On the Mental Condition in Hypnotism. By D. Hack Tuke, M.D., F.R.C.P.*

Some of the members now present were in this room a few weeks ago when Carl Hansen, a noted hypnotist from Denmark, induced in several persons a more or less marked degree of that condition known as hypnotism or Braidism, and we had the opportunity of making some experiments upon the subjects while in this state. Although the hypnotic phenomena were by no means so striking as is often the case, there were some interesting points elicited which, taken along with other experiments of a similar nature which I have witnessed before and since, will, I hope, form sufficient material for some considerations on the nature of the condition which is thus induced *psychologically* and *physiologically*, though I bring forward these remarks expecting to be enlightened myself in a delicate and difficult problem rather than hoping to enlighten those whom I have the honour to address to-night.

I have for years been strongly impressed with the interest and physiological importance of these phenomena, but I frankly confess that often as I have endeavoured to form a clear idea of the cerebro-mental condition of hypnotised persons I have felt misgivings as to whether I had 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 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 hypnotised 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 hypnotised a description of their own feelings during the state when conscious, one being Mr. W. North, B.A., Lecturer on Physiology at Westminster

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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 co-adjutors in this enquiry.

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, &c.

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 hypnotising 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 rivetting the attention on one idea. Looking at an object is not essential, for the blind man may be hypnotised, and in susceptible persons the merely expecting to be hypnotised 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 foot note, p. 60) 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

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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 abandonment 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 hypnotised and are highly susceptible to sensory impressions, especially if these are associated in their minds with the hypnotic sleep. M. Richer of the Salpêtrière, whose researches in hypnotism are well known, has 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, in a communication with which he has favoured me, says 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 hypnotised.

These necessarily vary with the stage or type, and before

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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 Seppelli, recognise 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 have more particularly in view to give a complete picture of the symptoms presented in hypnotism, for I shall not confine myself, as I have said, strictly 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 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 hypnotised 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 as well as the respiratory centre.

On measuring Mr. North's pupils before and during the sleep we found them 3 and 6 millimetres respectively.

Mr. Braid speaks of the pupils being greatly dilated and highly insensible to light, while after a time they become contracted, but still insensible to light.

Tamburini and Seppelli 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.

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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 hypnotised 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 hypnotised 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.

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 on the table. 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 4 to 12, or even from 3 to 16.

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

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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 hypnotised 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 case* 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 pulse tracings also, which I exhibit.

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 hypnotised person who is cataleptic, which show the difference between the cataleptically rigid arm and one held out by a person not hypnotised. 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.

Reflex Action.—I need not insist here upon the well-known fact that reflex actions are more easily excited in animals when

* On the occasion of a more recent experiment when Mr. Horsley and myself carefully observed Mr. N's. condition, while in the hypnotic state.

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the cerebral lobes are removed, and that, therefore, if we assume, as we seem bound to do, that the cortex is rendered more or less functionless in hypnotism—that its controlling, inhibiting power is weakened if not suspended—it is only natural that rigidity of the muscles should be so easily produced reflexly by sensory stimuli. We were not, however, prepared to expect—and Heidenhain 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 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. Of these most interesting effects I have some photographs here.

On the evening when Mr. Hansen experimented in this room, 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 awake, though remaining abnormally susceptible to reflex action after being aroused from the hypnotic state.

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 express his intention of sitting on my legs. I remember wondering whether my posterior knee-ligament 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 15 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.

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

The power of co-ordinating movements is perfect in the

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stage in which the muscles are not flaccid. Mr. Braid says of hypnotised persons, "The power of balancing themselves is so great that I have never seen one of these hypnotic somnambulists fall." ("Hypnotism or Nervous Sleep," p. 56.)

In the lethargic state the body sinks down, the limbs become flaccid, hanging down; and when raised they fall again heavily when left to themselves.

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, hypnotised at Bethlem Hospital, Mr. Lawford 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 has found that galvanizing the muscles of the face does not modify in the least degree the nervous condition of a hypnotised person. The cataleptic condition is not affected by galvanism, although, strange to say, a puff of air has usually an immediate effect in rendering the muscles flaccid.

In the case of a girl at Guy's, 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 awakens her. I shall refer to her again.

III.—I now come to the subjective symptoms—those experienced and described by the hypnotised 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, recognise three grand types—the cataleptic, the lethargic, and the somnambulistic—but 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. I shall not adhere closely to these distinctions, but would point out that the boy who in this room remained, after looking at the disc which fell from him, in the same attitude, his hand and arm retaining their position, would be referred to the first category; that the other boy who fell into a sleep with his muscles flaccid, and who when somewhat roused displayed the symptoms of neuro-muscular hyper-excitability, would be relegated to the second

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class; while the girl under Dr. Wilks, at Guy's, whom I have seen, belongs to the somnambulist division.

Sensation of Pain is, except in a very early stage, almost always deadened or quite suspended. Of 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 anæsthesia being induced by hypnotism without resting on doubtful instances. Of course the degree of insensibility varies.

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, the muscular rigidity 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 is marked analgesia, but she exhibits all the signs of pain when she is told that the prick of a pin is painful. In this way one can produce alternate analgesia and hyperalgesia 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 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.

Special Senses.—(1.) As regards the sense of *smell*, we applied assafœtida to the nose of a hypnotised boy in this room, and he did not at first appear to perceive it, but soon afterwards said the smell was pleasant. Strong ammonia was applied, 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

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time for me by Mr. Lawford, clinical assistant at Bethlem:—"After being hypnotised 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 recognise the presence of scent (eau de cologne) on a handkerchief; and on other occasions has not been able to recognise odours.

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

(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, or no perception 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 recognise 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 hypnotised, 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.

With the girl at Guy's Hospital, we found that, although when induced to write a letter, she wrote better when nothing was placed between her eyes and the paper, yet when walking in the ward she fell against anything that came in her way, and would have injured herself if not looked after.

Since writing the above I hear from Mr. Price that now, when in the somnambulistic condition, she walks about, avoiding objects in her way just as when awake. This, however,

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has been in the ward in which she is placed, and not a strange ward where I saw her walking.

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.

(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. 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 Seppelli 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 tastes like coffee when she thinks it is the latter. Heidenhain observes—"I could put hot pickles in the mouth of a hypnotised person, and on my making masticatory movements he would proceed to chew them. Only on awaking would he perceive the hot taste." ("Animal Magnetism," p. 15.)

Mr. Price, a few days ago, tested the Guy's patient first in the normal and then in the hypnotised condition, with salt, sugar, and quinine. In the normal state she immediately recognised the first two, and said the third was very bitter, but of course did not know it by name. When hypnotised a few

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minutes after by Mr. Price, and then tested, she did not taste the salt, sugar, or quinine; the sugar, however, which was coarsely pounded, she said was gritty.

We found that Mr. North tasted plum jam.

I pass now from the Sensations to other mental states, and I need hardly say 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 any 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 can not 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 someone'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

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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 paralysed. 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 hypnotised 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 a 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 says, "Here I appear to have been absolutely unconscious for some moments."

There may be, we see from the above description by Mr.

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North, a double or divided consciousness, which brings out in strong relief one feature of the singular mental condition in Hypnotism.

This subject of duplicate consciousness (I avoid the term double consciousness, as it applies to another mental phenomenon) is one of great interest, and might alone occupy an evening's discussion. As Dr. Bastian intimates in his book ("The Brain as an Organ of Mind"), the wonder is that with our two brains, presenting as they do marked differences in their convolutions on either side, we are not always conscious of a dual being.

That duplicate consciousness is by no means uncommon with the insane patient is certain; and this is closely associated with the confused sense of his relation to his former self, ending at last in a complete loss of personal identity, as in the case of a patient several years ago in Bethlem Hospital, who having lost himself—*i.e.*, the self he was most familiar with—used to seek for himself under the bed.

We cannot for a moment suppose that this division of consciousness takes place between the cerebral hemispheres on the one hand, and the lower ganglia on the other. It must be either between the two halves of the brain or different centres in the entire cortex. Mr. North's conclusion on his own case in this particular is "that the loss of consciousness is apparent rather than real, and," he adds, "I cannot better express my meaning than by describing my condition as one in which the subject is conscious that he is playing the fool, and his superior self looks on conscious of the absurdity of the actions or words, but at the same time either unable or unwilling to control them."

Mr. North gives, as an illustration, that he remembers Mr. Hansen trying to suggest rats to him, and that he (Mr. N.) repeated the Italian for rat, "Topo, Topo," several times. "I knew perfectly well," says Mr. North, "that I was doing so, and that I was playing the fool, *i.e.*, that my *outer* self was doing so, the *inner* self looking on, *too idle* to interfere." I may add that the Italian was suggested to Mr. North's mind by the fact that the previous day he had been reading some Italian fables about rats in the Italian class at University College.

The same splitting up of our consciousness occurs in the closely allied state of dreaming, and is well illustrated by what occurred to a friend of mine several years ago when in Switzerland. After an Alpine climb of nearly 20 hours, he arrived

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one night at an inn where he was unable to procure a bed. He had to sleep in the bureau, and was constantly disturbed. He was also suffering intense thirst, and had to get up from the sofa to drink water every few minutes. When he shut his eyes innumerable visions passed before him associated with water. At last he slept and dreamt. His ordinary occupations when at home now suggested part of the dream. He dreamt he was mad. He had arranged that he should be conveyed to Bethlem Hospital, but he says one idea was that it would be a simpler thing to die. Whether this was suggested by one half of the brain I do not know, 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 hypnotised. "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

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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 hypnotised 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 hypnotised, 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

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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 does almost everything you tell her, we could not induce her to drink a cup of tea when it was suggested that it was brandy, and 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 hypnotised, 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 tyrannises 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.

Mr. Price writes as follows to me in regard to suggestions made to the girl at Guy's Hospital:—

"On its being suggested to her that she is dying, she gradually relaxes her muscles to a certain extent, and if standing falls backwards, not flat, at first, but gradually. When in this state it is useless attempting to call her attention to anything. She pays no notice whatever. On being told, how-

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ever, that she is alive, she gets up and goes on as before. Likewise on the idea being suggested to her that her hands are being cut off, nothing can induce her to use her fingers. She uses the hand as a stump. I have attempted, after waiting a short time to catch her unawares, by asking her to hold or pick up something, but without success. Frequently I have found the effect of a command of any kind to wear off before many minutes."

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

Hallucinations are 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; 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 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 some time, but it ends by being effaced and disappearing 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 what has happened, to her satisfaction.

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I have seen a lady when hypnotised 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 expression 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. Richer* 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 is 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 irresistibly 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

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

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thousand ways, and at the Salpêtrière 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 tongues, 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 her hands is suddenly removed? Why, she immediately becomes cataleptic.

There is no doubt that by being frequently hypnotised, 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.*

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

* "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*).

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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, can sew (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 they have no wish in the matter. A very good example of this condition of artificial somnambulism is seen in the girl at Guy's Hospital. I may add here that she was admitted for pains in the head among other symptoms, and was found to walk in her sleep. This induced Mr. Price, the house physician, to try and hypnotise her, which he successfully did again and again. 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 supposing to be the mental condition of a hypnotised subject. The girl was not really deaf as regards sounds, but only believed herself to be deaf, and believing herself deaf heard only when she thought she could hear.

As I have said, we got her to write a short letter. When we interposed a sheet of paper between her eyes and the letter, she wrote the line more crookedly. We asked her to write the name of the house physician, which she knew, but she wrote another; and her own name but she wrote quite a different one.

Dr. Carpenter says he has seen Braid's subjects write with perfect regularity, even when a screen has been placed before

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the eyes, and dot an *i* or cross a *t*. But if the paper was removed somewhat from the position it had been in, the writer made the corrections on the place which would have been right had the paper remained *in situ*, but out of place after the paper which the writer could no longer see had been removed.

I may add that we gave this girl her tea during the time she was hypnotised, her tea seeming to her changed, through suggestion, into coffee, and her bread and butter into cake. After she was roused she was quite unconscious of having had her tea, her visceral sensations not sufficing to inform her. When she went into the ward she wished for her tea as usual, just as if she had had none.

A similar experience occurred to M. Lasègue (whose able extempore discourse at the International 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 hypnotised, 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 arrested from the sleep in the midst of her enjoyment, and her eyes were at once turned to her beloved beef. Great was 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, I believe) 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 hypnotised 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 recognise 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,

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although not consciously perceived. With the hypnotised, 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 hypnotised 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 hypnotised. He repeated automatically every thing 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 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 are in function, but that her speech centre, her graphic and other perceptive centres, are so also. It is not, therefore, 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. The reflex action of the cortex, apart from consciousness, as insisted upon by Prof. Laycock, is as great a fact as the reflex action of the basal ganglia, the medulla, and the cord.

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

An able French writer on Hypnotism in the "Revue Philosophique" (M. Ch. Richet)* brings this out very strongly, and observes that all is not said when one pronounces the word "automatism," and compares the hypnotised 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." I think this is a somewhat exaggerated description; but no doubt in some instances there is, along with depression of the will, exaltation of ideas—in some cases, of the memory of the past; 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 automatism a psychical automatism. As there are reflexes of the medulla oblongata, so there are also cerebral, psychical, reflexes."†

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, recognising here two functionally opposite conditions as simultaneously present—the suspension or negation of certain, that is the highest cerebral functions, and the unantagonised 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 'electro-biology,' 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."‡

* "Revue Philosophique" (Ribot), Nov., 1880, p. 478.
† *Op. cit.* 480.
‡ "The Medical Press and Circular," Apr. 20, 1881.

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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,* 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 we certainly are at liberty to suppose as at least equally feasible that the highest centres are rendered inactive because they are exhausted, and not because they are inhibited.

"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" (*op. cit.*, p. 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 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.

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

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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 this reflex or automatic cerebral action conveys the impression that there are two Egos.

5. Some of the mental functions as Memory may be exalted, and there may be vivid hallucinations and delusions.

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 hypnotised; 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 exaltation or depression of sensation and the special senses.

In concluding these imperfect observations on a most interesting theme, let me anticipate a possible objection that may be felt, if not expressed, namely, that these researches are outside our specialty, and do not fall within the objects contemplated by the meetings of this Association. I would say in defence that one of the objects of the Medico-Psychological Association as deliberately adopted and laid down in our Rules is "the cultivation of Science in relation to Mental Disease," and I submit that to this disease the peculiar abnormal mental condition presented to us in Hypnotism is in close, significant, and most suggestive relation. I would also say that if the consideration of the Mental Condition in Hypnotism does not legitimately fall within our province, we are little better than psychological hypocrites in publishing an organ bearing the name of the "Journal of Mental Science."

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