions as those which ushered in the hypnotic sleep, and was compelled sometimes to change the subject.

ARTIFICIAL SOMNAMBULISM AT THE SALPÊTRIÈRE.

THANKS to the courtesy of M. Charcot, I have had several opportunities of witnessing somnambulism artificially induced in his service at the Salpêtrière. Some of the cases I have briefly described in the *Journal of Mental Science*. Their importance, however, will bear a more extended notice, and this I am enabled to give through the assistance of the Professor and M. Richer, whose excellent work on *Hystero-Epilepsy* is well known in England. But for this help I should have despaired giving a faithful and somewhat detailed report of the conclusions arrived at by M. Charcot, one of whose ablest exponents is M. Richer. My obligations to them are in direct ratio to the satisfaction afforded to the reader of this section.

It must be remembered that the hypnotic phenomena observed at the Salpêtrière have occurred in the subjects of hysteria major. The form is therefore peculiar, and is coloured by the disorder. It presents a complete and regular type, of which other forms of hypnotism are feeble and imperfect forms. What may be called hypnotismus major throws light upon the less defined forms.

The therapeutic action of hypnotism has been little pursued by MM. Charcot and Richer. Rather have they sought to prove hypnotism by unquestionable proofs; to place it on a solid basis, and to elucidate thereby the physiology and pathology of the nervous system.

Three distinct states or types are recognized at the Salpêtrière, as having symptoms peculiar to each—namely, the cataleptic, the lethargic, and the somnambulistic. They may be observed alone, but as they may succeed one another in the same experiment, they are regarded as phases or stages of the same affection.

The *cataleptic* state is produced by a loud and unexpected sound, a bright light, or by staring at an object after Braid's original method. It is consecutive to the lethargic state when the eyes, closed until that time, are exposed to the light by raising the lids. It is slow or sudden in its invasion; the former when Braid's method is employed. This, however, only succeeds with some subjects, for it more usually causes lethargy. The lethargic state may, notwithstanding, be changed into the cataleptic state by suddenly removing, at the right moment, the object upon which the gaze of the subject is fixed. M. Richer infers from this that the subject, before passing into the hypnotic sleep, traverses the cataleptic stage, but so rapidly that it is unobserved unless arrested in its course and rendered permanent.

In this mode of producing the cataleptic state, the participation of the will is necessary. The attention, as well as the look, must be directed to the object. But this concurrence of the will is not necessary when the cataleptic sleep is induced suddenly by the other processes mentioned. The subject may be sur-

prised and rendered cataleptic at a time when he least expects it. He is seized, and, as it were, instantaneously petrified, however strong his efforts may be to resist the influence. MM. Charcot and Richer have obtained this result many times by making vivid electric sparks flash before the eyes of subjects not expecting them, or by striking a hidden gong.¹ When the commencement of the catalepsy is thus sudden and unexpected, the subject is immediately rendered immovable in the attitude in which he was at the moment when he was impressed. There is sometimes, in addition, an expression or gesture of terror. In this case, may the catalepsy be attributed to the emotion of fright? or rather, is it not due to the vivid and sudden excitement of the senses of sight and hearing? M. Richer thinks that the result cannot be referred to either cause exclusively. It is true that on coming out of the cataleptic state, the subjects have no remembrance of any fear; but we know that the amnesia which accompanies these states sometimes applies equally to the moments which immediately precede it, and authors have reported cases of catalepsy suddenly succeeding to a state of vivid emotion. On the other hand, M. Richer's observations demonstrate that a luminous impression on the retina is alone sufficient to produce the cataleptic condition, and the same holds good of an auditory impression. When the subject is plunged into a lethargic condition, with the eyes closed, it is sufficient to expose the globes in order to instantaneously induce the cataleptic state, but this result is only brought about in a light room, so allowing the retina to receive a luminous impression. In the same way a monotonous and prolonged sound, like the

¹ See page 64.

tic-tac of a watch, or the continuous vibration of a gong, may produce this effect.

Immobility, it may be said, is the characteristic feature of this state. The subject, even when placed in a forced attitude, retains a complete equilibrium. The eyes are open, the look fixed, the face expressionless. The eyelids rarely wink, and the tears accumulate and roll down the cheeks. The respiratory movements themselves are modified. The pneumographic tracings mark long pauses, represented by horizontal lines, which, at long intervals, break the shallow depressions.

The limbs do not suffer fatigue from even the difficult positions in which they are placed. When raised or displaced, they experience the sensation of extreme lightness, and whether they are flexed or extended they offer no resistance. At the same time, there is no true "*flexibilitas cerea*," as is often stated.

Tendon-reflexes are absent or very much diminished, and the phenomena of neuro-muscular hyperexcitability, which MM. Charcot and Richer have so elaborately described¹ in the *Archives de Neurologie*, are completely wanting.

The skin is entirely insensible to what would cause the acutest pain were the patient in the normal condition; but certain senses, especially those of sight and hearing, preserve their activity, more or less. Through these channels reflex actions can in consequence be excited, by suggestions. Fixed attitudes, artificially impressed upon the limbs, are succeeded by more or less complex movements, per-

¹ See summary of these researches in the "French Retrospect," by the writer—*Journal of Mental Science*, January, 1883.

fectly co-ordinated to the character of the actions excited.

Taking *visual* suggestions first, it may be observed that the eye of the cataleptic is fixed, and appears to see nothing. In fact, if let alone, it does not leave the imaginary point to which it seems to be directed. But if, in the field of vision, any object is lightly moved backwards and forwards, the eyes immediately follow it, and usually the head does so also, while the rest of the body remains completely cataleptic.

As regards *auditory* suggestions, as the hearing is no more abolished than sight, a stroke on the gong may modify the cataleptic attitude of the patient. Indeed, music exerts so powerful an impression as to make the subject assume all the postures related to the various sentiments which it expresses. When the music ceases the catalepsy immediately returns.

The subject can, of course, be impressed by words as well as sounds, and definite hallucinations may thus be excited, which cause gestures and conversations resembling the third stage of hysteria major, with the difference that during the attack the patient is completely insensible to every external stimulus, and the hallucination occurring spontaneously pursues an irresistible course, while in the case of the induced hallucination, although anæsthesia may be equally complete, the senses are not totally sealed, and the hallucination is through them under the complete command and direction of the operator.

The muscular sense, again, is a facile channel for suggestion. When plunged into the cataleptic state, with the eyes open, the physiognomy does not remain

unaffected by the various attitudes of the body induced, as indeed Braid originally pointed out. When these attitudes are expressive, it is in harmony with them. Thus, a tragic attitude induces a severe air on the face, and the brow is contracted. On the contrary, if the open hand is brought to the mouth, as in sending a kiss, a smile immediately plays over the lips. The reaction of gesture upon physiognomy is, in truth, most striking and beautiful.

Further, the experiment may be reversed, and the influence of the facial expression upon the gesture may be contrasted in the same way.

To impress various expressions upon the physiognomy MM. Charcot and Richer have had recourse, as already mentioned, to local faradization of the facial muscles, in a similar way to that practised by M. Duchenne.

In proportion to the degree in which the movement of the features is accentuated under the influence of this excitation, we see the whole body in action, as it were, spontaneously, and the gestures supplement the facial expression. When the application is clumsily performed, the physiognomical expression is not fully marked, and the gesture remains undecided. Once induced, the action impressed on the face is not effaced, even when the cause is removed. After the removal of the electrodes, the face remains fixed, as also the accompanying gesture. If the ordinary position of the limbs is then restored, the physiognomy also becomes at once expressionless.

Most important of all are the proofs of the reality of the cataleptic state which MM. Charcot and Richer have contrived, so as to prevent successful simulation.

It is generally supposed, that if, with a cataleptic

subject, an arm is extended horizontally, this position may be retained so long as to prove beyond doubt that there is no deception. This is not the case, for at the end of ten or fifteen minutes the limb begins to fall, and in twenty or twenty-five minutes at most, it has become vertical. A vigorous person, not hypnotized, can extend the arm as long. Another test must therefore be found. This is supplied by tracings of muscular contractions, as has been stated already.¹ If a myograph be connected with the extended limb, and a pneumograph be applied to the chest of a simulator on the one hand, and a genuine cataleptic on the other, the following are the results:—With the cataleptic, the tracing which registers the contractions of the arm exhibits a perfectly uniform line during the whole period. With the simulator, on the contrary, the corresponding tracing resembles at first that of the cataleptic, but, at the expiration of several minutes, decided differences appear; the uniform line becomes uneven and very irregular, marked here and there by great oscillations. The pneumographic tracings are no less significant. With the cataleptic the respiration is less frequent, and is superficial; the completion of the tracing resembles the commencement. With the simulator, the line is composed of two distinct parts; at first the respiration is normal and regular; in the second stage, which marks the period of muscular fatigue, there is irregularity in the rhythm and the volume of the respiration, and deep and rapid depressions—proofs of the disturbance of the breathing which accompanies the muscular effort which the person is making. In short, the cataleptic does not experience any fatigue;

¹ See page 69.

the muscle subsides, but without effort, without voluntary interference. The simulator, on the contrary, subjected to the double test, finds himself drawn in two directions at the same instant, one induced by muscular effort, the other by the vain attempt to conceal it!

Infallible tests are also at hand in the production at will of hemi-lethargy and hemi-catalepsy, which can be repeated at any moment, whether during the state of automatism or during that of induced hallucinations.

A few words may be said as to the mode of terminating the cataleptic condition. It may cease either by the patient's returning to the normal state, or by transition to that of lethargy. A slight stimulus, such as blowing on the face, is sufficient to rouse the subject. In a moment he is restored to the outer world. Pressure upon the ovarian region has the same effect. Closing the eyelids, or simply the withdrawal of light, instantly induces lethargy. During the presence of the cataleptic state, it suffices to close one of the subject's eyes, to induce relaxation and at the same time neuro-muscular hyper-excitability on the corresponding side, whilst the same side as that on which the eye remains open retains the attributes of catalepsy.

With regard to the *lethargic* state, or type, it is, in the first instance, induced by looking steadily at an object, or by slight and continuous pressure on the eyes when the lids are closed, for ten or fifteen minutes in a sensitive person, and for the first time, but subsequently in a much shorter period; not, however, suddenly, as when the cataleptic condition occurs. When the latter state is induced, by whatever means,

simply closing the eyes may, as stated, cause lethargy, and pressure may produce the somnambulistic condition. As regards the symptoms of lethargy, the early stage is often marked by a deep inspiration, with a peculiar sound in the throat, followed by some frothy saliva on the lips. The eyes are partly or altogether closed; the globes are strongly turned upwards and inwards, and there is constant quivering of the lids. The body is powerless; the limbs become flaccid, and, if raised, fall down heavily when not supported. The respiration, as ascertained by the pneumograph, is deep, and somewhat irregular. The tendon-reflexes, which are diminished, or altogether absent, in the cataleptic state, are here remarkably exaggerated. Moreover, there is marked neuromuscular hyper-excitability, a phenomenon which M. Charcot first observed in 1878, and which he has designated *hyperexcitabilité neuromusculaire des hypnotiques*. It consists of the aptitude which the voluntary muscles acquire to contract under the influence of simple mechanical irritation. The irritation of the tendons and the nerves will also excite like action of the muscles with which they are connected. Thus, by means of a small rod, applied to the skin over a given point, most of the results obtained by Duchenne by galvanism, have been induced in the hypnotized subjects at the Salpêtrière, by MM. Charcot and Richer, to whom great credit is due for their beautiful experiments.

Thus, for example, muscular contractions, characteristic of irritation of the radial, ulnar, and median nerves, are produced by this means. The muscles of the extremities, the trunk, and the neck are acted upon in like manner. Such contractions are energetic,

and resist even violent efforts, and they may persist for several days after the subject awakes from her sleep, while so long as the lethargy lasts, the contraction can be almost instantly removed by stimulating in the same way the antagonist muscles. It is a remarkable circumstance, however, not easily explained, that the facial muscles differ from those of the rest of the body in this particular, that they do not preserve their contractions after the subject is aroused, but at once relax.

Limited stimulation of the skin by a pinch or blowing, or by gently stroking the surface of a limb, does not excite these muscular contractions.

It cannot be too strongly insisted upon that the neuro-muscular excitability which forms so fundamental a character of the lethargic stage of hypnotism is an objective symptom so striking and so easily induced in sensitive subjects, that it forms a delicate anatomico-physiological proof of the phenomena being produced independently of the will of the person upon whom the experiment is performed.

We agree with MM. Charcot and Richer in thinking that to suppose an uneducated woman could, when first acted upon, induce localized muscular contractions, with absolute anatomical precision, upon many parts of the body, would be "truly childish."

In the lethargic state analgesia appears to be complete, while some of the senses (hearing and vision) preserve a certain amount of activity. It is found, however, that the attempt to impress a particular idea or action upon the subject by means of suggestion usually fails.

If, when the lethargy is profound, the subject's eyelids are raised in a light place, the cataleptic stage

is induced, as has already been stated. Moreover, if one of the eyes is kept closed, whilst the other is subjected to a bright light, the surprising result is witnessed of an individual divided in two parts by the median line—the one, which corresponds to the closed eye, presenting the characters of muscular susceptibility peculiar to the lethargic state; the other, which corresponds to the open eye, presenting simultaneously the phenomena belonging to the cataleptic stage already described.

Proceeding now to the third, the *somnambulistic* state, it may be also induced by fixing the attention upon an object, or by feeble but repeated monotonous sensory impressions, as well as by other means which need not be specified here. It is pretty easily induced in persons previously placed in the lethargic or cataleptic state by pressure or gentle frictions upon the vertex. This condition corresponds more to that of the so-called “magnetic sleep” than the other types. The phenomena are very complex, and with difficulty analysed. Some are not readily explained in our present state of physiological knowledge, and have been, to some extent, left over, so to speak, at the Salpêtrière for future investigation.

The eyes are closed, or half closed; the lids often, but not always, quiver. The subject, left to herself, appears to be asleep, or rather torpid; the attitude is not so relaxed, and the resolution of the limbs not so complete as is observed in lethargy.

The tendon-reflexes are normal; neuro-muscular phenomena are absent; in other words, the stimulation of the nerves and muscles themselves, or the percussion of the tendons, does not cause any contractions. But, on the other hand, a remarkable

degree of rigidity is caused by light touches of the skin, or gently blowing upon it—a contraction which differs from that arising in neuro-muscular hyper-excitability in not being dissipated by acting upon the antagonist muscles, although, in general, easily relieved by the same processes, gently applied to the skin, which induced it. Often confounded with the immobility of catalepsy, it is, nevertheless, clearly distinguished from it by the resistance, often very decided, which is offered when an attempt is made to force the rigid limb in the other direction. M. Richer designates this condition as cataleptoid, or pseudo-cataleptic, to mark it off from the immobility, without rigidity, which characterizes catalepsy.

Whilst in the state of somnambulism, analgesia may be complete; there persists a remarkable exaltation in certain respects, imperfectly studied, of the cutaneous sensibility, the muscular sense, and certain special senses. It is generally easy, by means of suggestion or command, to perform very complex and varied automatic acts.

The relation between the lethargic and the somnambulistic state is more direct than that between the somnambulistic and the cataleptic. This is shown by the fact, that if in a subject in somnambulism slight pressure is exerted on the eyes by the fingers, lethargy, with neuro-muscular excitability, is induced, while on the other hand, if the eyelids are raised and the eyes exposed to the light, catalepsy is not the result.

A few words as to the proofs of the reality of this state of somnambulism, and the diagnosis of simulation. They are identical with those of the cataleptic and lethargic states, and are due to the susceptibility which takes place in the neuro-muscular system, as

compared with that ordinarily present. Whatever the means employed to produce the muscular contraction, it may be carefully examined and tested, so as to determine beyond doubt whether it is simulated or not. Tracings should be obtained, as stated in the section on lethargy. Lastly, a proof of genuineness is afforded by the production of hemi-lethargy along with the characters of neuro-muscular excitability, by pressure on one eye.

It may happen that certain hypnotic phenomena persist when the subject is awake. Muscular contraction, as induced by the experimenter, may, as we have seen, continue, if not removed during the sleep ; moreover, it is not relieved by the means which easily have this effect while the subject is hypnotized. It presents all the characters of permanent hysterical contraction, the only difference being in the causation. M. Richer has not allowed this contraction to continue more than a few hours. He finds that the most rapid and certain mode of terminating this condition is to re-hypnotize the patient, and to manipulate in the manner already mentioned.

As has been described in the section on "The Mental Condition in Hypnotism," hallucinations and delusions induced during the sleep may persist, like muscular contraction,¹ on awaking. Even the realities of the outer world do not disillusionize the subject.

The influence of the repetition of experiments upon the development of the hypnotic phenomena must here be briefly referred to. The symptoms now described are not equally well marked, as may be supposed, in all cases of hypnotism. M. Richer,

¹ See page 88.

during four years' study, only met with seven or eight cases in which all the phenomena now described were really well marked. All of them were women affected with hysteria major. Again, it is important to remember that patients can, to some extent, be educated; and this is a circumstance which should never be lost sight of, for while certain phenomena may not be simulated, they may be developed by unconscious practice. Even in the most complete cases, all the phenomena may not have presented, from the beginning of the experiments, the succession of definite characters here detailed. Little by little, the subjects are, by repetition, perfected, so to speak. Sleep is more quickly induced; it is deeper; neuromuscular excitability, which at first requires more or less energetic massage, becomes more perfect, and very slight excitation suffices to induce the precise localized contractions described. So with the cataleptic, who at first is far from manifesting the fully-developed characters which have been mentioned. This progress of symptoms is, however, itself a matter of interest, if recognized and understood.

One of the most remarkable questions for long discussed by authors interested in the question, is the amnesia which succeeds the experiments. The chain of the subject's memories is arrested the moment he passes into the sleep, to be renewed when he is awaked. Generally the amnesia is complete and absolute. Sometimes, however, although he cannot at first remember anything, hints and suggestions serve to enable him to recall some of his hallucinations and actions. Although usually the loss of memory extends back to the time of going to sleep, it sometimes covers the moments immediately preceding

the sleep, as when the subject is suddenly acted upon by the gong, or a brilliant light. In that case, the fact of having been sent to sleep is not present to the consciousness; even the having been asleep at all is ignored.

MM. Charcot and Richer do not find, if the foregoing experiments are conducted with care, that fatigue is experienced, but if too long continued, the subjects, on awaking, shiver, and complain of cold. M. Charcot repels the notion that they suffer any inconvenience in consequence of hypnotism; still less does he admit that the effects are dangerous.

I think, however, that it is very important to be alive to the possible influence exerted on the system in rendering it too susceptible to causes calculated to induce nervous sleep when not intended. Mr. North found, on returning home after the third and last time he submitted to a hypnotic experiment, that the mere direction of his attention to a book in which he was interested, tended to bring on the same condition. When this happens, it is clearly undesirable to continue experimentation.

CONCLUSION.

It is scarcely necessary to do more than point out to the reader the parallelism in many particulars between the phenomena of spontaneous somnambulism and those witnessed in hypnotism. As these phenomena are arranged under the same heads, the reader can make the comparison for himself. There is an obvious reason why the details are more complete in the description of the latter than the former, seeing that it is possible to prolong the induced condition, and carefully observe the reactions to various stimuli. Many of the most marked cases of natural somnambulism have occurred before it had become usual to note accurately and scientifically the state of the several senses, reflexes, etc. In future, the sleep-walker will be much more carefully tested, and there will be a clearer appreciation of the special points upon which it is needful to obtain definite information.¹

¹ An excellent illustration of a good report of a case of Trance will be found in the *Lancet*, Dec., 1883, and Jan. 5 and 12, 1884, "Lethargic Stupor or Trance extending continuously over more than thirty-three weeks," by Professor Gairdner, of Glasgow.

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