5. Evidently, hypnotism is yet to be studied and tested by the same methods applied to all therapeutic agents. So far, its value in inebriety is established, to what extent and how far it can be used are to be settled by future observers.

PSYCHO-PHYSICS OF SLEEP—NATURAL AND INDUCED.

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In order that we may more closely follow the line of thought, to succeed let us briefly recite the phenomena of natural sleep.

Sleep is preceded by a feeling of drowsiness accompanied by a general feeling of heaviness and intellectual dullness. There is also a feeling of weariness of the eyes and a tendency to drooping if not actual dropping of the eyelids. The head nods and the individual rouses and yawns and if he is in a sitting posture he seeks a position more comfortable for repose. If the person is in a reclining position, various groups of muscles may at this stage of semi-consciousness present the phenomena of spasmodic contraction; the drooping head is raised with a jerk and the contracted limbs are straightened and the whole body assumes a position of complete relaxation.

The sensory organs, barring that of touch, are still active,—the sense of hearing being quickened if anything. The eyes close and one after another the senses become inactive and the intellectual faculties become clouded. The objective mind, no longer in contact with its surroundings, ceases to operate, the subjective mind has full sway and the logical association of ideas comes to an end. The sleeper is in dreamland and is no longer astonished at the vagaries of memory or imagination.

The number of respirations drops from eighteen to twelve or fourteen per minute, and changes to a costal character, and the quantity of air drawn into the lungs is materially reduced by reason of the diminished action of the diaphragm.

The temperature is reduced quite markedly and many persons suffer from coldness of the extremities during sleep, due to lowered heart action.

The powers of volition next cease and the sleeper is, to all intents and purposes, for the time being paralyzed. There are, however, degrees in the profundity of sleep. Only the few are entirely oblivious to their surroundings. Most healthy people are what are called, light sleepers,—sleep with one eye open, as it were, and even with the soundest sleeper the duration of profound sleep is brief, not extending over two hours at the farthest.

Few persons are capable witnesses upon this subject, simply because it is not their custom to take observations on the phenomena of sleep—they do not lie awake to see.

The period of sleep depends upon the individual and his surroundings and needs. As we pass through dreamland in going to sleep, so does it form the portal to the waking state. Our memory of these hallucinations is vivid or otherwise as we dwell upon them. Most healthy persons allow them only a passing thought and pass them by. This is an utilitarian age and the dreamer has considerable difficulty in finding an audience. "Never tell your dreams

until after breakfast" is an old adage that if followed is fatal to dreams, so evanescent are they.

A recent writer, Lyman, says: "Sleep may be defined, in general terms as that state of the central nervous system in which the higher centers are, to a great extent, in a condition of physiologic quiescence, with all the consequences thereby implied." There has been much discussion as to whether sleep is a cerebral anemia pure and simple, or whether its whole nature is expressed in the term "ganglionic exhaustion." The same author says "there are others, who, while recognizing in experimental results undeniable proofs of the anemic condition of the brain during sleep, still persist in perceiving only one of the collateral and unimportant effects of ganglionic exhaustion. To corroborate this most gratuitous assumption of the unimportance of the position which anemia occupies among the causative factors of sleep, they have cited the observation that gourmands frequently sleep after an enormous meal, their red and swollen features meanwhile bearing ample witness to the condition of cerebral hyperemia." The flushed face, however, is no sure criterion of cerebral congestion. Dyspneic blood stimulates the vasodilator nerves as well as the vasomotor nerves, and as a consequence the cutaneous system may be flushed while the internal organs are anemic, by reason of the contraction set up by the stimulation of the vasomotor center. They forget also that there is a vast difference between a condition of partial stupor engendered by such causes and the physiologic sleep which the laborer enjoys after a day of toil.

Webster says: "It is a natural and healthy, but temporary and periodical suspension of the function of the organs of sense, as well of those of the voluntary and rational soul; that state of the animal in which the senses are more or less affected by external objects and fancy or fantasy only is active."

Our definition for sleep would be something as follows: sleep is a condition of restful repose during which there is complete relaxation of the muscular system with lowered heart action, accompanied by recuperation of vital, nervous and other bodily forces.

Lyman also holds that the term sleep, when employed to designate more particularly a condition of rest of the central nervous system is closely allied to that which prevails during activity in certain tissues which are subject to periodical exacerbation and diminution of function; as, for example, the glands. The temperature in these structures is found to be much lower during rest than during functional activity. It has also been observed that the temperature of muscles is higher during activity than during rest. Now, a rise in temperature among other things, means the conveyance of an increased amount of oxygen to the tissues within a given length of time, or, in other words, a condition of physiologic hyperemia. "Inversely, rest takes place in the tissues as a consequence of reduced oxygenation and interplasmatic exhaustion." "That ebb and flow of brain activity (and of the cerebral circulation in consequence) transpire under normal circumstances like other similar manifestations of organic life, in synchronous harmony with the rising and the setting of the sun is proved by the fact that sleep during day time, after a night of activity, is not, and never can be made to be as refreshing as that indulged in after sunset."

Just what influence the diurnal motion of the earth

has to do with the interganglionic ebb and flow of the vital forces, I am unprepared at this time to say, but that more credit has been given to this force in the past than should be, seems likely in the light of our present knowledge of physiologic chemistry. That sleep is, in a large per cent. of cases, the result of "interganglionic exhaustion and cerebral anemia" combined, I am free to admit, but no one who has made much of a study of the phenomena of sleep in the healthy state and especially in children but will admit that there are other elements than these that produce sound refreshing sleep, and *that* in the day time also.

Sleep is the natural state of rest for the tired physical or mental organism, but why do infants, animals and men that are not actively engaged sleep? They do not need sleep from the same cause as their more industrious brothers. No; another line of causative phenomena must be introduced to account for sleep in a large per cent. of cases and that, according to my way of thinking, is found in suggestion.

Let us take a familiar example to be found in the habits of the common barnyard fowl. They go to roost and rise with the setting and rising of the sun. That this is a matter of habit is shown by the fact that they go to roost whenever an eclipse of sun occurs, no matter what the time of day. There are several ways of explaining this habit. In the first place, not having any means of producing light they find their occupation gone with the setting of the sun and they have nothing to do but to retire; then again, their enemies are night prowlers and the fowl find their greatest safety in retirement. These experiences have fixed the habit until it has become a second nature with them and all the feathered tribe. Pet canaries, however, have to be covered in order to protect them from the light and induce sleep.

If the theory of solar control of vital forces were the correct one, why do not all animals sleep at night and not, as is the case with many of them, make that their period of greatest activity? It would appear that the most vigilant and active forms of animal life, in its native state, turn night into day. It would therefore seem that habit and necessity are the principal factors in determining the time when nature shall take repose. The night prowlers and day sleepers among the brutes seem to flourish in proportion as their nocturnal vigilance is successful, their forced day naps to the contrary notwithstanding.

In order to understand how the habit of retiring with the sun or shortly thereafter came to be formed by modern man, it is only necessary to go back in history to more primitive man before he had any means of producing light and credit the same conditions that send the feathered tribe to its roost, to-day, with driving him to his cave and to sleep. One-half or more of his time was then spent in enforced retirement and sleep, but with the advent of artificial light the wakeful period has been lengthened until now the average city man spends less than one-third and even as little as one-fourth of his time in bed and yet seems to get along all right.

If he suffers from insomnia it is not from loss of sleep, as is popularly understood by many, but by a disordered nervous system that prevents sleep. Who ever heard of a case of insomnia in an otherwise healthy child or adult either, for that matter, that could not be explained on the ground of a disordered mental or physical system?

The idea that brain rest can only be obtained during profound sleep is wholly erroneous. It is not essential that a person should lose consciousness in order to rest, and although complete relaxation is essential, it may be obtained in the waking state, and is now taught in all our schools in connection with physical culture exercises.

The facts in the case are that most people sleep too much. Some of our most noted men have been very light sleepers. History tells us that Napoleon needed very little sleep. He could catch a ten minute nap in the presence of kings or princes, or in the saddle whenever he needed it and willed so to do. The wizard of Menlo Park works days at a time and revives his strength by "cat naps" and says, judging by his own experience: "No healthy person requires more than two hours sleep a day, and that there is no excuse for people not utilizing twenty out of twenty-four hours for study or work of some kind." All of which I firmly believe. A few minutes sleep at the right time, that is, when one begins to feel weary, is worth hours when one is completely exhausted.

The benefit derived is not alone from the sleep, but the relaxation that takes place and the lowering of the frequency of the heart's beats. A man's span of life is not measured by the tick of a clock but by the beat of his heart. Anything, then, that will keep down the tension of the vascular system to normal, will, everything else being equal, tend to lengthen his days. During sleep the rapidity of the heart's action is appreciably modified. This is due in some degree to the position assumed. There should be a difference of ten beats per minute between an erect and recumbent position in a healthy person and even more in nervous irritable people.

In children there is a marked difference between the waking and sleeping state. Trousseau examined a number of children and found the waking pulsation 140 sleeping 121; not only this, but the frequency of the respirations is considerably diminished and oxygenation and tissue changes take place less rapidly and consequently nutritive processes are reduced, especially in the brain, unless unconscious cerebration or dreaming is carried on during sleep.

It has, for many years, been generally admitted among scientific observers that there is diminished blood supply or a condition of anemia of the brain during sleep. It has long been observed that the fontanelles in infants are depressed during sleep but pressed open when awakened. Arthur L. Durham (1860) demonstrated the marked contrast between the aspect of the brain during functional activity and the repose of sleep.

Dr. W. A. Hammond asserted from observations made on dogs and rabbits in 1869 that, "in every instance the pressure was lessened during sleep and increased during wakefulness." It remained for Dr. Fleming to demonstrate the practical value of the knowledge of the anemic condition of the brain during sleep by producing sleep on several occasions by compressing the blood supply of the carotids. These experiments were repeated by Dr. J. L. Corning in 1882 who added the further thought, "that when anemia, within certain limits, is brought about through the operation of physiologic law or by means of artificial appliances, compression of the carotids, its effects, as a concomitant physiologic factor in the production of sleep, will be directly in the ratio of

the interganglionic exhaustion." He based his opinion on the fact that favorable results from compression are more easily produced in the evening than in the morning.

It has been cited that the presence of the pneumogastric nerve in the sheath of the carotid militated against the exclusiveness of the theory of cerebral anemia as the cause of sleep. I can not see how this in any way interferes, as compression of the nerve would indirectly produce brain anemia by lowering the heart's action and only add to the condition directly produced by compression of the carotids.

To the idea presented by Dr. Corning, I desire to add the further thought of "suggestion," as an active agent and advocate a *sleep center* governed by the vasomotor center controlling the blood supply of the brain and located in the medulla oblongata at a point extending from the floor of that body to within 4 or 5 mm. of the columns scriptorius. *Stimulation* of this center causes contraction of all the arteries and consequently rise in blood pressure while inhibition, *paralysis* of this region, causes dilation of the arterial system and marked decrease of blood pressure. Fixation of the attention of an individual acquainted with the anatomy of the part upon the multipolar nerve cells, the vasodilator cells, situated in his own medulla oblongata with a view of stimulating their action results in lowering the pulse rate very markedly and if, at the same time, the individual is made aware of the fact that such action will result in producing anemia of the medulla and further reduce the blood supply to the cerebrum and thus produce sleep, he will be affected just in proportion as he has faith in the theory and power of concentration of his mind upon the object desired.

It is thus that sleep by auto-suggestion is produced. But it may be said that sleep so produced is not true sleep but an hypnagogic state. We will not quarrel with this statement, but freely accept it, and claim there is no difference between hypnosis and true sleep, except in the manner of its induction and perhaps some variation in the order in which the phenomena are produced.

In this position we are fully indorsed by Newbold and James. In a recent article on the hypnotic state Professor Newbold says: "Hypnosis is, in a sense a normal state artificially prolonged." And further it would perhaps be too much to say with Mr. Wm. James of Harvard, that, "we all pass through the hypnotic state every night while going to sleep. Yet the changes which take place in the hypnosis probably do not essentially differ from those of normal sleep."

Accepting the two divisions of sleep, exhaustion and habit, made in this article, we would distinguish between the sleep of fatigue and the hypnotic condition as to the phenomena of invasion, but as for the sleep of childhood and even adult life that comes as the result of habit, and I see no difference in phenomena or subsequent effects; both are normal.

Professor Bernheim holds that "there is no fundamental difference between spontaneous and induced sleep." Thomas J. Hudson in "The Law of Psychic Phenomena" says: "There is nothing to differentiate hypnotic sleep from natural sleep." There are, in fact, many analogies between the phenomena of normal sleep and that of hypnotism." M. Liebaux (Bernheim's "Suggestive Therapeutics") has very wisely established the fact that "the spontaneous

sleep is in relationship with himself alone; the idea which occupies his mind just before going to sleep, the impressions which the sensitive and sensorial nerves of the periphery continue to transmit to the brain, and the stimuli coming from the viscera, become the point of departure for incoherent images and impressions which constitute dreams. "Have," says he, "those who deny, the psychic phenomena of hypnotism, or who only admit them in cases of diseased nervous systems, ever reflected upon what occurs in normal sleep, in which the best balanced mind is carried by the current in which the faculties are disassociated, in which the most singular ideas and fantastic conceptions obtrude? * * * * *

"In order to fully understand the phenomena of sleep, it is essential to accept the theory of the 'duality of man's mind.'" "The broad idea that man is endowed with a dual mental organization is far from being new." "Indeed it may be safely assumed that the conception of this fundamental truth was more or less clearly defined in the minds of all ancient philosophers."

It might not be unprofitable, had we the time, in this connection to inquire as to how far it would be possible by auto-suggestion to control our dreams and thus obviate the discomforts incident to unpleasant hallucinations. It is sufficient for our present purposes, however, to establish the proposition that the subjective mind is controllable by the power of suggestion during natural sleep and thus show the analogy between spontaneous and induced sleep in this important and particular point.

There are many other points of similarity some of which it might be profitable to indicate at this time. In the first place, recollection of what has occurred during both spontaneous and induced sleep is in an inverse ratio to the depth of the sleep. If the sleep is light, then the subject has a more or less vivid recollection of what has passed when awakened, especially if he is questioned before other impressions take their place. But profound sleep is dreamless, at least so far as the memory of the sleeper is concerned, although reasoning from analogy, a condition of absolutely dreamless sleep is very doubtful.

I think it is safer to say that the subjective mind is ever active and that the reason we are not, at all times, conscious of its continued activity is because of the preoccupied condition of the objective mind. Unconscious cerebration is undoubtedly going on in our brain all the time and it is only when it takes a practical turn that we recognize it.

Our dreams are often incoherent and absurd, induced by our semi-conscious condition in which our objective minds obtain through our partially paralyzed senses only imperfect impressions of our surroundings, and even these distorted impressions are subject to modification by our bodily condition at the time.

We have incidentally referred to telepathic impressions introduced during natural or induced sleep by means of which any desired mental state may be induced at will—these conditions are held by some to be of a pathologic nature, but from long observation I am positively convinced that they are harmless unless carried to the extreme, and, as any good thing may be, abused.

Every time a nurse puts a child to sleep by rocking or singing to it, she hypnotizes it and suggests pleasant dreams, and the child thrives upon its treat-

ment. Men are only grown up children and are amenable to similar treatment and with like beneficial results when judiciously applied. What can be more pleasant to a person who has been suffering from insomnia, with its bad dreams, than to have some one who is versed in the science come in and say: "Sleep and dream not," and have faith to believe and sleep peacefully through the entire night? Such is being done constantly in these latter days and we venture to predict that the future has a more rational line of treatment for disorders of the nervous system than opiates, in hypnotic suggestion which produces normal sleep when applied with that end in view.

We have, in the past, associated experimentation and display with the hypnotic state, but we are now entering upon the era of its application and the first and easiest mode of applying it is in the treatment of sleeplessness.

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DISCUSSION ON PAPERS READ BY DRS. HOWARD, MASON, CROTHERS AND SUDDUTH.

DR. J. H. HIBBERD, of Indiana—In my judgment the matter of hypnotism is one of great interest in the present state of evolution in the medical mind, in the large field of neurotic disturbances. I think that upon a thorough examination of this question it will turn out to be a greatly misunderstood abnormal manifestation of nervous disturbance. I do not suppose that any one in the world can be hypnotized who is not willing to be. I take it for granted that there must be an abeyance of the exercise of will power when one consents to be hypnotized. I agree with Dr. Patrick when he says that there is no such thing as hypnotism at a distance. I do not believe, when a subject comes under the hypnotic influence, that the operator has any other influence over him than that of suggestion. The hypnotic condition amounts to an unusual condition of certain parts of the nervous system, of some of the normal senses, and the subject goes off into a condition of catalepsy, trance, and finally somnambulism. It seems to me, from investigations that have been made, that this is the natural order in which this condition comes about, but by virtue of frequent use and a thorough knowledge of the process that is going on, the subject arrives at the condition of trance and by "cutting across lots" he rapidly comes into the state of simple suggestion. A larger proportion of the people of the world and no small segment of the medical profession are accepting the statements of those who make a business of going around asserting that hypnotism is due to some psychic force that comes to the operator from the subject. This, I believe, never takes place, for it is merely a matter of suggestion. The suggestion may come directly from the operator, it may come from the surrounding circumstances, it may come by auto-suggestion. There are two ways of arriving at the truth. The better way, the scientific way, is by pursuing an investigation and arriving at facts by actual demonstration. Results obtained in this way are never absolute but are conditional. They are true until other facts are elicited, compared and analyzed and made into a new order of things which is for that time the scientific state. Another way, which may be called the philosophic method, is that in which an inquirer takes up the results that have been obtained by a large number of other people, compares, examines and analyzes them, and after excluding those facts which have no importance to his subject and those things which have been shown to be false, he finds a certain number of facts that are of very great importance and then he arrives at a result which is sometimes correct but is more frequently incorrect. By taking, in this philosophic way, the facts as they may be found scattered over the world, and putting them together, there comes to me a conclusion which seems to be worthy of being entertained and accorded further investigation. It is this: to regard the mind as a compound organ, certain parts of which may be in active operation and all the rest remaining in abeyance and producing no results. A soldier in battle earnestly engaged in the pursuit of an enemy, may be shot while in that condition and has no knowledge of it until he falls from loss of blood or from the wound of some nerve. This is simply an instance of the intense activity of one department of

his mind which ignores the activity of all other parts of his mind. If we keep this fact in our minds, we take away a large factor in the mystery of hypnotism.

DR. A. E. STERNE, of Indianapolis—It seems to me that the condition of hypnosis does not depend upon the hypnotizer, but upon the hypnotized altogether. I believe that any man can hypnotize if the subject can be hypnotized. There is and can be no vital force involved. I think that hypnotism is yet in its infancy. From the experience I have had with this "power" I believe it to be as much, if not more, a power for evil than a power for good. I have given up the use of hypnotism as a therapeutic agent and only use it for diagnostic purposes, when I use it at all. I believe that every time a patient is placed under the influence of hypnotism, you weaken an organism already weakened. In the Charity Hospital in Berlin, we worked for a long time under the instruction of Professor Jolly, and it was noticed that in almost the majority of subjects placed under this influence very deleterious conditions arose afterward. That the school of Nancy, led by Bernheim, goes too far, most physicians, I think, are inclined to believe. I believe we follow more the school of Charcot, and that we should discourage such ideas, although we can not exactly deny them, coming from the source they do. If we do not discourage the ideas advanced by Bernheim we go into a territory that is not distinctly medical; we go into jurisprudence and the possibilities of excusing from acts of criminality, people who have committed crime in the hypnotic state. I do not believe that a person of good moral principles will do a crime in the state of hypnosis, and if a person does do a crime under this influence, I believe he is just as much a criminal as if he was not under the influence of the second person. This is a question that it behooves the medical profession to take a stand upon. It is a story of life and death very often, as we have recently seen. There is an element of fraud in all hypnotism; it lies in the person hypnotized. I have many a time put a blunt instrument in the hands of a good girl and she would make plunge with it if told to do so, but when I put a knife in her hand she would not make use of it when directed to do so.

DR. G. J. PRESTON, of Baltimore—In regard to the question which the last speaker has touched upon, I think it is one which involves very great issues. The fact that it has been set up a number of times in murder cases or criminal cases as an excuse, makes the question one of such importance that we can not disregard it. I do not altogether agree with Dr. Sterne, for I believe that a person thoroughly under the influence of hypnotism will do things which in his normal condition would seem very shameful, not to say criminal. We are all familiar with the fact of making our friends undress themselves, or eat potatoes, or do a great many foolish things under the influence of hypnotic suggestions. How far that can be carried is a question which is by no means settled. I remember seeing a great many such experiments performed in Charcot's clinics seven or eight years ago. Dr. Stanley Hall, at that time professor of psychology at the Johns Hopkins University, was interested in the study of hypnotism, and we worked over some particular phases of it, and among others this matter of criminal suggestion. I was not in a position to know the subjects very well, but I used to see the experiments done over and over again upon old and upon fresh subjects, of giving them a knife, or some harmless powder said to be a deadly poison, and suggesting their criminal use. There never was any hesitation in carrying out the hypnotic suggestion. It may be that criminal suggestion is something that has a very unfortunate future before it. I quite agree with Dr. Sterne that we should not regard it as an excuse at all, and should educate the popular mind into regarding it as no more of an excuse or perhaps not as much an excuse as drunkenness. I am satisfied that a great amount of hysteria is caused by hypnotism. This is not so evident in this country as it is abroad. Any one who will follow the work of some person who has been exploiting hypnotism in one of the larger hospitals abroad will see an enormous crop of hysterics that has sprung up around these unhealthy mental experiments. I use hypnotism a good deal myself in certain selected cases, I have never had very much success with inebriety, although perhaps some. I have had some success with sexual perversion, and have had a good deal of success in treating ordinary hysteria. I have never seen any bad results from hypnotism used in a purely therapeutic way. The number of persons who can be hypnotized is certainly very limited. I should say 10 per cent. was a very high average in this country.

DR. E. S. PETTYJOHN, of Alma, Mich.—I beg leave to disagree with the author's theory to the effect that a man can

do as much work on two or three hours' sleep as he can do on the allotted time of eight hours. I wish to speak in this connection of two cases that have come under my observation. One of them, a school teacher, retires after her year's service to her country home. She is very much exhausted, weak and anemic. She then sleeps on an average twenty hours out of the twenty-four, taking one or two meals a day. This she continues from four to six weeks, after which time she comes out like a butterfly from a cocoon. She is then as bright and hearty and strong as if she were a young woman again. The other case is that of a school teacher and is quite similar. I would like to ask if that is not a recuperation of brain cells by prolonged rest and sleep? The brain cells themselves have not the power of muscular activity and so the process of elimination must come from rest. Elimination and repair of the muscular system can be accomplished by the activity of the muscular tissues, but in inactive cells these processes must be secured by rest, and how can this better be secured than by the agency of sleep? I would like to see it proved that a man or woman can do as much work on two or three hours' sleep as upon the amount usually taken.

DR. B. D. EVANS, of Morris Plains, N. J.—I think the matter of hypnotism, like a great many departments in the study of medical agencies, is at this time carried to at least an enthusiastic, if not to an unreasonable extent. Most persons who claim to be hypnotists or have the power of hypnotizing subjects, are necessarily enthusiasts. I have noticed another thing, that they have, as a rule, a large number of cases that can not very well be verified by the testimony of any observer. I mean by this, that an enthusiastic hypnotist gets results that another person observing does not appreciate, and that if the cases operated upon are taken and studied apart from the person who believes he has operated upon them, that these cases will give a very different testimony to others, from that which they give to the person who says that he has hypnotized them. The point made by Dr. Sterne and Dr. Preston, that a very small percentage of persons are subject to hypnotic influences, is borne out by the limited observations I have made along this line. The power of suggestion is admitted by all observers. I am inclined to think, in regard to the matter of hypnotic suggestion, that the results are obtained principally upon people of a neuropathic organization. In all cases that have come under my observation or that I have inquired into, I have found that the subjects were people of very limited intelligence or of extremely bad heredity. In the animal kingdom this seems to hold good. The rabbit, for instance, which is a very stupid creature, is said to be readily hypnotized.

DR. W. S. WATSON, of Fishkill-on-the-Hudson, N. Y.—We are hearing a great deal lately, of the evil doings of individuals being ascribed to the influences of other people. I believe there must be first a willingness on the part of the subject before it is possible to hypnotize him. It is my experience that if my subject is not willing, I am powerless to do anything with him. I believe that there can and will be much good come from hypnotism, but I think there should be some very stringent legislation against the public hypnotizing which is practiced in this country.

DR. W. J. HERDMAN, of Ann Arbor, Mich.—I can not agree with the statement that hypnosis is not injurious to the subject of it. I think there is no question but that it has a deleterious influence. I have had two girls under my care who were the subjects of auto-hypnosis. They were both sophomores in college. One of them had had a severe attack of la grippe. As a result of that, she fell into a state of auto-hypnosis. Her room-mate, by "suggestion" probably soon exhibited the same state. They were rooming in the house of a lady who had formerly been their teacher but had married a Professor. Their condition was discovered by this lady who went into their room and found them both apparently in sleep but while "in sleep" engaged in conversation. As they had been children together, while in this condition they talked over the events of their childhood. In the case of the first girl this condition lasted only three or four weeks. She recovered under treatment for her impaired nervous condition. It was three months before the other girl came into a moderately normal condition. During this entire period I never made the slightest attempt, and did not permit any one else, to throw them into this condition. Every time they were found in that state it was by auto-suggestion. During the course of treatment of the second case, I asked the lady in charge to bring the young woman to my office. She would sometimes drop into the hypnotic state on the street, but usually not until she came into my wait-

ing-room which was somewhat warmer than the street. I went through every possible test for the condition of the nervous system. As the ophthalmologist had his office in the same building, I took her into his dark room and he examined her with the greatest care as to the condition of her eyes. During this ophthalmologic examination she was in a state of somnambulism. When she was awakened she did not remember that she had ever been in the dark room. I had her also in one of my examining-rooms during hypnosis and she could not recall, when awake, anything that was in that room. Not to make a long story of it, when she fully recovered from this abnormal condition, the consciousness of what occurred in that state came back to her and she would recollect the experiences as of a dream. She would, while in a hypnotic state at home, recount to those about her, her experiences in my office and in that of the ophthalmologist. When she was awakened from that state and questioned about it she knew nothing about those circumstances. This young woman is perfectly honest and perfectly straightforward. That is her record from early childhood. She came into my office once with a friend, after I regarded her as perfectly well. She asked me if there was not in one of my inner rooms, a painting. I said "yes," and asked if she recollected anything about it. She inquired if it was a marine scene. I said yes, and asked if she remembered any of the figures in it. She asked if there was not a ship in it and a buoy; and this she did as if she were trying to recover a memory of something that had made but a faint impression on her mind. She went on recollecting thus, one thing after another as if by a great effort of memory. In the same way she went through the details of the ophthalmologist's dark room, of which she had no recollection whatever some months before when in her normal condition. Now it appears as if she had registered upon her mind in that condition something which was shut out of her mentality when in her normal condition. While in the hypnotic condition she would always talk with her room-mate about the experiences of her childhood. She was then, to all intents and purposes, a child in her manner, speech and allusions. On one occasion when she was in the hypnotic state in my examining-room, one of her former teachers, who had known her very well as a child, was present. I asked her questions which she answered in a jerky, petulant way, quite the contrary of her normal manner, for when she was herself, she was a perfect lady. The Professor exclaimed upon hearing her answer: "If that isn't that girl as she was at 9 years of age and exactly as her brother is now; that is a family characteristic." Subsequent experiences and culture had built upon this "family characteristic" and had given her the refinement of manner with which I was familiar, but in the hypnotic state she had gone back to that stage of brain registration which was characteristic of her childhood.

What I started out to state was this: that the series of experiences undergone by that girl unquestionably weakened her mind. Since that time she has been engaged in school teaching. Only yesterday I learned that there is something of an arrest or deterioration in her mentality; that she is unable to concentrate her mind as formerly. She passes often into a dreamy state and is unable to use her mind as she did three years ago. I am satisfied that there is a dissipation of energy in hypnosis, whether it is auto-hypnosis or brought about by somebody else's "suggestion." There is a voluntary or involuntary inhibition of the higher centers of brain activity, and by frequent repetition this tends to mental weakness and, as has been stated by Charcot, time and again, such persons are likely to become hysterical and purposeless if they were not so previously. I regard this study of hypnotism as most valuable to us by reason of its giving to us the knowledge of the physiology of mental action. It is no wonder we know so little about its true significance, since physiologists can tell us so little as to how the brain is connected with mental activities. Until they can give us more definite information of physiologic psychology, we can have still less of pathologic psychology. I believe hypnosis to be a mental state closely allied to sleep and also very closely allied to those conditions which we term hysteria.

DR. HUGH T. PATRICK, of Chicago—We can not hope to settle the question of hypnotism in this discussion, but it would seem to me desirable to have an expression of opinion in this Section at this time. That there is such a thing as hypnotism, I think goes without saying. That it may be deleterious, I think goes without saying. That its practice should be restricted, I think goes without saying. But I would make two pleas, first, that it be accorded a place among our diagnostic and therapeutic aids; a place as limited

as you will; personally, I think it must be exceedingly limited, but still, a place. Second, that it constitutes no short cut to therapeutic success. He who would use it must be the well-educated, careful, wise physician still.

DR. W. N. SUDDUTH, of Minneapolis, Minn.—Dr. Pettyjohn wanted to know if sleep is not a therapeutic agent. If his teacher had broken her hours of work by frequent naps she would not have needed the twenty hours of sleep. As to whether hypnotism is an injurious agent or not, depends entirely upon the way it is induced and the individual upon whom the operation is performed. I am a living example of nine years use of auto-suggestion. In 1882, from nine to ten hours office work and five to six hours microscopic work at night, I broke down with nervous prostration. In the summer of 1885, in the old town of Heidelberg, I mastered the matter of auto suggestion by which I could put myself asleep for any time I wished. I was so weak that I could not walk more than a quarter of a mile at a time. I would go into the forests above Heidelberg, walk as far as I could, and then put myself to sleep for a few minutes at a time. Inside of a year's time I had increased my weight to 210 pounds and made a corresponding increase in strength. At the present time, I do twelve hours of most intense work daily. I breakfast at 7, work from 8 to 12, then have dinner, and take a nap after dinner till 2 o'clock; then I work till 6, get another meal and at 8 o'clock begin my literary work and keep it up till 12 or 1 o'clock and then I go to bed and sleep four or five hours. I have kept up this routine for nine years, and am in better mental and physical shape than ever before in my life. The case of the two girls brought before us by Dr. Herdman was not hypnotism at all but simply hysteria. The very fact as the Doctor goes on to state, that they have since suffered from mental disease, shows that it was a premonitory sign of mental disease. Hysteria can illustrate every stage of hypnosis that you ever heard of.

Another point mentioned was that the enthusiasm of the practitioners of hypnotism makes them not good observers. I have been in nearly all the laboratories of Europe. I have spent fifteen years of solid work on that subject. I have not been in practice; I am a student in morbid psychology. I have hypnotized at my home on an average twenty-five to fifty persons a week. They are not hysterical people, but students of the universities I have been connected with. The best subjects I have ever had have been those of the greatest vitality, the best physique and greatest ability. The poorest subjects are those who are weak-minded. The best results and the quickest results have been with other classes of subjects. There are three classes of people who can not be easily hypnotized: idiots, because they have no will power; insane people (barring melancholia); and skeptics. You can not hypnotize an individual who has no faith in you. You can not hypnotize children under 5 years of age. I make a distinction between mesmerism and hypnotism, and if I had time could prove it to you very plainly. Mesmerism appeals to the natural attention, which is common to man and the lower animals. Hypnotism appeals to the educated attention. I do not use mesmerism. I believe that when you set up a machine to mesmerize people and put them to sleep it may be injurious. The only results I have ever seen that have been bad were produced in cases where mechanical means were used to mesmerize the subject. If you work on hysterical people, you get hysterical results. Charcot worked in an hysterical atmosphere. In fifteen years of constant use of hypnotism as a means of studying psychology on normal healthy persons, I have never had but one case that showed any hysterical symptoms whatever. There are laboratories in Europe which report from six to twelve thousand cases. The men I have seen there and the reports which I have received from there, have not shown any deleterious results from hypnosis. Where patients were in the pathologic condition to begin with, you might observe bad symptoms, but such symptoms would have been observed after the administration of ordinary drugs. If you put a normal atmosphere about it and use normal methods on healthy individuals, the time will come when hypnotism will be almost a household remedy.

DR. A. E. STERNE—I hope the times spoken of by the Doctor will never come. I don't want to see hypnosis used in my family. We have not to deal with normal conditions as physicians. From our standpoint as practical therapeutists I don't want it used.

OPERATIVE TREATMENT OF PURULENT DISEASE OF THE ANTRUM OF HIGHMORE, WITH EXHIBITION OF NEW INSTRUMENTS.

Read in the Section on Laryngology and Otology, at the Forty-sixth Annual Meeting of the American Medical Association, at Baltimore, Md., May 7-10, 1895.

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In considering the operative treatment of purulent disease of the antrum of Highmore, I shall speak only of operations for chronic disease. Acute purulent cases, which in my experience are of much more frequent occurrence and much oftener of intranasal than of dental origin, seldom require more than the removal of the cause and appropriate local and constitutional remedies.

Antrum operations naturally divide themselves into two classes: the intranasal and the intra-oral. Each has its advantages, and many methods have been devised to meet the indications demanded by the two positions. Until recently the general rule has been to open the antrum at its lowest attainable point, in order to secure the best drainage, as with scarcely an exception the importance of drainage was especially urged as the *sine qua non* of correct surgical treatment, for it was not deemed inexpedient to have such a pus cavity draining into the mouth, month after month. Over one hundred and twenty years ago, however, Hunter, by indicating the middle meatus as a seat for operation, pointed toward other desiderata than drainage. While giving due weight to the surgical importance of drainage, we must recognize not only the disagreeable features of pus flowing into the mouth and its injurious effect on the digestion and general health, but also—thanks to Miller—the positive dangers thus engendered, not to mention the great difficulty of healing a cavity so exposed to irritation and re-infection from entering food particles and microorganisms.

Operators are widely divided as to the best course to pursue in treating this sinus, but most of those who now advocate opening the antrum into the mouth *for the purpose of drainage*, after introducing a drainage tube, *plug it*, to prevent discharge into the mouth or entrance of foreign substances into the cavity. Two only, I believe, dissent from this plan: Bosworth, who holds that the plug is unnecessary, and Zarniko, who asserts that neither tube nor obturator is required, but that the opening through the alveolus remains closed by a blood clot until this is driven out at the next irrigation.

I do not wish for a moment to condemn intra-oral operations; on the contrary, I find them indispensable in certain cases. But as presenting fewer objections and offering many advantages not obtaining from this position, I wish to direct more attention to the intranasal methods, and to urge a more careful comparison of the two positions. Should we have, for instance, an empyema of the maxillary sinus with a diseased molar or bicuspid as the exciting cause, what more proper than to have the tooth extracted under nitrous oxid gas and a so-called drainage tube introduced? The tooth cavity can at this time be reamed out to admit a tube from 4 to 6 mm. in diameter, and as the tooth *must* be removed it adds but little to the

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