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INDEX TO VOL. XVIII.

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CONTRIBUTORS.

ORIGINAL ARTICLES.

CRITICAL DIGEST.

PERISCOPE

SOCIETY REPORTS.

ASYLUM NOTES.

MISCELLANY.

BOOK REVIEWS.

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Original Articles.

THERMOTAXIS IN BIRDS.

By ISAAC OTT, M.D.

ACCORDING to Drs. Corin and Van Beneden, the temperature of a pigeon undergoes considerable diurnal oscillation. They state that removal of the cerebrum did not disturb the rhythm of temperature. Adami, in the Institute Pasteur, made some experiments upon a fowl. He put the fowl, with cerebrum removed, into a chamber at 22° C., and then the rectal temperature rose rapidly. When the fowl was removed the temperature fell to normal. When placed in a chamber, 16–18° C., the temperature fell rapidly, and when taken out of the chamber it had a tendency to return to its original height. In a normal fowl similar thermal changes were not produced when placed in the chamber. If the decerebrated fowl received 15 c.c. of ice water by the mouth the temperature fell a half a degree or more in a few minutes. If the fowl without a cerebrum was fed with a heated egg, the temperature rapidly increased. Adami states that the temperature of the normal hen was so variable that it was difficult to choose an opportune moment to inject a sterilized culture of vibrio Metschnikoffi to produce a transitory fever.

My experiments were made upon pigeons. They were allowed to run about after the puncture of the brain with a pin. When I punctured the corpora striata there was almost invariably a fall of temperature. If, however, the pin traversed the posterior part of the striate bodies, then a rise of temperature ensued equal to about one degree. When the tuber cinereum was punctured, then a rise of about one degree was observed. If the pons varolii was punctured, a fall ensued. It is very difficult to obtain rise of temperature in the pigeon, for the punctures in the majority of cases caused a fall. Simple puncture of the cortex was without effect. Experiments made with putrid blood, subcutaneously, causes a fever of about one degree in elevation. These facts show that the corpus striatum and tuber cinereum are associated with rises of temperature, and confirm experiments made upon animals. It must be remembered that anatomically the corpus striatum attains in birds a relative size and complexity found in no other class, whilst the formation of the cortex does not increase much. It must also be remembered that rabbits are the best animals to make experiments upon heat regulation, as it is much more readily disturbed than in the other animals usually accessible to the physiologist.

Appended are the experiments made upon pigeons. Fifteen in all were made, and I give a few of them.

EXPERIMENT I.—PIGEON.

TIME.		TEMP.
3.20 P.M.		104.7
3.21 "	Pin thrust through tuber cinereum.	
3.30 "		105.8
4.10 "		105.1
4.20 "		105.3
5.50 "		105.9
6.00 "		105.5

EXPERIMENT II.—PIGEON.

TIME.		TEMP.
2.38 P.M.		105.9
2.39 "	Pin thrust into pons varolii.	
2.48 "		105.6
3.00 "		105.4
3.10 "		104.4
3.30 "		103.6
3.40 "		103.0

EXPERIMENT III.—PIGEON.

TIME.		TEMP.
2.38 P.M.		106.0
2.39 "	Pin thrust into corpus striatum, on posterior part right side.	
2.48 "		107.6
2.58 "		107.4
3.08 "		107.0
3.12 "	Died.	

EXPERIMENT IV.—PIGEON.

TIME.		TEMP.
2.12 P.M.		105.7
2.13 "	Pin into right corpus striatum.	
2.23 "		106.1
2.33 "		105.9
2.49 "		105.6
2.59 "		105.4

EXPERIMENT V.—PIGEON.

TIME.		TEMP.
2.07 P.M.		107.2
2.08 "	Pin thrust into tuber cinereum.	
2.17 "		108.1
2.27 "		107.7
2.40 "		107.3
	Laboring; respiration 40 per minute.	
2.50 "		107.1

EXPERIMENT VI.

TIME.		TEMP.
2.38 P.M.		105.9
2.31 "	Pin thrust through pons varolii.	
2.48 "		105.6
3.00 "		105.4
3.10 "		104.4
3.20 "		104.2
3.30 "		103.6
3.40 "		103.0

THE RELATION OF THE TUBERCULA QUADRIGEMINA TO THE CIRCULATION AND THERMOTAXIS.

In the many punctures of the brain of the rabbit I have noted a rise of temperature after a lesion of the tuberculа quadrigemina, and Baculo was the first to publish the fact. It seemed to me a subject which needed an investigation. Danilewsky, Ferrier and Brunton found that electrical irritation of the corpora quadrigemina caused a great rise of blood pressure with slowing of the heart

and amplification of the pulse-waves. Newell Martin has found centres in the corpora quadrigemina which influenced the respiratory centres. I did not try electrical irritation, as the proximity to the main vasomotor centre makes it very liable to come in the range of the spread of electricity. Instead I punctured the bared and unbared bodies. As a rule the effect was, during the first fifteen seconds, a rise of pressure, but it soon fell about thirty millimetres in thirty minutes. When the temperature was noted before and after the puncture, it was found to rise about 1° to $2\frac{1}{5}$° F. Usually this rise did not last over three to four hours, when it receded to its original level.

The question now arises what causes this rise of temperature? Is it due to irritation of a thermotaxic centre or the irritation of fibres connecting these centres? Or is it due to the fall of arterial tension and the respiratory changes caused by irritations of the centres of Martin and Booker? As far as known, no fibres connected with thermic centres run in these bodies. Hence we must assume that these bodies contain centres connected with thermogenesis or thermolysis. The small rise and its short duration would exclude any thermogenic centre. The changes in respiration and lowering of arterial tension would cause a disturbance of equilibrium between heat-production and heat-dissipation, the latter being greater on account of the dilation of the blood-vessels. Hence it follows that the tubercula quadrigemina are connected with thermolytic centres, which explains the small temporary rise of temperature.

Fifteen experiments were performed, of which I give a few.

EXPERIMENT I.—RABBIT.

TIME.		TEMP.
3.05 P.M.		104.2
3.06 "	Puncture into posterior part of the tubercula quadrigemina.	
3.15 "		104.7
3.30 "		104.9
3.45 "		105.1
4.00 "		105.4

EXPERIMENT I.—RABBIT.

TIME.	TEMP.
4.15 "	105.4
4.30 "	105.4
4.45 "	105.4
7.00 "	105.2
9.45 "	104.6

EXPERIMENT II.—RABBIT.

TIME.	TEMP.
2.45 P.M.	103.9
2.46 " Puncture into right anterior quadrigeminal body.	
3.00 "	104.1
3.15 "	104.0
3.30 "	104.2
3.45 "	104.7
4.00 "	104.8
4.15 "	104.6
5.30 "	104.8
7.20 "	105.5
8.25 "	105.0

EXPERIMENT III.—RABBIT.

TIME.	TEMP.
4.20 P.M.	104.6
4.21 " Puncture into median part of the corpora quadrigemina.	
4.30 "	105.0
4.45 "	105.0
4.47 "	105.0
4.57 "	105.4
5.07 "	105.4
5.55 "	105.4
6.20 "	103.6

EXPERIMENT IV.—RABBIT.

TIME.	PULSE.	PRESSURE.
4.0 P.M.	62	124
4.1 " Corpora quadrigemina punctured.		
4.00.15 P.M.	72	150
4.01.15 "	71	128
4 02.15 "	71	128
4.15.00 "	72	120
4.25.00 "	76	92

EXPERIMENT V.—RABBIT.

TIME.	PULSE.	PRESSURE.
4.28 P.M.	65	110
4.29 " Corpora quadrigemina punctured.		
4.29.15 P.M.	73	154
4.34.00 "	70	138
4.40.00 "	68	130
5.03.00 "	64	120
5.08.00 "	52	72
5.15.00 "	58	80

EXPERIMENT VI.—RABBIT.

TIME.		PULSE.	PRESSURE.
5.29.00	P.M.	50	134
5.29.15	"	Corpora quadrigemina punctured.	
5.30	"	49	150
5.31	"	50	152
5.36	"	50	130
5.40	"	50	124
5.43	"	56	118
6.08	"	62	120

Ether was used during the operative procedures in the above experiments.

PAIN IN THE SOLE OF THE FOOT ON WALKING.

In the Boston Med. and Surg. Journal, Sept. 1, 1892, Dr. J. J. Putnam describes an affection consisting in a tenderness of the sole, usually most marked opposite the space between the distal ends of the third and fourth metacarpal bones. In walking there are often referred sensations along the corresponding toes. If walking is persisted in, soreness often ensues, which finally may give rise to dull pain throughout the whole leg. It is worse in wet and cold weather. The treatment consists in protecting the tender point, either by putting a thin but stiff leather inside-sole into a broad shoe, with a hole cut of appropriate size and shape, or else by making a depression at this point in the sole of the shoe. This can be done by having the last made with a projection on it at the proper place. It is very important to make the hole in the inner sole of oblong shape, the long axis, which should be an inch or an inch and a half in length, running parallel with the metatarsal bone. He finds the proper place to make the opening by putting analine ink over the tenderest spot on the sole and letting the patient put his naked foot into the shoe containing the inner sole, which has been moistened with water so as to absorb the stain. After a time the leather of the boot-sole is pressed up into the hole in the inner-sole, and then it may be necessary to renew the boot or shave off the elevation. A. F.

A STUDY OF THE SPINAL CORD OF A SPRING-HALT HORSE.[1]

THE horse from which this cord was taken had belonged to a farmer living near Boston. The animal was about twenty years old and was known to have been afflicted with spring-halt five or six years before 1891, when it was destroyed. During this time it had grown continuously worse, and at the time of its destruction it was practically worthless. The attention of Dr. L. H. Howard, President of the Massachusetts Veterinary Association, was called to the animal in the summer of 1889. He gives this description of its symptoms and efforts at locomotion at this time: "The animal, on being moved, would pick up each hind leg with a quick, jerky motion, characteristic of spring-halt, but the great excess of motion seemed to be that of abduction; the whole limb would fly out away from the body, so much so that he would sometimes hit it against the shafts of the vehicle to which he was harnessed. The foot came back to the ground, however, in proper advance of the point of leaving it, and progression was accomplished after the animal was once in motion. The muscular contractions quickly diminished until they became nearly normal, and did not take place again while he was trotting. On dropping his gait to a walk, they would sometimes occur again for a few steps; when he had come to a standstill, then always on starting again the above-described movements would take place. These symptoms all the time increased until the animal came into our possession in the summer of 1891. He had then become an exaggerated case. The motion of abduction was now so excessive that he would throw the first limb lifted so high that he would lose his balance, and be

[1] An abstract of a paper read by T. L. Bolton before the Massachusetts Veterinary Association, at Boston, June, 1892.

obliged to hop on the opposite limb, when that in turn would fly out and up so high that over he would balance on the first one again, and thus he would 'dance the ballet' for several seconds before being able to progress at all. Finally the excessive contractions would subside enough so he could step forward, and he would trot off all right for a longer or shorter distance, when he would have to stop and again have his 'dance.' In some instances the throwing up of the limb would so overbalance him that he would fall to the ground. If moved suddenly in a stall of ordinary width, he would strike first one side of it and then the other several times with his hoofs." In June of 1891, the animal was placed in charge of Dr. Howard for experiment. He invited several veterinary specialists, who were interested in spring-halt and who had theories of the nature of the disorder, to try their treatment upon the animal and supplied the means for doing so. Dr. Bryden alone accepted the invitation. He made a careful examination, and diagnosed the case as a disorder resulting from defective hoofs. This belief that a defective hoof was the cause of spring-halt he had been led to by his father more than thirty years before. This is his description of the animal and its pathological symptoms:

"The horse was a small black pony, about fourteen hands high, and twenty years old, apparently well enough, with the exception of hind legs, which were badly afflicted with spring-halt, both legs being nearly, if not, quite alike. In viewing the animal from behind, the crests of the illium were not even. The glutials were both alike flat, and the hips drooping, and the sacrum and tail elevated and coarse; the muscles to the stiffle were somewhat wasted; the muscles behind the tibia were small, and felt like tendons to within two or three inches of their origin. The hocks were both coarse, but not more than ought to be expected under the circumstances; his age and the way he had been used for sometime having tended to produce changes; both had a small elevation or slight coarseness at the seat of bone spavin. His legs below

the hocks were always swollen, from the fact that when he attempted to move in his stall he struck his ankles against the sides with such force as to make and keep them sore."

Most of these symptoms will be recognized immediately as common to all cases of spring-halt. Dr. Bryden believing that hoofs were the primary cause, and that these other symptoms resulted from the disordered hoofs gave special attention to them. He says:

"They were smaller than nature had intended them to be, and very nearly round; the wall short and very thick, the sole low, the bars strong, the heels short, and the frog of medium size. The horn seemed fairly healthy, but it grasped the extremity like a vise, causing him much uneasiness."

Dr. Bryden began his treatment upon the theory that the above-described symptoms were due entirely to the compression which the too small hoofs exerted upon the nerves and blood-vessels supplying the lower extremity. The hoofs were thinned and pared down and the frog thoroughly cleaned, and kept so. The details of his whole treatment are unnecessary. It will be sufficient to say that after two months' care and treatment the animal improved greatly. Dr. Howard says of this treatment, "that it caused a certain decrease of the excessive motion described, and we saw him on two or three occasions even start off without his customary introducing 'ballet.'" The recovery was not complete, and the treatment does not seem to have given evidence that the animal would ever have completely recovered, for it was destroyed. The spinal cord was taken out and sent to Dr. H. H. Donaldson, Assistant Professor of Neurology at Clark University. He placed it in my hands and under his direction it has been examined with a microscope.

The specimen consisted of a section of the cord extending from the level corresponding to the eleventh dorsal vertebra to the termination of the cord in the sacrum. The portion of the cord caudad of the origin of the fifth pair of lumbar nerves was so badly

bruised in the process of removal from the vertebra that it was unfit for microscopical examination, save the roots and ganglia of the first and second pairs of sacral nerves which were held intact by the dura mater. In addition to this were the roots and ganglia of the fourth, fifth, and sixth pairs of lumbar nerves. The whole specimen was hardened in a 2–5 per cent. solution of bichromate of potash plus one-sixth its volume of 95 per cent. alcohol. In this fluid it remained for two months, when sections were taken from six different levels of the cord, and also the roots and ganglia of the fourth, fifth, and sixth pairs of lumbar, and of the first pairs of sacral nerves, and completely hardened in strong alcohol. These specimens were then numbered to preserve the order, and sectioned. In staining, two purposes were kept in view: the first to show the fibres, and the second to show the cells. For fibre staining the best results were obtained with a double stain of palladium chloride and ammonia carmine. Other fibre stains were nigrosin, acid fuchsin and carminic acid. The most satisfactory cell stain was a double stain of Delafield's hæmatoxylin, and Van Giesen's picro-fuchsin. As the cells did not show a regular and marked degeneration, we need not concern ourselves with them. The fibres alone seem to have undergone a regular degeneration. Beginning with the sections from the level of the eleventh dorsal nerve and proceeding caudad, the location of the degenerated nerve fibres will be pointed at the successive levels where specimens were taken. On a section from the level of the eleventh dorsal nerve, a lesion appears in both the dorsal and ventral columns. In the dorsal columns it has a grosser appearance, and is not so diffuse as in the ventral columns. Large numbers of fibres have entirely disappeared from the region about both posterior horns of the gray matter. The degenerated areas are not quite symmetrical in the right and left halves of the cord. In the ventral columns the degenerated fibres appear singly as a rule, and are distributed around the periphery of the anterior columns as far as the

points of entrance of the anterior roots of the spinal nerves. There are in addition more or less degenerated fibres distributed throughout the entire section. The appearance of the section from the level of the first lumbar vertebra is similar to that from the level of the eleventh dorsal. In the posterior columns the lesion is somewhat more marked, but in the anterior columns it is less marked and not so closely confined to the periphery. On the section from the level of the fourth lumbar vertebra, no lesion, properly speaking, appears in the anterior columns, but it is perfectly plain in the posterior columns and involves a larger area of the section. The location about the posterior columns is about the same as on the other sections. As the animal was old and had been subjected to hard usuage, the degenerate fibres in the anterior columns may have no pathological significance. The disturbance in the posterior columns is certainly significant of something more than the decay resulting from old age and hard usage. It is confined entirely to the sensory areas. The first indication of any degeneration is the failure of the myelin substance to receive a stain, and not unfrequently the fibre that fails to stain is swollen. The axis-cylinder is next to disappear, and finally the medullary sheath, leaving an unstained gap in the section. A section was allowed to remain in nigrosin for twelve hours, and no stain of these areas was affected. These unstained areas can easily be seen without a glass, and was first noticed on an unstained section from which the alcohol was allowed to evaporate.

The results of the examination of sections taken from the ganglia of the fourth, fifth, and sixth pairs of spinal nerves are perhaps more interesting still. The ganglia were sectioned at intervals of one-eighth of an inch, and the order of these sections carefully maintained. The same methods of staining were used for these as for the sections from the cord. The most peripheral section of one ganglion showed that a single funiculus in the motor region had undergone complete degeneration. Proceeding toward the cord the successive sections showed that this

funiculus became gradually broken up and distributed throughout the whole motor area of the section, for the degenerated fibres were found scattered in every part of the motor area. Although the disturbance in the cord was mostly confined to the sensory area, it is the motor fibres in the nerves that have suffered decay. No very careful and detailed study of the blood-vessels has been made, so that it cannot be definitely stated whether or not the lesion has resulted from a lack of blood supply. It is not deemed expedient to attempt to argue the consistency of a sensory degeneration in the cord and a motor degeneration in the spinal nerves. It is my purpose simply to state what appear to be the facts in regard to the condition of this cord. We have simply a coincidence: a horse is afflicted in a high degree with spring-halt, and a lesion has been found in the sensory areas of the cord and in the motor areas of certain nerves which control the hind limbs. Some veterinary surgeons have long supposed a central origin for the disease, or at least that the disease was nervous. The disease has resisted up to the present time all attempts at a cure, and the sale of a horse is greatly injured when it is known to be afflicted with spring-halt. As a means of getting a better understanding of the symptoms of spring-halt, I would suggest a careful study of the cutaneous sensibility of the hind limbs. The history of the animal is also important in determining the cause.

Before closing this paper I wish to enlist the services of the members of this Association in obtaining further material for finishing a work that appears at present promising. I will take it upon myself to examine any material sent to Clark University, Worcester, Mass., and report the results of the examination to the person who sends it. The cord after being taken out (and the whole cord is desired) should be placed in a 2–5 per cent. solution of bichromate of potash plus one sixth its volume of 95 per cent. alcohol, and expressed to the above address.

A CASE OF HYSTERICAL ASTASIA-ABASIA SUING FOR DAMAGES, WITH REMARKS ON THE NATURE OF THIS DISEASE AND THE HYSTERICAL TEMPERAMENT.

By L. BREMER, M.D.,

St. Louis, Mo.

ALTHOUGH hysteria is not the "Proteus" among diseases any more as it used to be looked upon by past generations of physicians; and though, thanks to the labors of Charcot and his disciples, it is now a well-defined and circumscribed nosological entity, there are still cases which even to one that pays particular attention to nervous disorders, may be puzzling in a degree, and hence interesting and worthy of publication.

A case of this kind in which to the notorious unreliability as to the subjective symptoms in the hysterical, an additional difficulty through a co-existing motive, obscuring the case, was added, is the subject-matter of the following remarks:

A woman, forty-nine years of age, married, and the mother of a sixteen-year-old daughter, and a son over twenty-one, claimed that she had become paralyzed about two years ago by an elevator accident in one of the large dry-goods stores of our city. She was the only passenger at the time going from the ground to the second floor. She asserted that by a sudden stop of the elevator she had been thrown forward from the seat, had landed on her head, and that ever since her lower extremities were paralyzed, sensation, however, remaining normal. She brought suit for $20,000 damages against the firm in whose store the accident was claimed to have occurred.

The testimony for her side showed that since the alleged accident, brought about, as claimed, by a temporary defect in the machinery (an assertion which could not be substantiated) she had been unable to walk. The

testimony on both sides went to show that shortly after the accident she had been in a peculiar semi-conscious state, in which she called for persons that were not present, and although she did walk a few steps, she insisted shortly afterward that she was paralyzed and that "she knew" she could not walk. Physicians that were called in declared that they could not discover any lesion accounting for the paralysis.

Living in the country a short distance from the city, she was seen a day after by her family physician, to whom she suggested that her back was injured, but refused a thorough examination.

A rather indifferent treatment, consisting chiefly in the application of the faradic current was instituted, and, this proving ineffectual, all attempts of bringing about improvement through medical aid was abandoned until about one year and a half later, when she applied to a surgeon for a diagnosis of the case.

On the strength of his opinion that there was a causal relation between the alleged accident and her present condition, the suit was brought.

The claimant for damage was present in court and gave the jury an account of what happened in the elevator and of her subsequent inability to walk. She looked about her age, had snapping black eyes, very mobile facial expression, and followed the proceedings, and especially the testimony of the witnesses, with a keen interest. From her own testimony it appears that she was not entirely incapable of locomotion, but that she managed to move by quite a peculiar device. While seated on an ordinary chair she would take hold of the seat with both hands, slightly tip the chair forward and shuffle along with the aid of the two legs of the chair and her own. She was not only willing, but eager to give the jury an exhibition of this, the only possible manner of locomotion. With the help of this device she declared to be able to move about the house and premises, and attend to some extent to her duties as a housewife. She was, *e. g.*, able to milk a number of cows every day.

She could also crawl on all-fours and climb upstairs in this manner. Often, while in her present condition, she had ridden to town in a farmer's wagon, over rough roads, and had managed to do some shopping. By the physicians that appeared on behalf of the plaintiff, it was stated that her general health was fair, and that there was no abnormality of the functions of the bladder or rectum; that the reflexes were normal, and that the various qualities of sensation were intact; but that, while she was capable of moving the legs in every direction and with apparently normal strength, in the sitting or lying position, she was not able to either stand or walk.

One of the experts that appeared in her behalf thought that the clinical picture presented by the plaintiff fitted in the frame of a traumatic neurosis; the other, while concurring in this, laid more stress on an indentation existing between the last lumbar vertebra and the sacral bone. The indentation was thought to be the result of a slowly progressing caries, following the concussion during the alleged accident in the elevator. The patient had told the physicians what they considered a straightforward story, and they took the injury sustained by sudden stopping of the elevator for granted.

The expert engaged by the defense, after hearing the testimony of what seemed to him unprejudiced witnesses, came to the conclusion that the case was explainable only on an hysterical basis, and that no coarse lesion of any kind could account for the symptoms-complex presented by plaintiff.

Experts for plaintiff concurred in saying that they had observed her closely, especially during her examination as a witness, and that they had been unable to discover any indications of hysteria. They went further, and stated to the jury, that so far from exhibiting any such symptoms, she had borne a long and searching cross-examination with unusual composure, and they were positive she was not suffering from hysteria, and her ailments could not be explained on that hypothesis.(!)

The ground taken by expert for the defense was as follows:

It can be shown by witnesses, most of them life-long neighbors of plaintiff, that she was possessed of the hysterical temperament; unmistakable evidences of which could be traced even to early girlhood.

Thus it could be shown that she had a penchant toward anonymous letter writing for no other ostensible purpose than to create a sensation.

She had, moreover, figured in a number of fictitious robbery-affairs, in which she was the heroine, and which turned out to be inventions; she had also been the recipient of munificent donations from unknown and mysterious persons. She was proven to have written anonymous letters to her friends that caused scandal and strife. On one occasion such a letter was sent to the grave-digger of the cemetery of her neighborhood, notifying him of her death, and requesting him to have the grave ready at a certain hour of a certain day. The grave was ready and no corpse showed up. This letter was proven to have been written and sent by her.

A letter purporting to come from, and signed by, one of her friends and neighbors and addressed to herself, in which she was charged of being the mother of a "nigger-baby," was proved to be in her own handwriting. All these inventions and apparently purposeless intrigues were adorned with minute and spicy details, that were calculated to impart to them a certain amount of inner probability. Gradually the truth leaked out among the neighbors as to the authorship of the letters, and the reality of sensational occurrences of which she was the central figure.

Her reputation among her acquaintances for veracity was, consequently, not good. For improbable and impossible stories, calculated to stir up sensation, create social complications and cause discord and strife, she had become quite notorious. Lastly, the testimony furnished the psychologically important fact that she had

quite a knack of forming intimate friendships, which generally ended in enmities.

Owing to the inaccessibility of the plaintiff to defendant's expert, and in view of the more than probable reluctance on her part to give any information as to any possible previous attacks of the same nature or similar to the one from which she was now suffering, or as to the present or past existence of objective hysterical stigmata, the expert for the defense could only point out and emphasize the occurrences in her life-history alluded to above as indubitably betokening the hysterical temperament. He gave it as his opinion that the only admissible explanation of plaintiff's morbid condition was that of one of the forms of hysterical paralysis.

The intactness of all qualities of sensation spoke against any involvement of an anatomical nature, of the cauda equina (as claimed by one of plaintiff's experts), nor could there be any injury higher up in the lumbar portion of the spinal cord, because in addition to the perfect preservation of sensation, as before stated, no disturbance of the functions of the bladder or rectum existed. Nor did the symptoms in the case justify in the least the inference of an existing traumatic neurosis.

I may here be permitted to remark that such things are self-evident to the neurologist, but they are far from being so to average experts. But this is a chapter apart, belonging to the much-discussed-experts question in the courts of justice.

The line of defense, then, as counseled by the expert for defendants was, that the plaintiff, while a passenger in an elevator, was taken with an hysterical seizure, either induced by fright on account of a too sudden a stop of the machinery, or without any external assignable and demonstrable cause; and that the paralytic attack was only the culmination of a morbid hysterical state of the nervous system which had existed throughout the life of the patient.

To the mind of the expert for defendant it was a plain and typical case of astasia-abasia, although for

prudential reasons this to a jury formidable appellation was withheld. I believe that the mere mention of the word would have given a much-desired opportunity to opposing counsel of effectually ridiculing the expert testimony of the defense.

How very susceptible the mind of the average jury is to the ridicule judiciously invoked against long-winded technical terms of Greek extraction used by a medical expert, and how this may affect the verdict, I need not state at any length at this place. The verdict was in favor of defendants, the jury adopting the views of the expert for defense.

Remarks.—I am not aware that in the history of forensic medicine there was ever a case of this nature; *i. e.*, that a patient who is suddenly stricken with a peculiar kind of paralysis sues the proprietor of an elevator in which the attack happens. Suits have been brought by hysterical women for alleged assaults under similar conditions, the charges for criminal assaults against dentists and physicians, especially during administration of chloroform, being the most familiar among their many unaccountable pranks; again, the cases are not rare where profound sensation and the highest pitch of indignation was produced in whole communities by the accounts of hysterical women whom nobody would suspect as being liars or endowed with the hysterical temperament, of robberies and assaults of a revolting and atrocious nature, accounts which on investigation were found to be entirely fictitious.

Thus, in every large city examples are on record of thrilling experiences which certain women have had with burglars. The highly-colored descriptions of such occurrences, as they appear in the daily press, bear all a family resemblance; and the neurologist, the psychiater and the police generally make at once a correct diagnosis of such cases. The police especially have frequently to deal with them in a practical manner, and is often compelled out of consideration for the fair name of the family of the hysterical heroine, to throw the mantle of

charitable silence on some *prima facie* high-handed criminal and revolting assault, the account of which fills the mind of the unsophisticated newspaper reader with horror and indignation, but which disappears from the criminal record like a river in the desert, never to be seen or heard of any more.

But there is not always such a negative and harmless outcome of hysterical charges. Cases are on record where innocent individuals have suffered penalties in consequence of simply imagined or deliberately concocted and trumped-up charges by hysterical women. Owing to the labyrinthine nature of their cerebration it will be often impossible to say in a given case whether false accounts and fictitious occurrences are the outgrowth of hysterical hallucinations engendered by an acute attack, or whether they are the well-pondered results of the cunning hysterical temperament which concentrates its energies in inventing romances or outrages, in some instances with an object in view, generally however for no other cause than to get up a sensation, create confusion and cause trouble and annoyance to others, sometimes to persons absolutely indifferent to them. To the normal mind it is hardly conceivable how such acts, obviously devoid of ordinary motives, can be done by apparently sane persons; but he who has had opportunities of watching the manifestations of the hysterical temperament is not astonished at anything done by the hysterical, however absurd and unaccountable, or at allegations made by them, however strange, incomprehensible, abnormal and odious.

A short while ago the daily papers gave an account of an outrage committed on a young married woman in a small Eastern town. When the husband returned home in the evening, the wife being generally alone throughout the day, he found her missing, the whole house in a state of disorder, looking like the scene of a desperate struggle. After a close search he finally discovered her in the cellar, gagged, exhausted, frightened to death, apparently the victim of an atrocious assault.

The police, after inspecting the scene, diagnosed the case at once correctly, and soon furnished proofs of the correctness of their view, showing that the woman was a fraud, and that the disorder in the house and the gagging was her own work.

The same outgrowth and manifestations of the hysterical temperament that caused in the Middle Ages the canonization of some, and the burning at the stake of others,[1] is still active in our days; the groundwork is still the same, only the superstructure and the ornaments have changed. The hysterical woman of to-day is still deceived and deceiving, still the victim impelled to inexplainable acts and words by an inexorable bane in her temperament, still the central figure of extraordinary happenings; but the stage of her activity is shifted.

While in the Middle Ages convents and churches were the favorite ground on which hysterical manifestations of both sexes were conspicuous, the scene was changed later on to the private dwellings and public halls, where spiritualism enchanted its votaries, and quite recently it is the newspaper-office and the court-room in which the unseizable Proteus, hysteria, wields its tremendous power and tries immense possibilities for evil.

That the case detailed at the head of these remarks bears all the recognized characteristics universally credited to what is generally understood by the "hysterical temperament," there can be very little doubt.

The School of the Salpêtrière make a distinction between interperoxysmal or physiological, and paroxysmal, or pathological hysteria. I take it that the attack of paralysis attended with impairment of consciousness in our case was a long-deferred paroxysm, being the first pathological manifestation in a woman who up to this time had only shown symptoms of the hysterical temperament; *i. e.*, had, in the language of the French school, been only physiologically hysterical.

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[1] Le grand du Saulle, Les Hysteriques.

That this paroxysmal manifestation should be delayed until the change of life is rare, but not unprecedented.

There are a number of cases on record in which the menopause was the disturbing element (the *agent provocateur*, as the French term it,) that precipitated the hysterical paroxysm.

Besides the medical interest that the case possesses, in the writer's opinion, it has also an important medico-legal bearing on the vexed question of hysteria and principally that mental state which is known as the hysterical temperament.

How many victims of judicial error hysterical women have made in the history of civilization it is impossible to compute. Perhaps the number of their victims in the various ages equals that of the hysterical women that were burned at the stake in the Middle Ages. Who knows?

At any rate, it will be well, in charges brought by women whose history points, however slightly, to the hysterical temperament, to consider the possibility of an utter absence of facts in the case, however plausible the allegations and strong the evidences may be.

This does not apply so much to the civil affairs like the case under discussion, as to charges of a criminal nature.

The generality of the profession, and for that matter up to a few years ago, even the neurologists and the medico-legal fraternity, were, comparatively speaking, in the dark as regards the hysterical temperament, its nature, and its manifestations, the various forms of incriminations.

Reading the accounts of mob justice in certain parts of our country and weighing the facts leading up to it, I am fully convinced that in those regions in which lynch justice still holds sway many an innocent victim of hysterical allegations has been swung from a tree, riddled with bullets, or treated to a coat of tar and feathers. I cannot help suspecting that the epidemic of rapes committed, as reported by negroes in certain parts of the

South, savors somewhat of epidemical hysteria on the part of the victims.

(In order to prevent any possibility of misinterpretation, I desire to state distinctly that the negro, owing to a peculiar sexual organization, is more apt to commit sexual outrages than the white of the same degree of education.)

Even in countries where people are unwont to take the law in their own hands or act on the spur of the moment, where the slow and even course of justice is not disturbed and where the real or suspected criminal is accorded all the fairness that law and order dictate, instances of judicial error, following the accusations of hysterical women, were by no means rare.

One of the saddest and most instructive cases is that of the unfortunate de Roncière, a young French army officer, who, on the charge of an hysterical sixteen-year-old girl, the daughter of the colonel of his regiment, was placed on trial for attempted rape, and, failing in his object, stabbing her about the genitals. Anonymous letters, alleged to have been written by the accused to the father of the girl, containing threats, abuse and foul language, figure quite prominently in the case also. The fact that the girl two days after the "assault" went to a ball and danced all night, and that no sign of any injuries could be demonstrated, made no impression on the jury, who, in spite of the brilliant pleading of the defendant's lawyer, found him guilty of the charge. He was deprived of his rank in the army, discharged in disgrace, and had to serve a term of ten years in prison. The enormity of the accusation and the unjust verdict came near driving him insane. He left the prison a broken man, and seven years later, at the instance of one of the lawyers of his former accusers and adversaries, he was rehabilitated and reinstated in his former rank, not because it had been established that he was innocent of the crime charged, but because of his exemplary and irreproachable conduct since the time of his conviction. The trial took place in 1835, long before hysteria was

looked upon in the light that it is regarded to-day; *i. e.*, about four decades before the epoch-creating investigation of Charcot and his school. But in perusing the proceedings of that trial and understanding hysteria in the modern way, the psychiater is apt to wonder how it is possible that there ever was a time in a civilized country like France when a man of good repute could become the victim of a judicial error on such flimsy evidence and on the unmistakably false accusation of an hysterical girl.

More recently, in Spain, six persons were innocently sentenced to loss of liberty and civil rights on the detailed and elaborate charges of a woman afflicted with hysterical insanity. They were all relatives of her, one her own husband. The Medico-Psychological Society of Paris took the matter up, and after hard work, lasting several months, they established the fact that the six condemned persons were the victims of groundless charges, based on morbid imagination. The Spanish courts of justice accepted the views of the French savants, the trial was re-opened and the condemned men exonerated of the crimes imputed to them.

The foregoing remarks I thought to be pertinent and having a bearing on our case, showing how extremely cautious physicians, lawyers, judge and jury must be in forming an opinion on charges and allegations made by hysterical women. It is not always that they are willful and conscious liars, although it is well known that many of them lie simply for the art of lying, that they belong to that class which has been styled "pathological liars;" some, no doubt, believe in the reality of their manifestly erroneous impressions and false assertions. Thus, in the present case the plaintiff was given the benefit of *bona fides* by expert of defendants, and it was not assumed that she willfully lied for the purpose of levying blackmail, but that the hysterical seizure, with which she was taken in the elevator, was attended with the hallucination or delusion that an accident had happened to the machinery, causing the subsequent paralysis.

That there is no age exempt from the manifestations of the hysterical temperament, and that these may occur at any period between seven and seventy, is a fact well known to neurologists and medical jurists, but incredible to the casual reader of accounts illustrative of this baneful psycho-neurosis. Above all are little children, who, on account of their tender age are above suspicion of telling a falsehood, very dangerous as accusers and as witnesses, when they are possessed of the hysterical temperament. Their world-wisdom and cunning which they display in maintaining and rendering plausible invented stories has its analogon in, but is not explained by, that other species of psycho-neurosis growing only on the soil of degeneracy—coprolalia. Any one who has heard such children hurl forth their filthy phrases supposed to be found only in the most infamous slums, is lost in wonderment how it is possible that a child (reared very often in the best of surroundings and under all precautions imaginable) could have gotten hold of the vilest expressions a language is capable of and ordinarily found only in the gutter. As the word in coprolalia, so the tale in some cases of hysteria in children.

It will be remarked that I have classed this case of astasia-abasia unhesitatingly as hysterical in origin. As is well known, not all cases that have been described under this name can be demonstrated to have an hysterical background, and develop on other neuroses. Last year Dr. Knapp,[2] of Boston, undertook to collect all the cases of astasia-abasia published up to that time. The list contains fifty cases, one of them being of his own observation. Three of them have been observed in this country (Hughes, Hammond, Knapp). The collection contains a number that evidently, to say the least, are impure, and will undoubtedly be weeded out by future

[2] P. C. Knapp: Astasia-abasia, with the report of a case of trepidant abasia, associated with paralysis agitans. Journal of Nerv. and Ment. Dis., November, 1891.

investigators and writers on the subject, in the same manner as spurious cases of other modern nervous diseases, such as myotonia, myoclonus multiplex, and others are of late undergoing a process of depuration. There are at present three recognized forms of the disease, the paralytic, trepidant and the choreiform. The chief and common characteristic of all of them is, that the person afflicted with them is unable to assume and maintain the erect posture or to walk, the various qualities of sensation, including the muscular sense, being intact. The reflexes are normal. If such patients are assisted to stand and are supported by attendants, their legs will either tremble, stiffen, execute ineo-ordinated movements, or bend like cotton when the support is withdrawn. Lying on their backs, however, or sitting, they move their legs with absolute freedom and normal power in any direction. Although they have forgotten the two fundamental functions the legs are designed for, they may nevertheless be able to execute a series of highly complex movements, such as swimming, jumping, climbing, etc. Generally they can crawl on all-fours, and the device to hitch along a chair seems to be a not unfrequent form of locomotion. In Knapp's list it occurs four times. Perhaps there are other cases in which this makeshift of movement was resorted to without the fact being mentioned by the observer.

A number of theories intended to explain and elucidate the nature of astasia-abasia have been offered by writers on the subject, but none equals that of Charcot, who, with his usual felicitous knack of finding appropriate similes, has compared the cerebro-spinal mechanism of motion to that of a music-box.

The comparison is about as follows: The various movements that man is capable of, walking, running, climbing, dancing, etc., represent different kinds of co-ordinated rhythmical contractions of different muscle groups, the harmonious and purposeful action of which is brought about by the rhythmical discharge of nerve energy from the multipolar ganglionic cells of the ante-

rior horns of the cord which, in their turn, receive their impulse from the higher centres, the ganglionic cells in the psycho-motor area of the cortex. This impulse having been given once, the spinal ganglionic cells perform their function automatically. Now, the spinal cord with its ganglionic cells may be compared to the copper roll in the music-box beset with metallic points whose different arrangement gives rise to the playing of different airs, whenever the rolls are set in motion. The mainspring which starts the mechanism and sets the rolls revolving is equivalent to the system of ganglionic cells in the motor area of the cortex. Supposing that the music-box has a "repertoire" of three airs: "Hail Columbia," "Yankee Doodle," and "Home, Sweet Home," the airs will be played correctly as long as the mechanism is in good order. Carrying the simile further and substituting the various movements of walking, crawling, climbing, for the three airs in the succession above given, the air "Hail Columbia" cannot be rendered any more when the metal points for that air are disarranged, whilst the two other airs are still rendered faultlessly; in the same manner the act of walking will become impossible when the ganglionic cells of the spinal cord that preside over the automatic harmonious contraction of the various muscle groups called into action in the walking process are functionally disarranged, the faculty of crawling and climbing remaining intact. The wound-up spring that furnishes the running power of the music-box corresponds to the motor area of the cortex.

Of course, this simile does not explain the pathology or pathogenesis of the disorder, but it is an illustration that renders this morbid phenomenon seizable to our understanding.

THE RESTORATION OF VITALITY TO MUSCLES WHICH HAVE BEEN COMPLETELY PARALYZED FROM POLIO-MYELITIS.

By GRÆME M. HAMMOND, M D.,
New York.

IT has always been a question of considerable doubt as to whether electrical stimulation of muscles which have become paralyzed from disease of the spinal cord has any decided influence in restoring them to a normal condition and at the same time reflexly stimulating degenerated nerve cells in the cord into a condition of vitality. I think it may be taken for granted that if any permanent benefit is derived from electrical stimulation of the muscles, it must be in consequence of aroused energy in the nerve cells which supply those muscles. Stimulation confined entirely to the muscular tissue, if it has any regenerative effect at all, can only be temporary, and must cease to be operative soon after the stimulation is discontinued. To be permanent at all, the cells in the anterior horns must be stimulated or developed sufficiently to enable them, by their own activity, to supply the paralyzed muscles with motion and nutrition. I do not refer to acute diseases of the cord. In such cases a certain amount of repair takes place in the cord after the destructive process has ceased; but while the disease is in progress the paralyzed muscles are undergoing atrophy, which degenerative local applications of electricity can retard to a great extent. I refer particularly to chronic cases, in which the destructive process in the cord has long since ceased and in which the patient is left with some muscles over which there is slight voluntary control, and with others which seem to be totally paralyzed.

Microscopical examinations of sections of the spinal cord in such instances shows the affected anterior horn

to be atrophied, while many of the nerve cells have entirely disappeared; and others, again, have become rounded, have lost many of their processes, their nuclei are indistinct, and the body of the cell is shrunken, pigmented, or granular. Cells are observed in all stages of degeneration, from almost total destruction to a nearly normal condition.

It is the general opinion, and it is probably correct, that the paralysis and atrophy of the muscles are in direct ratio to the destruction of the cells in the anterior horns; that muscles which are partially paralyzed are supplied by cells in a more or less partial state of degeneration; and that these muscles, of which the patient has absolutely lost all motor power, have reached that condition on account of the total destruction of the cells which formerly enervated them.

There is a wide diversity of opinion in regard to the value of electricity in the treatment of the paralysis of spinal origin. Nearly all investigators admit the efficacy of this agent, in acute cases of polio-myelitis, in retarding the paralysis and atrophy of the affected muscles, simply by its local stimulating action on the muscles themselves. But there is not the same unanimity of opinion when the chronic form of polio-myelitis is considered. As I have previously remarked, the only way in which voluntary movements of the paralyzed muscles can be regained is by the more or less complete regeneration of the nerve cells in the anterior horns. No one for a moment believes that nerve cells which have been entirely obliterated can be reproduced again by the action of electricity or by anything else, and many refuse to believe that nerve cells which still exist, though in a more or less degenerated condition, can be stimulated to a more healthy growth or to any further development by electrical applications applied to the muscles supplied by such cells. It is quite possible, in some instances, even in apparently favorable cases, that electrical applications are unavailing; but the cases reported in which permanent benefit has been derived are too numerous to be disregarded. I shall

not, therefore, consider the question of the efficacy of electricity in the treatment of chronic polio-myelitis: I shall take that for granted. I do not mean to say that I believe all cases can be benefited, but I believe many of them can be if properly treated. The subject which I shall call particular attention to is in reference to the ability to discriminate between those muscles which are capable of being improved and those which are too degenerated to admit of such a possibility.

It is generally conceded that muscles which do not respond at all to repeated attempts at electrical excitation are those whose cells have been destroyed. It is therefore useless to hope for any improvement in their condition. I will admit that if there is no contraction of the muscular elements, or if there are no muscular elements remaining, then electricity is a useless remedy. But how is it to be determined whether a muscle contracts or not? This question is usually decided by the senses of touch and sight. If the operator cannot feel a muscle contract or see it contract, he usually comes to the conclusion that it does not contract, and consequently gives a hopeless prognosis so far as that particular muscle is concerned. But there may be cases—I am satisfied there are such cases—in which the nerve cells, though greatly degenerated, are not entirely destroyed, and the muscular contraction under electrical stimulation does take place, though it may be so slight as to escape detection by the senses of the most acute observer; furthermore, that such cases are sometimes capable of a certain amount of improvement. In support of this view, I desire to report the following cases:

CASE I.—A lady, about twenty-five years of age, consulted me in the year 1889. When six months old she had suffered from an attack of anterior polio-myelitis, which left her with the anterior tibial and peroneal groups of muscles paralyzed in both legs. As she grew older, both gastrocnemii contracted, giving rise to marked talipes equinus. On examination, I found that all of the muscles in the right leg responded to the galvanic cur-

rent, but not to the faradic. The contractions were, however, very slight. In the left leg the peroneal muscles responded very slightly to galvanism—the anterior tibial muscles not at all. The contraction of the gastrocnemii was so powerful that they could not be overcome by any force it would have been proper to have used. At my request Dr. A. M. Phelps divided the tendons of both muscles. After the tendons had reunited, it was found that the feet could be flexed passively to their normal limit. Voluntarily the patient could flex the right foot and extend the toes slightly. On the left side all of the muscles responded faintly to will power except the tibialis anticus and the extensor proprius pollicis. These muscles seemed to be completely paralyzed, nor would they respond to any form of electrical stimulation. My opinion was that those muscles which could be made to react to electricity could be developed to a limited degree, while it was hopeless to look for any improvement in the tibialis anticus and extensor proprius pollicis in the left leg. I made applications of galvanism almost daily for over a year. The applications were made to the two completely paralyzed muscles just as regularly and as thoroughly as they were made to the others. The development of the others was slow, but progressive. The power of flexion of the right foot gradually increased until it could be perfectly accomplished. I was greatly surprised, about six months after treatment began, to observe a very faint reaction in the left tibialis anticus. As time went on the contractions became more noticeable, and finally could be induced by efforts of the will. A year after treatment began, flexion of the left foot could be performed fairly well. A little over a year after treatment began, slight contractions were observed in the extensor proprius pollicis. This muscle has slowly developed, but not to the same extent as the tibialis anticus. The great toe can be partially extended, but the muscle is very weak. At the present time the patient walks quite well without a brace of any kind. The heel strikes the ground first, and in bringing the feet forward they can both be so well flexed that the toes never strike the ground.

CASE II.—A lad, eleven years of age, consulted me in April, 1891. When he was six years of age he had an attack of unilateral polio-myelitis, which resulted in partial paralysis of the anterior tibial group of the left leg,

with the exception of the tibialis anticus, which was totally paralyzed. The peroneal group were in the same condition. These muscles could not be made to contract to the electrical current to the slightest appreciable extent. All other muscles acted feebly. There was slight talipes equino-varus. The gastrocnemius was contracted and unyielding; so the tendon was cut.

Electricity was used daily, all of the muscles reacting except the peroneals and tibialis anticus. These muscles, however, received applications just the same as the others. It was only after seven months of daily applications that faint contractions were observed in the tibialis anticus. These, however, increased in vigor, and soon slight contractions could be induced by efforts of the will. This muscle has slowly developed power, so that the foot can be voluntarily flexed; but it requires a mental effort to perform the act, and the muscular effort cannot yet be maintained longer than a few seconds. Although I persistently endeavored, for a year and a half, to arouse some vitality in the peroneal muscles, I was not successful. The muscles are just as inert to-day as they were when I first examined them.

CASE III.—A boy, nine years old, came to my clinic at the Post-Graduate Hospital, in May, 1891. When he was three years of age he had had an attack of anterior polio-myelitis, which had paralyzed the muscles on the anterior and external sides of the leg. Electrical examination showed that all of the muscles responded slightly except the tibialis anticus and the extensor proprius pollicis, which appeared to be totally inert. Daily electrical applications were made. It was only at the end of five months that slight contractions were observed in the tibialis anticus. This muscle gradually developed until voluntary control was fairly well established. The foot could be flexed, but the muscle has never become what could be called strong. The electrical applications were continued almost daily to the extensor proprius pollicis for nearly eleven months, but without obtaining the slightest evidence of reaction.

These three cases show that in some instances it is possible to restore, or at least to partially restore, vitality to muscles which were at first regarded as hopelessly degenerated. Because the senses were not able to appre-

ciate minute muscular contractions, there was no proof that such contractions did not occur. They probably did occur. Those muscles which, after months of careful attention, showed visible signs of vitality were probably in relation with cells in an extremely degenerated condition, but which were not completely destroyed, and which, under stimulation, were capable of a certain degree of regeneration. Those muscles which, even after many months of assiduous applications, still failed to show evidences of vitality were evidently completely degenerated and their cells obliterated. These cases simply demonstrate that our senses are not sufficiently acute to determine whether totally paralyzed muscles are capable of improvement or not, and that it is only after long-continued treatment that this point can be definitely ascertained.

NERVE SUTURE AND NERVE BULBS.

H. W. Paget, in "Practitioner," August, 1892. In the brief paper with the above title, the author impresses the well-known fact that the suture of divided nerves fails whenever there is suppuration in a wound. He likewise draws attention to the fact that bulbous enlargements of divided nerves after amputation have become very uncommon since healing without suppuration has been brought about by the aseptic *régime* of the present day. In other words, the avoidance of suppuration has prevented the formation of bulbs at the ends of divided nerves by preventing the conditions under which they occurred.

Few greater boons have indeed been wrought by aseptic surgery than the abolition of this source of pain and discomfort after amputation. J. C.

THE ELECTRICAL TREATMENT OF CERTAIN PHASES OF NEURASTHENIA.

By W. F. ROBINSON, M.D.,

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THE object of this article is to direct the attention to those peculiar phases of neurasthenia in which the mind is mainly affected, the physical condition remaining comparatively unaffected, or what is known as cerebral neurasthenia. It is characterized by the well-known morbid fears, about which so much has been written, and the severer cases are very apt to show a deep despondency and hopelessness, which renders their condition most pitiable. Another cause of acute mental suffering is the terrible mental activity they display. This is not by any means a healthy activity, but a morbid, unnatural process in which the morbid fears of all kinds play an important part. Sometimes they take a definite form, as fear of committing suicide or homocide, or, most frequent of all, fear of going insane. At other times it is simply a vague apprehension, the so-called fear of fears, or fear of everything, but which is often too indefinite to admit of any such definition. The patient will say "I cannot tell what it is like; but oh! it is fearful."

In addition to the purely mental symptoms, headache or dizziness is almost always present, or we may have both together.

As to the nature of this disease, the main cause of the whole trouble is, in the writer's opinion, a condition of depression; and therefore the main indication for treatment is to stimulate and tone up the weakened nerves so that the proper balance between the will, judgment, and imagination is restored.

In this disease the imagination seems to run riot and to be entirely beyond the control of the will. In ordi-

nary conditions of health this might be of little moment, either one way or the other. In this affection, however, the morbid fancies are always the reverse of agreeable, and from an annoyance they soon become a perfect torment, from which there seems no escape. This condition of things, if not relieved, is almost sure to run into insanity. It is, therefore, all the more worthy of careful attention and treatment on the part of the physician, since he who cures such a case may feel quite confident of having saved his patient from this terrible malady.

The treatment of this affection comprises many things beside electricity, and the writer does not mean to imply that it is the only means to be employed.

It may be looked upon as the principal agent in the treatment, however, on account of its wonderful tonic action, which meets the main indication in the disease.

Just here attention may be called to a principle of electric treatment of great importance in the treatment of this affection. It is what may be called the dual action of electricity.

Every current that passes through any portion of the human body has two actions: first, the local action upon the nerves or muscles lying immediately beneath the point where it enters; and secondly, a general or systemic action upon the system at large.

This secondary or systemic action is of great importance in the treatment of this disease.

It depends principally upon the separation of the two electrodes. Thus, if two electrodes were placed close together upon the abdomen, there would be very little diffusion of the current, which would pass directly from one pole to the other beneath the skin, and consequently the systemic action would be comparatively slight. If now one of the electrodes be moved to the back so that the current has the whole thickness of the body to traverse, there will be a much wider diffusion of the current in every direction and the systemic action will be much greater.

We have three forms of electricity at our disposal:

the galvanic, the faradic, and the static; and for our purpose we may almost leave the static out of account. The only way in which this form is of value here is that of general faradization. In order to do this properly, the patient must be entirely undressed, which makes the treatment extremely inconvenient for office application, and moreover, in the writer's opinion, the benefits of this form may be obtained just as well, and very much more agreeably, by means of the static form.

We have left the two remaining forms, galvanic and static, of which it may be said that they are both of undoubted value in the treatment of this affection.

When a patient presents himself suffering from mental neurasthenia, and who has never taken electricity, so that there are no indications to act as a guide, I always begin with the static charge, giving it for five minutes daily.

It is often very desirable to treat these patients every day. First, because they need the daily stimulus of the electricity, and also because in this depressed, nervous condition the frequent advice and counsel of the physician is just what they require. Patients whose nerves are greatly depressed are very apt to be in a condition of more or less profound despair, and they look upon their physician as their only hope.

They are so beset with all kinds of unpleasant ideas, morbid fears and apprehensions, that it is often of the greatest value to them to be able every day to carry it all to their medical adviser and to throw it, so to speak, on his shoulders.

This form of treatment may be kept up for a month and then should be intermitted for two weeks. During this time remedies may be given, or in certain cases they may go without treatment of any kind. At the end of the period of two weeks the same treatment may be resumed and kept up for a month more, in case the patient makes satisfactory improvement. By this time many mild cases will be cured, and the treatment may, therefore, be stopped altogether. If the case seems to be

improving, but at a very slow rate, static sparks may be given along the spine, beginning with a mild wooden electrode, and if that is well borne, passing on to the severer ones.

We now come to two contra-indications for the static form. First, cases which seem to be absolutely unaffected by this agent. These cases are occasionally met with where the static form of electricity, either as a charge or as sparks, seems to have not the slightest effect on the course of the disease.

As soon as the physician becomes convinced that the patient is not affected by this form of electricity, he should immediately give it up and supply its place by galvanism.

There are certain rare cases where static electricity seems to have a very unpleasant action, causing dizziness, headache, and nausea. Such cases are extremely rare, but they do sometimes occur, and when the physician meets with one, the only thing to do is to drop the use of the static form immediately and use galvanism in its place.

Galvanism.—Although the seat of most of the symptoms is in the head in this class of cases, I think it is better as a rule not to apply galvanism directly to this member, for the reason that it is so excessively sensitive that vertigo and headache are very apt to result. If this occurs it only retards the cure and discourages the patient. Even spinal galvanism applied in the ordinary way, with one pole at the back of the neck and the other at the small of the back, will sometimes produce this same result. It is a good rule, therefore, to begin the galvanic treatment with a simple bimanual treatment—an electrode in each hand. In this way there is secured a wide diffusion of the current with very little irritation. This treatment may begin with a dose of 5 milliampères and increase gradually to 10 for the constant current. If the interrupted is used, the dose should be a little smaller. If the bimanual treatment be well borne, after

five or six applications, it should be changed for the spinal application.

If the ordinary method of spinal galvanism be found to cause too much irritation, then the following method, which I have called transverse galvanization, should be employed:

Two oblong electrodes are used, being placed on either side of the spine in the lumbar region. In successive treatments these are moved up higher and higher, until finally they rest in the hollows formed between the shoulder-blades. If they do not apply well here, they may be kept just below these bones, where the rounded form of the body gives good, firm contact.

I have found this to be one of the most useful forms in which to apply galvanism in this affection, and therefore use it more than any other.

Of the three ways in which galvanism may be applied —the constant current, the interrupted current, and voltaic alternation—the interrupted current is probably the most valuable in this connection.

Voltaic alternation gives too powerful a shock, and is therefore too much of an irritant to be used.

Whatever form of application is used, it is well to begin with the constant or least irritating form, and, after a short time, to pass on to the use of the interrupted current. In order to use this current properly, it is absolutely necessary to have connected with the battery an apparatus for automatically making and breaking the current, as it is impossible to perform this by means of the hands alone.

The length of time required to cure these cases is extremely variable, so much so that it is almost impossible to lay down a general rule.

As already stated, mild cases of acute neurasthenia of the mental type are frequently cured in the period of ten weeks—that is, a month of treatment, then two weeks' intermission, followed by a second month of treatment.

On the other hand, when the disease is met with in persons of middle age, who have suffered with it all

through their adult life, two or three years may be required to produce a complete cure.

It is on this account that great circumspection must be used in answering the question which patients always ask at the outset of the treatment: "Doctor, how long will it take?" Instead of fixing a definite date, it is much better to say a few words as to the great uncertainty of this affection, and tell them, what is no more than the truth, that the length of time required for a cure will depend upon the rate of progress made.

Recent cases that can be traced to some single cause which is no longer acting, generally make rapid improvement under the treatment, and a speedy recovery may be safely promised.

Old cases, however, that have nothing to build on, and where a condition of nervous bankruptcy exists, do not respond nearly as well to the electric stimulus, and therefore require much longer to cure.

ASSOCIATION OF TABES AND PARALYSIS AGITANS.

The "Revue générale de médecine, de chirurgie et d'obstétrique," August 24, 1892, quoting from a German periodical, refers to Placzek's report of a case in which tabes and paralysis agitans were associated, in a man of fifty-two, with the following history: Soft chancre at the age of twenty; lightning pains in the calves for the first time at forty-two; impotence, dyplopia, softening of the gums to such an extent that teeth could readily be removed with the fingers; at forty-five, characteristic tremor of paralysis agitans, rhythmic oscillations beginning in the feet and rising to the arms, together with the characteristic expression and gait of Parkinson's disease. The symptoms of tabes were as follows: Argyll Robertson pupil, Romberg's symptom, impotence, lightning pains, shedding of the teeth, incontinence of urine, abolition of knee-jerk (no ataxia), slight loss of memory, and great excitability. Heimann (Berlin, 1888) has also published a case of paralysis agitans with tabetic symptoms. L. F. B.

Critical Digest.

ANATOMICAL, PHYSIOLOGICAL AND PATHOLOGICAL NOTES.

By H. H. DONALDSON, Ph.D.

—***Contribution to the Surface Anatomy of the Cerebral Hemispheres.***—By D. J. Cunningham. With a chapter upon Cranio-Cerebral Topography, by Victor Horsley. With eight plates. Royal Irish Academy: Dublin, July, 1892.

At the present time the surface anatomy of the brain serves as the foundation for a number of speculations concerning character and the relation of mental to anatomical peculiarities. For the surgeon the relations between the encephalon and the enclosing cranium cannot be too carefully determined. This sumptuous "Cunningham Memoire," No. VII., discusses the same material from two points of view. Some fifty pages are occupied by Horsley with cranio-cerebral topography, while over three hundred are devoted by Cunningham to the title theme. This latter author examines the beginnings and development of the cerebral fissures and their relations to one another and to the skull during growth. For this he has studied a large number of fœtal human brains as well as those of children and adults and a good series from the primates.

The manner in which the fissures develop in the different orders of vertebrates and the failure of the human brain to pass through stages typical of lower orders, in the course of its own development, shows that fissuration has but a limited phylogenetic value, so that while it is possible, to a very slight degree, for the human brain to exhibit ape-like features, it is not possible for it to exhibit such as are carnivorous, because it does not pass through such a stage. This fact justifies the author in setting the limitations which he does to his research, and not going beyond the primates for comparison. The individual fissures could be studied equally well on brains removed from the skull or *in situ*. When, however, it was to be determined whether, as a result of growth, a given fissure had shifted its position in relation to other

fissures or to the skull, it was of the greatest importance that the brain should be fixed undistorted in its normal position. The method by which this was accomplished in this instance, the preparation of a large number of specimens by the removal of the skull bones except along the line of the sutures, and the large number of beautiful casts taken from these preparations, and represented in the plates, are in themselves sufficient to give unusual value to the paper. Cunningham chooses the most important features on the brain surface for his present discussion, thus taking up the complete fissures of the human cerebrum, the Sylvian fissures and the island of Reil, the fissure of Rolando, the intraparietal sulcus and the præcentral and other sulci on the external surface of the frontal lobe, in the order given. In estimating the value of surface peculiarities, it is assumed that ape-like characters are indicative of low development, that characters found in the developing brain represent a lesser perfection than is found in the adult, and that there is a normal and general arrangement of these fissures which may be designated as the dominant type, deviations from which are important in proportion to their degree and the rarity of their occurrence. Not only is note taken of the changes due to age, but comparison is made between the two halves of the same brain, between the sexes, and with negro brains and those from the apes. All measurements are made comparable by being given in the form of percentages—the standard being taken from the brain itself. The results thus obtained are comparable with one another in a way that would not be possible if absolute figures were alone given. Each of the five chapters is furnished with a summary of the results, and from these we shall select a few by way of illustration :

From about the end of the second to the end of the fourth month of fœtal life the human cerebrum exhibits transitory fissures on both the mesal and lateral aspects. These are complete fissures in the sense that they cause a distinct fold of the mantle projecting into the ventricle. They appear to be caused by a disproportion in the growth of the mantle and the enclosing bones. Cunningham suggests that while the skull bones show a quadrupedal pause, the hemispheres are developing the occipital lobe, which is most emphasized in man, and as a result of this increased activity in the growth of the mantle these fissures occur. In support of this idea is

the fact that they occur only rarely, if at all, in orders below the primates. How far they occur in monkeys is not known. Their disappearance is a curious process. Cunningham is of the opinion, based on measurements, that these fissures do not disappear by a simple process of unfolding, because the area of the mantle formed by the fissures thus smoothed out would be greater than it is in fact found to be. He therefore infers that a certain amount of absorption takes place at the bottoms of these fissures while they are in process of being smoothed away. (Retrograde processes occur in the development of the nervous system, but I do not know that we have in other instances such a process interpolated between two periods of growth. The explanation, therefore, deserves close examination.)

The period at which these fissures disappear coincides with the appearance of the fornix and callosum. On the mesal aspect the fissures have in the main a radial arrangement, and this persists to some extent when the callosum fails to develop. In this instance, then, it is possible that the development of the callosum is the cause of the disappearance of these transitory fissures.

Though in general the term transitory applies properly to them, yet in some cases they persist, and thus form the complete fissures of the cerebrum, *i. e.*, such fissures as are accompanied by a protrusion of the mantle into the ventricles. The complete fissures in the human brain are the ventral part of the arcuate fissure, the cephalic part of the calcarine, in many cases the parieto-occipital, and in some cases the mid-collateral. The Sylvian fissure is not a complete fissure.

Cunningham homologizes the transitory "external perpendicular fissure" with the ape-fissure of the monkeys. This is more satisfactory than Eberstaller's homology of the "anterior occipital fissure" with the same. It follows from Cunningham's view that the ape-fissure is not represented in the adult human brain. To the variations in the fissures limiting the cuneus a good deal of space is given, and the whole discussion forms an admirable example of the way such a feature should be studied. Having recognized the constituent elements —the subdivisions of fissures and the gyri more or less sunken in them—all the cases found can be classified according to the degree in which the fissures are interrupted by these same gyri.

It appears that the dorsal end of the parieto-occipital fissure occupies a tolerably constant position, both on the surface of the cerebrum and in relation to the cranial sutures. In the fœtus and child it is slightly further in front of the lambda than in the adult.

In next discussing the Sylvian fissure, the peculiarities of its formation are considered. The limbs of this fissure are gaps between the several opercula, which here cover over the insula. These opercula are enumerated as the fronto-parietal, the frontal, the orbital, and the temporal. The peculiarity of Cunningham's description lies in the emphasis put on this frontal operculum, which may or may not be developed. In the former case there are formed both an anterior ascending and an anterior horizontal branch. In the latter case there is only a single branch; but, strictly speaking, this represents not one, but both the branches mentioned. In the case of the insula, the correspondence of the furrows on it with those of the mantle is pointed out, and its change of position with relation to cranial wall is measured. It lies more under the parietal and less under the frontal bone in the adult than it does in the fœtus.

In studying the fissure of Rolando, the stability of its position on the surface is brought out. Its position is the same in both sexes and both hemispheres. The angle of this fissure is determined as 71.7°, and here again there is no sexual difference, but in brachycephalic heads the angle becomes larger. If there is any sexual difference in the length of this fissure it is in the females, in whom it is the longer.

It appears that the interparietal sulcus in the apes and in man does not hold the same relations to the fissure of Rolando. In man this last appears earlier than the interparietal and is deeper than it. In the apes the reverse is the case. This would suggest that its value in the two cases was not the same. It seems probable, further, that in the type of the interparietal sulcus there may exist differences of both sexual and racial value.

Of the two extra furrows which are recognized in the frontal lobe—namely, the one dividing the superior and that dividing the middle frontal gyrus—it is only the latter which has established itself on the brain of the chimpanzee. The negro brains which he examined also resembled that of the chimpanzee in this point.

Owing to the absence of the frontal and orbital oper-

cula in the apes, the Sylvian fissure does not in them possess anterior limbs—the so-called anterior limb corresponding to the anterior free border of the fronto-parietal operculum.

Victor Horsley's discussion of the cranio-cerebral topography takes up many points—especially some neglected ones—and treats them from the standpoint of variations due to cephalic index, age, race, sex, and pressure distortion.

Whatever difference of interpretation may be possible for certain of the results obtained, the prime fact remains that the methods of observation and measurement employed throughout this investigation give these results a permanent value, and both future investigators and present surgeons in this field must consider them.

PSYCHOLOGICAL NOTES.

By WILLIAM O. KROHN, Ph.D.

The University of Chicago has already expended one thousand dollars upon apparatus for its laboratory in experimental psychology.

The Regents of the University of California are about to report favorably upon an appropriation to enable Prof. Howison to splendidly equip a laboratory in experimental psychology at that institution. At present Leland Stanford University is the only institution west of the Rocky Mountains that enjoys facilities in this line, there being but one other laboratory besides this west of the Mississippi, that of the University of Nebraska, at Lincoln.

—***Dermal Smell and Taste Sensations in Paralytics.***—(Untersuchungen über das Verhalten der Hautsensibilität, sowie des Geruchs- und Geschmacksinnes bei Paralytikern. Von S. Kornfeld und G. Bikeles. Jahrbücher für Psychiatrie. Elfter Band, III. Heft.)

In the literature of psychiatry it is generally stated that, as a rule, paralytics experience a general anæsthesia. So state Savage, Mendel, Kraepelin, and others. Kornfeld and Bikeles have made numerous researches, testing paralytics with reference to three things: first, the sensibility of the skin and its ability to localize; second, the sense of smell; third, the sense of taste.

In the first place, it is interesting to note that different results are obtained from the same individual on different days. All of the subjects, however, give positive evidence of the existence of an upper and a lower limit for the perception of two instantaneous touch impressions, just as in the normal. By the upper limit is meant that distance of the two points of the dividers in which, for the first time, both touch impressions are instantly perceived as *two*. By the under limit is meant that point at which the two just cease to be perceived as two distinct touch impressions. Different localities on the skin manifest different degrees of sensibility, as in the normal. The skin of a paralytic can also be progressively educated to finer sensibility and more accurate localization.

With reference to the sense of smell, it was noticed that certain paralytics could not recognize the odor of onions, caraway-seed, or vinegar. One patient mistook the odor of an onion for that of a lemon; and the same patient could not recognize the odor of garlic; while another called the odor of vinegar that of ordinary whisky.

The sensations of taste in these paralytics were experimented upon chiefly by means of standard solutions. The following were some of the results: At the point and sides of the tongue the patients appear in general to have no correct sense of taste. For example: the patient would designate a 4 per cent. solution of salt as sour. "Salty" and "sour" could not be distinguished from each other, for the salt solution above referred to was frequently designated as sour, and a citric-acid solution as salty. Even quinine bisulphate was regarded as sweet, sour, or salty interchangeably. At the root of the tongue the following results were obtained: A 4 per cent. solution of sugar was perceived as tasteless, while an 8 per cent. salt solution was designated sour. In experiments with this latter solution, if the patient were permitted to roll his tongue and draw it back, he would then sometimes designate the taste as slightly salty; others would say that the 2 per cent. solution of citric acid tasted the same as the 8 per cent. solution of salt; still another characterized as bitter this same citric-acid solution.

When applied to the gums, sour and salty substances were most frequently regarded as bitter; while an 8 per cent. solution of quinine, on the other hand, was not

perceived as bitter, but rather as an acid and astringent. When permitted to swallow this strong solution, they would experience a slightly bitter taste.

These are some of the most important and remarkable results from this interesting series of experiments. The tests made by these two men woefully lack system of arrangement and uniformity of conditions.

—***Influence of Various Nerve-Excitants upon the Mental Processes.***—(Münsterberg's Beiträge z. exp. Psychologie. Heft IV., pp. 121–146.)

Few things can be of greater interest to psychology than the modification of the psychical functions under the influence of various drugs, narcotics, and stimulants. The earlier researches of Exner and others had in mind only the modification of the reaction time, while Dietl and Vindtschau studied the effect of morphine, coffee, and champagne upon the mental processes. Kraepelin's studies, also in this direction, were pursued with his characteristic vigor, but not in the most systematic way. Perhaps Münsterberg's experiments, when completed, will have proved much more thoroughgoing in method and more fruitful in results than any previous investigations.

In those experiments to which the present paper relates, he used as excitants—tea, coffee, alcohol in four forms (beer, cognac, Rheinwein, and Bordeaux); also the narcotics, opium and sodium bromide; and the drugs, quinine, antipyrine, and phenacetine.

The simple psychical processes upon which these tests were made were four in number: (1.) Holding in auditory memory a series of ten figures or consonants, in the utterance of which the experimenter occupied fifteen seconds, and which were written down by the subjects of the experiment at the close of the utterance of each series. (2.) Simple addition of ten digits differently arranged in each series. (3.) The naming of colors, ten bands of color being displayed at the dropping of a sliding shutter, which fell just as the chronoscope was started. (4.) Counting of the letters on a printed page. The experiments were made as nearly as possible under the same conditions, between the hours of eleven and one each day.

Taking up the first experiment, the memory test, we find that Münsterberg's experiments were made at one-quarter of an hour, one hour, and two hours respectively,

after partaking of the stimulant. The results were remarkably constant with the various individuals serving as subjects. In every case, after partaking of beer, the number of mistakes in recollection were increased as much as 12 per cent. Indeed, in the general results we find that the memory capacity the first hour was more or less modified and inhibited, and after the second hour the reaction set in; and this capacity of memory was made to do better work than in normal condition. Results are different in the case of beer, cognac, Rheinwein, and Bordeaux respectively—the first being more inhibitory, and the last more beneficial. Under the influence of tea the errors were much fewer in number than when the brain acted under the normal condition. The same was true of coffee, but in less degree, showing that tea and coffee were what might be called beneficial excitants. In some memory tests, antipyrine exerted a decided inhibitory effect, increasing the number of errors in every case over that of the normal; while with quinine we have no uniform results, it acting sometimes beneficially and at others inhibiting the memory. As a rule, phenacetine reduced the number of errors perceptibly.

In the simple mental process of addition, we find that the average normal time occupied for the four individuals was 7.16 seconds, 9.48 seconds, 9.17 seconds and 8.72 seconds respectively at the beginning of the experiment—practice reducing this, however, to 6.02, 7.56, 5.26, 6.72 seconds respectively. The results were various in different individuals. In some, under the influence of beer, the reaction time was increased as much as 1.10 seconds; while in another, under the same condition, it was reduced by as much as .66 of a second. Cognac lowered the reaction time by as much as 1.87 seconds; while in the case of another individual the same cognac increased the reaction time of the individual .34 of a second.

In the counting of letters the effects from beer were always inhibitory—*e.g.*, A, under normal conditions, could count as many as 406 letters in two minutes; under the influence of beer his record was reduced to 332.

In the naming of colors, alcoholic stimulants were in nearly every case inhibitory. With reference to tea and coffee, with one exception, the reaction time for addition was greatly shortened. The same was the case in the naming of colors. Under the influence of tea, the individual, who was able to count but 390 letters in two minutes, increased that number to 461 after the first hour,

and to 490 at the expiration of the second hour after partaking.

The inhibitory effects of antipyrine were quite noticeable in all three of the processes—addition, naming of colors, and counting of letters. These uniformly harmful results from the use of this drug ought to furnish a hint to the average practitioner. No uniform results were obtained from the experiment with quinine; while, in nearly every case, phenacetine quickened the mental processes.

In counting letters, opium and sodium bromide were both inhibitory, as they were also in the recognition and the naming of colors. In the simple process of addition, however, sodium bromide quickened the psychical activities, while opium impeded them; and in the memory tests the contrary was the case—opium assisting, and sodium bromide inhibiting.

From Münsterberg's experiments the following general inductions might be made: (1.) Under the influence of alcohol, in various forms, the sensory reaction time was lengthened, while the motor reaction time was shortened. (2.) Under the influence of tea and coffee the sensory reaction time was shortened and the motor lengthened. (3.) Opium was a helpful stimulant in but one of the simple mental processes—namely, auditory memory—and sodium bromide acted as an accelerative only in the case of simple addition. (4.) The effects of antipyrine were uniformly harmful, those of quinine doubtful, while, as a rule, phenacetine was helpful in assisting the mental processes to quicker activity.

It is rather exasperating that up to the present Münsterberg has carried his experiments no further. He leaves us, however, a promise that future experiments will be made.

Your reviewer can vouch for the uniform conditions under which the experiments were made, and their accuracy in general, for he himself served as a subject in a number of these experiments during his sojourn in Freiburg at the close of 1891. One thing was observed, which was not mentioned in Münsterberg's paper, namely, the inhibitory effects of alcohol were much more noticeable in the case of the American and English subjects than in that of the native Germans.

ACROMEGALY.

By JOSEPH COLLINS, M.D.,

New York.

[*Continued from December number.*]

Observation LV.—(Paget.) Male, aged forty-two; disease had been progressing for ten years. There was extreme lengthening of the face, with overgrowth of the facial bones, particularly of the inferior maxillary. The hands and feet were enormously and characteristically enlarged. The patient had lost six inches in height from the advancing deformity of the spine. Thyroid apparently enlarged, vision defective, molluscous growths on the trunk, and osteophytes in the knee-joint. Voice thick and guttural. Loss of muscular strength.

Observation LVI.—(Bury.) The author presented to the London Pathological Society the brain and thyroid of the patient who was the subject of the following sketch: Female, twenty-three years of age, who had been troubled with loss of strength and headache for upward of three years. Eighteen months before death her sight began to fail. She presented great prominence of the orbital arches, low retreating forehead, enlargement of the nose, lips, tongue and body of lower jaw. Voice low-pitched and monotonous, speech low-pitched and deliberate. Right lobe of thyroid gland unduly prominent. Hands, feet and digits enlarged, increased principally in their breath and thickness. Kyphosis and slight scoliosis of the upper dorsal and lower lumbar vertebra. Abdomen enlarged and its walls thickened; limb muscles soft and flabby, but no paralysis. Reflexes normal. Taste, smell and hearing unaffected. Left eye nearly blind; temporal hemianopsia of the right eye. Sugar in the urine, and death from coma.

On autopsy, there was found a pulpy tumor at the base of the brain, excavating the sella turcica and extending from the optic chiasma, which, with the optic tracts, were compressed to the cerebellum. Microscopically, the tumor was apparently a glioma. Each lobe of the thyroid was found enlarged and contained a cyst. Pendant masses were found attached to the pericardium, similar to a persistent thymus. Heart and liver normal. Uterus small, infantile. Small cysts in ovaries. With the exception of severe headache, starting in the left

temple, there had been no sensory disturbances in this case.

OBSERVATION LVII.—(Boltz.) Male, forty-one years of age, of good family history, has one boy seven years of age who has always been in good health. While the patient was at school he was troubled a great deal with attacks of cardiac palpitation, and later had an attack of pneumonia. In later years dyspepsia and hemorrhoids have been troublesome. He cannot exactly state when the present illness began. The first thing that he noticed was bodily weakness and then trouble in reading, and shortly after the defect of vision prevented him from working. He presented the ordinary typical face and countenance of acromegaly. Teeth good and held firmly in their sockets. Tongue enormous, the filliform papillæ greatly enlarged, giving rise to the so-called hairy tongue. Hair strong and coarse, beard scanty. Clavicles elongated, principally from growth at the acromial ends; muscles of shoulder girdle atrophied. Moderate kyphosis of the cervical vertebra. Tonsils normal; epiglottis enlarged and thickened; thyroid somewhat smaller, probably atrophic on the right side. Hands and finger present the characteristic enlargement. Patella and both epiphyses of the tibia enlarged. Feet enormously enlarged. Visceral organs normal, no post-sternal dullness; urine normal; muscular strength lessened; sensation and reflexes normal; intelligence not disturbed, but answers very slowly. Voice deep, and sounds if it were hindered in the throat. Sexual desire and ability has been absent for seven years, although the genital organs appear to be normal. Taste, smell, and hearing normal. Denies venereal infection. Bitemporal hemianopsia; rotatory nystagmus when he fixes sharply. To explain the bitemporal hemianopsia, we must have a lesion of the inner crossed fibres of the optic nerve in the chiasm, and an intact condition of the outer uncrossed. The writer, therefore, believes that this case is probably due to an increasing or proliferating tumor of the hypophysis cerebri which has caused an atrophy of the inner crossed fibres of chiasma, the outer uncrossed fibres remaining as yet undisturbed. It might be stated in connection with this case that Schultze's case somewhat resembling this gave a left-sided hemianopsia.

OBSERVATION LVIII.—(Bradford.) The patient was a woman forty-three years of age, who had noticed enlargement of the hands and feet for the past ten years, and

which came on without any apparent cause. Four years later she developed a kyphosis of the cervico-dorsal vertebra. The skin of the hands and feet was greatly thickened, both clavicles lengthed and enlarged at the acromial ends, and the thoracic cage enlarged mainly from increase in size of the ribs. The under lip was markedly enlarged, and face showed the type of acromegaly. Reflexes normal, great muscular weakness, and mentally very dull.

OBSERVATION LIX.—(Berkley.) A sixty-year-old negro woman, who presented herself for treatment on account of mental disturbance. No neuropathic inheritancy. The excessive growth first began to be noticeable in 1889 and from October, 1890, to March, 1891, the period in which she was under the care of the reporter, no particular change had taken place except some trophic disturbances in the arms and hands. The internal organs apparently normal and the sensory and special sense organs are not appreciably affected. Patient troubled greatly with excessive perspiration which is exceedingly offensive. Patellar reflex good; absence of Romberg's symptom. Patient has a very wicked temper and is very weak mentally. Head, nose, lips and tongue, but not the ears, appear enormously enlarged. Hands present the characteristic enlargement; arms and forearms unaffected. In the lower extremities the patellæ and feet seem to be the only parts hypertrophied. Very little information could be obtained regarding sensation, as the patient was practically devoid of sense. The trophic disturbance of the forearms were of the nature of ulcers.

OBSERVATION LX.—(Hare.) Female, aged twenty-five, of good family history. Three years ago menstruation was irregular for a time and afterward absent for periods varying from three to six months. Then vision began to fail, first in the outer half of left eye and gradually proceeded across the eye till the vision was entirely lost; latterly the vision in right has markedly failed. She presented slight distention of the abdomen, general increase in size of all the members, posterior curvature of the vertebra, extending from the twelfth dorsal to the seventh cervical vertebra. On the anterior surface of the thorax at the third interspace, half way between the nipple and the sternum, there is a considerable bulging due to increase in the length of the third and fourth ribs; no exostosis. On the left side the floating ribs are protruding. Nose enlarged and face massive. Considerable

increase of the bony and connective tissue of the entire body. She gives the appearance of a large woman unequally developed. In three years she has gained sixty-five pounds. Distinct enlargement of the thyroid gland, but no associative circulatory disturbance. Suffers from a severe neuralgic pain in the right temporal and supra-orbital region, and occasionally sharp pains in the extremities. Variable pre-tibial œdema. Appetite good, urine rather scanty; loss of hearing on the right side, and chronic otitis media purulenta of right side. While under observation the patient had a hæmoptysis lasting for about a week, and this was followed by an epistaxis. Electrical examination shows a normal qualitative response in all parts tested, but somewhat altered quantitative reaction chiefly in the direction of a delay, especially in the thighs. Examination of blood showed 4,700,000 red corpuscles to the cubic millimetre and 11,000 leucocytes. Hæmaglobin percentage normal. Red corpuscles crenated and irregular in shape, many of them seeming to be poorly developed. Vision, R. $\frac{20}{100}$, L. O. Total atrophy of optic nerve of left side. Optic nerve of right eye is pale with shallow cupping, but not including entire disc. R. pupil normal in reaction. Left does not act alone, but only in harmony with right. Slight central color scotoma, most marked for green.

OBSERVATION LXI.—(Cohen.) Male, American, twenty-eight years of age, 6 feet $2\frac{1}{2}$ inches in height, weighing 238 pounds. At the age of sixteen he thinks he was as tall as he is now and weighed 180 pounds. He has never been troubled with spontaneous or intense headache, although headache may be brought on by study, occasionally he has confusion of ideas; until four years ago worked as a blacksmith and wielded a thirty-pound hammer. Appetite increased; great drowsiness; urine normal. Thickness and dumpiness of fingers characteristic; hands spade-like; skin thick and tough; nails broad and short, but not striated. Has comparatively little strength. Feet flat, enlarged, broad and clumsy. In two years' time the size of his hat-band has increased from $6\frac{3}{4}$ to $7\frac{1}{2}$ inches. Cervico-dorsal kyphosis with tendency to forward thrust of the head; paunching of the abdomen. Varicose veins of the legs very prominent. Superciliary ridges prominent, frontal sinuses much enlarged. Malar bones enlarged and projecting laterally. Face presents typical lengthened ellipse of acromegaly. Ears enlarged and stand out at right angles from the

head. Lips greatly thickened, lower lip overhanging nearly to the chin; tongue broad, thick, and furrowed. Chin much enlarged vertically, scapulæ enormous; sternal ends of clavicles stand out prominently like knobs. Sternum unusally long and xiphoid process apparently ossified. Thyroid cartilage enlarged. Thyroid gland not demonstrable. Some post-sternal dullness. Olecranon process apparently small and fossa of same name apparently much deepened, so that hyperextension of arm can be easily produced. Opthalmoscopic examination negative.

OBSERVATION LXII.—(Harris.) Female, fifty-three years of age, of good family history; her own children healthy and intelligent. Until twenty years of age she was in perfect health, when she suffered from an intolerable neuralgia, which sometimes attacked the face and head and sometimes the extremities. As the time went on the interval between the attacks became less, until the pain was continuous. She suffered in this way for thirteen years. The pains then began to disappear, and simultaneously with the improvement she noticed changes in the face and extremities. This change was a slow increase in size of bones and cartilage of the bones of the face, neck, hands, and feet, and increase and thickening of the skin over these parts. Her mind gradually became enfeebled, and she was generally dull, apathetic, and easily fatigued, and passed the greater part of her time in bed. For six or eight years, it was said, she had a "goitre" on the right side of the neck, and for about the same length of time she had been unable to see objects on her left side. Chloroform-like odor from the patient; no post-sternal dullness; voice coarse; speech slow, thick, and often hesitating. Prominent frontal eminences; nose drawn strongly to right and enormously increased; mouth large; lips thickened; skin dirty yellowish color, and seemed slightly thickened; no obvious enlargement of malar or superior maxillary bones; great length and hypertrophy of inferior maxillary bone, and alveoli project far in front of inferior maxilla; tongue filled entire cavity of mouth; teeth lost; thyroid on right side enlarged, on left side could not be felt; hands and feet characteristic enlargement; menstruation normal; anterior curvature of spine in upper dorsal region. Measurements made after death given in detail.

OBSERVATION LXIII.—(Holsti.) Male, who, although his parents were healthy, inherited a distinct psychical

taint, and one of his brothers had some mental trouble. As a child he was sickly and weak, and, among other things, had an attack of chorea. When fifteen years old he began to grow very rapidly, and somewhat later had an attack of transient œdema of the fingers. When thirty-nine years of age he suffered an attack of typhoid fever, after which he never completely recovered his former health. Had acute pains in arms and legs very frequently. A year later he noticed that his hands and feet were growing larger, the lower jaw and chin more prominent, and his hat too small. Five years later, shortness of breath, great muscular weakness, atrophy of the muscles, especially the glutei, and could walk only with a stick; kyphosis of upper part of spine and chin brought forward toward sternum; face the shape of elongated oval, eyelids œdematous, skin light yellow color, insomnia, mind clear, hearing normal, rumbling and swashing sounds in ears, hyperidrosis, absence of pain; thyroid not to be felt, acromial ends of clavicles enlarged, cardiac hypertrophy, mitral insufficiency and obstruction. Excepting the atrophy of the thenar and hypothenar muscles, the hands and fingers are characteristic of acromegaly; legs below knee large, and feet enormously enlarged. Died of erysipelas after frost-bite.

Autopsy.—Cranium greatly thickened; brain large, 1,870 grms., with pons, cerebellum, and medulla, which weighed 240 grms.; cranial nerves appear very broad; hypophysis cerebri greatly enlarged, measuring anteroposteriorly 25 mm., side to side 30 mm., pulpy consistency. In place formerly occupied by thymus, a large, united, gray red mass, looked like whitish fat with innumerable small round bodies in it; thyroid enlarged, consistency hard; heart, liver, and spleen diseased; periosteum thickened, more adherent, especially at epiphysis; around the joints especially, surface of bone showed elevations and depressions; marked difference between epiphyses and diaphyses, former broadened and thickened, the latter appear narrow; microscopically, condensing osteitis at periphery and marked rarefying osteitis in cancelous structure; Haversian canals and lacunæ very markedly enlarged; hyperplasia of the interstitial tissue of thyroid and general degeneration of the parenchymatous portion; the body occupying location of thymus showed fat ground substance, uncommonly rich development of blood-vessels, and some normal thymus tissue.

OBSERVATION LXIV.—(Dulles.) Male, Syrian, twenty-seven years old, of good family and personal history. Falsely charged with misdemeanor while visiting his native country and placed in prison. After liberation he was under great distrust and mental anxiety until he left the country. While in prison, hands and feet began to enlarge; had profuse sweats, great drowsiness after meals, increased appetite; has broad leonine countenance, wide malar eminences, large mouth, broad lower jaw, large chin, thick lips, lateral projections of rami of jaws. Hands and feet have characteristic enlargement. The feet have a large fleshy pad along outside and under os calcis. Internal organs and urine normal. Eyes compound myopic astigmatism, absence of hemiopic pupillary reaction; typical left lateral hemianopsia with great contraction of preserved field of vision. No improvement while under treatment.

OBSERVATION LXV.—(Fratrich.) Male patient, thirty-nine years of age. His father had epilepsy at sixty, and an uncle was likewise psychopathic. The father was short in stature and had large hands, like the patient. One brother died of meningitis and one of intestinal trouble. Patient had attack of some sickness when he was six years old, in which he was unconscious for three weeks. Until eighteen years old he was quite healthy, when the symptoms that still persist first showed themselves. He first had severe neuralgia in the forehead and pain and formication in hands and feet; great hunger, but no thirst; marked enlargement of fingers, toes, clavicles, and lower jaw; no enlargement of thyroid gland; lately general weakness and pains, beginning at the hips and going down to the tibia; right side of face more developed than left; eye normal, teeth intact, hearing normal, ears enlarged; speech slow and dragging; larynx increased and vocal cords thickened; muscles of upper extremity atrophic; condyles of radius and ulna greatly developed; hands and feet markedly enlarged; pelvis and genitals normal; sexual ability diminished; heart hypertrophied. Measurements given in detail.

OBSERVATION LXVI.—(Redmond.) Female, aged nineteen; admitted complaining of great weakness and swelling of hands and feet, and in wrists, knees, and ankles when she moves, and pain at night in back, right shoulder and right side. Had pneumonia three years previously, and after this remained weak, languid, constipated, and had irregular scanty menstruation. Present illness began

seven months before entrance to hospital, with swelling of hands and feet, somewhat sore to the touch. She went to bed, and swelling disappeared, but hands remained enlarged. Later the knees became swollen, stiff, and painful. The present enlargement of the hands reached its extent in a few weeks. She is anæmic; fingers greatly enlarged, ends bulbous, nails slightly convex; marked increase in carpal ends of radius and ulna; back of hands considerably swollen, does not pit on pressure; knees greatly enlarged; considerable effusion into the joints; some enlargement of the heads of the tibia and fibula; patella freely movable; legs uniformly enlarged; ankles widened; effusion in ankle joints; feet wider than normal; toes thickened and bulbous, and some œdema on the back of foot; thyroid gland not to be felt; urine normal; nausea; headache; elevation of temperature; diarrhœa; melæna; inanition, etc.

[I can see no reason for calling this case one of acromegaly from the description given by the author in the original article, and it is put under this title under protest.—J. C.]

OBSERVATION LXVII. (Packard.) Male, aged forty-five; of good family and personal history. Has always had large hands and feet, and at fifteen had reached his mature growth. When thirty-seven years old he had pains all through his body, supposed to be rheumatic attack, which was followed by a very exhaustive diarrhœa. On account of the weakness and occasional vague pains, he has been unable to work since that time. He has had three attacks of somnolence, the first lasting for three weeks, the other two lasting for a long time. His brain power had failed for several years, and he is apathetic and irritable; speech slow and deliberate, and slowness of mental response. Later on unconsciousness would appear, and remain for days at a time; before and after these attacks the somnolence would be very intense. Examination of the eyes at this time showed partial optic atrophy on both sides, with hemianopsia, both temporal fields being lost. When seen, seven years afterward, he gave a history of having suffered from severe generalized headache, with apparently causeless exacerbations. The spells of somnolence have disappeared; sweats a great deal, especially in warm weather; hearing, taste, and smell are all normal; sexual desire and power absent, as it has been for fifteen years; face large and heavy, and gives evidence that it has increased in size since seven years before, when he was first

under observation; the thyroid cannot be felt; no post-sternal dullness; scapulæ prominent; forward curvature of upper portion of spinal column; some lumbar lardosis and prominence of abdomen and lower portion of thorax; hands and feet markedly enlarged, but no deformity, and temperature; pain and tactile sense preserved; skin of hands soft and pliable and entirely hairless; the great toes are especially enlarged; urine albuminous. In past few years his visual field has enlarged considerably, though he still has bitemporal hemianopsia.

OBSERVATION LXVIII.—(Osborne.) Male, forty-two years old, German; has lived here for eleven years. Mother died of ascending paralysis; otherwise family history is good. Although the patient's wife is healthy, their offspring have all died of tuberculosis or croup. Patient suffered from severe attacks of epistaxis for several years when a young man; then for a period of fourteen years, although his health was not seriously impaired, he noticed continuous gradual enlargement of hands, feet, face, and body, occasional headache (often severe), vertigo, pains in bones and joints, ravenous appetite and dyspepsia, tinnitus aurium, which, with the headache, has increased to almost unbearable severity. He has had suicidal and homicidal tendencies, and always at night. He has attacks of sharp pain and a peculiar pressure feeling in the top of the head just over the region of the anterior fontanelle, which is painful on pressure, and a feeling of "rolling shot" starting from the top of his head and coursing down through his body to the feet. The headache for the past four years has ceased to be continuous, but the tinnitus aurium has continued to grow worse, as has the vertigo. With the exception of fullness of the retinal vessels, the eyes are normal. The right ear is larger than the left; the canals are increased in size; the drum is very concave, and the hammer is markedly drawn up. The right side of the whole body is more enlarged than the left. The abnormal bone and tissue growth began when the patient was about twenty years old. The hands and feet are now characteristic as described by Marie. The cranium does not seem much altered, but the face is elongated, brow low, supra-orbital ridges very prominent, and some exophthalmos; nose very much enlarged and flattened; lower jaw projecting; lower lip and tongue markedly hypertrophied; scoliosis and kyphosis of upper dorsal region; thyroid apparently normal; larynx enlarged; voice deep, heavy, and loud;

slow mentation and forgetfulness; sensation of heat and cold normal; right patella reflex absent, left very much diminished; knee-joints enlarged, and the seat of great joint pain, the finger-joints suffering also frequently; no post-sternal dullness. Since this case was reported, the upper part of the left external ear has become as hard as bone, and the right ear shows a beginning change in the same direction. The prognathism has markedly increased, and there has been considerable development of molluscum growths.

OBSERVATION LXIX.—(Denti.) Male, aged thirty-two; free from hereditary or acquired taint. The disease first made its appearance at the age of twenty-three, during convalescence from a grave attack of typhoid fever. He first noticed progressive enlargement of the hands and feet, and of the cephalic extremity, especially the face, with an increase in the height of the patient. No functional disturbance. This condition persisted for seven years, during which time the patient, a cavalry officer, was distinguished for his extraordinary robustness, uncommon muscular strength, voracious appetite, and excesses in smoking and drinking. At the end of this period the lower jaw began to increase enormously in size, likewise the hands and feet enlarged greatly, and shortly afterward the clinical picture changed. There was a breaking down of health, emaciation, loss of color, paleness of the mucous membranes, earthy pallor, great anorexia, grave and continuous lethargy, somnolency, profuse perspiration, dimness of vision first in the right eye and then in the left, then temporal hemianopsia first of the right and then of the left, and after a short period complete bitemporal hemianopsia.

The opthalmoscope showed a congestion as of neuro-retinitis, which was followed by a bleaching of the papillary disc on the right side and then on the left. The atrophy had a neuritic character.

At this period a sort of remission in the course of the disease appeared, though the disease was not arrested. The appetite improved as did the nutrition and muscular strength, and the lethargy and profuse perspiration were not so troublesome. Treatment: arseniate of iron, hypodermatic injections of strychinia, and the application of the galvanic current to the eye by means of the electric water bath.

OBSERVATION LXX.—(Sarbo.) Fireman, aged forty-three. On account of mental condition of patient no

history could be obtained. Evidences of syphilis were present. Hands and feet were enormously enlarged, as were also the ears. Malar bones thickened, face appeared broad. The fingers were characteristic in their shape and some œdema was found in the calf of the left leg. Patient died after having been for a short time in the hospital. Autopsy showed marked thickening of the skull, especially in the frontal region; evidences in the brain of peri-encephalitis chronica, hypophysis cerebri normal, heart enlarged as was likewise the spleen, scar on glans penis, evidences of phthisical processes in the lungs. The result of the examination of the bones showed that the clavicle, the occipital bone, and the bones of the hands and feet were greatly hypertrophied and that the enlargement was not alone in the bones, but in the soft parts as well.

It is to be remarked that the kyphosis so commonly attending this disease was absent in this case. Thyroid gland apparently normal. Ends of the bones showed a condensing osteitis. (A table of measurement appended to the original.)

Observation LXXI.—(Gonzalez Cepeda.) Male, aged forty-eight; office-clerk; sanguine temperament; robust constitution. Had suffered for a long time from intense cephalalgia, which was increased in intensity by the recumbent posture. This, with weakness, had for a long time incapacitated him for work. On examination the cranium did not seem to be noticeably enlarged, the sutures were somewhat prominent. The lengthening of the face and the enormous orbital eminences were quite characteristic. The cheek bones were projecting, the superciliary ridges enlarged, and the pre-orbital circle was very prominent. The eyelids were stretched and drawn, puffed and of a dark color, the nares enlarged, the alæ swollen, and the walls of the nose greatly increased in thickness. Lips thick and fleshy, especially the lower. Lower jaw very prominent, conspicuous prognathism, jaws separated, tongue massively enlarged, so that it could be hardly contained in the cavity of the mouth. Head constantly inclined forward. Hands a third broader and thicker than normal. Feet greatly enlarged. Judging from the history of the patient there was in the beginning some polyuria, and a great dimunition of the venereal appetite, which last still persisted. Urine contained a slight and somewhat variable amount of sugar. Patient died in syncope. The autopsy showed a hypertrophic condition of the pituitary

gland without any evidences of inflammation or degeneration. The increase in the size of bones was most characteristic in those of the hands and the feet; that is to say, osseous hypertrophy presented itself in the bones of the extremities and in the extremities of the bones.

OBSERVATION LXXII.—(Massalonggo.) Male, aged fifty-one; nothing hereditary in his history, and he likewise denied specific. Had always been healthy and robust, and supported without fatigue the hardships of a military life during the time of war. Without any apparent cause the symptoms of the disease began to manifest themselves in his twenty-seventh year. The symptoms then were severe pains in the left side and later in the right half of the head; he had also less frequent but more severe pain in the lumbar region and along the side of the left leg. After each attack of cephalalgia the patient would be worn out and incapable of enduring any fatigue. Two years later the patient noticed his neck becoming increased in size, and the size of his hats had to be constantly increased. At this period virile power became completely lost. It is important to mention that when the patient was about twenty-two years of age he had an attack of sickness attended with loss of consciousness and delirium which lasted for forty days, and which was called by the physicians cerebral fever. With the progress of the disease there was no cessation in the cephalalgia, lumbar pains, etc., the general debility became more marked, and the hands, feet, and head progressively enlarged. The face assumed a new outline, that of an elongated oval. Presently there appeared an extraordinary weakness of the legs, which necessitated his occupying continually a recumbent posture. Patient complained of a sense of oppression, constriction in the throat, and tachycardia. Great prominence of the superciliary ridges, frontal sinuses, the zygoma, nose, mouth, tongue, and lips. Lower jaw remarkably enlarged, and teeth of the lower jaw separated from each other for about a half centimetre. Examination of the head shows coarse gray hair, spiky osseous protuberances along the sutures, especially the lambdoid. Thyroid is hypertrophied more in the left lobe than in the right. Cervico-dorsal kyphosis. Clavicle enlarged, sternum lengthened, thorax protuberant, sides depressed, heart hypertrophied, abdomen bulky and pendant, skin pigmented in portions, and various localities are found mollusci penduli. Sensibility normal, reflexes weak, slight paleness in fundus of the right eye, field of vision normal, timbre of voice normal.

OBSERVATION LXXIII.—(Barclay and Simmers.) Male, aged forty; Scotch, and by occupation a farmer; family history excellent. The disease began when he was twenty-five years of age. He ascribes it to a fall from a horse, and shows a depression in the skull, at the upper border of the occipital bone, about two inches in diameter, the result of this injury. At first there was violent and frequent attacks of epistaxis, and for a period of four or five years he suffered greatly from headache, which became after that period gradually less and infrequent. Joint pains were occasionally troublesome. Patient stands six feet two inches in height, and weighs twenty stones. Has great strength for a single effort, but becomes easily fatigued and is readily prostrated. Hands enormously enlarged, both the bones and the soft parts participating equally, the increase in size is chiefly lateral. Nails longitudinally striated with incurved edges; they are twice as broad as they are long. Great hypothenar masses of flesh. Wrists enlarged and bones of arm and forearm somewhat hypertrophied. Feet and legs exactly analogous to that of hands and forearm, only the hypertrophy is not so great. The tendo-Achillis is enlarged and rope-like and attached to an enormous os calcis. Nose, supra-orbital ridges, lips, and tongue greatly enlarged. Face markedly prognathus. Zygoma and malar bones prominent; antrum of Highmore apparently enlarged. Cranial bones not greatly affected. Scalp thickened and easily movable. Beard scant, hair thick, coarse and abundant. Cervico-dorsal kyphosis and compensatory dorso-lumbar lordosis; no scoliosis. Sternum greatly hypertrophied; circumference of chest at nipple 49 inches. All the joints are somewhat enlarged and give a kind of crackling noise. Thyroid cannot be felt; no retro-sternal dullness; sexual appetite in abeyance; skin pigmented in parts; knee-jerks lessened; appetite enormous; great thirst, and urine is excessive, but otherwise apparently normal. There is continuous tinnitus aurium, but no headache. He has had two or three epileptiform syncopal attacks. Hearing and sight fairly good.

OBSERVATION LXXIV.—(Brown.) Male, aged forty-two; clergyman. Father died of anæmia at an advanced age; an uncle died of phthisis; mother epileptic. Patient had an attack of rheumatism at nine years of age, which left a mitral diastolic murmur. Has had right frontal headache for the past ten years, made worse by mental exercise, and for the past six months has suffered

from palpitation; profuse acid sweats, thirst and weakness. Hands and feet were noticed to be very large while he was still young, but they have greatly increased in size during the past few years, until now they are quite characteristic in shape. Pulse 110 to 130. The face shows the typical shape of Marie. Left side is somewhat larger than the right. Thorax enlarged and a considerable number of molluscum fibrosum over neck, chest and arms. Appetite increased, urine normal. Pharyngeal linings lie in folds; voice altered. Patient seemed to improve under antipyrine and arsenic.

OBSERVATION LXXV.—(Orsi.) Female, forty-five; married, no children. Mother died of pulmonary trouble; family history otherwise good. Had intermittent fever when thirteen years old and later an attack of epidemic parotitis. Menstruated at seventeen years of age, scanty and irregular for three years, and then it stopped and came on only at intervals of from five to six months. Married when twenty-two years of age. When thirty-three years old began to suffer from pain in the chest unaccompanied with cough or respiratory disturbance; the pain afterward extended to shoulder, to half of the neck and head, and the left eye. This continued for about three years, when it completely ceased for a few days and was replaced by a most intolerable vertigo. As this disappeared the pains returned, now associated with feeling of burning in face, swashing sounds in the ear (right), and weakness of memory. Three years later she was troubled with pains in the legs, and now for the first time noticed an enlargement of the face and feet. Two years later she suffered from pains in the hands and forearms, and at one time there was an eruption of pimples on the right forearm. A short time before presenting herself for treatment, after a period of violent pain in the head, she awakened one morning with marked exopthalmos of the left eye and swelling and inflammation of the conjunctiva; this abated, after lasting for fifteen days. With the exception of the absence of prognathism the face is very characteristic; chest is enlarged, curvature of the spine, no post-sternal dullness, external and internal genitals atrophied, menstruation scanty or absent, continual desire for sexual intercourse, which indulgence is not followed by gratification. The enlargement of the hands and feet is rather typical, except that the hypertrophy seems to be more in the hard than soft parts. The subjective symptoms are still persistent.

(*To be concluded in the February number.*)

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

PATHOLOGICAL.

—***Serous Cysts in the Cerebellum.***—Under this heading, in the August number of the "American Jour. Med. Sciences," Dr. Williamson gives us his reasons for thinking that serous cysts of the cerebellum are originally, in most cases, the result of tumor-growth. The reasons for this assumption are as follows:

1. The history and symptoms have been those of cerebellar tumor.

2. Intra-cranial tumors are especially liable to undergo cystic degeneration when situated in the cerebellum.

3. So-called simple serous cysts are exceedingly rare.

4. In many cases which have been looked upon as simple cysts, minute examination has revealed a very small mass of tumor-growth at some part of the wall.

5. Hence, no case can be classed as a simple cyst

unless careful examination of portions from *every* part of the cyst-wall has revealed no tumor-growth.

6. The amount of new-growth may be so minute as to measure only $\frac{3}{32}$ by $\frac{3}{16}$ of an inch in the wall of a cyst nearly the size of a pigeon's egg.

7. If the cystic degeneration can be so marked that only a patch of new-growth of the above dimensions is left, it seems not improbable that in some cases the whole of the tumor may disappear and only a cyst remain, or the remaining tumor-growth will be so small as to escape detection.

Considering the above conclusions as reliable, the author thinks, in view of the fact that removal of cerebellar tumors is almost uniformly unsuccessful, that to trephine the skull and puncture the cerebellum with a fine hypodermic needle, in hope that the lesion is one of tumor which has undergone cystic degeneration, is a justifiable procedure. In the majority of the cases the growth would be solid, but in some the lesion would be cystic; and if such were the case, drainage might be followed by good results. J. C.

CLINICAL.

—***Contribution to the Prognosis in Traumatic Neurosis.***—Dr. Morton Prince ("American Jour. Med. Sciences," July, 1892) reports three cases of traumatic neurosis—two of which have already persisted twenty-nine years, and one twenty-eight years—as instances of the extreme length of time that such disabilities may persist, and that without obvious external cause therefor. Two of the cases were examples of monoplegia and one an example of hysterical hemianæsthesia and hemiplegia. The cases were in every way typical, and serve to indicate the duration that hysterical paralysis has in some instances. J. C.

—***A Case of Athetosis Bilateralis.***—F. P. Norbury, M.D. ("Med. Fortnightly," April, 1892). The patient has been insane for about eight years. His inheritancy was insanity from mother's side and intemperance from father. The athethosis began apparently about two years after the appearance of the mental disorder.

The muscular spasm appeared first in the fingers and toes, and gradually the hands, arms, face, neck, and tongue were involved. The lower extremities were implicated very early in the progress of the disease. The

movements were, from the beginning, gliding, not quick or jerky, and are regular and continuous. They can be controlled only by placing one leg across the other, folding the arms, and compressing the chin on the breast.

Aphasia gradually developed and his vocabulary became limited to one word. Dementia increased with the athetosic movements.

The gait is straddling, the stride being slowly made, the toes touching the floor first. Walking excites the athetosic movements to such a degree that he cannot walk very far or often. Reflexes normal; sensorial conductivity somewhat inhibited; no motor paralysis, anæsthesia, or pain.

The patient had an attack of acute alcoholic delirium two years before his admittance to asylum. J. C.

—***Metal-Turners' Paralysis.***—Such is the name given by Drs. Walton and Carter to the muscular paralysis seen in two patients, whose histories are published in "American Jour. Med. Sciences," for July, 1892.

The first case was a young man who had been a brass-worker for a number of years, but had to give it up on account of increasing infirmity, which consisted in a recurrent numbness in the little finger of the left hand. After a time the numbness became continuous, then awkwardness in using hand and weakness; no pain or paræsthesia, and affection confined to left hand; some anæsthesia of little and ring fingers on both sides, but markedly on ulnar side; the little and ring fingers are drawn up, the index and middle fingers comparatively straight; wasting of thenar and interossei muscles; thumb fixed in flexion; adduction of thumb impossible; flexion and extension of fingers and wrist unaffected; the interossei and thenar muscles do not respond to galvanism or faradism; no fibrillary twitching; slight tenderness over ulnar nerve at the elbow.

The second case is very similar to the first, and was practically that of ulnar paralysis.

The writers are inclined to think that the occupation of these patients should be held responsible for the paralysis, and not the possible imbibition of some toxic material connected with their labor; and they are also of the opinion that the affection is not allied to the multiple neuritis among brass-workers, as described by Suckling.

As regards the duration of the affection, its course would seem to be to reach a maximum in about four months, but to progress no further. J. C.

—***Menstruation among the Insane.***—Helen W. Bissell, M.D., in the "Northwestern Lancet," April 15, 1892, says: "There is no entirely regular menstrual history, if a number of years be taken into account, and periods falling in from between three and five weeks, are to be considered normal. Normal menstruation is an expression of the general condition and its suppression is often only an indication of the needs of the system, and so is a conservative act of nature. In the chronic insane the menopause makes no radical change in the form of disease. In acute cases menstruation returns with regained general health and is an indication that the system can again sustain the loss of force. It is always to be regretted when there is not at the same time increased mental vigor. Tonics and general measures are, as a rule, preferable to direct or local treatment, though sometimes both are valuable. The underlying conditions which cause irregularities of menstruation are oftener the cause of mental disease than those deviations *per se*. A. F.

—***Cerebro-Spinal Meningitis.***—Trevelyan (Brain, spring number, 1892). The author reports thirteen cases of cerebro-spinal meningitis, and would have us believe that this disease occurs more frequently than is supposed, and is not detected on account of the rapidity of its course and the ease with which it is confounded with other diseases.

Cerebro-spinal meningitis is said to be—(1) primary, when it occurs in its epidemic or so-called "sporadic" form; (2) secondary, when it complicates some acute disease, like pneumonia, enteric fever, etc.; (3) consecutive, when it follows upon some bone affections due to ear or nose disease; and (4) traumatic. The writer gives examples of each of these varieties pertaining to the etiology.

The question as to how far the morbid changes in the pia may go and still be consistent with recovery, is discussed somewhat, but no conclusions are reached. It is probable, however, that cases attended by well-marked purulent formation are in almost every instance fatal. The reason that exudation is more abundant in the dorsal and lumbar region of the cord is, it would appear, because the subarachnoid tissue is more plentiful there. The same cause, and not gravitation, explains the fact that the exudation is chiefly, if not exclusively, found on the posterior aspect of the cord. J. C.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held at the New York Academy of Medicine on Tuesday Evening, December 6, 1892.

Dr. WILLIAM D. GRANGER reported a case of

ACUTE MANIA, WITH THE ADMINISTRATION OF ENORMOUS DOSES OF PARALDEHYDE.

The patient was a female, aged twenty years; single. She came under Dr. Granger's care July 23, 1891, suffering from acute mania, the attack having begun six months before. It was her second attack, the previous one occurring when she was fifteen years old, and was fully recovered from. There was a history of insanity in her father's family, and her mother is a very nervous woman. The attack of acute mania was of great violence, with pronounced delusions and hallucinations. There was marked insomnia from the first. During her previous illness she was given large doses of paraldehyde, and with the advent of the first symptoms of the second attack the same drug was administered. She was given each night 10 fluid drachms of the drug, in divided doses; and this method of treatment had been kept up for nearly four months. It produced but little sleep, and that was broken. When the patient came under Dr. Granger's care, he found that, in spite of her close confinement and the enormous doses of paraldehyde she was taking, she was showing some evidence of convalescence. She was well nourished and had a good appetite. There was no gastro-intestinal trouble. She had no eruption of the skin. A careful examination failed to reveal any unfavorable symptoms connected with the use of the drug, unless it was that it had lost some of its sleep-producing powers. After the third night, and against the wishes of the family, Dr. Granger determined to rapidly withdraw the drug; and he did so in ten days. After its withdrawal the patient was able to sleep soundly all night. No other drug was substituted. She suffered no inconvenience

during the period of its withdrawal. In three months the patient was discharged, and she is to-day perfectly well. No symptoms of the paraldehyde "habit" appeared.

DISCUSSION.

Dr. FREDERICK PETERSON said that he has seen one patient—a woman—who acquired the paraldehyde habit. The last time he heard from her, she was taking about one ounce of the drug nightly, without any bad effect.

Dr. CHARLES L. DANA said he has seen some bad effects from 3 drachm doses of paraldehyde given to an opium-eater. This amount was given in divided doses, and serious collapse followed. He thought that 1 drachm was a sufficiently large dose to start with.

A CONTRIBUTION TO THE ETIOLOGY OF CHOREA.

Dr. CHARLES HENRY BROWN read a paper on this subject. He stated that the mechanism that prompts the peculiar inco-ordinate movements which make up the objective neuro-muscular phenomena of chorea has never been explained, and is to-day as much a mystery as in the time of Sydenham. The recorded pathological evidences serve only to prove that some irritating process has been at work upon the cerebral and spinal motor tracts and co-ordinating adjuncts. The mortality from chorea seems to be greater in Great Britain, and the English observers have given more attention to the gross lesions, which apparently are the result of complications, and which include, chiefly, cardiac valvular troubles and emboli, pericarditis and vaso-motor changes. The reliable accumulated data of the microscopical conditions of the brain and cord are somewhat limited; it however attests that some morbific irritant has been at work. There is, first, hyperæmia; this results in exudates, and is complicated with hyperplasia of connective-tissue elements; this takes place throughout the motor areas, and the end is resolution. The morbific stimuli which incite the nutrient distributors to the motor areas to rebellion and disease must in some way, by natural selection, choose this location.

Dr. Brown then considered some of the more prominent reputed etiological factors of chorea. Among the chief predisposing ones is heredity. Heredity is such a broad subject, and surrounded by so much speculation

and mysticism, that no direct information is attainable in half the cases we study. Positive information is rarely obtained. Age is an important, positive, and relative factor. As a rule, chorea is confined to the pre-developing period of manhood and womanhood. The exceptions serve to prove the rule. Sex and pregnancy are also important predisposing factors in the etiology of the disease. Anæmia and mal-nutrition are causes which directly apply, and equally to all correlative affections of chorea. Shock, or sudden fright, Dr. Brown said, he considered a very rare exciting cause of chorea, and he cannot accept the theory that this factor alone can cause the disease. We must accept the fact that chorea is something else than a mere rampant neuro-motor mechanism due to shock or any reflex cause. Dr. C. A. Herter has drawn our attention to the fact that excessive excretion of uric acid was a highly constant feature in pronounced chorea. There was a diminution of the chlorides in relation to urea. The urine in almost every case was of a high specific gravity (1024–1030) and small in amount. Work along this line of investigation will in future be of great importance.

The most common nervous affection of rheumatism, Dr. Brown said, is chorea. The rheumatic diathesis in children is not to be expressed in the same way as in the adult. In the latter it shows more frequent manifestations in the muscles and joints; in childhood it may only be expressed in so-called growing pains, erythema nodosum, slight stiffness, etc. Rheumatism is essentially a disease of the motor apparatus; chorea is a disease of the motor centres. The analogy is interesting. While we recognize that rheumatism often immediately precedes an attack of chorea, there are but few cases observed where the onset of the chorea is immediately followed by an attack of rheumatism. In many cases coming under his observation the rheumatic phenomena, such as articular swellings, exudations and cardiac complications did not make their appearance until months and even years after the chorea. As regards the pathology of rheumatism in children, the articular manifestations are rather a vascular than a parenchymatous process, with little serous exudation. Tissue elements are unaltered and solid products or pus are rare. Reabsorption is complete and no traces are left. Visceral complications suggest similar reflections. As Fernet says: "Touching without profoundly modifying; rarely leading to organic

changes." Chorea is rarely associated with rheumatism in the adult.

Dr. Brown gave the history of an interesting case of chorea in a child eleven years of age. The patient was covered with about 150 (actual count) little tumors, from the occiput to the extremities. They varied in size from that of the head of an ordinary pin to a good sized almond. Most of them were of the size of a small pea. They varied in consistency. Some were firm to the touch, but most of them were quite soft. Under the microscope they were found to consist of young granulating connective tissue. Some were immediately associated with the skin; others were below in the connective tissue. A photograph was presented, showing the distribution of the subcutaneous nodules.

It is an admitted fact by the English observers, Dr. Brown said, that the subcutaneous nodule is always accompanied by rheumatism and no other disease. If it is present, it is associated with other rheumatic phenomena, either articular swellings, cardiac lesions, or chorea. In the majority of cases on record there is associated all three correlative phenomena. Pathologically, the subcutaneous nodule is an exudate and connective-tissue hyperplasia, with abundant vascular supply. In this nodule we have the key to a homologous exudate and connective-tissue hyperplasia that composes the fibrinous nodules on the valves and also the little colloid and hyaline bodies found in the choreic brain.

Until we can solve the nature of rheumatism, that of chorea will be mysterious. Blake writes of a supræmic origin of rheumatism. Distemper causes chorea in dogs. Chorea has also lately been transmitted by inoculation from one dog to another.

In conclusion, Dr. Brown said that while he does not claim that the rheumatic poison is always the cause of chorea, yet, as it is the most common cause of joint affections and is always the cause of the subcutaneous nodule, and as chorea is so intimately associated with these nodules, a relation to rheumatism exists which is much more common than is generally accorded.

DISCUSSION.

Dr. SACHS said he never saw a case of chorea associated with these subcutaneous nodules. He objected to making this symptom an etiological factor in chorea, on account of its extreme rarity.

Dr. BROWN said: The subcutaneous nodule was rare in this country—quite common in England. He had seen, however, three cases since this one. He had no doubt but it would be more frequently seen if understood. He did not claim it as an etiological factor of chorea. It was associated with rheumatism, and was an exudate. It was original, however, as far as he knew, to compare the hyaline exudates, pathologically seen in cases reported in the choreic brain, to the exudate, so-called the subcutaneous nodule.

Dr. J. ARTHUR BOOTH reported a case of

TUMOR OF LEFT FRONTAL LOBE OF BRAIN.—OPERATION.—RECOVERY.

The patient was a male, aged twenty-four; single. He had hip-joint trouble since childhood. Aside from this he enjoyed fair health until eighteen months ago, when he commenced to have epileptic attacks, general in their character. There is no history of any attack of hemi-spasm, or any limited to a single group of muscles, although the patient's brother thinks that the jerking was more marked in the right arm. The last attack was in June; and in this one he fell, striking the chin and left side of the head quite severely. Shortly after this his relatives noticed for the first time the swelling on the left temple, the patient himself stating that it was there before the fall. About the same time failure of vision became a marked symptom. The patient was also troubled by a turning in of the left eye. No history of hemianopsia. During the last month he had what he designated as fainting-spells, in which there were no convulsive movements. For the past year he has had a good deal of headache of a severe character, chiefly in the forehead, through the temples, and often radiating back as far as the occiput. He has never vomited. His memory failed very much during the past year, and he now finds it difficult to recall recent events and the names of those with whom he is well acquainted. There has been a marked change in his manner; he is dull and not inclined to talk. There is no history of injury to the head other than the one mentioned above. He confesses to two attacks of gonorrhœa; denies syphilis. His parents are both alive and healthy. There is no history of phthisis in the family.

Examination.—Manner quiet; face rather expressionless; speech slow and somewhat uncertain, though there is no marked aphasia; tongue straight and clean; there is no decided paresis of the face, but there is less expression on the right side than on the left; paresis of the right external rectus; pupils widely dilated; no reaction to light or accommodation; vision very much reduced in both eyes, the left being the weaker; there is marked optic neuritis of both nerves, with numerous small hemorrhages; stands fairly well with eyes closed; no ataxia; knee-jerks absent even with re-enforcement; no anæsthesia or analgesia; sense of taste normal; sense of smell very deficient on left side; on the left temple, just back of the external angular process of the frontal bone, there was quite a prominent swelling, oval in shape, somewhat tender, pressure on it causing pain to radiate through the head as far back as the occiput; deep pressure at the base of the tumor shows absence of bone at that point.

These symptoms, Dr. Booth said, were considered sufficient to warrant the diagnosis of an intra-cranial tumor, and its location in the anterior fossa, or, more definitely, in the left frontal lobe. The patient was referred to Dr. B. F. Curtis, who concurred in the diagnosis, and advised surgical operation. Dr. C. L. Dana, who saw the patient at this time, also concurred in this opinion. The operation was performed, on September 30th, by Dr. Curtis at St. Luke's Hospital. The tumor was exposed, and was found to be covered by a tough soft red membrane, containing a cheesy material, which was removed with a spoon. The circular opening in the bone was found to be one inch in diameter, and the dura mater enclosed the opening. The opening in the bone was enlarged and the dura mater separated from the roof of the orbit, where the tumor was adherent and had caused absorption of the bone. The dura mater was now opened and the tumor enucleated with the finger. There was no shock following the operation; the patient slept well during the night, and the next day talked as well as before the operation. On October 6th an examination of the eyes showed extensive hemorrhages occupying the entire right retina and two-thirds of the left. No perception of light. On October 16th sight was suddenly recovered to some extent in the left eye. On October 22d the patient had a general epileptic attack, and after this again became blind, remaining so up to date. An examination of the eyes on November 3d revealed choked disc in atrophic stage in both eyes.

The healing of the wound was delayed by a tubercular infection, but is now well. Unfortunately, the patient is entirely blind; but this condition was not unexpected, owing to the high degree of neuritis present before the operation. On this account it is to be regretted that the patient did not come under observation at an earlier date.

DISCUSSION.

Dr. B. FARQUHAR CURTIS, who performed the operation, stated that it was carried out in an exploratory way. The bone was cut away until the limits of the tumor could be felt on all sides before the dura was incised. Although the operation lasted over two hours, there was hardly any shock and very little blood lost. The slight hemorrhage was probably due to the fact that the growth was a tubercular one.

Dr. DAVID WEBSTER said that he examined the patient's eyes before the operation, and observed a high degree of choked disc. The optic nerves were much swollen, and sight was very much impaired, the patient being unable to count fingers with certainty. He was of the opinion that the removal of the tumor had nothing to do with accelerating the blindness in this case; the temporary recovery of the sight some days after the operation showed this. The total loss of vision was due to the natural progress of the disease of the optic nerves —probably complete atrophy.

Dr. B. SACHS referred to the psychical changes in connection with frontal tumors. Experiments on dogs have shown that when the frontal lobe is removed, either entirely or in part, the animals invariably became idiotic, as was inferred from the changes in their actions. In man also many cases have been reported wherein affections of the frontal lobe were followed by marked psychical changes. Dr. Sachs said he saw one case, however, where the autopsy revealed a very large tumor in the frontal region, and in that case there had been no change at all in the person's manner, etc. The value of this symptom, then, still seems to be an open question. In tumors of a tubercular nature, Dr. Sachs said, we cannot hope to do much by operative procedures. It is questionable whether we can prolong the patient's life by such an operation. In the case reported, of course, the tumor was situated so near the surface that the wisdom of its removal was manifest.

Dr. HERTER referred to the fact that in this class of tumors we usually have to deal with multiple growths, and there is always much danger of recurrence. He has seen one case of abscess of the frontal lobe, almost destroying the entire lobe, without any change in the patient's character. The presence of the abscess was not even suspected.

Dr. J. F. TERRIBERRY said that in one case of frontal tumor coming under his observation, in which the growth involved the middle of the anterior portion of both lobes, there were decided psychical phenomena manifested. The patient, who was a man of intelligence, lost all interest in his business, became careless about his diet, habits, etc.

Dr. M. ALLEN STARR referred to a case where a large tumor was removed from the frontal lobe. The growth was followed by decided mental symptoms, which proved of great aid in its localization. These mental symptoms appeared from the very first. There was slight aphasia and paralysis on the right side. In twenty-six cases of frontal lobe lesion, fifteen showed very marked psychical symptoms. Dr. Starr said that the majority of cases of frontal lesions, collected by him since 1884, showed the existence of psychical symptoms. In those cases in which the left frontal lobe was invaded, the proportion in which mental symptoms were present seems to be higher than where the right lobe was invaded.

Dr. BOOTH, in closing the discussion, stated that when we have a tumor creating pressure, which can be localized and removed—whether the growth be of a tubercular nature, or otherwise—he thought it ought to be removed.

DISCUSSION ON THE DIAGNOSTIC SIGNIFICANCE OF TREMOR.

Dr. C. L. DANA, who opened the discussion, stated that his data was obtained from studying twenty-six cases of tremor in various forms of nervous diseases, assisted by sphygmographic tracings procured by the method recommended by Dr. Peterson. When we come to study tremors, we find that they differ in regard to rate, and in regard to form and amplification. Also, as to whether they are continuous or not, and as to where they are located. As regards their rate, there are two kinds, the fine and the coarse. The French also include

a tremor of median rate—between the fine and the coarse. In the fine tremor the number of vibrations are from 8 to 12 per second, and in the coarse they are about one-half this number, ranging between $3\frac{1}{2}$ and $5\frac{1}{2}$. As regards the form, amplification, etc., we have perhaps three different kinds. The vibratory, in which the arm or extremity shakes as a whole; the segmental or oscillatory, in which a single segment is moved; and the jerky, which is rather an inco-ordinate movement. Most writers on this subject divide tremors into the intentional tremors, and those more or less continuous. It is hard to make this distinction in actual cases. We may call those the continuous tremors which continue nearly all the time, such as we get in nervous excitement and neurasthenia. Then we have the intermittent tremor, which stops when the hand is at rest or when it is moved, as in paralysis agitans. Then we have one that is intermittent and intentional; that is to say, it is only brought out by voluntary movements of the hand. They may be increased by tension or rather extension of the extremity. They may be greatest when the limb is at rest, as in acute alcoholism and paralysis agitans. Some become more pronounced on voluntary motion, as in certain scleroses. As a rule, the distribution of the tremor is of particular importance. We have those of the extremity, of the chin, the eyes, etc. With regard to the diagnostic significance of these various tremors, Dr. Dana said we cannot exactly assign to each of them a particular clinical character. In acquired neuroses and cortical neuroses, like general paresis, a fine vibratory tremor, practically continuous, is present, involving a large part of the body and both sides of the face. The rate is from 8 to 12 per second. In alcoholism there is a great difference of opinion as to the rate of the tremor. Dr. Peterson states that in delirium tremens it is as slow as 6 per second. Most French writers state that it is a fine tremor in these cases. In the degenerative neuroses the tremor is a coarse one, segmented and intermittent. It usually affects one-half of the body more than the other. The rate is from $3\frac{1}{2}$ to $6\frac{1}{2}$ per second. In paralysis agitans the rate is about 5 per second. Senile tremor, Dr. Dana said, is, in his opinion, only an irregular form of paralysis agitans. In the organic nervous diseases the tremor is coarse, jerky, intermittent, usually intentional, and confined to certain segments or limbs.

Dr. FREDERICK PETERSON presented a number of

kymographic tracings, representing tremors in various forms of nervous diseases. In early alcoholism, Dr. Peterson said, the rate of tremor is about 10 per second, but in delirium tremens it becomes coarse.

Dr. LANDON CARTER GRAY said that the accurate tracings made by the kymograph are of great value in the diagnosis of the different forms of tremor. He has thus far been baffled in trying to find out with absolute certainty the characteristics of the various forms of tremor—excepting that we get in paralysis agitans. There are so many exceptions to the rule of obtaining an intentional tremor in disseminated sclerosis that it is a poor reed to lean upon.

Dr. SACHS said he had always considered facial tremor as characteristic of either alcoholism or of general paresis, but recently he has seen a number of cases of general neurasthenic disturbance in which a distinct facial tremor was present.

Dr. GRAY said he thought facial tremor is an indication of general paresis in the vast majority of cases, but we should not attach too much importance to this symptom. He has observed it in neurasthenia as well as in other conditions.

Dr. E. D. FISHER said that he has seen a facial tremor in dementia, or in dementia following mania. Also in chronic alcoholism. He considered it a valuable sign, but one that could not be absolutely depended upon.

Dr. GRAY stated that in one case of syphilis of the nervous system—mainly of the cord—the facial tremor had been very marked.

Dr. LESZYNSKY said he has observed a facial tremor in a patient suffering from tobacco poisoning. Also in cases of insanity not associated with general paresis or alcoholism.

Dr. ROCKWELL said he recently saw a case of tremor of traumatic origin. The patient had received a severe injury, which resulted in paralysis from which she quickly recovered. Subsequent to the paralysis she suffered from a tremor which he decided was due to the accident.

Dr. MARY PUTNAM JACOBI suggested that the tremor might have been due to traumatic hysteria.

Dr. GRANGER said that facial tremors are seen so frequently in the insane that they excite no comment whatever. They are extremely common in dementia—a very coarse tremor. In acute mania there is a very fine tremor

like that in general paresis. In general paresis, however, we may find all sorts of tremors, from the finest to the coarsest. By itself, it is simply suggestive of the disease, and we must look for other symptoms.

Dr. PETERSON said he has seen a number of cases of neurasthenia in which the facial tremor was present; he has also observed it in diffuse syphilis of the central nervous system.

Dr. STARR confirmed the statement that tremor of the face is not very infrequent in severe types of neurasthenia, and that it is not to be relied upon as a diagnostic symptom of general paresis.

Dr. DANA, in closing the discussion, said that it is very rare indeed to get a facial tremor in any case of neurasthenia, no matter how severe, when there is no tension of the facial muscles; that is, when the muscles are at rest. A tremor of the lips, for instance, without any tension of the muscles, he would certainly consider as an evidence of serious trouble.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, October 24, 1892.

The President, Dr. FRANCIS X. DERCUM, in the chair.

Dr. WM. H. MORRISON read a paper entitled

REPORT OF A CASE OF LARGE INTRA-CRANIAL TUMOR (WEIGHING FIVE OUNCES) COMPRESSING THE LEFT FRONTAL LOBE.

A. C., colored, about forty years of age, came under the author's observation in April, 1886. At this time he was a coachman by occupation, but had been in the army and had also served as a sailor, and was said to have suffered shipwreck on one or two occasions. He complained of pains in the head, which were attributed to localized syphilitic meningitis, and he was placed upon iodide of potassium. He soon passed from the author's observation, and was not seen again until two days before death. In the summer of 1888 he had an epileptiform convulsion, which was the only convulsion in the history of the case. The pains in the head returned and increased

gradually in severity, and were especially marked on stooping. In August, 1889, he gave up his work, but for a month before this his friends had noticed that his speech was slower than usual. Shortly after quitting work his eyesight began to fail, and soon he was unable to recognize persons or objects at a short distance from him. The pain seemed to be more in the occipital region, although on stooping there would be pain felt in the frontal region. During the last six or nine months of the history the pain was not so severe, and at no time does it seem to have been a marked symptom. A few months after quitting work he was admitted to the Pennsylvania Hospital, where he remained six weeks.

An examination of the eyes showed no light-perception. In the right eye there is extensive hemorrhagic retinitis, with superficial and deep hemorrhages scattered over the fundus, rendering it difficult to see the disc. The margin of the disc is obliterated. There is extensive œdema. Near the macula are several yellowish white patches, suggestive of hemorrhage. The condition of the left eye is about the same.

After leaving the hospital he received no medical attention. The principal trouble observed by the patient and his friends was the loss of eyesight, which had sunk to simple perception of light. During the day he sat about the house, and at night he was able, unaided, to go up three flights of stairs. In fact, a few days before his death, he dressed himself and came downstairs without assistance. There was no motor disturbance in any part of the body—no weakness of the muscles. Intelligence did not seem to be materially impaired. His memory for past events was retained. In illustration of this it may be stated that two weeks before his death he was visited by friends whom he had not seen for years, and conversed with them intelligently and rationally about events that had occurred ten or more years previously. For recents events, however, memory was defective. The drawling speech continued, and to this was added slight amnesic aphasia. Occasionally he would be unable to remember a certain common word which he wished to use, but when it was suggested he would recognize it and be able to pronounce it without difficulty. Hearing was unaffected; the sense of smell was good, but whether or not there was any difference on the two sides could not be ascertained; the bowels and bladder acted normally.

The writer was called to see him at midnight on De-

cember 24, 1891, the statement being that he was in a stupor from which he could not be roused. When seen, however, he was awake. He protruded the tongue normally. He lifted first one arm and then the other, and moved the legs at command. He had high fever, injected conjunctivæ, and other symptoms of influenza, which was prevalent at that time. The following day his condition was about the same; but next day he passed into a comatose condition, and died that evening.

The autopsy was made fourteen hours after death, the examination being confined to the head. The body was that of a stout, well-nourished man, with nothing abnormal on inspection. The scalp was fully one-half inch in thickness, there being a quarter-inch layer of fat; the bone was of normal thickness, and the dura but slightly adherent to its under surface; the dura was found strongly adherent to the pia mater along each side of the longitudinal fissure, and a portion of it was removed with the brain. A large tumor was at once evident in the left frontal region. The brain and tumor were removed as carefully as possible. It was found that the tumor had eroded the left half of the cribriform plate of the ethmoid, so that there was a direct communication between the interior of the skull and the nasal cavity.

From the inner surface of the frontal bone, one inch to the left of the median line and one inch above the orbital plate, there sprang a conical projection of bone; this had a base one-half inch in diameter, and projected three-eighths of an inch above the surface of the bone. Corresponding to this exostosis, there was a depression in the dura mater and in the new growth. Inspection of the external surface of the bone showed no depression and no evidence of injury.

Examination of the brain and tumor, after removal, showed that the growth had occupied the greater part of the left anterior fossa of the skull. The mass is irregularly pyramidal in shape, its base, corresponding to the left half of the frontal bone, being attached to the inner surface of the dura. The base of the growth measures two and one-half inches vertically by three and one-quarter inches transversely. The tumor extends backward into the frontal lobes two and three-quarter inches. After preservation in alcohol for five months, the weight of the mass is five ounces, its volume nine cubic inches, and it displaces five fluid ounces of water. The orbital plate of the frontal bone was not displaced, and there was

no exophthalmus. The tumor was not adherent to the brain-tissue, but seems to be a dural tumor originating at the position of the projection of bone already mentioned, and thence extending gradually, pressing backward the frontal convolutions. Internally and externally the tumor was covered by cerebral tissue; but underneath, the brain-tissue has been displaced and absorbed in the position of the cribriform plate, and the bone itself has been destroyed. The tumor was readily lifted from its cavity, and, in fact, care was necessary to prevent it from falling out when the brain was removed.

The growth was examined microscopically by Dr. C. W. Burr, who pronounced it to be a sarcoma.

The special features of this case, as elicited by post-mortem study, are: The evidences of a slowly-developing and steadily-progressing lesion, accompanied by pain in the head, not distinctly localized, not especially severe; a single epileptiform convulsion, neuro-retinitis, loss of memory, slowness of mental processes, slowness of speech, and slight amnesic aphasia. To these may be added absence of motor disturbances, and absence of signs of involvement of the special senses other than the sight.

Referring to lesions in this region, Dr. Seguin says:[1]

"Focal lesions of the frontal lobe produce no specific symptoms, and cannot be directly diagnosticated unless they extend as far caudad as the base of the second or third frontal gyri. The forward mass of the frontal lobe including the orbital lobule appears to be inexcitable and insensitive. Even psychic symptoms do not necessarily appear after the loss of a considerable amount of cerebral substance from this region. The diagnosis of tumors, abscesses, etc., in this part of the brain must be made by taking into consideration the seat of the pain, the presence of cicatrices or other etiological indications, the general signs of cerebral irritation and compression, but, after all, usually by exclusion. In some cases unilateral anosmia is produced."

Dr. Mills, speaking of lesions in this part of the brain, says:[2]

"Lesions of the prefrontal lobe, although this is one of the so-called latent districts of the brain, have, in a

[1] Pepper's System of Medicine, vol. v., p. 89.

[2] Transactions of the Congress of American Physicians and Surgeons, vol. i., p. 272.

large percentage of the carefully-studied cases, shown distinct manifestations. The symptoms are largely psychical, and, unfortunately, the physician is not usually well trained to study such phenomena. Mental disturbances of a peculiar character occur, such as mental slowness and uncertainty, want of attention and control, and impairment of judgment and reason. Closely studied, the inhibitory influence of the brain both upon psychical and physical action is found to be diminished. Memory is not seriously affected, although a continuous train of thought cannot well be followed, and complex intellectual processes cannot be thoroughly performed."

A review of the history of this case, as thus imperfectly elicited, seems to indicate that, had the patient been under careful observation, a diagnosis of the probable seat of the growth would have been made, and, possibly, with sufficient certainty to have rendered an exploratory opening justifiable. Could the tumor have been located some months or a year before death, its removal would have been comparatively easy.

Dr. Ferrier, in commenting upon a case, very similar to the one reported in this paper, in regard to tumors in this situation, says:[3] "It is not until the tumor presses backward and, directly or indirectly, disturbs the functions of the central and posteriorly situated convolutions, that motor or sensory symptoms declare themselves; and until these have occurred, or until there are signs of implication of the nerves or other structures in the anterior fossa, an accurate diagnosis of the position of the tumor cannot be made with certainty, inasmuch as loss of memory and impaired power of concentration may also be produced by diffuse lesions or lesions which cause general disturbance of the brain. Of the structures in the anterior fossa, the olfactory tract is especially apt to suffer, but, on account of our patient's mental condition, it never could be ascertained with certainty whether there was any implication of smell in the one nostril or the other. During life, however, I had expressed the opinion that the case was in all probability one of tumor of the frontal region, but its precise position, whether deeply seated or superficial, or connected with the corpus callosum, did not appear to me sufficiently clear. For this reason, though I frequently considered the advisability of operation, I did not think it well to interfere until

[3] Lancet, June 4, 1892.

definite localizing symptoms should declare themselves; but the patient was carried off by an intercurrent malady before this event occurred. The necropsy, however, proved that the tumor might have been reached and, in all probability, enucleated by trephining over the left frontal lobe anteriorly."

DISCUSSION.

Dr. JAMES HENDRIE LLOYD.—About a year ago I put on record a case of tumor in the frontal lobe not exactly in this situation. That case had been successfully diagnosticated, and the tumor had been localized. A consultation was held to consider the propriety of trephining; but the man developed tuberculosis of the lung, to which he succumbed rapidly, and the operation was not done. In that case the most prominent symptom, and one which I have never seen in any other brain-lesion, was the peculiar inhibition of thought—the increase of the time-reaction of cerebration. Although Dr. Ferrier, in the communication referred to to-night, says that it may be present as a symptom of other lesions, I have never seen it in any other lesion so characteristic and so typical. In the case which I reported, the man was intelligent and answered questions properly; but it took him a long time to do so, as though, to use a simile, the question had to percolate through a stratum of diseased tissue. I have a suspicion that if there had been an opportunity to study the case reported to-night by Dr. Morrison, it would have been found to present these peculiar psychic symptoms.

Dr. CHARLES K. MILLS.—A similar case of tumor of the brain I reported years ago to the Pathological Society of this city. In the size and position of the tumor, the case reported to-night reminds me of it. It was a fibroma, involving the pre-frontal lobe, and extending to the corpus callosum and the gyrus fornicatus, but not to the motor region. The patient showed this slowing of the mental reaction. After shouting at the man, we would have to wait sometimes a minute for his answer. As I put it at that time, it seemed to take a long time for an idea to get into his brain or to be appropriated by his brain. He also had motor symptoms on the opposite side of his body, which, however, were unlike the symptoms seen in tumor of the motor region. He had either a pressure or inhibitory paralysis which was not absolutely persistent. Hughlings Jackson holds the view that the pre-

frontal lobe is not only in a general sense concerned in higher mentation, but also in a certain sense it is a higher motor lobe. I believe that in such a case as that presented to-night, operation would almost certainly have resulted in death, unless great attention were paid to closing the dura mater and the scalp. One cause of death after such operations, as in porencephalus, is disturbance of the relation between external and internal pressure.

The PRESIDENT.—This tumor extended so very far back, that it is difficult to believe that there were no other symptoms than those recorded; yet when we look at the lateral surface of the brain, and see the marked difference in the course of the outer branch of the pre-central and also of the central fissures of either side, we see that the pressure has been exerted very gradually. This is probably the reason that there was no weakness on one side. This fact has of course been illustrated by a great variety of brain tumors. The Society may remember that, some years ago, I presented a large mass, almost as large as this, which started in the base of the second and first frontal convolution, and which pressed back the motor area to a great extent; but there had been no marked motor symptoms, the parts evidently having adapted themselves perfectly to a gradually increasing pressure. The mass extended back so far that certainly the caudate nucleus and the anterior limb of the capsule must have suffered, and if the growth had been rapid, other parts would have suffered from the transmitted pressure.

Dr. WHARTON SINKLER.—This tumor is very much like one that Dr. Catell will remember, the specimen of which I presented to the American Neurological Society. This was a sarcoma occupying a space just in the Rolandic fissure. It grew downward from the dura, and by pressure caused complete right hemiplegia. The patient also had some convulsions.

Dr. JAMES HENDRIE LLOYD read a paper entitled

ARTHROPATHY IN GENERAL PARESIS.[4]

He first briefly traversed the history of the subject of the arthropathy of tabes and other organic nervous affec-

[4] Dr. Lloyd's paper, which systematically discusses the subject of arthropathies, will appear in full in the second volume of the Philadelphia Hospital Reports.

tions, referring to the pioneer contributions of Dr. John K. Mitchell in 1831, Scott Allison in 1846, and of Charcot in 1868, and the more recent contributions of Ball, Clifford Albert, Rosenthal, and others. The different varieties of arthropathies were fully considered, and the arthropathy of Charcot discussed with reference to its occurrence in four diseases—namely, locomotor ataxia, syringomyelia, disseminated sclerosis, and general paresis. In a note, Dr. Lloyd referred to one case of possible insular sclerosis with arthropathy which was operated upon by Dr. J. W. Hearn for the removal of numerous foreign bodies of bone from the knee-joint. He believed that, in general paresis with arthropathy, either posterior sclerosis was present or there was good cause to suspect it. He regarded the arthropathies as trophic lesions and of spinal origin. The patient whose case was reported in detail, and which formed the basis of the contribution, belonged to Marie's hypertrophic type of arthropathy.

J. D., aged thirty-eight, white; admitted to the wards in July. He had suffered for some years with pain in the legs, which had been called rheumatic. Otherwise he was apparently healthy up to one year and a half ago, when he had a swelling of his knees. At this time no mental symptoms were observed. Six months before admission he began to have mental symptoms; he had delusions of a persecutory tinge. He became silly and weak. Then he had a remission and was much better; then he relapsed, and was sent to the hospital. Drawling speech began three months before his admission. He had had no convulsions. There was no history of syphilis.

On admission he was very demented and dull, answering questions very imperfectly. He had a drawling speeeh and some unsteadiness of the facial muscles. There was very slight nystagmus; no intention tremor, no delusions could be demonstrated at first; the knee-jerk appeared to be abolished, but the knees were so swelled and deformed that it was difficult to test them. By tapping vigorously, a slight myotatic reflex was caused in the quadriceps. Both knee-joints were enormously enlarged; grating sounds could be heard in them easily. The bony structure on the anterior end of the condyles of the femur was enlarged, forming prominent bosses. Sensory tests were negative, because of the patient's state. The pupils acted on accommodation, but

did not react to light—the Argyle-Robertson phenomena. Hearing was good; the right elbow was deformed by an old ununited fracture of the olecranon, but the man had fairly good use of the joint; the detached olecranon was easily movable and somewhat enlarged. The left forearm presented an extensive scar, the result of an old injury; the ulnar nerve had been cut across many years before, and there was the characteristic wasting and *main en griffe*.

A few days after admission the patient had a maniacal episode—so characteristic of paresis—which required that he be strapped in bed. He was very violent in his delirium, fighting and resisting, but showing no intelligence. After this episode he gave evidence of a grandiose delusional state. He was more demented, and talked in a rambling and incoherent way about finding an immense piece of silver and large sums of money. His speech became still more drawling and unsteady. Because of the deformity of his knees it could never be satisfactorily tested whether he swayed with his eyes shut. He managed to walk about. In the course of a few weeks incontinence of urine set in.

The joints grew more deformed. The patellæ were flattened and disfigured and increased in diameter. The bosses on the condyles were very prominent. No stalactites could be determined; grating sounds were always readily obtained; the joints were painless and free from heat or redness; there was evidently increase of fluid within them; no very marked œdema was seen around the joints, but still the skin had a very hard and tough feeling; there was increased lateral movement.

The electrical tests were of great interest. Very strong currents, both of faradism and galvanism, failed almost completely to cause contractions in the muscles of the thighs and legs. The only exception was in the peroneal group of the right leg, in which the reaction was normal. I think the reason for this failure was in the fact that the brawny and somewhat œdematous skin resisted the passage of the currents.

An examination of the eye grounds by Dr. Gould gave negative results.

Early in October the patient began to have retention of urine. This required the use of the catheter twice a day. Although every precaution was taken against sepsis, the urine soon became alkaline and contained pus. The bladder was washed out with a solution of boracic acid

daily. On the 16th inst. the man had a severe chill, followed by a rapid rise in temperature. The chill was repeated daily. The patient's condition became grave. A diagnosis of infectious cystitis and pyelitis was made. He died on the 20th inst. with œdema of the lungs.

The post-mortem findings were as follows:

Brain.—The dura was very adherent to both the skull and the membranes. It was thickened. The longitudinal sinus was filled with a black clot. There was sub-arachnoid œdema. The frontal lobes especially were abnormal and in marked contrast to the rest of the brain. They were blanched, the arachnoid somewhat opaque, the convolutions evidently shrunken. The pia mater stripped easily from the brain in the Rolandic and parietal regions of the left hemisphere, but on the frontal lobe it adhered, especially over the exterior and extreme frontal region and along the gyrus marginatus. On the right hemisphere this condition was more marked and more extensive. Almost all these convolutions tore when the pia was stripped from them. The perivascular sheaths were filled with a white opaque fluid. At the base of the brain adhesions were very extensive, so much so that it was difficult to open up the Sylvian fissure, the opposing surfaces being agglutinated together. The pia-arachnoid was thickened and opaque and strongly adherent in other regions of the base. The large blood-vessels at the base were normal. On laying open the brain-axis the lateral ventricles were found to be dilated and full of a clear fluid in excess. The ependyma was not thickened, but normal in appearance. The aqueduct of Sylvius was pervious. The walls of the third ventricle were agglutinated together. The basal ganglia, internal capsules, mid-brain, pons, medulla, and cerebellum were normal to naked eye inspection.

The Knee-Joints.[5]—The right joint was as follows: The synovic membrane in front was of a steel-gray color, mottled with blue patches and covered with numerous small miliary calcareous nodules. The anterior edges of the condyles of the femur were greatly hypertrophied in nodular masses or rogosities. These formed bosses extending upwards and outwards about two centimetres beyond the edge of the condyle. In the anterior notch

[5]Very accurate plaster casts were made of the joints by Dr. H. G. Cattell, Assistant Pathologist of the Hospital, and are now in the Museum.

between the condyles was a triangular mass of nodules embedded in tissue and freely movable. These nodules were of stone hardness. Over the articular surface of the right condyle there was left the lining membrane of the joint considerably thickened and rough in some places, in others thin, and presenting about the centre an eroded patch. Over the surface of the left condyle, the lining membrane was absent, and the bone was worn and eroded, especially toward the periphery. There was a series of small eroded patches with nodules running along the outer border to the posterior extremity of the condyle. In brief, most of the soft structures of the joint showed destructive changes. The semi-lunar cartilages were much worn and eroded, and easily displaced. The inner surface of the capsular ligament showed some pedunculated masses. The crucial ligaments were apparently wasted, but still held firmly. The end of the tibia was covered with thin, worn and eroded membrane; part of the surface of the bone was bare. The joint contained a green, thick, opaque fluid. The patella was quite deformed. It was thin and flattened, with rugous edges. The under surface was covered with shreds of membrane. The capsular ligament was much distended and the joint cavity extended to an abnormal limit upon the front of the femur. The left knee-joint was rather larger and more distended than the right. The same general characteristics were to be noted—distended capsule, eroded membranes, nodular pedunculated formations, and bony bosses on the anterior edges of the condyles.

Kidneys and Bladder.—The kidneys were large; the capsules adherent. The pelvis of the right kidney was enormously dilated and filled with a purulent fluid. The ureters were dilated. The bladder was thickened and presented evidence of a recent catarrhal process.[6]

DISCUSSION.

Dr. CHARLES K. MILLS.—This patient was in my wards also, and I had an opportunity of studying him a few weeks before death, and also just before death. It was certainly a most interesting case of arthropathy, and particularly on account of the paretic dementia which was present. As to this question of paretic dementia

[6] Acknowledgments are due to Dr. H. D. Beyea and Dr. Joseph Sailer, resident physicians, for valuable clinical work on this case. The specimens will be examined microscopically.

and the occurrence of arthropathies in the course of the cerebral affection, I think that one of the expressions which Dr. Lloyd used might be misleading. He spoke of these cases and other cases as belonging to the ascending type of posterior sclerosis. One of the earlier views of paretic dementia, when it was the termination clinically of posterior sclerosis, was that the degenerative conditions in the spinal cord continued through the motor tracts all the way to the cerebrum and to the cerebral cortex. This is certainly not the correct view. A number of years ago I had for several years a case of posterior sclerosis under my care in private practice. The patient became paretic and went to the Pennsylvania Hospital for the Insane, and subsequently to Danville, where he died. The body was sent to Philadelphia, and a post-mortem was made, and twenty or thirty sections from the cord, and all the way to the cortex, were examined under the microscope. Similar cases have been recorded. The disease perhaps ascends so far as the cord is concerned; but the cerebral condition is only a localized expression of a general condition. The disease does not usually extend anteriorly beyond the oblongata and pons. This has a little bearing upon the discussion of this case. We are not to regard these arthropathies as having anything to do with the paretic dementia. They are connected with the spinal lesion. The muscles were not extremely atrophied, and there is not much doubt that the absence of electrical reaction was due to the condition of the skin and subcutaneous tissues. Comparing the skin of the arm and hand with that of the thigh and leg, the difference was very marked; a solid mass, quarter to half an inch thick, seemed to be present under the skin of the thighs.

Dr. Lloyd refers to the occurrence of arthropathies in cases of hemiplegia, and in spinal affections other than posterior sclerosis. The arthropathies in cerebral hemiplegia are not to be explained in the same way as those of these cases. One explanation of them is that they are due to neuritis. They are due neither to the cerebral lesions, nor, strictly speaking, to the secondary changes in the motor tract, but to the peculiar conditions presented in hemiplegia, the relaxation of the joints and the traumatisms to which the limbs are subjected, and to the fact that the relaxation is itself in a certain sense a traumatism. As a result of the traumatisms inflicted by the flaccid, dangling, or sometimes contractured arm,

neuritis is excited, involving a large part of the arm only, and sometimes the joints as well.

Dr. Lloyd referred to disseminated sclerosis with arthropathies. Of this I have seen one or two instances. In amyotrophic lateral sclerosis, I have seen peculiar painful and semi-anchylosed conditions of the joints, one within a few weeks, in the case of a lady who for three or four years has been developing symptoms of progressive muscular atrophy, or, more properly, of amyotrophic lateral sclerosis. Both shoulder-joints, but one more than the other, have been subject to attacks of pain without much swelling, but now there is a certain amount of adhesion.

Dr. WHARTON SINKLER.—I agree with Dr. Mills that the arthropathies of hemiplegia are quite different from those of spinal origin. Dr. Lloyd refers to the fact that in some of the benign cases of arthropathies in tabes, recovery may take place in the joint. There is an interesting example of that in the wards of the Philadelphia Hospital. The patient has suffered from both epilepsy and locomotor ataxia, and at one time he had enormously enlarged knee-joints and was so ataxic that he could scarcely stand. I looked him up a short time ago, in the clinic with some other cases of [illegible] arthropathies, but found that the knees had [illegible] had regained the power of co-[illegible] movement, that instead of walking with crutches he used a cane.

I would [illegible] refer to another patient at the Philadelphia Hospital who has remarkable spinal arthropathies and who is suffering from none of the forms of spinal disease referred to to-night. The patient has chronic myelitis, with contractures, exaggerated knee-jerk and trophic lesions. He had an enormous arthropathy of his shoulder, the joint at one time filled with fluid. Crepitation was also present. It was never painful. During the past year this swelling has very much subsided.

The PRESIDENT.—Some years ago I had a photograph made of the first patient to whom Dr. Sinkler has alluded. In addition to the enlargement, the knees were exceedingly retroflexed. There was no lateral displacement. Last winter when I wished to demonstrate the condition to my class, I found that while there was still some retroflexion, it had markedly diminished.

In the second case mentioned by Dr. Sinkler, the patient has a delusion that all his troubles are due to

poisoning with arsenic. In this case there is loss of the temperature-sense over the entire right arm and side of the face, and it is probable that we have not a case of myelitis, but of syringomyelia with arthropathies in the shoulder-joints. In syringomyelia the arthropathies are more common in the upper extremity, while in locomotor ataxia they are more frequently met with in the lower extremity.

Dr. JAMES HENDRIE LLOYD.—I think that Dr. Mills may have misunderstood one point in my paper. I did not say that the joints in hemiplegia are like spinal arthropathies. I only referred to an historical fact. They were originally described by an Englishman, Scott Allison, in 1846, at which time the question came up as to their possible rheumatic origin. They are pseudo-rheumatic at least. They are painful and present some of the symptoms seen in rheumatic joints. They are entirely distinct from spinal arthropathies. So the arthropathies of acute myelitis are apt to be of this same pseudo-rheumatic character, as in Gull's case and as in Dr. John K. Mitchell's case, which suggested to the latter his theory of the central origin of rheumatism. In 1831 he published a paper on this subject in the "American Journal of the Medical Sciences." These are different from the non-painless spinal arthropathies.

I have no doubt that in the case reported this evening, the connection of the joint disorder is with the cord, but it will require the microscopical examination to decide that. I do not care whether you call this case an example of the ascending type of general paresis or not. I have never believed that the degeneration in so-called ascending cases of general paresis begins in the cauda equina and extends upward. There is, however, sometimes a preponderance of posterior sclerosis in the earlier stages, which posterior sclerosis precedes the onset of the general paralysis. I have seen cases where the symptoms of locomotor ataxia existed for some years before the onset of the paretic dementia.

The PRESIDENT.—I might recall the fact that some years ago we had a collection of bones and joints exhibited to the Society. At that time I showed some bone sections. I found in some of the smaller joints of the foot that the cavities were obliterated and that bone tissue had been thrown across the joints. It is interesting, therefore, to note that the irregular deposit of bony tissue is not merely (at least in some instances) a calcareous deposit, but is made up of true bony tissue.

Dr. CHARLES W. BURR read a paper entitled

TUMOR OF RIGHT PREFRONTAL LOBE.

R. G., male, married, American, aged forty-four, box-maker, came to Dr. Sinkler's clinic at the Infirmary for Nervous Diseases, December 3, 1888, presenting the following history: During the summer he had suffered much from vertigo, thought to be due to dyspepsia. About August 1st, while standing in a street-car, his legs suddenly gave way beneath him and he fell. He was assisted home and put to bed, after which he became comatose and remained so the entire night. There was no convulsion. The next morning he was perfectly conscious, got up, dressed, complained of severe headache, and vomited several times. The third day he returned to his work and continued at it for three weeks. Six weeks later he had another severe attack, which was thought, by the physician who attended him, to be uræmic. On recovering consciousness, he saw double. He has not worked since. Diffuse headache and vertigo have continued. He has had one more attack of coma. Vision has been failing for several months. He uses alcohol very moderately. Syphilis is denied, and evidence of it cannot be found.

Present State.—Well built, healthy-looking man; gait good; station good; no ataxia in legs or arms; no paralysis; knee-jerks plus (later they were diminished); no impairment of taste or smell; hearing apparently normal, though no careful test was made; no pain on percussion of scalp; general sensation normal; mental condition good; no loss of memory; no slowing of mental activity; speech normal. Dr. Geo. E. De Schwinitz reported the eye condition as follows: "Discs swollen; R. E. + 6, numerous, tortuous, transverse veins pass over outer side. L. E. + 7 D. at apex; edges + 6 D. Irregularly contracted fields; lateral nystagmus." Urine free from albumen and sugar.

Further Course of Disease.—By February, 1889, there was complete blindness. From this time on the attacks of unconsciousness slowly increased in frequency, until finally two or more occurred every week. While his wife alleged that convulsive movements occurred in some of these attacks, this was never the case when I was present. The onset was always sudden; the coma complete; the respiration stertorious; the face congested;

there was persistent and obstinate constipation. During the course of the disease the patient put on much fat. In the last six or eight weeks of life his mind became sluggish and he wandered slightly in speech. He died September 14, 1891, three years after the onset of the symptoms.

Remarks.—The headache, vertigo, attacks of coma, choke disc, and nystagmus rendered the diagnosis of intra-cranial tumor very easy. Its localization, however, was a matter of extreme difficulty, and the decision I finally made that the cerebellum was probably involved proved post-mortem to be false. I was largely influenced by the fact that in the absence of paritive localizing symptoms, nystagmus, with choke disc and complete blindness, point to cerebellar disease. I explained the absence of cerebellar ataxia by non-involvement of the middle lobe. I think the error was excusable, or rather, the graver error was in attempting localization without sufficient data.

Autopsy was made nineteen hours after death, the body having been kept on ice. Rigor mortis was marked. The scalp was not adherent to the calvarium. The latter was very thin, and upon its inner surface were many worm-eaten depressions filled by small cauliflower-like excresences from the dura. The dura was congested, and over the right frontal region firmly attached to the bone and thickened. On removing the dura a softened mass attached to it came away from the outer aspect of the right prefrontal lobe. A harder mass was left behind, involving the entire lobe except the median cortex and the orbital surface. It did not extend into the ascending frontal convolution. Microscopically it presented the appearance of a round-celled sarcoma. In the softened part hemorrhage was present. The optic nerves were much shrunken.

SECONDARY CANCER OF THE DURA INVADING THE CEREBELLUM.

M. G., female, white, single, aged about forty-five years. In March, 1891, the left breast was amputated for carcinoma; and in April of this year the left axilla was opened, to remove cancerous glands. Immediately after this operation the left arm was found to be palsied. Soon after she began to complain of rapidly increasing weakness, and had an attack of unconsciousness without con-

vulsion. There was at times slight frontal headache; never vomiting. I saw her once only, a couple of weeks before death, while she was under the care of Dr. Harvey Shoemaker, to whom I am indebted for permission to show the specimen. At that time she was emaciated, cachetic, and bed-ridden. There was no palsy of legs or arms except that due to the local injury; the lower face was palsied; tongue protruded straight; there was distinct inco-ordination of movement; the knee-jerks were much diminished; sensation was normal; there was constant lateral nystagmus; the pupils were equal and reacted to light. Acuteness of vision could not be measured; she could, however, see apparently quite well. Dr. Cross reported that there was no fundus lesion; urine was normal. She was apathetic, and almost never spoke except when addressed; she would answer all questions asked her, but soon became mentally fatigued, and then would reply at random. For some weeks before death she had attacks of sudden oncoming unconsciousness without convulsion; duration varied from one-half hour to several hours.

She died in June, 1892. Diagnosis: Intra-cranial cancer involving the cerebellum.

Autopsy.—A hard mass, about as large as an English walnut, was found growing from the dura mater at the posterior edge of the right lobe of the cerebellum. It had invaded the cerebellar tissue, and was surrounded by an area of softening involving the whole interior of the lobe. Microscopical examination showed it to be carcinomatous.

DISCUSSION.

Dr. WHARTON SINKLER.—This patient was a regular attendant of my clinic for nearly three years. At first, the diagnosis of brain tumor was readily made, but the difficulty in localizing the growth was exceedingly great. There were absolutely no focal symptoms. There was a history of a convulsion, but there was some doubt whether or not there had been any convulsive movements. In the subsequent attacks there was simply stupor. There was no pain, no headache, no loss of memory, no impairment of the special senses. No pain could be elicited by percussion. Therefore, from the standpoint of the neurologist as well as from the standpoint of the ophthalmologist, it seemed probable that the growth was located posteriorly.

The PRESIDENT.— It is exceedingly interesting to note that there were special attacks of stupor, which attacks seemed to replace the convulsions which are seen when the tumor involves the motor area. They seemed to be periodic attacks of irritation, causing, as their focal symptom, stupor. This certainly suggests a point for future use in diagnosis. If, as was claimed, the man really had a general convulsion, it was probably due to irritation of the dura, and not focal in character. The fact that the base of the second frontal gyri is pressed upon would be in harmony with the history of nystagmus. The case is also of interest as illustrating the difficulty of distinguishing between cerebral and cerebellar tumors. In a case at the Philadelphia Hospital, studied by Dr. Mills and myself, it was impossible to make a positive diagnosis. There was general headache, and, as it was increased by percussion over the frontal region, we thought that the tumor might be in that position. Exploratory operation failed to reveal the growth, and the post-mortem demonstrated that it was in the cerebellum.

Dr. WHARTON SINKLER.—In the case referred to by Dr. Lloyd, the supposition of general paresis was justifiable from the circumstances. The man came into the house with distinct delusions of grandeur. He could walk a thousand miles; he had enormous strength; he had a large amount of money in his box at some sailors' boarding-house. These were the prominent symptoms on admission. Later, the unsteadiness of gait, pitching backward, and eye lesions were observed.

Dr. CHARLES K. MILLS.—One affection that should be borne in mind in considering the question of disease of the cerebellum, and that is labrynthine disease. The two affections sometimes resemble each other pretty closely. Of course, in labrynthine disease there is usually tinnitus and deafness, but you may have both in disease of the cerebellum. In labrynthine disease another symptom may be present, which is occasionally seen in cerebellar disease—that is, lost knee-jerk. I think that this may be explained in a method similar to that by which Jackson explains the absence of the knee-jerk in cerebellar disease itself.

Adjourned.

Book Reviews.

Diseases of the Chest, Throat and Nasal Cavities, Including Physical Diagnosis and Diseases of the Lungs, Heart and Aorta, Laryngology and Diseases of the Pharynx, Larynx, Nose, Thyroid Gland and Œsophagus. By E. Fletcher Ingalls, A.M., M.D. Second edition, revised and enlarged; 240 illustrations. 8vo. 700 pages. Extra muslin. Price, $5.00. New York: Wood & Company.

The original edition of this work was founded on a series of lectures on Physical Diagnosis delivered to a class of students, and was somewhat elementary in character. In this second edition the author has revised the former and enlarged its scope with the intention of making it a complete and comprehensive treatise and thereby increasing its value to both student and practitioner. It would require a too lengthy analysis to fairly criticise a work whose merit is so unequal in its various parts.

The chapters on Physical Diagnosis are excellent; they cannot be too highly commended. And indeed the general excellence of both manner and material render its defects more prominent and less excusable.

The subjects treated of in this volume cover such a wide field, and our present knowledge of them is so far advanced, that it would seem a somewhat difficult matter to produce a treatise at once satisfactory to both students and practitioners within such limited space and while doing justice to each subject.

And in fact we find that the chief defects of the book are due to too great condensation of material, as well as oftentimes a hurried or superficial consideration.

And this, unfortunately, is not confined to the less important subjects, as evidenced by the following few among many instances: The consideration of Pertussis occupies two pages; Fatty Heart, two; Angina Pectoris, three; Nasal Bony Tumors are disposed of in one page; Malignant Nasal Tumors in one; Exophthalmic Goitre a half page; while the space devoted to Nasal Fibroid Polypi is almost as brief as the celebrated chapter on the Snakes of Ireland.

The first two hundred and sixty pages are devoted to Diseases of the Chest, and are excellent—the chapters on Physical Diagnosis exceptionally so. It is to be regretted, however, that, with few exceptions, so little attention has been given to the subject of treatment. Indeed, the brief notice and extreme meagerness of detail which this most important question receives is annoyingly frequent throughout the entire book, and in many instances might almost as well have been omitted.

Diseases of the Upper Air-Passages occupy the remaining four hundred pages.

Although Diseases of the Nose and Throat is one of our youngest specialties, its literature is already voluminous, and we have so many excellent books devoted to it, that an author is scarcely warranted in presenting us a new one unless he has something in the way of original investigation or newly discovered facts to offer.

Such *raison d'être* can hardly be claimed with much force in the present instance.

While the language is clear and concise to a degree, and while the author has availed himself of the most recent knowledge of his subject, still there is little, if anything, which is really new, or which has not been well said before. The author does not pretend, in his preface, to have written a book for the specialist, yet it is fair to assume that it is so intended, inasmuch as the manner of his presentation of the subject is too elaborate for the requirements of the general practitioner, although, from the point of view of the specialist, it is by no means sufficiently so. As compared with the classical work of Bosworth, lately issued, it can only be called a compend. Microscopical anatomy is practically absent, and in what is said of gross anatomy the author has contented himself with a description of what may be seen on inspection.

The author's classification is often peculiar; as, for example, after including chronic follicular pharyngitis under the head of diseases of the fauces, he makes a separate chapter on diseases of the pharynx, under which caption he considers only foreign bodies, retro-pharyngeal abscess, tumors of the pharynx, cancer, the neuroses, scalds and burns.

Acute phlegmonous tonsillitis and and acute follicular tonsillitis are apparently considered as due to the same cause, although the classification is here again somewhat involved. The well-established rheumatic origin of the former is not specially emphasized.

In removing the tonsils of young children the author gives chloroform, lays them prone, introduces a gag, and uses the cold wire snare; his reason for thus transforming one of the simplest and quickest operation in surgery (when done with the tonsillotome in the usual way) into such an elaborate, prolonged and complicated one, being to save shock to the friends, fright to the child, and hemorrhage.

The consideration of the neuroses is mainly scanty and superficial. In a general way it might be said that this is a treatise on the diagnosis and symptomatology of disease of the throat and nose—physiology, pathological anatomy, etiology, and treatment receiving comparatively but slight attention.

The chapter on diseases of the œsophagus and thyroid body does not deserve its title. It is absurdly short and superficial.

The book is well and profusely illustrated, many of the illustrations being new.

It is well printed on good paper, and is a fine specimen of the printer's art. G. S.

Miscellany.

MENTAL DEPRESSION.

We often view this condition as a precursory to permanent alienation or to a more tragic ending, and it behooves the physician, if possible, to treat this symptom with heroic measures. As a precursory symptom there is another corollary, *mental pain*, which painful emotional state contributes more to disastrous permanent conditions than simple stupor, apathy, or torpor.

The drug of all others which seems to do the most toward changing the subjective morbid feelings is opium; and yet it often fails, and, to me, it seems to do so on account of the carelessness in the choosing of the quality of the drug and the exactness of its component elements. Morphia alone seems inadequate—crude opium injurious. I use the preparation called "Svapnia," which is always reliable. It contains a standard of ten per cent. of morphia and the alkaloids codeia and narceia. The other narcotic alkaloids, thebaine, narcotine, and papaverine, are removed. I use Svapnia in pill-form, containing a tenth of a grain. These are keratine, coated, to allow of absorption only in the small intestine.

There is care necessary in giving the drug as well. There is no advantage to be gained, and rather a detriment, to push the drug beyond a slight physiological action; and it is hardly to be recommended to go beyond three-fifths of a grain in the twenty-four hours.

Dr. Landon Carter Gray, in his recent most excellent work on "Nervous and Mental Diseases," page 600, says: "Opium is the best of all drugs for the direct treatment of melancholia. . . . . Great care must be taken to have the opium pure. It must never be bought hap-hazard in the shops. All that I use is obtained from some reliable source and analyzed."

This little note on the merits of "Svapnia" is prompted by many satisfactory trials of it. There is another point, to most universally observe in conjunction with its use, and that is, to give aloin, or aqueous ext. aloes, in sufficient quantities to act upon the bowels.

Another wise injunction is to be observed, as laid down by Dr. Gray, page 602: Never give a prescription to the patient for opium, etc. Send him to the pharmacist yourself with special injunction: "*No copy or repetition.*"

C. H. B.

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Original Articles.

REMARKS ON THE VARIETIES OF CHRONIC CHOREA, AND A REPORT UPON TWO FAMILIES OF THE HEREDITARY FORM, WITH ONE AUTOPSY.[1]

BY WILLIAM OSLER, M.D.,

Professor of Medicine in the Johns Hopkins University, Baltimore.

NOTHING illustrates so pointedly the widespread interest now taken in diseases of the nervous system than the rapid manner in which facts accumulate about obscure and rare affections. Twenty years have passed since Huntingdon, in a postscript to an every-day sort of article on chorea minor, sketched most graphically, in three or four paragraphs, the characters of a chronic and hereditary form which he, his father and grandfather had observed in Long Island. In the whole range of descriptive nosology there is not, to my knowledge, an instance in which a disease has been so accurately and fully delineated in so few words. No details were given; the original cases were not even (nor have they been) described,[2] but to Huntingdon's

[1] Read before the Philadelphia Neurological Society, Nov. 28, 1892.

[2] Several years ago I made an attempt to get information about the original family which the Huntingdons described, but their physician stated that, owing to extreme sensitiveness on the subject, the patients could not be seen.

account of the symptomatology no essential fact has been added. Within the past eight years a copious literature has gathered around the subject (particularly in this country), which is available to 1889 in the monograph of Huet.[3] Since this date the interest has even increased, and the references stand thick and close in the Index Medicus for the past three years. The recent paper by Sinkler (*Medical Record*, March 12, 1892) gives the literature to date. The practical outcome is that we now know the clinical aspects of this form thoroughly, and I have nothing unusual to offer in the history of two Maryland families which I have to report; but the connection of the chronic choreas with each other and their relation to chorea minor are questions which may be discussed, and upon which we need fuller information.

A chronic chorea of adults and aged was recognized long before Huntingdon's description of an hereditary form in adults, which was itself antedated in this country by the observations of Waters, Gorman, and Lyon.

Provisionally, at least, we may place the cases of chronic chorea in four groups:

First group, chorea of infants, appearing either at birth or within the first two or three years of life. Until recently but little attention has been paid to these interesting cases, of which there have been several well-marked examples at the Philadelphia Infirmary for Nervous Diseases; one has been reported by Sinkler and two by myself. A *résumé* of the literature to date is given by Audry in his recent monograph upon "Double Athetosis." The cases heretofore described may be, as he says, divided into those in which no accurate account is given as to the existence of spasm with the movements, and those with explicit statements as to its presence or absence. A majority of these cases are examples really of spastic diplegia, plus movements which may be choreiform, tremulous, or athetoid; or there may even

[3] De la chorée chronique, Paris, 1889.

be combinations of mobile spasm with more rapid movements, so that the diagnosis is extremely difficult, one observer calling the case chronic chorea, another double athetosis. This confusion was well illustrated in the discussion at the Berliner Gesellschaft f. Psychiatrie u. Nervenkrankheiten last year, when Remak showed a case of chronic chorea which Oppenheim had regarded as possibly athetosis, and which Senator thought—owing to the existence of spasm—had nothing whatever to do with chorea. In a large proportion of these cases there is also mental impairment, or even idiocy. The following case illustrates choreiform movements in a child with extremely slight spastic manifestations.

Female, aged four and a half years, seen in Ontario, May 12, 1892. One of twins, born prematurely at the eighth month. Mother had one child before, also at eighth month. Nothing abnormal was noticed about the baby at birth, it was not blue, and subsequently throve well. No abnormality was observed until the other child began to creep, when this one seemed backward and could not hold on to anything. At one year irregular movements were noticed in the arms and legs, and have continued. Teeth were cut at the twelfth month, and she began to talk at the third year; has never walked. The child is bright, intelligent-looking, with well-formed head; does not dribble. There is no nystagmus; talks a gibberish, of which I can only catch a word or two, but which the mother understands quite well. Movements slight in face, scarcely noticeable; no distinct grimaces; movements of tongue natural. The arms are in constant motion, slow and irregular as a rule, but occasionally jerky in trying to grasp objects. The fingers do not display athetoid movements. She cannot use a spoon, but can feed herself with bread, etc. The mother is sure that the arms are never stiff. She sits up well, but the head occasionally comes forward with a jerk. The feet are extended in talipes equinovarus position, and the toes spread occasionally in athetoid movements. The legs are freely movable, not apparently stiff; the muscles hard, but not very well developed. In taking off the stockings, however, the legs stiffened and were hard to bend at the knees, and the big toes became strongly flexed.

This case, belonging to the group described in literature as chorea spastica, is more properly a spastic paraplegia with choreiform and athetoid movements. The following is an illustration of a less common type, in which there was no spasm and the movements were of a more characteristic kind.

N. G., aged eight and a half years, the eldest of two children. The mother had twitching of the eyelids when young, but there are no nervous troubles of any moment in either her own or in her husband's families. The patient was a delicate infant, but throve fairly well, learned to walk and to talk at the usual time. About the fourth year it was noticed that she had irregular jerking movements in the arms, which were moved about wildly and even thrown over the head. She became excitable and irritable, and slept badly. Within a few months the face became affected, and she made grimaces, and sometimes a peculiar grunting noise. The legs were involved shortly after the face, and at times she walked with difficulty. When seen in 1890, more than four years after the onset, she seemed a well-grown child for her age, was not anæmic, a little nervous in her manner and excitable, but intelligent looking. After sitting quietly for a few moments, the arms jerked about and the face twitched. The right arm is most affected, and is twisted about in an odd way, and lifted as high as the shoulder. The legs are now not much, if at all, affected, though she fidgets about in her chair. When watched, the movements are much increased. She feeds herself with great difficulty. There is no spasm in the muscles, which are well nourished; the reflexes are not increased. There is no heart affection. Treatment has not been of the slightest benefit. She is very wayward; and though bright mentally, it is difficult to get her to attend to her studies. There have been no explosive utterances, or any of the mental features of convulsive tic.

And lastly, some of the cases of chronic progressive chorea with dementia have begun in early childhood.

Second group, comprising cases of chronic chorea without any hereditary *anlage*, in which the disease may set in in childhood, adolescence, maturity, or old age. Many of the cases in Huet's monograph had no history

of chorea in the ascendants. In scarcely any of the features are these cases to be distinguished from the variety described by Huntingdon, but in many instances the disease has begun in childhood or adolescence, and has gradually led, in a variable period of time, to dementia. Very many cases of this kind have been reported recently from asylums.

Only some of the cases of chorea in the aged can be classed here, since many run an acute course, and recovery is not uncommon, noted indeed in eleven instances in Herringham's critical review upon chronic chorea, in *Brain* (1888). The acute course, and the association occasionally with rheumatism, render it probable that many of these are really instances of chorea minor.

Third group, including the cases with marked heredity, the so-called Huntingdon's chorea, characterized by the occurrence in family groups, a late onset, psychical disturbances, and a progressive and fatal course.

Fourth group, comprising cases of chorea minor which pursue a chronic course, and persist for months or even years, and ultimately recover. They differ essentially from the other forms we have been considering, in the absence of a progressive character, the more active, quick, bizarre movements, and the retention of the mental powers. The following is a good illustration of the chronic form of chorea minor:

Alfonzo G., aged twenty-one, baker, applied to the Infirmary of Nervous Diseases, June 1, 1885, with spasmodic movements of the muscles of the face, arms, and trunk. The affection had lasted without intermission since August, 1884. There was no rheumatic history in the family, but a sister had chorea, and subsequently died of heart disease. He is a strongly built, well-nourished young man. The muscles of the head and neck and those of the face contract suddenly, jerking the head upward and rotating it slightly. At the same time he makes a grimace, and the muscles of the thorax are thrown into quick action, and the air is drawn in often with a whistling sound. The heart is not involved.

The patient was under observation and treatment for three years, during which time the chorea persisted with

slight variations in the intensity of the movements. When I last saw him the twitching and jerking of the muscles of the neck and chest were present, but the facial spasm had lessened. There were no mental symptoms, and for the greater portion of the period he was able to work.

Other instances of chronic chorea minor in the records of the Infirmary are given in my "Lectures on Chorea,"[4] two of which are very interesting from the persistence of the symptoms for more than three years with ultimate recovery.

Habit spasm, beginning in childhood, may persist for years, and is often confounded with chorea minor; there are also aggravated forms of convulsive tic with movements typically choreic, but which can usually be separated from chorea minor by the existence of fixed ideas, coprolalia, etc.

The following is a record of two family groups of the hereditary form of chronic chorea. The cases present the usual peculiarities described by Huntingdon. For the opportunity of seeing the members of the first family and for the details of the pedigree, I am indebted to Dr. Ellis:

FAMILY X.—FIRST GENERATION.

A. B., an Englishman, married C. D., a native of —— County, State of ——, and had of issue eleven children. A. B. died aged eighty-seven, and his wife aged eighty-five. Neither of them, so far as is known, displayed any mental or bodily peculiarities. Two of the eleven children died choreic and demented.

Of the other children, two of the girls married N.'s. One died aged seventy-five, leaving children, all of whom are in good health; the other, Mrs. N., still lives, aged seventy-seven, and has healthy children: George, died aged seventy, a bachelor; Sarah, died aged fifty, of typhoid fever, without issue; William, died aged seventy-six, leaving a large family, none of whom have shown any symptoms of the disease; Mary, died of an acute illness, aged fifty-five, leaving healthy issue; Jane, died

[4] Medical News, Philadelphia, October, 1887.

aged seventy, leaving a family, none of whom are affected; two other daughters died maidens, well advanced in life. The two affected children were James and Margaret.

James, the first to become affected, began to exhibit remarkable muscular irregularities before he was forty. Dr. Ellis writes: "I very well remember, in my earliest youth, his grotesque movements, exciting unusual attention, and I fear more ridicule than sympathy. His swaying, jerking, and fantastically irregular walk compelled him from the sidewalk to the unobstructed roadway. Notwithstanding his infirmity, he was a great pedestrian, frequently walking from his home, eight miles distant, and returning the same day. His sudden stops and precipitate advance, his facial contortions and mobile features, I recall with great vividness after forty years. His wife died in childbed.

Margaret, married J. M. Her symptoms began to develop before she was forty. She continued to go about until a few days before her death, which occurred in her sixty-fifth year. Except a short time before her death, she was not entirely helpless, nor were the mental symptoms very strongly marked in her case.

SECOND GENERATION.

Margaret M., the last-mentioned patient, had five children, two of whom have already died of the disease, and three are in various stages of it. I have seen two members of the family, and have performed a post-mortem on a third:

First child, male, now in his sixty-first year. A year ago the first evidences began. "A man of some character, it is but charity to ascribe the eccentricities of his life to disturbed mentality. He married twice, but had issue only by his first wife. Several children died in infancy, but one surviving is now in good health." This patient I could not see.

Second child, female, married, became choreic in her fortieth year, and died demented in December, 1890, in her fifty-eighth year. She was confined to her bed for nearly a year before her death, which occurred in the Pennsylvania Hospital for the Insane, Norristown. She had four children—three girls and one boy; all are living and in good health, the oldest being now in her thirty-second year.

Third child, male, aged fifty-five. I saw this patient with the doctor. He has enjoyed good health, and has been able to attend to his business until recently. When about forty-two he began to get nervous. Irregular locomotion was the first symptom; his speech became affected about a year ago. He will make use of a nod or a grunt in place of words whenever he can. Lately he has been confined to the house, and has been obliged to abandon business. He is very irritable, and is steadily passing into a state of dementia. He has had five children: four are living and in good health, the oldest about thirty-three years of age; one died of basilar meningitis at sixteen. I saw this patient in April, 1889, and made the following note:

Bony, well-built man; face has an intelligent expression. The gait is very peculiar; he sways from side to side; the movements are irregular, very unlike those of an ataxic, but resemble rather those of an alcoholic. He does not use a cane; feet are not specially spread; eyes not directed to the ground. He can stand with his heels together, with his eyes shut; no movements of the hands or arms when at rest, but in attempting to move there are large irregular sweeps of the arms and slight tremor. He has great difficulty in feeding himself, and sometimes takes two hours or more at a meal. He still can write, though with increasing difficulty. He signs his name to a letter, but the pen, in forming the letters, is often jerked up and the signature is very irregular. With the eyes shut he touches the nose or ear with precision and quickly. The grasp of the hand is firm and strong. There is no disturbance of sensation, no numbness or tingling. Knee-jerk slightly increased; ankle clonus not obtainable. Pupils medium size; react to light and on accommodation. Speech is slow, and interrupted frequently by the interjection 'Hem, ha!' This peculiarity, his wife says, is of comparatively recent development. The mental condition is apparently good; perception clear. When questioned, however, on several occasions, it seemed to take him some time to understand our wishes. He takes an interest in what is going on; reads a good deal, particularly the newspapers. He still personally conducts his business.

Within the three years and a half since making the preceding note he has steadily declined mentally and bodily.

Fourth child, female, aged forty-three, married, has had five chidren. One died of scarlet fever; the others

are living, the oldest a boy of twenty-three. In this case the disease has progressed with greater rapidity than in the others, and certain indications of it have been present, according to the doctor, since her thirty-fourth year. The mental symptoms were first to appear. In April, 1889, I made the following note:

Slightly built, somewhat anæmic woman; talks clearly and rapidly, but occasionally she displays a certain childishness, and the doctor, who has not seen her for some years, was much struck with the change in this respect.

While sitting quietly there were no irregular movements of her limbs, but occasionally there was a slight jerk of the finger, the shoulders would move, and once or twice, while speaking, there appeared to be a regular contraction of the facial muscles. There is no tremor of the tongue, and the pharyngeal muscles act normally; the grasp is good; she can use her fingers for delicate movements, and can thread a needle, and there does not appear to be the slightest inco-ordination. The most marked change appeared to be noticed in her gait. She walks with the feet somewhat spread, but follows a straight line fairly well; she turns with a little difficulty, and, if rapidly, loses her balance. Her head is carried somewhat stiffly in walking; she does not trip, and she walks in the dark quite well. She stands with her eyes shut and her feet together without swaying.

The power of the legs is good; knee-jerk increased on both sides; no disturbances of sensation; special senses normal; the pupils are of medium size and react to light and on accommodation. In the three years since the preceding note was made she has lost ground rapidly, and the muscular inco-ordination has become much worse. She is now confined to the house, and for the greater part of the time to her bed.

Fifth child, female, aged, at the time of her death, fifty-one; married; had eight children. Dr. Ellis writes: "After the birth of seventh child, in her thirty-second year, her husband noticed the beginning of the trouble in jerking movements of the legs when sitting, and when erect she had a trick of raising her heels suddenly and standing upon the ball of the toes. Irregular movements of the arms speedily followed. When I saw her first, in 1880, she could walk a mile or two without apparent fatigue, and would insist on walking to church, nearly a mile distant, repelling the suggestion that she could not walk as well as another. At this time, in walking, her

body would be bent forward, her head jerking, with a pendulum-like motion, to and fro, and her legs making such irregular and large movements that she would make wide excursions on the sidewalk. A year later she could no longer go out without assistance. Her speech indicated marked changes very early, in her fortieth year, and this was (in 1881 and 1882) accompanied by great difficulty in swallowing and frequently with alarming spells of strangling. She was a most pitiable sight. She suffered also from procidentia uteri; yet in June, 1883, in her forty-third year, she was delivered of her eighth child, which survived but a few days. Her menses were perfectly regular, her menopause occurring in her forty-eighth year. Six months before her death she was confined to her bed, utterly helpless, and was fed with a spoon. She was now entirely demented.

"Her deep reflexes were rather exaggerated. She could go about the house at night with as little help as in the daylight. She was exceedingly irritable and cross. The choreic movements stopped in sleep; there was no palsy of the sphincters. Of her eight children, seven are living, the oldest in her thirty-third year; all are in good health."

Post-Mortem (about thirty hours after death).—Considerable wasting of the body; no enlargements of joints; no abnormal position of limbs; face a great deal wasted, presenting several recent scars and abrasions, the result of falls.

The skull-cap of moderate thickness; dura tense; meningeal vessels looked stiff; longitudinal sinus contained recent clots. On the exposed cortex cerebri the arachnoid was somewhat turbid and universally separated from the pia by a considerable layer of serous exudate; this was especially marked over the sulci. Pacchionian granulations were numerous; cortical veins moderately full. At the base the arachnoid was turbid and the larger arteries a little stiff; the meninges were not especially adherent, and the pia could be stripped without tearing the substance. Superficial examination revealed no areas of softening, and no special lesions of hemispheres or of cerebellum. There was general wasting of the convolutions, which were also, on section, rather firm. The gray matter was dark, and in places looked thinner than normal. The crura presented no signs of descending degeneration; the pons and medulla were natural-looking; anterior pyramids had a clear, normal

aspect; the ventricles were not distended. Spinal cord was firm; arachnoid a little opaque; pia normal. Transverse sections showed no systemic degenerations; the gray matter had a rosy red tint.

Microscopical Examination.—I am indebted to Dr. Gray for an extensive series of sections from various parts of the brain and cord. The changes may thus be summarized: The arteries were thickened and in places showed hyaline degenerations, and, in the smaller arterioles, fatty changes, very marked in the fresh specimens from the cortex. Here and there the perivascular lymph-spaces were large and contained leucocytes. The ganglion cells in many sections showed very slight changes, not more than are often seen in chronic disorders associated with atrophy of the convolutions. There was the common vacuolation, and many cells seemed laden with pigment. The increase in the connective-tissue elements was more evident to the touch and on section than microscopically. Sections of the pons and medulla showed no special foci of disease. Beyond thickening of the arteries and a shrinkage in the cells of the anterior cornua (probably an artificial change), the sections of the cord showed no important lesions.

The morbid anatomy of chronic chorea is that of a neuro-degenerative disorder—diffuse changes in vascular, ganglionic, and neurogliar tissues—not essentially different to, though less pronounced than, those of dementia paralytica. We see, too, the terminal series of the process, far removed in time from, not necessarily akin to, the initial alteration which lies at the basis of the disordered function.

The doctor writes that, prior to the onset of the chorea, "these patients and their children are intelligent and bright, and the women are comely. The men are rather aggressive, energetic, and ferocious; the women are affectionate and prolific: the issue of the five numbers twenty-seven. There is no history of infantile chorea in the family, nor of rheumatism, nor of heart disease. The period of development of the symptoms covers a wide range, from the twenty-second to the sixtieth year. The symptoms have begun earlier in the women than in the men. There is at present no sign of disease in any

member of the third generation, though several of the children are past thirty-five. There seems to be a remarkable insensibility to pain in these cases; they fall about and bruise themselves severely without complaint. Shortly before the death of No. 4, she struck a cast-iron key, lodged in the door-lock, with her hand and broke it, naturally bruising and maiming her hand very much; but of this she took no notice whatever. The uncle and the mother of these patients kept about and showed much greater muscular vigor than members of the second generation, in whom, too, the dementia has apparently progressed more rapidly. The progress of the disease is marked by great emaciation; the movements are but little under control of the will and are much excited by volition. When standing, only those muscles are much affected which are concerned in balancing the spinal column and the head; the movements stop during sleep. These patients have all been light sleepers. The speech defect is not aphasic, but muscular —an indisposition to articulate on account of difficulty in moving the muscles. In case No. 4 the symptoms were very similar to those of a case of bulbar paralysis."

NEITER FAMILY.

So far as can be ascertained only four members of the family have been affected, namely: mother and three children, one of whom was our patient, Peter.

1. The mother, a German, is stated to have had trouble of the same kind as that which Peter has. For many years she made wild inco-ordinate movements with her arms, and toward the end of her life she could not eat alone and had to be fed. Her mind, also, became very weak. The exact duration of the disease in her case could not be obtained, but it extended over several years. She is said to have died of heart disease. She has one brother living, aged eighty-three, who is said to have the disease, but Dr. Simon visited him and reports that he is only subject to ordinary senile tremor. No information is available with reference to her family. Her maiden

name was Schmidt. She had four children, of whom three have been affected with the disease.

2. Lizzie N., was well up in her thirty-seventh year; married and had six children, of whom two died and four are living and well. After the birth of her last child the chorea developed, beginning in her arms first. Her husband noticed that she frequently dropped things. The trouble gradually became worse. Her mind became seriously affected, she talked incoherently, and had strange ideas. She once tried to commit suicide by jumping out of a window. The last year of her life she was helpless and could not walk alone. She died in her forty-ninth year, about twelve years after the first onset of the symptoms. Her husband, from whom these facts were obtained, says that the disease looked very much like St. Vitus' dance.

3. Nicholas Neiter, aged about forty, blacksmith, living at Edgewood, Hartford Co., Md. He was seen for me by Dr. Chas. Simon, who reports that he is evidently subject to the disease, as he displays grotesque inco-ordinate movements of the legs, arms, and face. Mentally, too, he is inclined to be childish and is very emotional. He regards himself, however, as in a condition of perfect health and not affected in any way as his brother Peter.

4. Peter Neiter, aged fifty-nine, German, a butcher, was admitted to Johns Hopkins Hospital,[5] October 9, 1890. Patient has been in this country since 1850. He has always enjoyed good health with the exception of malaria when he first came to this country; has not had syphilis. He dates his present trouble from an attack of gastro-intestinal disturbance eight years ago, which followed the drinking of large quantities of iced lemonade. At this time he had also pains in the head, and he speaks of the occurrence of something bursting in his body like a cannon. The movements began about five days after this over-heating and taking iced drinks. They did not start at any particular part of the body, but were general from the outset. They have gradually become worse, particularly when voluntary movements are made. They are severe enough to prevent him from working, and he has not been able to do much for six or eight years. He has fallen, sometimes, owing to the irregular movements of the legs. He has never at any time lost consciousness.

[5] The patient was shown at the Hospital Medical Society, and is reported in the Bulletin, vol. i.

Emotion or fright always exaggerates the movements. He has not had headaches; has as a rule slept well. His appetite has been good and general health excellent. Ever since the attack, eight years ago, he has been liable to a recurrence of the vomiting whenever he takes cold drinks. He says his memory is quite good. He does not think that his speech has been affected.

Present Condition.—The patient is a large, well-nourished, well-built man. The face in repose looks intelligent, but on smiling, the expression is fatuous. He answers all questions readily and freely; gives a good account of his condition, and it is more in his expression and general behaviour that an indication is found of mental impairment.

When sitting in a chair, at ease, the arms and hands are in more or less constant irregular motion. The fingers are extended and flexed alternately; sometimes only one, sometimes the entire set. At other times the whole hand will be lifted or there are constant movements of pronation or of supination. For half a minute or so they may be perfectly motionless. The head and trunk present occasional slow movements; in the latter more of a swaying character. The legs jerk irregularly and the feet are flexed or extended; but the movements are not so frequent as in the arms. The face in repose is usually motionless, but the lips are occasionally brought together more tightly and the chin elevated or depressed. There is an occasional movement of the zygomatic and of the frontal muscles. He puts out the tongue, with tolerably active associated movements of the face, and it is usually quickly withdrawn or rolled from side to side. It is impossible for him to hold it out for any length of time. There are no irregular movements of the palate muscles.

He walks with a curious irregular gait, displaying distinct inco-ordination, swaying as he goes, hesitating a moment in a step, keeping the arms out from the body and in constant motion. The legs are spread wide apart; steps are unequal in length and he seems rather to drag the feet. He stands well with the heels close together.

There is a suggestion of stiffness about the gait and about the way in which he uses his legs.

Sensation is unaffected. The deep reflexes are increased. There is slight ankle clonus, exaggerated knee-jerk, and slight increase in arm-reflexes.

The special senses are unimpaired. Pupils are of

medium size—the right a little larger than the left; they react to light and on accommodation; there is no nystagmus. He has no fever; bowels are regular, and the urine shows no special changes.

A report of cases of the hereditary form of chorea does not afford a very wide scope for discussion; but there are problems in the relation of the forms to each other and to chorea minor, which, if I have read the literature aright, are still far from settled. My own point of view may be very briefly stated: Chronic progressive chorea is a malady distinct from the various disorders associated with coarse lesions of the motor centres or path known as symptomatic chorea—an affection which (like forms of muscular atrophy) may occur in families or in single individuals, and is characterized by irregular, inco-ordinate movements, a reeling gait, speech disturbances, and progressive impairment of the mental faculties. The movements differ from those seen in chorea minor, being slower, and resembling rather those of Friedreich's ataxia, without the brusque, jerky character of the former disease. Moreover, in striking contrast to the movements of chorea minor, those of chronic progressive chorea are sometimes influenced by the will. A certain number of the cases of chronic chorea beginning in infancy and childhood belong to this category, but a very much larger number are instances of spastic paraplegia or diplegia; while others represent anomalous forms of chorea minor.

Chronic progressive chorea is, I believe, a disease wholly apart from the affection described by Sydenham, having nothing in common with it but the name. The course of acute chorea minor, the incidence in children, the arthritis, the seasonal relations, the extraordinary frequency of endocarditis—to say nothing of the different characters of the movements above referred to—separate it as a well-defined affection, depending possibly on a virus as yet unknown.

A STUDY OF SOME OF THE DRUGS USED IN FUNCTIONAL NERVOUS DISORDERS.[1]

By ARTHUR A. BOYER, M.D.

FIRST PAPER.

IN the treatment of functional nervous disorders, as in other fields, there is a great temptation to secure rapid and striking results. Methods and agents that accomplish them are eagerly adopted by the profession; while others, less attractive, naturally fall into disuse. It is not strange, therefore, that, in the continual looking to immediate effects, there is a disposition to give secondary consideration to the means employed, and too often to forget the rigid scrutiny to which they should be subjected.

The purpose of this paper is to call attention to the general character of the methods in vogue, and to discuss in detail the nature and mode of action of a few of the drugs that are used to-day.

There are two things that impress the student of therapeutics as applied to functional nervous disorders: First, the necessity for pushing familiar drugs to their physiological limits; second, the large number of new drugs reported as accomplishing startling results without a sequence of dangerous or unpleasant symptoms. It is not unreasonable to suspect that such reports are based on insufficient data, and that better acquaintance with these drugs will reveal elements no less dangerous, because insidious. The fact that they are effective in many obstinate conditions, places them in the category of drugs of profound action. The hiatus between the physiology of a drug and its therapeutic application is always great, but much can be done toward bridging it over by a careful study of some special disease, in which the symptoms are marked, and over which the drug is found to have

[1] Read before the New York Neurological Society, Nov. 1, 1892.

control. Such a study will be of value, not only in placing the drug where it belongs, but also in guarding the physician against its abuse. There is the greater need for caution in the treatment of functional nervous disorders; for, in the absence of organic disease, alarming symptoms are slow to arise, and are often to be found only as a general depression of the forces, whether physical or mental.

As we have just seen, the main reliance in the treatment of functional nervous diseases to-day is on some drugs in excessive doses, and on others having profound effects. Our study is made easier by that fact, since we are warranted in drawing some information from positive lesions, the result of toxic doses of the drugs in question.

Your attention is directed, first, to the drugs used in chorea. First and foremost among them stands arsenic. Its physiology and toxicology are too well known to require even a review. For the sake of emphasis, however, certain points will be mentioned.

In small doses, arsenic is a tonic. It is rapidly absorbed, and appears to act directly over the tissues with which it comes in contact, by irritating the end organs of the nerves supplying those parts. It increases the appetite, the glycogenic function of the liver, and the excretory functions. It increases the action of the heart, and raises the blood pressure, both by its action on the heart and on the vaso-motor system. It increases the number of red blood corpuscles, diminishes the absorption of oxygen, and the evolution of carbonic acid, and checks retrograde metamorphosis. It stimulates respiration, and it increases the general tone of the muscular system.

All this is true when the drug is given in small doses and for a short period.

In toxic doses, arsenic acts as a powerful gastro-intestinal irritant. It paralyzes the end organs in the vaso-motor system, decomposes the hæmoglobin of the blood, and renders it less coagulable. Motor and sen-

sory disturbances are common. In the one hundred cases of poisoning reported by Joubert Gourbeyre ("Des Suites de l'Empoisonnement Arsenicale," Paris, 1881), seventy-five had hemiplegia or local palsy, twenty-five paraplegia. Symptoms in many cases resemble those of multiple neuritis or sub-acute poliomyelitis. Sklarek and Ringer and Murrell, in their experiments on frogs, found that sensation and motion were abolished by the action of the drug on the spinal centres.

The effects of full medicinal doses long continued are in many respects similar to the toxic. There is a decrease in the red blood corpuscles, decomposition of the hæmoglobin, and diminished coagulative power—œdema of the eyelids, general œdema, albuminuria. The heart's action is feeble and irritable, the blood pressure diminished; the temperature is lowered, breathing oppressed, and motility and sensibility affected. In many cases the first symptom is a multiple neuritis, a herpes zoster, or a pigmentation of the skin.

It is not necessary to dwell on these symptoms of chronic poisoning; every one knows them, and avoids them as far as he is able.

There is, however, a large class of patients who have been taking moderately small doses of arsenic, from six months up, in whom are to be found few, if any, of the symptoms mentioned above, but who bear characteristic marks of their treatment. The skin is pale, often sallow to the point of muddiness; the air is languid, the gait rather uncertain, the hands moist, flesh flabby, appetite poor, habit constipated, heart's action feeble (frequently accompanied with palpitation or irregularity), pulse soft, respiration shallow. Examination of the muscular system reveals a lack of tone. This can be done with accuracy in the case of the extrinsic muscles of the eyes, the examination of which has been reduced to a science. They are found to be in a weak state bordering on paresis. With an esophoria of high degree, the nasal rotation is poor; with an exophoria, the temporal rotation is imperfect; abduction and adduction are usually

limited. In general, the condition of the patient is what might be called below par.

Although many of these symptoms cannot have gone unnoticed by any one who has systematically prescribed arsenic, little mention is made of them. A notable exception is Dr. J. Hutchinson, who, in several monographs, calls attention to the effects of long-continued use of the drug. In the *Archives of Surgery*, London, 1889, he says: "My experience in the medicinal use of arsenic has been very considerable, and my impressions regarding its effects, when long continued, are certainly very different from what we have recently seen so freely expressed. I never knew a patient to become fond of arsenic or experience agreeable effects from its long continuance. On the contrary, nothing but anxiety to be rid of a loathsome skin disease will induce the majority of those for whom it is prescribed to continue taking it. Its general effect, if pushed, is not to give vigor, but to diminish it, and make the patient feel apathetic and uncomfortable. So far from its usual effects being to clear the complexion, I believe that, unless the dose be very small, it not unfrequently makes the skin dry and earthy and the eye dull. Patients who have taken arsenic for long periods are, I think, without exception, glad to leave it off, and always experience improvement in general health when they do so. In very small doses it may have some tonic influence, but I do not think it is one that patients can appreciate."

Among its therapeutic effects the influence of arsenic upon chorea is considered one of the most important. That it will, in many cases, stop choreic twitchings, no one will deny. By what means it accomplishes this, every therapeutist confesses that he is ignorant. Wood has decided that it acts in "some unknown way," and most authors admit as much. Hutchinson goes so far as to say: "That arsenic has a special affinity for nerve-tissue, and some peculiar influence on nerve-function, we may safely believe; but further than this we can scarcely go." Scientifically perhaps we do not know,

but practically there would not seem to be occasion for so much hesitation. Let us see what data we have upon which to base an opinion. In the first place, it will be admitted that the essential thing in chorea is involuntary muscular contraction. To affect this, one of three things is necessary: To remove the cause; to produce anæsthesia of the afferent, or paralysis of the efferent nerves, or affect the conductivity of the cord. We have seen that in doses such as are prescribed for chorea, there is a decomposition of the blood and an increase in retrograde metamorphosis. In toxic doses there is usually a degenerative change in the spinal cord. Brunton has shown that the irritability of a muscle is not affected by arsenic, but that the work which it can do is diminished. It is probable, therefore, that the action of arsenic in chorea is twofold: Primarily a depression of the spinal centres by reason of the poverty of the blood; in the second case, and to a much less degree, a reduction of the working power of the muscles by the direct effect of the drug.

The next drug to which your attention is directed is chloral. The physiological effects are a powerful and certain hypnotic by its action on the cerebrum. When continued for a long time, the symptoms are sleeplessness, great mental irritability and muscular prostration, uncertainty of movements, with tendency to fall forward, appetite capricious, and frequent nausea; injection of the conjunctiva with yellowness. The direct effect on the muscles is to reduce the excitability as well as their working power. General symptoms of purpura; surface of body, especially on the back and fore part of the chest, is covered with reddish brown patches.

In regard to the use of chloral for the relief of chorea, there is little to be said. The cases in which it has proved of most value are those of acute and violent chorea, where an immediate cessation of spasm is requisite to the safety of the patient. Here the hypnotic effect of the drug is pushed to the point of producing coma, and the patient kept under its influence until the

nervous centres have had time to regain their lost equilibrium. The theory for its use was the fact that in sleep choreic movements usually cease. Chloral was quoted as a pure hypnotic. What could be a more ideal course of treatment than to maintain a natural sleep until the tendency to relapse should pass! Many satisfactory results have been reported. The large amount of chloral required in such and similar cases, however, to produce sleep, certainly creates a doubt in the mind whether the effect is produced through the hypnotic action of the drug so much as by the profound depression of the brain and spinal centres and direct action on the muscles themselves. More will be said of chloral and its action when the subject of insomnia is reached.

Some attention has been directed of late to the use of antipyretics in chorea. These drugs, on their introduction into the pharmacopœia, met with a most cordial, not to say, eager reception, and they are now enjoying almost unlimited freedom, because their administration is pleasant, their work rapid, and their employment attended with no alarming symptoms. There is no reason to doubt, however, that, like many of their predecessors that have accomplished great results with little display, they may have dangerous properties concealed. The very fact that they may be able to affect disorders of the character of chorea lays them open to suspicion, while it half suggests the nature of their action. Indeed, a reaction is already finding expression in the distrust shown among therapeutists for their effect in fevers—that field in which their value seemed most promising. So that when Dr. Masins, at the International Congress of Therapeutics and Materia Medica, held in Paris, 1890, affirmed their value in all febrile diseases, he was met by a general expression of dissent. Dr. Williams, of Boston, condemned their use because they seldom benefited the disease, and their result was to retard convalescence. Dr. Stockwin held them as little better than poisons; and in Dr. Semnala's opinion they give temporary relief only at the expense of the patient's strength.

Their most prominent feature is their power to reduce bodily temperature. Experimental research has led the majority of physiologists to the conclusion that this is due to the action of the drug on the thermogenic centres in the brain. They regard other effects of secondary importance. Of these observers, Ott, Girard, Cerne and Carter agree that antipyrine has no effect on the blood except in excessive doses. Batten and Bokenham, quoted by Ott, found that antipyrine acts upon all parts of the nervous system, mainly the spinal cord, but also on the brain and motor nerves, the symptoms produced being similar to those seen in lateral sclerosis. It causes tetanic convulsions, and the subsequent paralysis of the nerve centres is followed by a disappearance of reflex excitability. If directly injected into a muscle, it loses its excitability. It depresses the sensory centres. In small doses it acts as a cardio-motor stimulant, and in large doses, a cardiac depressant and a dilator of the capillaries.

The conclusion in regard to heat-reduction, arrived at by the investigators mentioned above, is open to some criticism; and Illingworth (*Provincial Medical Journal*, January, 1892) says very pertinently of Girard's experiments: "It is no proof that because antipyrine exerts its antipyretic effect while Dr. Girard is making his experiments on the striate body that the drug is necessarily operating on the same centre. It is much more in accordance with the symptoms observed in the administration of the drug to aver that it acts primarily on the red blood corpuscles, partially to prevent the oxygenation of the hæmoglobin. This action of the drug on the blood has a rapid effect on the heart, reducing the strength of the pulsations, and thus upon the respiration, which becomes slower. The deficient oxygenation will have the effect also of diminishing the fibrin-forming power of the blood." In support of this, he shows that antipyrine added to freshly-drawn blood dissolves out the hæmoglobin, deprives the corpuscles of their color and their tendency to form *rouleaux*. Each corpuscle,

much reduced in size, stands distinct from the rest and absolutely destitute of viscidity. The effect on a blood clot is to clarify and soften it. "It is evident, therefore, that in common with many drugs, but in a much more marked and wonderful manner, this drug liquifies the blood by diminishing its fibrin-forming power." He says, further, that the analgesic effects of the drug are due directly to this liquefacient property. By increasing the circulation, the tension in congested parts is reduced and the pain relieved. To this action he attributes its efficacy in migraine.

Should the opinions of this observer prove correct their importance cannot be over-estimated. It would establish another bond of similarity between antipyrine and its congeners—phenacetine and exalgine. It has been observed that the latter drugs have a decided effect on the blood to change the hæmoglobin to methæglobin. It is worthy of note, also, that, as Dujardin-Beaumetz has shown, the analgesic properties of the different antipyretics are in proportion to their power to change hæmoglobin into methæmoglobin. It would greatly elucidate the action of the antipyretics in widely different diseases should it be proven that the first effect of these drugs is on the blood, and the depression of the thermogenic centres a result of the poverty of the blood.

Whether the primary effect of antipyrine is upon the blood or not will concern the neurologist but little, since in such conditions as chorea it must be prescribed in sufficiently large doses to produce a marked lessening of muscular contractions, and in such doses it certainly causes changes in the blood.

The manner in which antipyrine arrests chorea evolves itself from the foregoing. In the present state of our knowledge a positive opinion is not possible. It may be conjectured, however, that there is a decrease in the excitability of the muscles themselves by the direct action of the drug, and the sensory centres in the spinal cord depressed by degenerative changes in the blood.

Thus it is seen that in all of the drugs that have won

reputation in the treatment of chorea, the feature of most prominence is their power to cause a depression of sensation and motion to the point of paralysis; that in doses short of this effect they are not of much value; and, finally, that when they are administered in doses sufficient to check choreic movements, other systemic effects, such as general depletion of the forces of the body, degeneration of the blood, vascular dilatation, and cardiac and respiratory depression, attend their specific action.

Let us turn now from chorea to a disorder in which cerebral symptoms are more marked. One of the distressing conditions that the neurologist is frequently called upon to treat, and one that often proves obstinate, is insomnia. Whether it occurs as a symptom complicating other conditions, or whether it is the only thing for which the patient seeks relief, its persistence is characteristic.

The drugs that have proved most efficacious in producing sleep are chloral and sulphonal. When the insomnia is recent, or the result of temporary irritations, the drugs induce sleep, and may be prescribed as indicated. When, on the other hand, the insomnia is chronic, particularly that form which is frequently referred to as the forerunner of insanity, the protracted use of hypnotics is not attended with that perfect immunity from unpleasant effects, that almost all the reports on the subject would lead us to expect. Reference is not here made to the toxic effects of either drug, but rather to those effects that are likely to escape attention, and in many cases come to be regarded as belonging to the insomnia itself.

To attempt to explain the manner in which the so-called pure hypnotics produce their effects would be to explain the physiology of sleep, and the result would not be satisfactory. It may be well, however, to take exception to the term pure hypnotic until we know in what sleep consists. The most that can be said of the hypnotics is that they produce unconsciousness, in which

the respiration, the pulse, and the temperature are those of natural sleep. This is far from saying that they produce natural sleep. No one who has seen the violence of mania, or the spasms of chorea, give way under the use of chloral, can reasonably believe that the drug has induced a physiological condition; and yet, to read the reports of the men who have employed the drug in such cases, you would imagine that they were dealing with a perfectly harmless drug. If chloral were a pure hypnotic there would not be such a short step from the "calm, quiet sleep," caused by it, to the profound coma and the paralysis of the heart and respiration. As a matter of fact the effects of chloral mentioned in connection with chorea go far to show that the unconsciousness of chloral is as far removed as possible from natural sleep.

The large number of persons suffering from insomnia who find their way to the specialist demonstrate only too frequently the failure of the hypnotics to accomplish what was expected of them, and that too in the hands of the skilled general practitioner who has used the drugs judiciously. They comprise two classes: those who are taking chloral or sulphonal yet cannot sleep; and those who sleep when they take the drug, but consult you for "extreme nervousness." These people have certain traits in common. The first thing that attracts your attention is the hard set features, the fixed look, the dull, heavy eyes, often congested, the dusky pallor of the complexion, the expression of despair. However infectious the mirth about them, the face never relaxes in a smile. The patient walks as if in a trance, and talks in an automatic manner; he knows that his words are producing no effect, and when ignored, accepts the fact without emotion. The mental conditions differ somewhat in chloral and sulphonal. In the former there is more excitement and irritability; in the latter, more despair; but in both there is the hopeless wail over their condition, irrational harping on their symptoms, and what may be called a mental vacuity for other topics. The disturbances of

motility are not usually sufficient to attract attention, although in some cases trembling is observed. Dr. Stevens has called my attention to a peculiar effect of chloral on the ocular muscles. If in normal conditions daily tests of the eyes of the same individual are made, it will be found that there is a constant relation between the tests of consecutive days. That is, with a certain amount of exophoria or esophoria there is a certain amount of abduction. There may be esophoria with excessive abduction, or exophoria with deficient abduction; but with every change in the esophoria or exophoria there is a corresponding change in the abduction. Right hyperphoria remains right hyperphoria, and left hyperphoria left hyperphoria. In many patients who are taking chloral this relation is constantly changing. A sort of insanity of the muscles exists, and it is absolutely impossible to arrive at any knowledge of the relation of the eyes. This effect is so characteristic that not unfrequently it has been the first information given by the patient that he was in the habit of taking sleeping powders.

That the effects mentioned above are caused by the hypnotic and are not a part of the insomnia may be readily demonstrated by removing the drug. It is remarkable what a change a few days' relief from the drug will produce. To suggest such a course to the patient is usually to call forth wild assurances that he will go mad without it. However, if he has the belief impressed upon him that a few nights' sleep are not necessary to his existence and sanity, he will generally acquiesce. He will not sleep as much as usual, perhaps, but it will be gratifiying to observe the softening of that hard expression, certainly a better complexion, it may be a faint smile of surprise that he is not so much worse off than before, and a return to a somewhat normal state of mind in which he can discuss his condition in a more rational manner. The trembling of the hands and head will cease, and the action of the ocular muscles become regular.

These effects follow immediately on the removal of the drug. What seems to be the direct cerebral effects of the hypnotic are not so easy of dissipation, and it is sometimes weeks or months before those attacks of unreasoning complaints cease to occur. A complete removal of all depressing drugs, and a course of treatment essentially tonic, will, as a rule, accomplish this, and a strengthening of the general system will eradicate many of the unpleasant symptoms attending insomnia.

To prevent repetition and avoid unnecessary prolonging of this paper, sulphonal and chloral have been considered together. That the physiology of the two drugs is in many respects radically different is fully recognized. As employed in the treatment of insomnia, however, the manifestations of their cerebral effects reveal much similarity in action. Sulphonal deserves some special mention from the fact that all the reports of the drug found in our journals are surprisingly flattering. Thus, Burnett (*Kan. City Med. Index*, 1891, xii., 289) says: "As a hypnotic, under all circumstances, when judiciously prescribed, it certainly stands at the head of the list in producing a refreshing, quiet, physiological sleep, without a systemic reaction which invariably follows all other hypnotics in degree." But when he says, later: "To hope for improvement in any neurotic patient necessitates as near as possible the establishment of physiological equilibrium of that nervous system, and to do this an avoidance of all extremes must be adhered to;" and when he confesses that in insanity sulphonal seems to him almost a supernatural gift, his first statement loses force.

J. Carlyle Johnstone (*Jour. Mental Science*, London, 1892) reports favorably on the drug, and sums up by saying that it has no injurious effects on the circulation, respiration, appetite, digestion, temperature, or on the general health. And yet immediately afterward he says, that its action is continued until the next day and followed by drowsiness, confusion, giddiness or fatigue: serious cerebral and motor symptoms are apt to follow

repeated doses. Gordon (*Brit. Med. Jour.*, 1890) reports favorably, but observes, in passing, that in waking from their sleep many patients show great confusion, being unable to tell who they are and where they are.

It is quite natural that the man in whose hands a new drug has given satisfactory results should be the one who makes a report of the drug. Successes are easy to report. But the man who fails in his efforts does not, as a rule, rush into print with them, and much valuable information in regard to the therapeutic effects of the drug is lost. In the second place, when a physician prescribes a drug for a malady, his attention is directed so much to the effect of the drug on the disease itself, that the other systemic effects are apt to be disregarded, unless they assume alarming proportions. The reports based on such therapeutic experiments are consequently one-sided, and statements of the innocuous properties of the drug in question are not well founded.

Daily contact with patients who have taken these drugs for varying periods of time has forced upon me conclusions that go far from supporting the opinions commonly expressed. This is so true that a large number of patients who present themselves for treatment will be found to be suffering as much from the drugs they have been taking as from the original disorder, and an absolute removal of all drugs will serve not only to elucidate the condition, but frequently also to give much relief to the sufferer.

A discussion of the drugs used in headache and epilepsy must be reserved for a future paper.

Sufficient has been said, however, to raise a suggestion that drugs which produce marked effects in functional nervous disorders are themselves subject to suspicion and should be studied with as much care as there is of eagerness displayed in effecting a cure of the disease.

33 WEST THIRTY-THIRD STREET.

TUMOR OF THE CORTEX PRODUCING HEMIPLEGIA, WITH LOSS OF TACTILE, PAIN, AND MUSCULAR SENSE.

By FRANK S. MADDEN, M.D.,

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THE localization of motor centres in certain well-defined areas of the brain is a scientific fact of fairly accurate exactness. The centres for certain of the special senses—vision, hearing, smell, etc.—have been localized with equally practical accuracy. Common sensation, with its subdivisions of tact, pain, temperature, and muscular perception, has not yet been positively shown to be in constant relation to any definite area of the brain, though much clinical and experimental data has accumulated tending to show that the sensory centres mentioned are quite closely related, if not identical, with the corresponding motor areas. Heusner,[1] Wernicke,[2] Jastrowitz,[3] Gray,[4] and Daskchewitsch[5] have each reported clinical examples of loss of common sensation in association with paralysis of motion, the lesion being in the cortical motor region or in the white matter immediately subjacent. That the anatomico-physiological relationship between motor and sensory centres is a close one, is generally, if not universally, admitted, and especially is this true of the muscular sense.

The case herewith reported is worthy of record in this relation. The history is as follows:

1 Heusner: Deutsche med. Wochenschr. October 18, 1888.

2 Wernicke: Archiv f. Psychiat. und Nervenk. Bd. 20, H. 1. 1888.

3 Jastrowitz: Deutsche med. Wochenschr. February 23, 1888.

4 Gray, L. C.: N. Y. Medical Journal. February 19, 1891.

5 Daskschewitsch: Centralblatt f. klin. Medicin (Leipzig). No. 27, 1891.

6 Seguin and Weir: American Journal Med. Sciences. July, August, and September, 1888.

R. K. B., aged fifty-one; married; merchant and speculator. Family history good.

Personal History.—Denies syphilis; was always fairly healthy; very temperate in the use of tobacco and alcohol, and not given to sexual excesses. Thirty years ago he received an injury to the back of his head by falling on the ice. In 1888 he was struck over the left occipito-mastoid region with a heavy cane; suffered much pain for two weeks afterward. In the summer of 1890 he had an attack of extreme dyspnœa, nausea, vomiting, and diarrhœa, the result of a run of fifty yards to catch an outgoing steamer.

On October 8, 1890, he had a convulsion, epileptiform in character, preceded by a sensation of severe tension with inco-ordination of movement in the left arm and forearm, followed by loss of power in the arm, which extended to the leg, with, finally, total loss of consciousness and convulsive movements affecting both sides of the body, but particularly the left. Vomiting of the cerebral type occurred two hours after a return to consciousness. Under sodii bromid. he remained well after this attack, until October 23d, when he had a succession of epileptic seizures of the Jacksonian type, affecting the left arm, preceded by loss of power and paræsthesiæ in the limb affected. Vomiting again occurred about four hours after the attacks had ceased.

About this time the patient complained of slight occasional headache; was much depressed mentally, and at times irritable and quite nervous. Numbness, tingling, and various other paræsthesiæ of the left hand gave him great annoyance. Loss of tactile sense was demonstrable in the left hand, and was absolute in the ring finger. There was also loss of muscular sense, with marked ataxia at times. One or two light attacks of a convulsive character occurred during the next month, and but little change was noticeable in the patient's condition.

On November 23d he had a violent epileptic convulsion, preceded by the usual aura and with disturbance of vision and ataxic aphasia. Vomited after the seizure as before.

On December 1st he had another attack, involving the left upper extremity, neck, and face.

The patient's condition did not vary materially during the ensuing two months, although there was a gradual progression of all symptoms; a noticeable drag of the

left foot became apparent, and the gait became staggering. The pain in the head and tenderness (region of right parietal eminence) increased in intensity. Impairment of tact and muscular sense was also more conspicuous.

One or two slight seizures occurred in February, and the patient developed a mental condition of exaggerated excitability, with attacks of hysterical crying.

Ophthalmoscopic examination (Buller, of Montreal) in March demonstrated a commencing optic neuritis.

About this time the patient underwent a remarkable change mentally. He became lively and cheerful and at times hilarious. His paresis in leg, arm, and face gradually increased, and the entire left side became hyperalgesic paroxysmally.

Early in April the patient's condition became one of bed-ridden helplessness; and, about April 8th, symptoms of extreme compression began to develop: Mild, wandering delirium, difficulty in swallowing, incontinence of urine and fæces, thick and incoherent speech, high pulse, elevated temperature, and finally coma and death on the 16th.

Drs. Dunham, Kellogg, and Hyde were present and assisted at the autopsy, done on the 17th.

On removing the calvarium, a bulging of the left hemisphere was noticed, over which the dura was much thinned. This bulging corresponded to a depression in the calvarium, into which it had pressed during life, causing absorption of the inner and outer plates of the left parietal bone, which was so thin as to be translucent. This depression was one-half inch to the left of the longitudinal sinus and over the posterior part of the post-central convolution. A smaller protuberance, with a corresponding (though lessened) thinning of the bone, was noticed on the opposite or right side. The dura was found to be extensively adherent over both hemispheres, but most tenaciously at the bulging point in the left. On stripping away the dura, the pia mater over the right parietal lobe presented a mottled and granular appearance, and the entire parietal lobe on this side bulged out markedly. At a point where the posterior central, the superior frontal, and the supra-sylvian convolutions form an angle, there was an irregular spot, about half an inch in diameter, which appeared to have undergone fatty or waxy degeneration. Fluctuation was detected at this point; and a probe, passed directly into this spot, was

followed, when withdrawn, by a few drops of a straw-colored serous fluid. A second passage of the probe, one inch behind this point, reached a hard mass about three-quarters of an inch beneath the surface. A longitudinal incision, made three-quarters of an inch from the median line, revealed a cavity, previously detected by the probe, which proved to be the anterior portion of the tumor undergoing cystic degeneration. This cavity measured, vertically, one inch; longitudinally, one and three-quarter inches; and transversely, one and one-quarter inches. Behind and a little to the outer side of this broken-down mass, but continuous with it, was found another nodular mass, as large as a good-sized walnut, which was firmly adherent to the cerebral substance behind it. Both sides of this degenerated growth were easily separated from the surrounding tissue and also the anterior portion of the nodular mass behind; but the posterior portion was so firmly adherent to the cerebral substance, that a portion of the latter was removed with the growth. The tumor involved the posterior central, superior parietal, supra-sylvian, anterior portion of the angular, and occipital convolutions of the right hemisphere. The tissue immediately surrounding the tumor was much softened. Section of the left hemisphere showed nothing abnormal, except the bulging above mentioned, which was presumably due to pressure.

Microscopical examination showed the growth to be a melano-sarcoma.

The patient was seen in consultation at different times by Drs. Stewart (of Montreal) and Spitzka and Gray (of New York). Operation, which was suggested by Dr. Gray, was not done, for the reason that the consent of the family could not be obtained. It is questionable whether an operation would have been beneficial if done at any time after a diagnosis could have been made.

Critical Digest.

ANATOMICAL, PHYSIOLOGICAL AND PATHOLOGICAL NOTES.

ACROMEGALY.

By JOSEPH COLLINS, M.D.,

New York.

[*Concluded from January number.*]

Observation LXXVI.—(Long.) Male, German, aged forty-eight, good family history; denies syphilis; had always been well, except at the age of twenty-five, when, in the German army, he had an abscess on left hip which lasted for five weeks. Came to this country in 1870; married shortly afterward, and from this union were three children, two of whom died in infancy; the third is now a young man and perfectly healthy. Twelve years ago he had an abscess on right hip which was very severe, but he made a good recovery. The symptoms of acromegaly first made their appearance in the hands in 1874; he was then thirty-one years old. Since that time the growth has been constant Although he is but 5 feet 9½ inches in height, he weighs 262 pounds. The skin is of dirty yellow color. Hands, feet, and face enlarged; cranium normal in size; forehead retreating; hair thick and wiry; nose and lower lip very much enlarged; eyelids and upper lid normal. Marked prognathism; lower jaw greatly hypertrophied; tongue much enlarged; slight cervico-dorsal kyphosis; thyroid gland apparently normal. Hands and arms are typical, the right hand and foot slightly larger than the left. No post-sternal dullness. Genital organs apparently normal; sexual appetite diminished. The thorax, clavicles, and ribs partake of the hypertrophy. Knees and legs enlarged; feet enlarged, flat-footed.

Special senses normal with the exception of sight, which has been lost for ten years, and so completely that he has no perception of light. Eyeballs not greatly pronounced, but marked nystagmus and complete optic atrophy. Patient is of average intelligence, and there is no polyuria, polydipsia or bulimia; measurements given.

OBSERVATION LXXVII.—(Cenas.) A boy, aged fifteen. Mother, who was an alcoholic, died at forty-nine years of age; the patient the youngest of six children and the last child. The mother was drunk at least once a week while carrying this child, and had a tedious labor, lasting five days. Asymmetry of face was noticed at birth. Enlargement of hands and feet, and to some extent the arms, was remarked when the child was a few months old. The hands and feet continued to enlarge, as the child grew older, out of proportion to the other parts of his body. For past two years he has had frequent fainting-spells of a few minutes' duration. Intelligence less than is common to his age, and frequent headache. The face is round and asymmetrical; hands covered with large violet spots; head large and asymmetrical; feet enormous; forearms small; wrists small; fingers sausage-shape; nails thick and crooked; hands and arms not quite symmetrical; of the right hand all the fingers are affected; of the left, only the thumb and index finger. The legs, thighs, and knees are normal; all the toes of left foot are enlarged, but only the first, second, and fifth of the right are affected Similar spots on feet as on hands. Head large; marked prognathism of lower jaw; the teeth partake of the enlargement; right side of face larger; and like condition exists in right side of palate, cheeks, lips, and tongue. Thyroid body enlarged on right side. Slight cervico-dorsal kyphosis; no retro-sternal dullness. In lumbar region the skin shows signs of scleroderma. Penis markedly enlarged. Headache, vertigo, and fainting are troublesome. Special senses normal. Voice thick, harsh, and muffled; appetite and thirst increased.

This case has been given somewhat in detail, as it is reported as the only congenital case on record.

OBSERVATION LXXVIII.—(Gerhardt.) Male, aged sixty-two; no family history pertaining to the disease; he has been exposed greatly to inclemency of the weather, and a hard drinker. Has had gonorrhœa and syphilis, intermittent fever, and has suffered severely from bronchial catarrh. Symptoms began in 1888, with pain and swelling in left ankle; then it went to the other ankle, and later to the hands, the right hand being the most severely affected. The pains are intermittent; there is excessive sweating and thirst; the nails are striated and crack easily, and the terminal phalanges are greatly enlarged of the feet and hands.

[It is scarcely posssible from the description of this case to see just why it should be classified under acromegaly.]

OBSERVATION LXXIX.—(O'Connor.) Female, born in Ireland, aged fifty, no family history, and with the exception of attacks of headache was healthy during childhood; married at eighteen years of age, and afterward had an attack of yellow fever. First noticed that she was getting stout in 1883. The hands and feet felt as if bursting, the right hand being first affected, then the left foot. This sensation of fullness was also complained of in the throat. Then the nose began to get red and enlarged, and the voice harsh. The face became enlarged, both transversely and longitudinally lower lip thickened and curled, tongue immense. Hands and feet characteristic. The left foot shows a greater increase than the right, and it has a marked thickened pad beneath metatarsophalangeal region. No enlargement of the bones of the arms or legs. There are distinct circumscribed tumors on some of the bones, such as the seventh rib and the clavicle. The thyroid gland can be made out; she sweats profusely and has great thirst. The menopause occurred at forty-seven years of age.

OBSERVATION LXXX.—(Sommers.) Male, Italian, fifty-one years old; has had large hands and feet since he was twenty years old. They have greatly increased in size in recent years. In 1886 he had a chancre, but no secondary symptoms appeared. In 1870 he had an attack of small-pox. The voice is croaking; he is surly in disposition and very reticent. Forehead narrow, low, and retreating; frontal sinuses large; nose very large; ears immense; lips thick; tongue hypertrophied and deeply fissured; marked prognathism of lower jaw; hands typical in shape, the width and thickness of fingers out of all proportion to the length; palms covered with great pads of tissue, more marked on ulnar side. The enlargement of the feet is of the same character as seen in hands. The great toe is enormous; patellæ are immense; knee-joints crepitate; very slight kyphosis. He weighs 275 pounds, though but 5 feet 11 inches in height. Thyroid small, special senses normal. At the autopsy, the brain and spinal cord was not examined. There was found fatty and cirrhotic liver, enlarged spleen, and absence of thymus.

OBSERVATION LXXXI.—(Bruzzi.) Male, age fifty-one, unmarried, of good family and previous history.

No illness of importance in childhood; had spermatorrhœa when a young man. He was of good constitution and development, and performed military service. When twenty-six years of age he had attacks of severe pain in back of head and neck and the dorsal region. At twenty-nine years of age he was impotent, and the pains were troublesome, and he had an attack of nervous prostration. In 1870 he had an attack of prostration, with delirium and a tendency to coma, in which he remained in an unconscious condition for forty days. His physician diagnosed this as cerebral congestion. After a long convalescence he regained strength, but was troubled with aggravated attacks of dyspepsia. The signs of acromegaly were quite typical, but not of a marked order. Prognathism and kyphosis were not well marked. A full table of measurements appended to original paper.

OBSERVATION LXXXII.—(Gajkiewiczi.)

OBSERVATION LXXXIII.—(Gause.)

These reports are inaccessible in the time necessary to complete this article. Dercum reported two cases to the American Neurological Association in June, 1892, which have not as yet been published.

Foy has reported a peculiar case, which I have included under this heading for the purpose of drawing attention to local manifestations resembling acromegaly, and to which he has given the name cheiromegaly. The case is in brief as follows: The patient, a refined lady, had had small ecchondromata removed from her hand twelve months before, and presented herself for the removal of a second such tumor, about the size of a large hen's egg. Shortly after the removal of the second tumor, a strange alteration occurred in the hand; it became broad and large, and very much resembled the hand of acromegaly, but unattended with any other changes or concomitants of acromegaly. The patient died afterward, but from what cause the reporter does not mention.

As yet the most obscure factors concerning acromegaly are the causation and pathology of the disease. As we have already stated in the beginning of this article, its occurrence has been attributed to various factors without its being in any particular instance shown to be dependent upon the attributable causes. Although the majority of the cases have been observed in persons occupying the most lowly walks of life, we cannot say that it is a respecter of persons, for it has been observed in clergymen, officers, and the refined and educated.

Regarding the theories of its pathology, the one looked to with most unanimity is that promulgated by Marie, who is particular to confess that the nature of the disease is wrapped in obscurity, but that the cases which have come to autopsies have shown, with considerable concordance, changes in the pituitary body. Many of the cases still under observation present symptoms, as can be seen in our abstracts of them, which point with a considerable degree of accuracy to an involvement of this body. In more than one-half the cases reported, eye or ear symptoms, pointing to the pituitary body, have been present and headache in almost every case. What this change in the hypophysis cerebri is, only time and detailed examinations will show. At the same time it is interesting to note instances where the pituitary body has presented changes in conjunction with other diseases without any symptoms of acromegaly developing. Such a case has recently been reported by Wills ("Brain," autumn and winter number, 1892). This patient had pains in the head for fifteen years, which were greatly increased in severity during the last six months. With the exception of progressive dementia, the symptoms were not well marked. There was some paresis of the left internal rectus muscle of the right eye with external strabismus; the other muscles of this eye were normal. Right pupil reacted to light and accommodation, the left to neither; consecutive optic atrophy in both discs. After death a tumor, about the size of a Tangerene orange, divided into two portions, was found wedged in the sella turcica. It lay in the interpeduncular space, extending anteriorly as far as the posterior termination of the orbital surface of the frontal lobes, and laterally it was overhung by the tempero-sphenoidal lobes. Posteriorly it separated the crura cerebri. Anteriorly the olfactory nerves were thin and flattened, the left more than the right, and likewise the optic tracts were more involved on the left side. Microscopical examination showed it to be an adenomata.

Boyce and Beadles have likewise reported three cases in which there was enlargement of the thyroid without symptoms of acromegaly (Journal of Pathology, 1892). Two of these cases were of myxœdema and one of sporadic cretinism, and associated with the enlargement of the hypophysis was an atrophied condition of the thyroid glands. Suckling has also seen the same condition in a case of myxœdema.

It has been suggested that in acromegaly the changes in the pituitary and thyroid glands stand in relationship one to the other; that is, when the latter is absent or diminished in size the former is hypertrophied. It has been shown experimentally by Hofmeister (Fortschritte der Medicin, No. 4, 1892) and others that after thyroidectomy in rabbits the hypophysis increases in weight; but these experiments have not been corroborated in every instance by other workers in the same line. In acromegaly many of the cases, such as Hudden's, Ballance's, Virchow's, Kanthack's, and others, there was atrophy of the thyroid gland, while in others the gland remained normal or was hypertrophied.

The functions of these two bodies, the thyroid and hypophysis, have yet to be learned; there is no doubt, as has been shown by Rogowitsch, that an intimate connection exists between them and that they stand in a close relationship with the nervous system, particularly the sympathetic. That one should take up the function of the other when diseased is comprehensible even when experiments fail to show that change goes on in the pituitary body after extirpation of the thyroid. The fact that acromegaly does not develop in every case of tumor of the hypophysis cerebri cannot be logically advanced as an argument that its normal existence does not prevent acromegaly; for we know that disease of the spleen is attended with the development of leucocythæmia, yet leucocythæmia does not necessarily follow extirpation of that organ. Nor does myxœdema necessarily accompany disease of the thyroid gland, although in bodies of persons dead from myxœdema, the thyroid is invariably degenerated and generally atrophied.

If acromegaly is dependent on disease of the pituitary body, it does not necessarily follow, as I have before stated (American Neurological Association meeting, June, 1892), that there must be enlargement or tumor of that body. There may be atrophy or parenchymatous degeneration; for if we accept that disease of the pituitary gland has a causative relation to acromegaly, it must be in either one of two ways: Either the pituitary gland —the prehypophysis, so called—secretes and pours out into the circulation certain substances necessary for the preservance of proper nutrition, and the absence of which is manifested by changes in the general system through the nervous system, particularly the sympathetic; or the normal pituitary gland filters out of the blood certain

substances the retention of which would give rise to a sort of toxæmia, the consequences of which would be a deleterious action on the nervous system and the resulting changes of the disease. Why there should be a special predilection for the extremities would have to be explained by some conditions of peculiarity of the circulation influenced through the vaso-motors.

It will be seen, from a glance at the literature for the past two years, that the disease known as acromegaly has come to stay, and that a diffusion of knowledge concerning its occurrence is followed by the report of many cases formerly classified under some other heading, but clearly belonging to acromegaly.

Acromegaly is most easily confounded with the disease known as osteo-arthropathy hypertrophica pneumique: a disease characterized by enlargement and deformity of the extremities, particularly at the joints, and dependent on some pulmonary disease, most often of a septic nature. It may also be confounded with myxœdema, leontiasis, oteitis deformans of Paget, elephantiasis, erythromelalgia, and rarely, if ever, with arthritis deformans.

In acromegaly the hands are large and thick in appearance, the fingers are uniformly enlarged, and the proportion between the segments of the fingers is well preserved. The nails are flat, small, longitudinally striated, and the flesh has a tendency to grow beyond and around, seemingly imbedding them. In osteo-arthropathy of pulmonary origin, the fingers, and not the hand as a whole, are affected. The fingers assume the shape of drum-sticks, and the ends of the bones of the forearm are markedly thickened, projecting voluminously on the dorsal surface of the hand, and the hand, as a whole, shows very evident deformity. The nails become changed, so that they resemble a parrot's beak. This last is a very important factor, and will suggest the diagnosis very quickly; for while, in acromegaly, there is great enlargement, there is no actual deformity, as the relationship between the different parts of the hand is well preserved, and the hypertrophy of the wrist is proportionate to that of the hand in acromegaly. In acromegaly the carpo-metacarpal region is very greatly enlarged, giving rise to the so-called "battledore" hand, while in osteo-arthropathy this articulation is nearly normal. The same remarks apply to the feet, excepting that there the changes are a little less marked. Another very important difference is that, in acromegaly,

the changes are equally in the bones and soft tissues, while in osteo-arthropathy the alterations are only in the bones. There are certain parts of the bone—namely, the epiphysis—where a marked predilection exists for these changes.

In acromegaly the face undergoes an important change. There is enormous hypertrophy of the inferior maxilla, and this gives a characteristic prognathous appearance. In osteo-arthropathy the lower jaw is never affected, with the exception of occasional thickening of the alveolar border in both inferior and superior maxillæ. Acromegaly is attended with a more or less well-marked cervico-dorsal kyphosis, which develops early; while such a change, if it occurs at all in osteo-arthropathy, is a late manifestation.

In acromegaly there are frequently symptoms referable to the eyes and ears, indicative of change in the pituitary body or adjacent to it; while such symptoms do not exist in osteo-arthropathy. Two very constant accompaniments of acromegaly are the development of little nodules of molluscum fibrosum and a large welt of thickened tissue on the inner side of the plantar surface of each foot. These have not been noted in osteo-arthropathy.

Finally, osteo-arthropathy is always secondary to pulmonary disease, and particularly, as has before been said, pulmonary diseases attended with the production of pus, such as phthisis tuberculosis, empyæmia, pulmonary abscess, and the like.

The decomposition of pus would seem to be the necessary antecedent for the development of the osteo-arthropathy, the morbid changes being brought about by the absorption of the products of such decomposition. The *locus* of such purulent change being in the lungs, would seem to facilitate, in some unknown way, the development of the osteo-arthropathy. In this disease, likewise, there has been found quite a hereditary element; while in acromegaly, on the other hand, the origin of the disease is in entire obscurity, and, with one possible exception, the disease has shown no hereditary factors in its etiology.

The differential diagnosis from myxœdema is generally not difficult. In myxœdema the face is of a characteristic "full-moon" appearance; the skin is of a peculiar waxy color, with a pinkish tint in cheeks; mentality is sluggish; the chin drops forward on the sternum from

sheer inability on the part of the extensors of the head; the skeleton remains free from enlargement. In acromegaly, on the other hand, the outline of the face is elongated; there is marked prognathism; the skin is thickened and muddy-looking; the patient is frequently very alert mentally (Cohen's case); and remarkable changes go on in the skeleton. In myxœdema there is absence of secretion of sweat and early alopecia; while in acromegaly there is hyperidrosis and thick, tough, wiry hair.

In Paget's disease (osteitis deformans) the bony changes in the upper part of the skeleton are most marked in the cranium. The outer table of the cranial bones becomes porous and spongy, as a result of inflammation, and the normal distinction between the outer table and the inner table and diploë is lost, the entire thickness of the bone consisting of a uniformly compact tissue, in some parts looking like chalk. The bones of the face are but slightly affected, and then only late in the disease; while in the long bones the changes in size and curvature are principally in the shafts, the extremities being scarcely affected. It will be readily seen that these are in marked contrast to the conditions present in acromegaly.

Arthritis deformans, leontiasis, and elephantiasis will scarcely be confounded with acromegaly, if the latter is carefully studied. In leontiasis ossium there is a growth of true bony structures in the shape of tumors of the cranium and face, and generally an absence of hypertrophy of the extremities. In arthritis deformans the changes are confined to the joints of the extremities, the face being rarely affected, and never does it present the elongated face of acromegaly. Elephantiasis consists of cystic and tubular enlargements of the lymphatics—first, of the cutaneous structures, then of the more deeply seated, attended with thickening and induration of the skin and connective-tissue and dilatation and multiplication of the blood-vessels, with wasting of the muscles, and attended with no change in the bony structure. A disease presenting these conditions will scarcely be confounded with acromegaly. Souza-Leite informs us that it is possible to confound acromegaly with the disease to which Weir Mitchell gave the name of erythromelalgia —a word signifying literally pain and redness in a limb. The disease in question is, however, only occasionally attended with an increase in the size of the fingers and

hands and a slight fullness of the arms and forearms, and rarely a small degree of kyphosis.

There is, moreover, to assist us in the differential diagnosis, an absence of elongated face and prognathism of the lower jaw, of the enlargement of the lips and tongue, and, in fact, of all the signs referable to the cephalic extremity so apparent and characteristic of acromegaly. Although enlargement of the extremities may occur in erythromelalgia, it is due to congestion and œdema, and the changes in the fingers, nails, and extremities, so typical in acromegaly, are absent.

Though much new material has been given for observation during the past two or three years, scarcely anything has been added to our knowledge of the causation and nature of the disease and its treatment. Undoubtedly the prognosis in this disease is extremely bad as regards complete recovery, but so few cases have as yet been described from the pathologist's point of view, the disease has not yet been recognized sufficiently long for us to give definite ideas as to its natural duration. It is probably, however, not less than a decade and longer in the greater number of cases. In one case (Bury) the duration of the disease was but three years, while in another (Graham) thirty-four years passed before death occurred. On account of our ignorance of the genesis of the disease, the treatment must be empiric and symptomatic. There has but little been suggested in a therapeutical way since the appearance of Souza-Leite's brochure, in which it is stated that Verstraeten has prescribed in this affection: phosphorus, perchloride of iron, arsenic, rhubarb, etc., and has placed patients on a modified Oertel's regimen, and other plans, but with little promise of success. In a few cases there is an amelioration of some of the symptoms, while other symptoms remain the same or are exaggerated.

Brown has recently stated that his patient was improving under the use of antipyrine and arsenic. Massalonga states that the activity of the disease was held in check by the administration of the salicylates and iodides. For the intense cephalalgia preceding marked manifestations of the disease, and likewise present in the earlier part of the disease, valerianate of caffeine and phenacetine have been found of great service. In cases presenting symptoms of intra-cranial pressure, particularly ocular symptoms, iodide of potash has been given very largely, but without apparent benefit.

The symptomatic treatment consists in combating the headache, overcoming the glycosuria when it exists,

and attention to the bulimia, polydipsia, and hyperidrosis, which are frequently troublesome. The glycosuria is generally combated readily by paying attention to the diet and the administration of arsenic and the alkaline waters.

All writers have been impressed with the necessity of paying attention to the nutrition of the patient from the beginning. The cause of death, in all cases reported as terminating fatally, has been asthenia, from intracranial pressure or from intercurrent acute diseases. The establishment of a high grade of nutrition will prevent these from occurring to some extent, especially the first and the last. Further than this, treatment seems to be of no avail.

Before closing, it might be well to remark that among English writers there might be a little more unanimity in the spelling of the word which Marie gave to the disease known by his name. There can scarcely be any excuse for writing it, as has been done by a recent writer (Wills), "acromegale;" and the substitution of a *k* for a *c*, in the first syllable, is merely a subserviency to the German, which is unnecessary. The appended bibliography brings the literature of the disease up to the date.

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PATHOLOGICAL.

—***A Case of Acromegaly.***—Dr. O. T. Osborne ("Am. Jour. Med. Sciences," June, 1892). This case is reported *in extenso*. A brief synopsis is as follows: The patient is a German, forty-two years of age. His mother died, when forty-four years old, of apparently ascending paralysis. A vein of tuberculosis seemingly runs through his ancestors and his own children. In early manhood the patient suffered alarmingly from epistaxis. The symptoms of the present trouble made their advent when he was about twenty-four years old. They were continuous: gradual enlargement of face, head, hands, feet, and body; severe headaches, occasional dizziness, pains in limbs, ravenous appetite, and dyspepsia. As time went on the headaches became markedly severe, and always referred to a small spot on top of head—worse at night, and accompanied with intolerable tinnitus aurium; occasional sui-

cidal and homicidal attacks, always at night. The severity of the objective symptoms remitted somewhat about four and a half years ago.

The symptoms at the present time are: severe headache, pain in right knee, ringing in the ears, irregular appetite, constipation, palpitation, profuse perspiration, irritability of bladder, urine about normal; right ear larger than left—in fact, the entire right half of the body is larger than the left; the right foot is 12¼ inches in length. Normally, the ratio of the foot to the height is 1.6, while in this case the patient is only 5.6 times the length of the right foot in height. The hands are very greatly enlarged, and palpation shows an osseous as well as an overgrowth of the soft parts. The legs and thighs are not hypertrophied, and the left gastrocnemius muscle seems atrophied. The thorax is greatly enlarged, and moves forward on inspiration. Cranium itself is not much affected; face is elongated, brow low, intra-orbital ridges very prominent; slight exophthalmia; nose enlarged and broadened; lower jaw greatly enlarged, and projects very much forward to the upper jaw; lower lid greatly hypertrophied; voice deep, heavy, and loud; thyroid gland does not seem atrophied; scoliosis and kyphosis of upper dorsal region of spine; hair coarse and profuse; mental responses fair; sexual appetite diminished; right patellar reflex absent, left very much diminished; "rolling-shot" sensation.

The author is inclined to the idea that the symptoms point to the presence of an enlarged pituitary gland.

At the present day the most probable theory concerning the genesis of acromegaly is that it is dependent upon a pathological condition of the pituitary body. In all likelihood the pre-hypophysis is the affected part of the pituitary.

Dr. Osborne attempts to explain many of the symptoms in the case he reports, by the local disturbance produced by the supposed enlargement of the pituitary body. This he does very ingeniously. It is, however, unnecessary, for some of them are more easily dependent on the systemic trouble in this disease.

Acromegaly is apparently of such a nature that we must look to a solution of its development in one of two ways: First, it may be a lesion of the sympathetic nervous system. Secondly, we may consider (certainly without certain physiological foundation) that the prehypophysis cerebri has a function to perform in the economy. This

function may be to select and destroy certain substances in the circulation or system the retention of which in the system is very deleterious. When the gland becomes diseased, this work remaining undone, the deleterious influence of such neglect becomes slowly manifest by trophic and other changes throughout the system. J. C.

—***Kidney Disease and Insanity.***—Geo. T. Tuttle, M.D. (Am. Jour. of Insanity, April, 1892). Chronic nephritis is sometimes the cause of mental aberration, which may be called insanity. Long-continued anxiety may cause albumen, hyaline, granular, epithelial and blood casts in the urine, with accompanying œdema in some cases. This kidney affection may be temporary, disappearing when the cause is removed, or, the cause persisting too long, may become chronic renal disease. Contrary to the opinion of many observers, disease of the kidneys is quite common among the insane. A. F.

—***Peculiarities of the Knee-Jerk.***—(Am. Jour. of Psychology, Vol. iv., No. 3, April, 1892.) Wm. Noyes, M.D. In a case of terminal dementia of many years' duration a series of experiments on the knee-jerk tend to show that: 1st. Sensory stimuli received during sleep produce a much greater effect and diffuse over a much longer interval than in healthy individuals. 2d. In a condition of half-sleep when the patellar tendon is struck by blows of uniform strength at five seconds, intervals, the knee-jerks fall into groups, and synchronous plethysmographic tracings suggest that these groups have some connection with the Traube-Hering curve. If the truth of the second proposition can be conclusively established, several important corollaries would seem to follow. These are here stated as facts for the sake of presenting definite propositions, the truth or falsity of which must be submitted to further experimental investigation:

(*a*) The knee-jerk curve instead of being theoretically a straight line, as has been heretofore assumed, is in reality a curved line, with the general characteristics of the Traube-Hering curve. (*b*) The spinal cord is not constantly in a condition of the highest potential functional activity, but its activity is represented by a curve of rhythmic vascular contraction and dilatation. During the phase of contraction of the spinal arteries, the cord is at its least functional activity, due to a condition of relative anæmia, while during the phase of dilatation of the spinal arteries, the spinal cord is at its greatest functional activity, due to a condition of relative hyperæmia.

(*c*) The question inevitably raised by (*b*) is whether the higher activities of the brain are also subject to a rhythmic rise and fall synchronous with vascular dilatation and contraction. A. F.

—***Friedreich's Disease.***—A case is reported by André Messous in the "Mercredi médical," August 17, 1892. The patient, fourteen years old, presented the characteristic gait when first seen, with loss of equilibrium in turning quickly or looking upward, with the heels placed close together. There was some inco-ordination in gross movements of the upper extremities, through fine movements like writing or threading a needle were perfectly correct. When lying down, it was possible, though somewhat slowly, to place the foot in some special direction as indicated. Scoliosis existed in slight degree, knee-jerk was abolished; and equinovarus was present in both feet when sitting or standing. Hearing, sight, taste and smell were normal; also the muscular reactions to electricity. L. F. B.

—***Contribution to the Symptomatology of Exophthalmic Goitre.***—The "Gazette médicale de Paris," July 30, 1892, quoting from German sources, gives Homen's account of a case of exophthalmic goitre in a woman thirty-nine years old, and of good social standing. The patient had chlorosis at twelve years of age, and remained delicate afterward. During her first pregnancy there had been a notable acceleration of the pulse. Of her five children, three showed marked symptoms of nervous irritability. One girl of fifteen, subject to vertigo, presented signs of developing goitre and quickened pulse-beat; another daughter had the same symptoms. The eldest child, twenty years old, had had epileptic seizures ever since the age of three. Following some abdominal trouble, the patient became subject to vertigo, pains in the the chest, and weakness and pains in the legs, especially about the knees. The vertigo grew worse, and there was notable diminution in keenness of vision, together with attacks of palpitation. A paresis of the right side of the face lasted a fortnight, and was then followed by a paresis of the left side of the face that kept the patient in bed about six weeks, during which time baths, massage, bromide, and iodide of potassium were administered. After this crisis passed, vertigo, feebleness in the lower limbs and weakness in the fingers remained. Want of power in the fingers produced marked awkwardness in movements of the hands. The year following, 1880, there was still another phase of exaggeration.

During the autumn of 1890, without appreciable cause, pains in the limbs, especially about the joints of the feet, the knees, and the elbow, together with swelling, suggested an attack of articular rheumatism. The skin, however, retained its natural hue about these swellings. There was also enlargement of the thyroid gland, which had been noticeable for several years in slighter degree. In 1891, after violent emotion, the patient's condition was again exaggerated. This time there was marked prostration, more violent palpitation, greater enlargement of the thyroid, tremor in hands and arms, oscillatory tremor of the eyelids on closing the eyes, attacks of diarrhœa lasting a few days or a few weeks, pulse 110–120, and slight exophthalmia. Treatment by electricity produced marked improvement, but this amelioration was only transitory. The joint troubles disappeared as rapidly as they came. At no time was there œdema. These observations recall Weil's reports of cases of exophthalmic goitre following acute articular rheumatism, and two in Dr. Hammond's clinic in which a history was given of joint trouble just before the appearance of exophthalmia and enlargement of the thyroid gland

L. F. B.

PSYCHOLOGICAL.

—***Suicide.***—An article in the "Medical Standard," Sept., 1892, by Jas. G. Kiernan, M.D., contains the following: Despite the influence which all monotheistic faiths teaching immortality exerted against suicide, despite the influence of ancient race customs, it continues to increase among civilized people faster than the population. The suicide rate, other things being equal, is greatest along the great rivers and least in low marshy districts. The maximum rate is that of June, the minimum that of winter. The suicide rate of American cities varies greatly, although the urban far exceeds the rural. The rate of Chicago is more than eight times the average American suicide rate, while that of New York is somewhat over half that of Chicago. The influence of the anti-suicide law is demonstrable. In 1881, when that law went into effect, the suicide rate was 166 per million. At present it is but 147, and has remained about that figure for the last five years. There are thrice as many suicides among men as women. Army life strongly predisposes, so that suicide prevention in the European armies has become a very serious problem. Suicide-laws may seem useless, but experience has shown that

burial ceremonies appeal very strongly to the vanity of a dying person. The prevalent notion that suicide is an insane act is erroneous, as no act by itself alone is evidence of sanity or insanity. Most insane suicides have an impulse to accomplish self-destruction by some special method, and are not likely to attempt to take their own lives, though numerous opportunities may offer, unless the one method, to which their minds constantly revert, presents itself. Some suicides drop, like Mr. Wegg, into "poetry." One Chicago specimen left the following couplet:

> Here's a receipt for a popular suicide:
> Take twenty grains of potassium cyanide.

He was a photographer and sought a painless death. German maidens often soak matches in beer and leave the world with a libation to Gambrinus. "Rough on Rats" and strychnine are astonishingly popular considering the painful death produced by them and the ease with which morphine and laudanum can be procured. Poison and drowning are most frequent among women, since they disfigure least. Revolutionists and miners often use dynamite. Penalties could exert but little influence on most insane suicides. The mass of suicides are, however, affected by them. Wherefore a modification of the New York suicide law (by a clause giving the body for dissection) would tend to check the growing suicide rate in Chicago. A. F.

—***Chorea.***—Walton and Vickery (Am. Jour. of the Med. Sciences, May, 1892). Neither rheumatism nor heart disease is essential to chorea. The preponderance of evidence points toward the conclusion not only that rheumatism and organic heart disease conjointly appear more frequently in the choreic subject than can be accounted for by coincidence, but that the same is true of each of these affections separately. It follows, therefore, that rheumatism predisposes to chorea, and organic heart disease has the same tendency. Fatal cases are generally associated with organic heart disease and probably with organic disease of the central nervous system (notably cerebral emboli). There is a large class of functional cases, largely reflex and fostered by circumstances tending to produce functional symptoms in general. The pathological connection between rheumatism and chorea, excepting in the cases where emboli are produced by accompanying endocarditis, is still obscure, probably no one theory is applicable to all cases. The mechanism by which the peculiar phenomena of chorea are produced is unknown. A. F.

—***Insanity and Immigration.***—Quoting from "Il Manicomio moderno," vii. year, i., ii., iii., a French journal gives the following item: R. Fronda finds among 2,000 insane persons 58 emigrants (52 men and 6 women), of whom 14 showed psycho-neuroses, 5 cerebral disease, and 39 mental degeneration; ideas of persecution predominated. There were also among these 2,000 persons 52 who were the children of emigrants, 38 men and 14 women. Two-thirds of these presented psychoses of degeneration. L. F. B.

—***Traumatic Psychosis.***—In "L'anomalo," 1892, p. 105, L. Frigerio gives an analysis of thirty cases under personal observation, in whom traumatism produced various psychoses, ranging from manifestations almost amounting to genius to those of mental failure. Epilepsy most often follow cranial injury. Effects of traumatism may be immediate or remote; their course is slow and does not last more than two years, at the end of which time death usually results or there is a stationary condition. The predominating symptoms are suicidal impulses, delusions of persecution, hallucinations, psychic perversions, and isolated convulsive attacks. Patients usually enter asylums when it is too late for surgical interference. L. F. B.

—***Diagnostic and Prognostic Value of Ideas of Negation.***—In the "France médicale," August 19, 1892, Camuset reviews the literature and theories of this particular expression of mental unsoundness. Cotard considers it a psychopathy, in which there is melancholia with ideas of indignity, incapacity, guilt, damnation, or possession. Ideas of persecution, however, cause those who suffer from them to ascribe their annoyances to some outside influence. Patients with delusions of negation kill or mutilate themselves; and, unlike those with ideas of persecution, are rarely homicidal. There is frequently analgesia; hallucinations of sight, but seldom of hearing. The psychic hypochondria is manifested by ideas of destruction or non-existence of organs, of death-in-life, or impossibility of being able to die—a privilege that causes terror. They refuse all food; while the persecuted who think of poison in everything edible, refuse it in part. These delusions are first intermittent, then continuous, ending in dementia. They are built on a foundation of anxiety, that disappears with the beginning of dementia. From the first, the character is timid, conscientious, and taciturn. In predisposed subjects, ideas of negation appear in several different ways: sometimes

suddenly, in middle life, and then may be quickly cured. But relapses are common, for this insanity comes in "spells," and is consequently more or less intermittent. Usually ideas of negation do not appear before the second or third attack of melancholia. Sometimes they are developed upon a paretic or hysteric case. Those who suffer from them are hereditarily tainted examples of excess of moral qualities, of which the lack in others causes the latter to lead disorderly lives. The condition is present more often in women than in men, which is true of melancholia in general. Cotard does not consider insanity of negation a distinct entity, as it may exist in melancholia, hypochondria, paresis, and senile dementia, but "a psychic state common to cases of chronic anxiety." L. F. B.

THERAPEUTICAL.

—***Therapy of Phenacetine.***—John V. Shoemaker, A.M., M.D., Philadelphia, writes as follows: Phenacetine was originally introduced into medical practice as an antipyretic, and subsequently was found to possess analgesic powers. In diseases attended by hyperexia, such as rheumatism, pneumonia, typhoid fever, and phthisis pulmonalis, phenacetine exerts a very happy effect in about half the dose of antipyrine, the ordinary dose being from 3 to 8 grains. The mortality of the typhoid fever of children has been very materially reduced by the employment of phenacetine. The fall of temperature does not occur until half an hour after the drug has been taken, and the effect continues from four to eight hours. As an antipyretic, phenacetine is considered by many good authorities as the safest and most efficient member of the aniline group. In epidemic influenza, phenacetine rapidly relieves the muscular pains and favors diaphoresis; the catarrhal symptoms subsequently require other remedies.

In ordinary colds, one or two 5-grain pills of phenacetine remove all symptoms. The combination of salol (or salophen) with phenacetine is especially useful in influenza and rheumatism.

The analgesic effects of phenacetine are very marked in various forms of headache, including migraine and the headaches from eye-strain, having the advantage over antipyrine in not so frequently causing a rash.

In the neuralgic pains of tabes dorsalis, in herpes zoster, and intercostal neuralgia, 5-grain doses, given every hour for three or four hours, usually afford complete relief and cause sleep.

Phenacetine is extremely useful in chronic neuritis, and, according to Kater, is unsurpassed in the treatment of cerebral disorder due to excessive indulgence in alcoholic drinks.

In whooping-cough, ½-grain doses dissolved in 10 drops of glycerine are readily taken by children, and afford prompt relief, permitting sleep, and ameliorating the attacks.

In delirium, a dose of 10 grains of phenacetine will usually afford a quiet night.

Mahnert considers phenacetine a specific in acute articular rheumatism, as it reduces fever, relieves pain, and lessens the duration of the attacks. It has been found useful in some cases of gonorrhœal rheumatism, and is worthy of more extended trial in this rebellious affection.

Given several hours before the time of the paroxysm of intermittent fever, it prevents the chill.

In insomnia from simple exhaustion, phenacetine acts admirably.—*Shoemaker*, "*Materia Medica, Pharmacology, and Therapeutics*," *vol. ii.*

—***Chloralamide.***—James Wood, M. D., in the "Brooklyn Medical Journal," April, 1892, draws the following conclusions, based upon the use of this drug in 280 cases: It is a most useful hypnotic, reliable, safe, and pleasant. It has a place as an anhidrotic in phthisis. It is superior to other drugs, because in hypnotic doses it stimulates respiration, and but slightly, if at all, influences pulse, temperature, or urinary secretion. No collateral symptoms of any consequence exist. The best hypnotic dose for an adult is forty grains. It is given preferably in an alcoholic solution just before retiring. A. F.

—***New Remedy for Exophthalmic Goitre.***—The "France Médicale," August 19, 1892, mentions Dieulafoy's new method of treating Basedow's disease, based purely upon analogy. In tubercular subjects, during hæmoptysis, or when this condition is feared on account of the heart's agitation (cardio-vascular erethism), ipecac is administered. Under its influence the pulse is reduced in rapidity and volume: erethism ceases, and, in consequence, hæmoptysis is arrested or prevented. The first indication in exophthalmic goitre is the same: to reduce cardio-vascular erethism. This suggested to Dieulafoy the idea of a new formula, and the result is the following pill:

Powdered Ipecac, ...	gr. .03
Powdered Digitalis (leaves), . . .	gr. .02
Extract of Opium, ...	gr. .0025

S.—One, three or four times during twenty-four hours.

Improvement has always resulted; and in two cases it proved rapid and most marked. In a few months there was practically a cure. The only drawback is diarrhœa until the organism becomes tolerant of this treatment.

L. F. B.

—***Scientific Teetotalism.***—J. Murray-Gibbes (Australasian Medical Gazette, February, 1892).

Under the above title the author propounded for his own discussion three questions, viz.: Is teetotalism founded on scientific principles? Is teetotalism as carried out now advantageous to the human race? and, lastly, How should teetotalism be carried out?

The first question he answers in the negative, apparently to his own satisfaction. The second question is likewise answered in the negative; and in reply to the third, his solution is rather broad, to say the least. That solution is as follows: "By adapting scientific food customs, which we shall find out by studying most of the primitive and other races by the light of recent research."

This passage is, to say the least, *charming* in its obscurity. It is not entirely possible to say that the author means that we should find scientific dietary customs as one of the advanced traits of primitive races. Throughout the entire article are found stray thoughts, which will probably upset some of the reader's previous ideas. For instance: "All food becomes acid before it is aborbed through the walls of the digestive tract." "Sugar in the food becomes converted into lactic acid in the stomach." "No single microbe has been so far proved to cause any one disease." This last sentence would incline us to believe that we have been waging war on the cholera bacillus lately for naught.

Although the author confesses he is a teetotaler, he thinks that alcoholic beverages should be taken for the organic acids they contain. The contents of the paper are not in entire keeping with its title. J. C.

—***The Cerebral Commissures in the Marsupialia and Monotremata.***—By Johnson Symington, M.D., F.Z.S., F.R.S.E., Lecturer on Anatomy, Minto House, Edinburgh (Journal of Anatomy and Physiology, Vol. xxvii., p. 69–84).

BY AD. MEYER, M.D., CHICAGO.

Dr. Symington gives a complete history of the different views held on the subject—on the one side by Owen,

on the other side by Flower, Sander, Osborn and Herrick. He decides the question in favor of Owen's view, arriving at the following conclusions: In the monotremata and marsupialia, 1. the anterior commissure is as large and generally much larger than any other transverse commissure of the cerebrum, and it unites the whole of the cortex of the two hemispheres except the gyri dentati and hippocampi majores (which extend over nearly the whole of the mesial wall of the hemisphere); 2. they have no true corpus callosum; and 3, the superior transverse commissure is simply a commissure for the gyri dentati and hippocampi majores.

In the placental mammals: (1) The anterior commissure is much smaller than the other transverse commissures, and it never extends to the cortex on the upper surface of the cerebral hemisphere, or to that on the upper part of the inner surface of the hemisphere; (2) a true corpus callosum is present, as well as (3) a hippocampal commissure.

(It is not quite easy to understand how the authors mentioned above can have overlooked the clear and convincing statement which Owen made as early as 1837. The whole confusion is caused by a lax use of the nomenclature, and by a want of exact definitions. Osborn says that the corpus callosum is a commissure of the mesial parts of the mantle, consisting of an anterior portion, the true corpus callosum, and a posterior one, the commissura cornu ammonis s. hippocampal commissure. The expressions anterior and posterior proved fatal. Had he defined the hippocampal commissure of Owen (Lyra Davidis, in man) as a commissure of the cortical areas which give origin to the fornix, *i.e.*, to the fibres which descend to the base of the brain within the mesial wall of the hemisphere, and corpus callosum as a commissure of the cortical areas which give origin to the fibres of the corona radiata of the inner capsule (lateral wall of the hemisphere), then he would not have been misled by Flower's statements. He would have seen that in an animal whose hippocampal region extends nearly to the olfactory bulbs, the "anterior" commissural fibres are not different in character and position from the "posterior" fibres of the hippocampal commissure, but that they differ essentially from the fibres which in other, higher animals form the corpus callosum, both by their distribution and by their relation to the lamina terminalis. Moreover he would not have made the same mistake in the lower vertebrates, *e.g.*, in the reptiles. The greatest

part of the mantle of the hemispheres in these animals is homologous with the hippocampal region of the mammals; at any rate that part of the mantle which in several species shows commissural fibres, is homologous with it, as it gives its origin to the fornix. There is no evidence in the sections for a true corpus-callosum and no argument in favor of one, as the reptilian brain—at least of the Ophidia—has no fibres which might be called homologous with the real capsula interna, nor has it an are a in the mantle which would give an origin to a "stabkranz" (fibres of projection, descending in the lateral wall of the ventricle).[1]

It is, however, fair to say that notwithstanding the above criticisms by Dr. S. and myself, Prof. Osborn's paper merits (together with Belloncí's and Edinger's work) a prominent position in the literature on comparative anatomy of the brain, being practically the first attempt in this line.

Cases treated by Psycho-Therapy.—Dr. José López Villalonga, of Havana, Cuba, describes the results of treatment of various nervous affections, in the "Revista de Ciencias Medicas," November 5, 1892:

Case I. was a chronic gastric neurosis of five years' standing, with obstinate attacks of vomiting occurring daily. The patient was treated after five hypnotic suggestions.

Case II. was of a similar affection, but only of eighteen months' standing, with severe attacks of vomiting, dizziness, malnutrition, etc. Like the preceding case, this one too was pronounced cured after five treatments.

Case III. was one of facial neuralgia; cured after two suggestions.

Case IV. was a mild attack of sciatica; cured after nine treatments.

Case V., was an acute gastralgia; cured after two treatments.

Cases IX. and VII. were also acute gastralgia; cured after five and three treatments respectively.

Case VI. was a chronic gastralgia of one year's standing, with attacks of vomiting, etc.; cured after eighteen suggestions.

Case VIII. was an acute neuralgia; cured after one suggestion.

All of these cases were young people of sixteen to twenty-two years of age, many of them presenting the ordinary symptoms of hysteria.

[1] Compare my paper, Ueber das Vorderhirn einiger Reptilien. Zeitschrift, f. wiss. Zoologie, Bd. liv.; Heft 1.

The author then describes three cases where he hypnotized, in order to perform minor surgical operations.

Case XIV. (mutism of emotional origin in a young woman) was cured in three months with hypnotism and an energetic tonic treatment.

Case XV. was a youth of nineteen years of age, addicted to onanism; he was completely cured after five treatments.

Case XVI. was constipation; successfully relieved by this procedure.

Case XVII. was a contracture of the left leg, of seven years' standing, due, it was thought, to rheumatism. After fifteen suggestions the limb resumed its normal shape.

Case XVIII. was a student, sixteen years of age, who had been totally deaf for over two months; after a single suggestion the deafness vanished.

A Case of Vertigo in an Hysterical Patient treated successfully by Suspension.—In the "Giornale della R. Accademia di Medicina di Torino," for September, 1892, Dr. A. Marro narrates the case of an Italian postman, thirty-six years old, whose family history was very poor on the maternal side, but otherwise was in good health until 1890, when he passed through a severe attack of influenza. Following upon this affection, he began to have spells of vertigo, and his legs seemed to tremble and shake. In the office, while writing, his hands would stiffen, after a time compelling him to stop. He was unable to walk on smooth pavement for fear of falling. At the objective examination there was present a presystolic murmur at the apex of the heart; patellar reflexes normal; iris reflex was also normal; the pharyngeal reflex was absent; the visual field was narrowed on the left side. Suspension was resorted to; and, after six weeks, with three suspensions weekly, the vertigo and dizziness disappeared, and the patient was discharged cured.

Society Reports.

THE BROOKLYN SOCIETY FOR NEUROLOGY.

Meeting held November 9, 1892.

BRAIN-CYSTS CONNECTING WITH A VENTRICLE.—THREE REPORTS.

I.—A Case of Traumatic Cephalhydrocele, with Remarks on the Causation of Hydrocephalus. By William Browning, M.D.

II.—An Operated Case of Brain-Cyst connecting with the Lateral Ventricle—Autopsy. By Calvin F. Barber, M.D.

III.—The Identification of Cerebro-spinal Fluid. By Elias H. Bartley, M.D.

I.

The comparative rarity of this trouble, at least of published reports, and some interesting questions involved, suggest that the subject may be worth considering, even though little new can be added.

My case is that of a girl of seven years, seen in October, 1892, a patient of Dr. Geo. E. Graw. Her trouble dates from an injury when a year old. The mother, with the child in her arms, fell on the stairs, throwing the girl somewhat violently into a corner. This was immediately followed by convulsions and by left hemiplegia not involving the face. There was no previous paralysis or other abnormity. The physician then in attendance said that the soft cranium had been dented in. At first the head was greatly swollen, and for years a large lump remained over the region of injury. This, however, gradually subsided, so that for the last three years it only puffs out on crying.

A year ago last summer she was in convulsions all one night; and she had another seizure October 7th, this year. She has, however, also been having of late so-called fainting-spells two or three times a day, and has

been less bright mentally since the first convulsions. The latter are severer on the left side; no initial symptom, but a moan; always of late yawning and tired; never complains of headache, unless sometimes of local tenderness on the head from crying; the left hemiplegia has very gradually improved, so that only a paresis remains; shortening of left extremities stated; knee and radial jerks stronger on left than on right; left hand cooler than right. For years the left thumb and fingers were drawn in and the hand was a little flexed; but even then, although not possible when awake, yet in sleep the arm would be freely put up over the head (*i. e.*, mimic or so-called automatic actions intact—a thalamic function). Walks limpingly on left leg; can just about stand alone on left foot.

Pupils equal; no distinct hippus. Vision in left eye possibly impaired, yet fairly good; in right, normal. Pulse 108 (standing). Sleeps well and without special dreaming. Is a plump, healthy, and bright-looking child. Cannot read yet, but can count some. Has a lively interest in everything, is properly inquisitive, laughs, plays, etc.

There is a long, somewhat transverse depression in the skull, reaching slightly backward to the left of the median line, and crossing the sagittal suture an inch or so in front of the lambdoid. The main part runs from this point obliquely forward and somewhat downward over the upper parietal region on the right. The hair-growth and color of skin over this part are normal. When the child is mentally excited, there is a filling up of the depression, that, however, can be very easily forced back by pressure with the finger-tips. It also fills some on compressing the jugulars. No distinct opening can, however, be felt, though it is evidently at the bottom of the hollow. When she lies down the whole depression fills up, even a trifle more than level, yet is also very easily emptied, showing a pretty free communication with the encranium.

Pulsation did not seem noticeable when the cyst filled by lowering the head, but became very evident when in erect postures it filled by any mental effort; *i. e.*, there was decided pulsation only when the fluid was driven up by an actively increased arterial supply to the brain. Perhaps this is the explanation of the fact that, in some cases, pulsation is observed, and in others not, although the size of the communication must also be a factor—a minute opening diminishing the pulsatory movement.

We aspirated and removed about two drachms of a clear, colorless fluid like water, excepting for some minute floating particles or threads. The puncture, though through a firm cyst-wall, did not appear to cause any pain, nor did the withdrawal of this small quantity of fluid have any perceptible effect on the patient. The cavity was immediately refilled, and even leaked some through the oblique puncture while she remained reclining, thus showing an abundant source. Microscopical examination of the aspirated fluid showed: occasionally a leucocyte; rare, irregular flakes and fibres, sometimes a little pigmented, otherwise only uncertain; and foreign matters.

Though the total of experience with this form of trouble is limited, it suffices to indicate that the cyst in this case connects with the lateral ventricle, and that the fluid is cerebro-spinal. Further and decisive proof was given by the chemical examination. This was made by Dr. Bartley, and, as it involves recent methods not (so far as I am aware) ever applied to one of these cases, I have asked him to contribute a brief account of the main decisive tests.

His results in this case were as follows:

Specific gravity (by weight), 1010.
No precipitation by heat.
All proteids precipitated by magnesium sulphate.
A precipitation by cold nitric acid.
No precipitation by hot nitric acid.
With Fehling's solution doubtful.

This excludes serum-albumen, but includes albumose, and in general shows that the fluid corresponds well to cerebro-spinal, but not to that from any independent cyst.

The differential diagnosis in well-marked cases is almost alone from venous cysts (*vide* Martin, "Venous Blood Tumors of the Cranium," "Journal Am. Medical Association," 1886, September 18th, 25th, and October 2d). Hernia cerebri, encephalocele, etc., are often congenital, and not readily reducible. Aspiration (and, if necessary, an examination of the fluid) settles the diagnosis.

It has been noted that all cases are in the young. It is not probable that they all die before advancing far in years, but that, as in Southam's case, either the external part shrinks up or the cranial opening becomes shut off spontaneously or by the natural bone-growth, thus leaving simply an encranial cyst (ventricular diverticle). Evidently of this nature aremany of the cases of late

glibly dubbed porencephalus: as that of Dr. Barber (given in this number), that of Brush, and others. This makes the pathology somewhat comparable to that in cases of syringomyelia starting from the central canal.

As to treatment: One negative indication has been established, both by theory and experience. Do not attempt surgical interference. The cases so far operated appear all to have ended fatally. Tapping also proves of little use, except when necessary to relieve pressure.

The literature of the subject is not great, the principal English and American papers being:

C. Lucas: Two cases. Guy's Hospital Reports, 1876, 1880–81.

Connor: Am. Journal Med. Sciences, 1884, July. He collected 22 cases, including 2 of his own.

Southam: Brit. Med. Journal, 1888, May 12th.

Makins: Trans. Clin. Society, London, 1888–89, xxii.

My recollection also includes a misplaced society report, probably American.

A few considerations may be added as to the way in which such cysts (or diverticles of the ventricle) originate. It is at least improbable that a simple rupture of the ventricular wall (ependyma) could alone lead to this result, although it doubtless occurs as a preliminary factor. The case is practically a special form of internal hydrocephalus. There is no evidence to show that this is here kept up by any continuous inflammation of the secreting choroidal villi. There seem to be two possible ways left, involving an interference with either: (*a*) the ventricular venous efferents, or (*b*) the normal discharge of the ventricular fluid. It is commonly assumed that the hydrocephalus observed from cerebellar and other tumors so situated as to exert pressure on the vein of Galen is due to venous stasis, and the consequently increased production of ventricular fluid; and there is other corroborative evidence. In the acute form due to tubercular meningitis, it is customary to explain the accumulation of fluid in the cœle as due to inflammatory irritation; *i. e.*, oversecretion. In one such case, however, I found a tubercular mass the size of a large pea just between Galen's vein and the cerebellum, attached to and pressing on both. This, in fact, was the only tubercle of any size, and the not very extensive amount of fluid may well have been of obstructive rather than of irritative origin.

I also once published a case of moderate internal hydrocephalus due to an almost complete blocking of

the straight sinus (JOURNAL NERV. AND MENT. DISEASE, 1887, April); and in another connection I have even tried to show that the strictly ventricular veins were terminal vessels. But Hedou, a later French investigator, claims that these veins do have more or less connection, through their finer branches in the brain-substance, with those discharging in other directions at the brain-surface. Even, however, granting his results, it is not demonstrated that such anastomoses are adequate when the normal venous path is obstructed; for closure of Galen's vein is certainly and rapidly fatal.

The alternative explanation of an interference with the normal efferents for the ventricular fluid is involved in even greater obscurity. That such fluid may flow through the acqueduct of Sylvius into the fourth ventricle, and then perhaps through lateral openings, was practically shown by an autopsy on a man in middle life, who died from a hemorrhage starting in a spot of softening and breaking into the left post-cornu. The blood filled the left lateral, passed through the foramen of Monro to some extent into the right, but principally by way of the third ventricle and the aqueduct into the fourth. From this it oozed out on either side subarachnoidal. The existence of such lateral openings to the fourth ventricle and of a posterior outlet has been denied. But such cases of hemorrhage, not very rare in any pathologist's experience, seem to give conclusive proof to the contrary, and show that these may represent a natural outlet for the ventricular fluid. That tapping a spina befida may relieve a hydrocephalus connected with it is well known. The occurrence of ciliated epithelium in the walls of the aqueduct might corroborate this if we knew more definitely the direction of their action.

As to possible ventricular relief through lymphatics, little definite can be said. Ependymal stomata have been described, and the lymphatics of the choroid plexus in the lateral ventricle unite, according to Arnold, to one trunk, following Galen's vein. Hence the main outlets, both for the venous blood and for the ventricular fluid, whether by the aqueduct or by lymphatics, all run for a short distance close together. Consequently, any compression of the one would in most cases be accompanied by interference with the others, and it becomes difficult, in given cases, to distinguish which is the principal.

In at least many of these cephalhydrocele cases the connection with the ventricle is at a point in the region of what may be termed the ventricular outlet, or neck of

the cœle (in ours, evidently the roof over this part). A slight dragging, displacement, cicatricial constriction, or even fibrinous plugging at this point, might suffice. Until some more exact explanation can be given, I think we may contentedly conclude that obstruction at this outlet is the cause. The same holds also for quite a proportion of the miscellaneous cases of hydrocephalus. Surgical measures, by any plan so far proposed, must prove unavailing in all such cases, largely by reason that the real cause is not removed, and the like applies to all attempts at cure by tapping.

II.

For the minutes of the case under consideration I am indebted to Dr. Jessie Duryea, now superintendent of the Kings County Hospital, under whose care the patient was, both before and after the operation.

A boy, T—— Mc——, fourteen years of age, was sent to the County Hospital from an institution for the care of orphan children.

His history up to the time of entering the hospital was exceedingly unsatisfactory. His parents were ignorant, and, as far as investigation could show, there existed no neurotic taint in the family.

When about eighteen months of age he fell from a second-story window, receiving a severe injury to his head. Several weeks passed before he had fully recovered. At this time, for some reason not explained, an operation was advised by the attending physician, the parents refusing to have it performed.

The patient had been an inmate of an orphan asylum for about four years previous to his admission into the hospital. While in the asylum he was the subject of epileptic seizures of varying degrees of severity. Upon his admission to the hospital he was found to be well nourished, but suffering from left hemiparesis. Had a marked depression in the temporo-occipital region of right side: the depression was triangular, with the base looking forward. Base was half an inch posterior to and parallel with a line drawn over top of head from one auditory meatus to the other. The lower side of the triangle corresponded with a line drawn from the external occipital protuberance to the upper margin of the orbit. The sides of the aperture measured one and one-fourth and one and one-half inches respectively.

While under observation the patient averaged one convulsion in three days, some occurring at night. Just

before a seizure he would use profane language regardless of those about him. The convulsive seizure over, the patient would seize anything within his reach and hurl the missile at those about him. These features were characteristic at each seizure.

Drs. I. H. Barber and John C. Shaw carefully examined the boy, and advised an operation: all other treatments having failed, and as the depression in the skull could only be explored by the use of the knife; there seemed to be a fair chance of relieving the symptoms by the removal, perchance, of a depressed piece of bone.

December 12, 1889, full consent having been obtained, the patient was anæsthetized, and in the presence of Drs. Schenck, Browning, Wells, Arnold, McComber, Osgood, and house staff. Dr. I. H. Barber operated.

The usual scalp incision was made, exposing the depression and revealing the absence of bone where depression had existed. The membranes being incised, an opening appeared, through which a probe was inserted into what appeared to be a large cyst of right hemisphere. As there was free pulsating discharge of clear fluid from the cyst, a drainage-tube was inserted, the wound closed antiseptically, and the child put to bed.

The wound healed by first intention, save at point of drainage.

Within forty-eight hours after the operation the patient had three convulsive seizures, after which he had no return of the attacks.

The cavity was washed daily with warm water (no reaction), and the wound dressed. At each dressing the discharge was profuse and of a clear, serous character.

Highest temperature registered was $101\frac{2}{5}^{\circ}$, on the fifth day after operation.

For the first three days following the operation the boy was very stupid, sleeping the greater part of the time. Frontal headache seemed to be his only complaint. Appetite good.

On the eleventh and twelfth days the patient tore the dressings from his head, complaining of an itching sensation; and on the thirteenth day the wound did not drain freely; there was rigidity of the muscles of whole body, and he did not respond to tests for sensation; he became speechless.

These symptoms were all relieved after removal of dressings and the discharge of about half an ounce of fluid.

On the fourteenth day after operation he became comatose, and died on the following morning.

Autopsy.—Removing the scalp, the section of bone surrounding the opening was found to be exceedingly thin, with irregular outline. The original fracture was found to have united by ligamentous union only. It extended, anteriorly, to within a short distance of coronal suture and about three-quarters of an inch posteriorly from opening.

The dura surrounding the opening was firmly attached to the bony wall.

Examination of brain-surface showed a vertical belt of disintegration about one-half inch in width, extending from the base upward, including the opening, to a point above the intra-parietal fissure. Incising the opening, a cavity appeared about the size of a large goose-egg, with a smooth limiting well. The surrounding brain-tissue was somewhat softened. The cyst-cavity had a well-defined though small opening into the lateral ventricle at about the juncture of posterior and lateral horns.

III.

The cerebro-spinal fluid differs from other serous fluids in chemical composition to such an extent that it may be differentiated from them by simple chemical tests. This fluid ought to be regarded as a true secretion rather than as an exudate.

The fluid, when pathologically increased in quantity, does not usually depart from the normal composition. After tapping a sac filled with cerebro-spinal fluid a number of times, there is apt to be some inflammatory exudate (or transudation), which partakes of the properties of other serous or inflammatory exudates. Cerebro-spinal fluid contains but traces of serum albumen, the proteids being usually in the form of albumoses.

There is usually present no fibrinogen; hence this fluid does not clot.

All the proteids are precipitable by saturating the solution with magnesium sulphate. Serum albumen is not precipitated by this salt, and hence must be absent.

Sometimes there is found a specimen which gives a small amount of serum albumen coagulum on boiling. The albumoses are precipitated by cold nitric acid, but the coagulum dissolves on warming, to reappear on cooling.

The specific gravity of cerebro-spinal fluid is gener-

ally lower than other serous fluids. It ranges from 1005 to 1010. The albumoses, like peptones, give the biuret reaction, or pink color, with Fehling's solution. Cerebro-spinal fluid reduces Fehling's solution, owing to the presence of a substance believed to be pyrocatechin.

To apply these facts to the practical examination of a suspected fluid, we may proceed as follows:

1. Boil, when there should be not more than a trace of coagulum—serum globulin and serum albumen.

2. Cold nitric acid ought to form a precipitate, which disappears on heating, and separates again on cooling.

3. Saturation with magnesium sulphate should give a precipitate. Saturation with sodium chloride should also produce a precipitate. Ammonium sulphate may be tried if the above salts fail.

4. The solution floated upon Fehling's solution gives a pink zone at the line of contact.

5. When boiled with Fehling's solution, there is a reduction of the copper—pyrocatechin.

6. The specific gravity is between 1005 and 1010.

In repeated tappings the later ones give inflammatory products with serum albumen, together with the albumoses; *i. e.*, they coagulate with heat and nitric acid.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, November 28, 1892.

The President, Dr. FRANCIS X. DERCUM, in the chair.

Dr. WM. OSLER read a paper on

CHRONIC CHOREA.

(See page 129)

DISCUSSION.

Dr. CHARLES K. MILLS.—My attention has long been directed to the importance of finding the link which binds these cases of chronic chorea, not only to each other, but also to other well-known forms of organic and mobile disease, as Friedreich's ataxia, and various organic athetoid and choreic diseases of that kind. I should like to know more about the exact pathology of these cases, and I had hoped that the microscopical examination which Dr. Osler had made would have thrown some

light upon this. Certainly the so-called Huntingdon's chorea is a disease apart from other choreas, but probably not apart from some other forms of organic motor disease with which we are familiar, particularly in an institution like the Philadelphia Hospital. These cases are not infectious as the minor choreas may be, but rather they are due to some deficiency in the development of the nervous system, although it is curious that they should come on so late in life; but the same is true of some forms of sclerosis.

Dr. JAMES HENDRIE LLOYD.—There seems to me to be a well-marked distinction between chronic chorea of adult life and the acute chorea minor of childhood. I have always believed that they were distinct, depending upon a distinct pathology. The most interesting point in the consideration of chorea minor is the possibility of it being an infectious disease. While nowadays there may be a tendency to go to extremes in regard to microbes and bacteria, yet chorea minor presents a well-marked group of lesions, such as joint involvement and endocardial change, which suggest the probability of infection.

Another important point is with reference to the relationship of chorea to pregnancy or of pregnancy to chorea. This is another of the unsolved problems of chorea. I have myself had rather an unusual experience, having seen five or six cases of chorea of pregnancy. It is well known that some of these cases are very acute and rapid in their progress, and that others of them have a definite tendency to become chronic or to end in death, and others tend toward involvement of the brain and to insanity. I remember an interesting case in the Pennsylvania Hospital for the Insane, in which an ordinary chorea of pregnancy ran into a dementia which was hopeless, the choreiform movements continuing. The chorea of pregnancy offers some objections to the theory of the infectious origin of chorea. On the other hand, there are some things about it which suggest a moral relation or a mental impression. A large proportion of the cases of chorea of pregnancy occur in primipara, and especially in those illegitimately pregnant. Dr. Levick recorded, years ago, a most interesting case of this kind at the Pennsylvania Hospital.

These are unsettled problems. The chronic chorea of which Dr. Osler speaks seems to me to be distinct from these acute forms and probably dependent upon some degenerative central disease.

Dr. GUY HINSDALE.—I had hoped that Dr. Osler would have told us something about the treatment. I presume that when the disease is divided into several classes, the treatment applicable to one class would not be suitable for the others. While arsenic may be beneficial in Sydenham's chorea, it may not be applicable to cases occurring in adult life. A week or two ago I saw, in consultation, a case of chorea in a woman eighty-two years of age. The disease had existed for six months. Arsenic and other remedies had been tried, and I was asked what to do; but I was unable to afford much encouragement in the use of further medication.

The PRESIDENT.—Dr. Osler's paper has impressed me more than ever with the fact that chorea is a symptom, not a disease; that is, we have a large group of choreiform diseases, many of which are essentially different. The ordinary Sydenham chorea and adult chorea are different diseases, as I think we are all willing to admit. The choreas of adult life present some interesting problems. With regard to spasm in these cases, my impression is that this does not occur in the hereditary forms of adult chorea.

I would ask Dr. Osler whether, from his experience, there would be any possibility of distinguishing, without the history, the cases of hereditary adult chorea from those which are not hereditary. According to my own experience, this distinction is not possible.

Dr. G. BETTON MASSEY.—Nothing has been said about alcoholism as a possible cause of this form of adult chorea. I do not know that there is anything in the idea, but the general impression among the community is that in these cases the father or mother has been intoxicated at the time of conception, or that the disease is the result of maternal impression. I recently saw a young man, twenty-two years of age, who had been intoxicated on two occasions. He stated that after the first drink of liquor he was unable to withstand it, and three or four ordinary drinks of whiskey would cause sudden intoxication. In this case there was a family history of hereditary chorea.

Dr. WILLIAM OSLER.—I can answer the question about alcoholism so far as the families reported are concerned; none of the members have been heavy drinkers. If alcohol was in any way a factor in the production of chronic progressive chorea, the disease would be exceedingly common, whereas it is extremely uncommon.

The point raised with reference to the affinities of this

disease is very important; for instance, its relation to double athetosis. Here the chief element of distinction in many cases is the spastic state of the muscles in athetosis; but in the discussion in the Berlin Society, to which I have referred, an interesting difference of opinion between experts was shown, one regarding a case as double athetosis, another as hereditary chorea, while a third thought that as spasm was present, it was probably not chorea. In the majority of the cases with spasm, I think the disease does not belong to this group although they are closely allied, and there may co-exist an athetoid with a choreiform condition. I do not think that spasm characterizes the non-hereditary form of chronic progressive chorea. So far as I know there is no essential distinction between these two forms other than the heredity.

The question of Dr. Hinsdale is interesting, but with our ample experience of the course pursued, no one should attempt to treat medicinally a case of chronic chorea. A physician should have the courage in these cases of chronic progressive affections of the nervous system, to say to the patient: "My good fellow, there is nothing to be done for you. Go home, arrange your affairs, live a quiet life, and do not throw away your money on medicine, particularly quack medicine." Unfortunately chronic chorea contributes only a small part of the cases of chronic disease of the nervous system for which we can do very little. This is regarded as a great reproach to medicine, we cannot be expected to cure all cases; as old Sir Thomas Browne said two and a half centuries ago: "There are vices incorrigible in divinity, cases indissoluble in law, and diseases incurable in physic," and they will remain so.

Adjourned.

Miscellany.

PEROXIDE OF HYDROGEN.

This preparation, as standarized by Marchand, is well known to the profession the world over; and it is with great regret that we note its efficacy has been, not only criticised in its use in diphtheria, but also that the author of the paper, Dr. A. Jacobi ("Archives of Pediatrics," January, 1893), has seen fit to ruthlessly condemn it, on theground of being a patent remedy. There are grounds to be thankful for that Marchand's preparation has been a patented one, for only by protecting the purity of the solution of Peroxide of Hydrogen, and his persistent efforts, "business" or no business, has made for it a just claim, as being a standard solution.

As to the claim of harmlessness, Dr. Jacobi should have been more logical. The fault in the cases mentioned by Dr. Jacobi, all are due, not so much to the preparation, but rather its unscientific use by the various physicians who used it. The word "harmless" is never to be interpreted in medicine as literal: it is always to be understood in a comparative sense. Many ordinarily harmless, so-called, remedies may be, by improper, inexperienced use, prove far otherwise.

The use of Peroxide of Hydrogen, as far as our personal experience of it permits us to judge, may be safely emphasized as harmless.

It has its place in medicine and surgery, and we trust a permanent one; and while the doctor's warning may be timely—to be careful in all things—it nevertheless does not prove that Marchand's preparation should be set aside because it is a proprietary remedy, that may do harm when used improperly.

SECTION OF NEUROLOGY AND MEDICAL JURISPRUDENCE OF THE AMERICAN MEDICAL ASSOCIATION.

This section, under the able leadership of Dr. C. K. Mills, promises to be a very important part of the Asso-

ciation this year. There will be an unusual interest taken in the work on the part of the officers and various members.

It is very earnestly requested that a more general interest, however, be taken in the work of the section by all neurologists and alienists. And all are called upon to present, this year, some written contribution.

The Association meets during the first week in June, at Milwaukee.

A preliminary programme will be published during March. It is necessary, therefore, to send in the titles of contemplated papers very soon.

VOL. XVIII. March, 1893. No. 3.

THE

Journal

OF

Nervous and Mental Disease.

Original Articles.

AN EXPERIMENTAL STUDY OF SIMULTANEOUS STIMULATIONS OF THE SENSE OF TOUCH.

By WILLIAM O. KROHN, Ph.D.[1]

Professor of Psychology and Pædagogy, University of Illinois.

THIS study of the simultaneous stimulation of several portions of the dermal area was undertaken with a view to pursuing four lines of investigation, as follows:

1. To discover the relative sensitiveness of different portions of the skin.

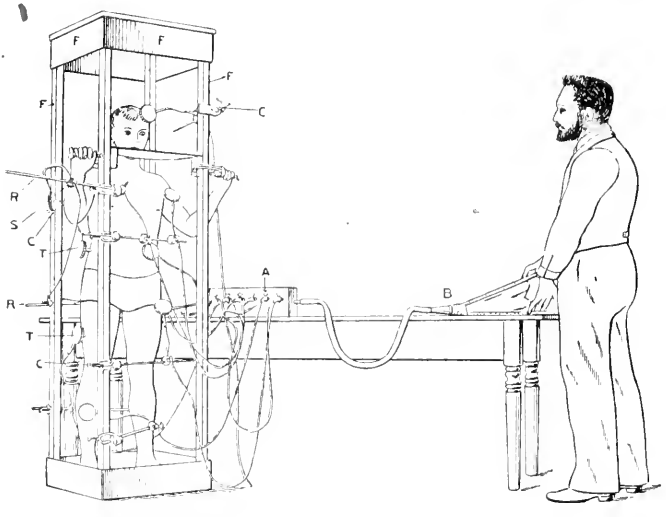
2. To find the nature and direction of the errors in localization.

3. To study the influence of attention upon the localization and interpretation of simultaneous touch stimulations. Also the investigation of the problem of attention, with especial reference to the question of how many sensations of touch the mind can attend to, or grasp, at one time.

[1] In the portion of the experimental work done at Clark University, Mr. T. L. Bolton, the able laboratory assistant, co-operated throughout, giving a large amount of time and supplying many valuable suggestions as the work progressed. The writer takes this method of thanking him for his invaluable assistance, so freely and generously given.

4. To examine the effect of practice. Can the skin be educated to greater sensitiveness and accuracy in localization?

The experiments upon which this study is based number many hundreds, and were made upon ten different persons, who kindly lent themselves as "Versuchsthiere." The majority of the experiments were made in the psychological laboratory at Clark University; and the writer desires to thank Prof. Sanford for assistance in devising the apparatus, as well as for his kind-

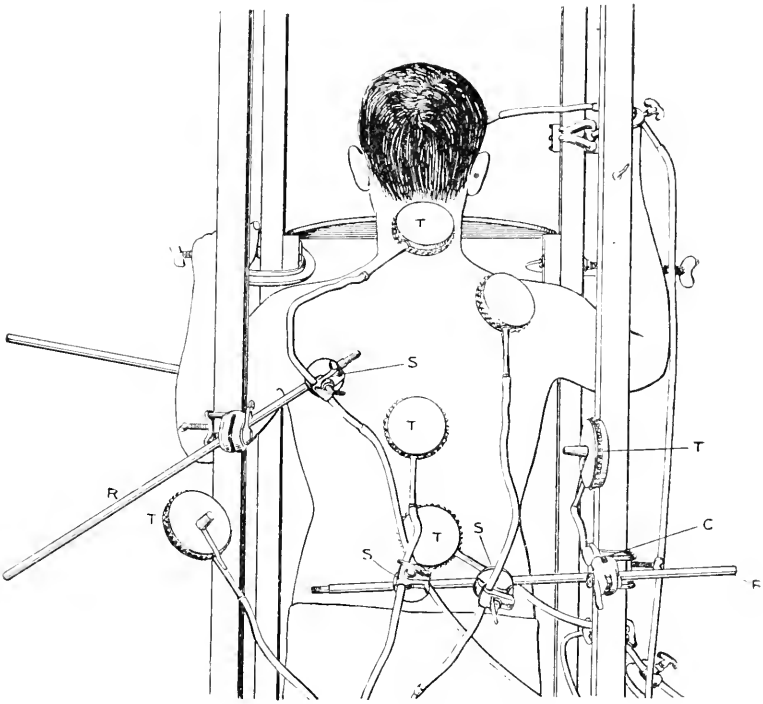


ness, both in serving as a subject for experiment and in rendering many timely suggestions as the work progressed.

Not only was much interesting material gained that has direct bearing upon the four lines of investigation already indicated, but the experiments also disclosed, incidentally and accidentally, many other important facts, having a bearing upon other lines entirely unthought of at the outset, but which, nevertheless, opened up some of the most fruitful subjects for further investigation. The first part of this article is descriptive, and

therefore general; the second part partakes more of the nature of a tabulated record of experiments.

Literature.—There is no literature bearing directly on this particular field of which the writer has any knowledge. If the field has ever been investigated, the results have, at any rate, never been recorded. No experiments



having been made in this line, there was no clew to apparatus; and the first problem we had to confront was the construction of suitable apparatus with which to pursue our investigation.

Apparatus.—The apparatus used can best be described in connection with the accompanying cuts.

The upright frame, *F*, is solidly made of wood, and securely fastened to the floor. The upright standards (*f*, *f*) are of such a thickness as to permit the fastening of the clamps (*c*, *c*), of which there may be a large number.

These clamps are after the Otis C. White pattern, with ball joints, and allow the adjustment of the half-inch nickel rods (r, r) at any angle. On these rods are sliding clamps (s, s), which admit a variety of adjustments; and through these clamps lead pipes are inserted (lead being chosen on account of its flexibility). These lead pipes are soldered at one end to tambours (t, t), and at the other end is connected by means of rubber tubing to the air-box, A, which in turn is connected with the bellows, B. The tambours are constructed in the ordinary way—flat tin-cups, over which bits of sheet rubber are stretched. When the rubber is expanded, by the forcing of air into the tambours, it presses against a cork, pushing it outward at least an inch. Corks were chosen because they come nearest to arousing pure and simple touch sensations. Ten tambours were used, thus making it possible to stimulate ten different spots on the dermal area at the same time, when air was forced through the air-box into these tambours. There are ten stop-cocks on the air-box, by means of which the air could be kept from passing into any one or more of the tambours in any experiment. A mouth-board was provided, in which the subject could fix his teeth in order to assist him in holding still.

Method of Experiment.—The subject was blind-folded, and took his place within the frame, keeping as nearly still as possible. The tambours (seven, eight, or all ten) were adjusted so that the corks were within one-half inch of the skin of the subject at different localities. The signal, "Ready," was given, and then the bellows compressed, thus forcing the air into the tambours, and thereby causing the corks to press against the skin. They immediately withdrew from the skin of themselves on account of the elasticity of the rubber diaphragm of the tambours. The subject then either himself indicated the exact point (as he thought) touched, or else let the operator pass a pencil or point over the skin till it come to the spot which the subject regarded as the one touched. In the later and more accurate experiments, the spots really touched, and those regarded by the subject as having been

touched were marked by a soap pencil or dry lamp black. In all cases the direction and amount of error were carefully observed and recorded. The subject was never allowed to become fatigued or chilled, as it was found that such influences always vitiated the experiment. In the first place, with a new person acting as subject, general tests were made, any kind of combinations or any sort of group of spots being used to determine the general dermal sensibility of the subject and his powers of localization. After this a series of ten tests (in some cases fifteen) were employed, each test embracing seven points on the skin—different features characterizing each of the tests. These groups or tests were repeated over and over again, always in a different order, and were such as the following:

TEST I. (Three pair bilateral and one unilateral touch).

Outside left ankle.
Outside right ankle.
Right side B.
Left side B.
Tip left shoulder blade.
Tip right shoulder blade.
Middle forehead.

TEST II. (All on right side except one).

Left elbow.
Right arm outside (upper).
Right nipple.
Top right shoulder.
Front right thigh.
Outside right calf.
Right instep.

TEST III. (On line through navel and bilateral).

Right hip over joint.
Left hip over joint.
4 inches to right of navel.
4 inches to left of navel.
3 inches to left of small of back.
3 inches to right of small of back.
Great toe of left foot.

TEST IV. (Bilateral).

Front of right knee.
Front of left knee.
Front of right shin.
Front of left shin.
2 inches above left nipple.
2 inches above right nipple.
Back of neck.

TEST V. (In groups).

{ Back of right calf.
Outside of right calf.
Front of right calf.
{ Top of right shoulder.
Right elbow.
Right wrist.
Left side of neck.

TEST VI. (Grouped in pairs).

{ Left knee front.
Left knee outside.
{ Left calf behind.
Right calf outside.
Back of right hand.

TEST VII. (Joint).

Left hand, knuckle of little finger.
Chin.
Right foot, joint of great toe.
Left ankle, outside.
Right wrist joint.
Right elbow.
Right shoulder.
Left knee.

Results. 1. *Indubitable evidence as to the relative sensitiveness of different portions of the skin.*

a). Skin over the joints much more sensitive than that at other localities on the dermal area. In the joint group (*e.g.*, group VII) it was not unusual for the person to correctly localize six or seven out of a possible eight. The following is the record on joint groups:

Person.	Whole No. of Joint Touches.	Percent. corectly Localized.	Percent. of Errors.
W. O. K.	512	78	22
T. L. B.	211	72	28
F. A.	399	74	26

While for the same persons, the general record on all localities touched was 62 per cent, 64 per cent, and 68 per cent respectively, for correct localization.

b). Touches on the back of the body are more distinctly felt, more clearly remembered and, therefore, better localized than on the front part of the body. Thus, out of all the touches on the front and back respectively, we gather the following records:

Person.	Whole No. of Touches.		Percent. cor. localized.		Percent. of Errors.	
	Back.	Front.	Back.	Front.	Back.	Front.
W. O. K.	200	200	69	55	31	45
F. A.	95	111	67	54	33	46
D. F.	40	93	62	57	38	43

Perhaps the general fact that the skin on the back of the body is more sensitive, and localizes better than that on the front of the body, may have some bearing upon the oftstated hypothesis, that the primitive man assumed the horizontal position of quadrupeds instead of the erect position, and that the back through generations of exposure was made to better localize the touch stimulations upon its dermal surface.

c.) Localizations of the dermal sensations are better for points not on the median line than for those that are. Thus, for example, out of 401 touches in the case of S., 130 were on the median line and 271 on other localities.

Of those on the median line, but 34 per cent. were correctly localized, leaving 66 per cent. representing the errors, while on other localities 68 per cent. were correctly localized and but 32 per cent. were errors.

d.) On the left side of the body we do not localize the dermal sensations so correctly as on the right side. Thus, out of 500 touches, 250 on the left and 250 on the right side of the body, there were 38 per cent. wrongly localized on the right side, while on the left there were 43 per cent. incorrectly localized. Thus, 53 per cent. of the whole number of errors were on the left side of the body. This is contrary to the results of the experiments of Hall and Hartwell ("Mind," No. XXXIII.) upon the relative sensitiveness of the right and left sides to motion on the skin.

As one of many specific examples, this might be cited: In Test IV. there were touches inmediately above both nipples; but in the large majority of cases of incorrect localization, in this particular test, the mistakes were made with reference to the touch above the left nipple. However, the interesting fact was noticed that the touch upon the left had the effect of pulling toward it the sensation on the right side; and the touch was, therefore, localized nearer the median line than it should have been, or nearer than it would have been, were there but a single touch, and that on the right side.

(*e.*) On hairy portions the localization is much better than at those localities not covered with hairs. This is especially prominent as a factor if the hairs have been shaven, as was the case with one of the subjects. In this instance the skin over the thighs and calves, after the shaving of the hairs, was so sensitive as to vitiate the experiments, because the sensations received at these regions were so intense and pronounced as to cause the mind to lose the sensations at the other stimulated portions of the skin.

(*f.*) A difference in the power to correctly localize was found in those portions usually covered with clothing, and those not so covered. Except in case of the

joints, the portions not covered would localize the sensations with greater correctness.

The above facts furnish unquestionable evidence for the assertion that the accuracy of the localizing power varies widely in different regions of the skin surface. And the proof is even more direct than that gained by the old method of experiment, in which the observer noted the least distance which must separate two objects (as the points of a pair of dividers) in order that they may be felt as two.

2. *Nature and Direction of Errors in Localization.*—These errors were of four kinds: (*a*) errors of extension, in which the sensation was projected away from the median line toward the extremities; (*b*) vertical errors *d'élévation*, in which the sensation was given a place higher than the one actually stimulated; (*c*) vertical errors *d'abaissement*, in which the sensations were localized at a point lower than the one at which the stimulations were applied; (*d*) miscellaneous errors, such as lateral errors on the limbs, *e.g.*, feeling a sensation on the *back* of the right calf when it was on the ouside of the right calf but in the same horrizontal place.

Then as to direction of the errors.—Out of every one hundred errors of localization in our experiments, 42 per cent. were errors of extension, and the average amount of error was 4.36 inches; 31 per cent. were errors *d'élévation* with the average amount of 3.36 inches; 20 were errors *d'abaissment*, average 4.19 inches; while 7 per cent. would be classed as mixed or miscellaneous errors. Thus both the largest number as well as the greatest amount of error fall into class (a)—errors of extension or projection. The more the stimulations are scattered over the dermal area, the more correct is the judgment of the subject as to locality. In case of legs and arms, touches on the joints are better localized than on the fleshy portions of the limbs; more acutely felt and localized across the long axis of a limb than within this axis; more correctly localized on the limbs than on the trunk of the body; better localized on the back than on the front; and better localized when not on the median line.

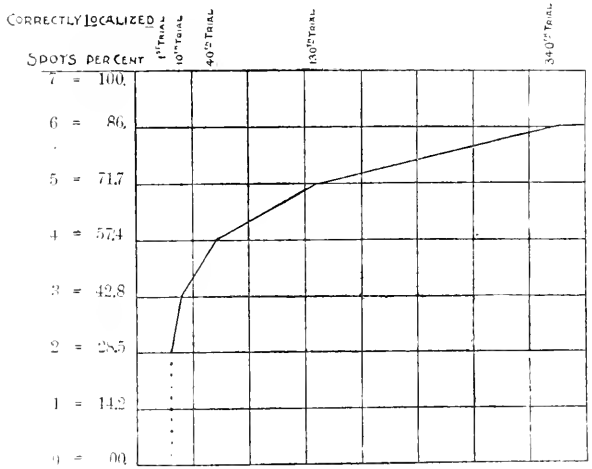
The general rule might be this: *The localizing power is delicate in proportion as the skin covers a more moveable part of the body, and is also more acute when the pressure stimulation is only strong enough to cause an appreciable sensation than when it is more powerfully impressed.*

3. *Attention plays a most Important Part in the Localization of these Simultaneous Stimulations of the Dermal Surface.*—For example, if the subject be told there will be no touches upon the legs, he will be enabled to give a greater number of correct judgments than if he expected the pressure stimulations to occur anywhere on the whole dermal area. And in a group test, like No. III. (in which six of the touches are on a line through the navel and bilateral, and thus grouped rather closely together) the subject could not localize the touches as well, because he expected them to occur all over the body. A test group like I. was always much better localized than group III. or V.

Close attention of the most intense degree is always a prime requisite for anything like success in correctness and accuracy of localization of the simultaneous pressure stimulations. With the varying degrees of attention there are varying results—from a hazy, cloudlike and very general sensation of being touched somewhere on the skin, with no idea as to the number of touches, to the correct and positive localization of the maximum number of simultaneous touches. If the points are somewhat scattered, and the subject attends closely, the mind will grasp clearly and distinctly, and localize correctly six out of seven simultaneous touches. One or two exceptional and star records were made in which the subject was able to recognize and locate every one of the stimulations in a group of eight, and that, too, very early in his individual series.

4. *The Effect of Practice is very Noticeable.*—The skin can be progressively educated to localize sensations of pressure more and more correctly. At first, in the different individual series, the subject could generally localize but two out of seven, but after a number (130)

of "sittings" (or more properly speaking, "standings"), he had no trouble in localizing five out of seven. The improvement from practice is very rapid. The accompanying "practice curve" shows in a graphic way the educability of the skin with reference to localization of the simultaneous pressure stimulations, for one individual.



5. *Dermal After-Images.*—In our experiments it was found that the after-images of touch were more pronounced and endured for a greater length of time in some localities than in others. Thus the after-images on the backs of the calves sometimes endured as long as five minutes after the touch stimulus was applied. Oftentimes the after-image was felt more clearly and localized better than the original stimulation. The fact of the matter is, that the subject many times would use the after-images as a clue in his endeavor to localize precisely, and after naming the touched spots, would, if permitted, correct, by means of the dawning after-images, his original statements as to the localities stimulated. Sometimes the after-image would be so strongly felt as to vitiate the succeeding experiment unless a considerable amount of time intervened, for the subject would locate pressure stimulations at certain spots, which supposed stimulations are clearly nothing but after-images

of the touches that composed the groups or series immediately preceding. The after-images endure for a longer period on the hairy portions of the skin, especially after the hairs have been shaven. The more pronounced and positive after-images occur in the following localities of the dermal surface, the sequence or arrangement corresponding to the natural order beginning with the part in which the after-images are most intense: calf of leg (behind), ankle bones (outside), shins, nipples, instep, and tendons.

6. *Fusion of the Pressure Stimulations.*—Perhaps the most remarkable result of our experimental study has been the discovery of a large amount of evidence with reference to the fusion of two or more stimulations into one single sensation, and the localization of this sensation at a point removed from either of those at which the stimulations were received. The facts bearing upon this subject gathered from our investigations are remarkable both for their number and their striking character. We herewith append a large number of cases in support of our statement. In Test III. there are two points stimulated on the front of the abdomen—one four inches to the right, and the other in the same plane four inches to the left of the navel; the touches therefore being eight inches apart. Yet in three instances, one of our best reactors, E. C. S., indicated but one touch on the abdomen, and that directly on the navel, midway between the two points actually touched. With J. A. B. there was also the same case of fusion. E. C. S. fused two touches, one at a point directly under the armpit on the right side, and the other at the tip of the right shoulder blade—into one sensation, locating it at a point midway between them but lower down on the trunk. L. R. fused the two stimulations—at the top of the right shoulder and the tip of the right shoulder blade, respectively—and localized the sensation as coming from a point midway between the two. In six instances the same subject fused into one sensation the two touches, at the back of the right calf behind and the outside of the right calf, in the same horizontal plane. Nearly every one of the

ten subjects would, at the same time, in his individual series, fuse these two into one (cf. Test VI.). It was also very common to fuse the two touches at the outside and front of the calf into one sensation, locating it as coming from a point a little lower but on a line between the two actual stimulations. One reactor felt as one and located at the knee (outside) the two touches upon the front of the right thigh and outside of the right calf respectively. And still another subject, in Test III., where there are two touches on the skin over each hip joint and two touches three inches on each side of the spinal column, three inches from the small of the back, did not feel these four stimulations properly, but experienced only two sensations and localized them as bilateral and on a point three inches directly back of the hip joint on either side.

Mention must also be made of the cases of partial fusion in which two stimulations were felt as two, but at points much nearer together than the points actually touched. Thus, one subject localized the two touches which occurred at the tip of each shoulder blade as bilateral, but each was two inches nearer the spinal column than the actual points stimulated.

This is but one of many examples which might be adduced. A more complex case of fusion is the following, in which there were three touches, one on each nipple, and one on the skin over the breast bone and in the same horizontal plane as the nipples. The subject felt the three as two, and located these two on the same line but three inches nearer the median line than the nipples, that is, he localized them as two coming from points about midway between either nipple and the point over the breast bone in the median plane.

7. *Diffusion.*—There were also results diametrically opposed to the cases of fusion just cited. These cases of diffusion were, however, less frequent in occurrence and less striking in character. Thus, one subject being touched by a single cork, at a point immediately under the armpit (left side *a*) designated two localities about four inches apart. This case will seem the more remarkable when it is stated that in this same identical experiment

in which the sensation was spread, the individual also fused two touches (at the knee and ankle) into one, located between the two. In another case the right nipple was one of the points touched. The touch was felt as two immediately above and below the nipple, four inches apart, and at the same time the same E. C. S. felt a touch on the tip of the right shoulder blade as two located in a vertical line and also four inches apart. J. A. B. felt as two a touch on the skin at a point on the spinal column just midway between the two tips of the shoulder blades. These psuedo sensations he localized as coming from the tips of the shoulder blades. With the same subject there was a single touch on the right nipple (Group Test II., cf. above), but he felt this as two, one four inches above the nipple and the other in a direct vertical line six inches under the nipple, or in other words, this single stimulation was diffused into two, which the subject regarded as *ten inches apart*. One reactor when stimulated at the second joint of the great toe on the left foot, felt two sensations on the same foot at the ankle bone and little toe respectively. Also touches upon the back of the hand or on the knee cap were often felt as two. Many other illustrations might be cited but these will surely cover the case in point.

8. *Dermal Sensations of Subjective Origin, or Imagined Dermal Sensations.*—By these we mean those cases in which the mind projects a sensation, and definitely localizes it as coming from a given point—a sensation which he feels as distinctly as if there were an actual pressure stimulation at that point. The psuedo or purely subjective sensations have the same "local sign" or "tone" as those arising from actual touch at the same localities. We have no explanation to offer—we can only submit the facts at this stage in our experimental study. Perhaps a very few could be accounted for as being after-images of previous stimulations, but only few—by no means all. Some specific examples might be of interest. Thus in Test II. one subject felt a touch on the left nipple (corresponding to an actual touch on the right nipple) when there was no such touch. In the case of

Test IV., the same subject felt a touch on the left forearm just above the wrist where there was no actual stimulation. Another subject, F. B. D., in Test II., indicated an additional touch on the left calf (outside); in Test III., he located an extra one on the right foot; and in Test IV., he located two more, one at the tip of the shoulder blade and another on the top of the shoulder, both on the right side. *In all these cases there was no objective stimulus to which the sensation might be attributed.* Likewise A. F. indicated in Test II. an additional touch upon the right wrist; and in Test III. localized one on the top of the left shoulder. In neither case was there any objective basis for the sensations. In one test, where there was but one actual touch on the limb, and that on the front of the right knee, J. A. B. felt two additional touches, one of which he localized on the left shin, and the other on the left arm just above the wrist joint. In Test IV., the same individual felt one on the front of the left thigh, and the other on the abdomen to the right of the navel, where there was no objective stimulation whatever at these localities. In the same Test IV., E. C. S. felt an additional touch, on the right foot, which he spoke of at the time as quite pronounced. The same person, in Test VI., indicated two extra ones, on the left calf and ankle behind respectively. This is all the more interesting from the fact that at the same time in the same test he he fused four sensations into two—those on the left knee front and left knee outside, as well as those on the right calf behind and the right calf outside; he fused these and localized the sensation product at a point just between the two actually stimulated. We wish to further pursue our experiments on this special line—the imagined dermal sensations—before attempting anything like an explanation. First examine, then describe, then explain, is ever the best method of procedure in scientific research.

9. *Bilateral Asymmetry of Function in Dermal Sensations.*—While as a rule bilateral touches were easier localized than touches in the unilateral or mixed groups, there are many cases in which bilateral touches were localized

very poorly indeed. For example—in Test IV., in one instance the touch near the left nipple was localized three inches too high, while in another instance it was three inches too low. In Test I. there was another instance in which the touch on the left ankle bone was localized three inches lower than the one on the right. Most of these mistakes occur with reference to the touches upon the left side of the body; and of two bilateral touches, the one on the right is more likely to be felt and remembered than the one on the left.

10. *Translocation.*—This term refers to those cases in which the stimulus is applied at one point on the surface and felt at a point exactly opposite. Thus a case of translocation of the dermal sensations on the limbs would be this one, taken from our records, in which a touch applied to the front of the left thigh was felt at a corresponding point on the back of the thigh instead of at the point actually stimulated. Or this—in which the actual touch was applied at the tip of the right shoulder blade but localized at a point almost directly in front near the right nipple. Several cases are recorded in which touches on the outside of the knee or ankle were localized at the corresponding points on the inside of the leg. There were a few isolated cases in which touches on one side of the body were localized at a corresponding point on the opposite side, *e.g.*, a touch on the left foot was felt as coming from the instep of the right foot. But such extreme cases are very infrequent.

This closes our study at the present stage of experimentation. It must be remembered that all these are experiments upon *simultaneous* pressure stimulations. The writer is now engaged in a study of *successive* touches in which a small-time interval, *e.g.*, $\frac{1}{25}$ of a second, elapses between each two applications of the stimulus. These experiments now being made are with special reference to the study of the physiological memory of the skin and are carried on with especially constructed pieces of apparatus.

CHAMPAIGN, ILL.,

TWO SEVERE CASES OF PRESSURE NEURITIS.[1]

By WILLIAM C. KRAUSS, M.D.,

Buffalo, N. Y.

AS a rule, neuritis due to pressure of whatever nature is not an uncommon occurrence. Such cases are generally unilateral, and the effects local and circumscribed. The removal of the offending agent or condition, if done early, is followed, in the majority of cases, by cessation of all symptoms, and there results *restitutio ad integrum*.

The two cases which I wish to report to the Association are, to my mind, very interesting, for several reasons: First, in that the lesions were bilateral in both cases; and, secondly, because of the intensity and dissemination of the symptoms.

Case I. was presented before the Buffalo Clinical Society, April 9, 1892, as "A Much Nervous Case."[2] The patient was referred to me by Dr. F., who desired to know what form of treatment would give the most relief.

Name, A. H.; female; single; occupation, seamstress; age, forty-three; height, four feet ten inches; weight, ninety-eight pounds; complexion, fair; hair, brown; constitution, frail and delicate; temperament, decidely neurotic.

Antecedents.—She has no knowledge of her grandparents on the paternal side, while on the maternal side they reached old age, dying at ninety and eighty-four years respectively. Her father died of tuberculosis when sixty-eight years of age; her mother, still living, is of a highly nervous temperament, but not afflicted with any recognized nervous disease. The aunts and uncles on her mother's side are all subject to heart disease. She has one sister present at the examination, who suffers

[1] Read by title at the Eighteenth Annual Meeting of the American Neurological Association. New York, June 22—24, 1892.

[2] Buffalo Medical and Surgical Journal, May, 1892.

much from nervous headaches, is extremely irritable, and, in her own words, is "very nervous." One brother, a typesetter, belongs to the same category.

History.—When three years old she passed through a severe attack of scarlet fever, and at seven, the whooping cough. She made good recoveries without any disagreeable sequelæ. At thirteen she was first afflicted with asthma, the paroxysms becoming very severe at times. At fourteen menstruation appeared, bringing with it a train of amenorrheic symptoms, compelling her to give up her schooling almost entirely. At sixteen, while watching her companions at play, she was forcibly pulled backwards, receiving an injury to her spine. She complained much of soreness and pain in her back, and was hardly able to walk or move about. Her general condition was very poor at this time and constantly growing worse until her twenty-third year, when she was obliged to keep her bed altogether. Symptoms of myelitis were present at this time, such as spasticity and sensory disturbances of the lower extremities and suppression of urine. To these symptoms were added new ones, more or less hysterical in nature—among others, convulsions, especially after excitement, etc. These attacks were of such frequent occurrence that she decided to try the "hot pack treatment," which gave her considerable relief for a short time. Just as she was getting accustomed to bear her loads patiently, she noticed her neck swelling, her eyes bulging, and she experienced attacks of palpitation and flushings. These symptoms of exophthalmic goitre continued in their way for two years, the neck gradually growing larger. In 1880, her left arm began to trouble her. Sharp, shooting pains were felt extending from the shoulder to the tips of the fingers; at the same time it grew weaker and weaker until it was rendered almost powerless. In 1882, the right arm became similarly affected, though to a less degree. After a period of a few months the pain and weakness in the arms would diminish and she would regain partial control over them. Since 1880, the left arm has been helpless ten times, the right three times. In 1886, she had two severe attacks of gastralgia and cardialgia, and her life seemed to be in imminent peril. She rallied, however, and a short time thereafter underwent an operation for the removal of uterine polypi. Of late she has had no recurrence of the asthma.

Examination.—The patient, accompanied by her sister, was barely able to come to my office on account of the

weakness of her limbs and shuffling gait. I found her a small, sickly-looking woman, possessed of a fair amount of intelligence, extremely anxious to secure some relief from her sufferings.

Her head, rather small, was well formed and regular, and disclosed neither scar nor deformity. The eyes were prominent, pupils symmetrical, field of vision normal on the left side, narrowed and amaurotic on the right. No achromatopsia. Sense of smell was diminished on the right side, sense of hearing also diminished on this side, while the sense of taste was unimpaired. She has been troubled many years with an obstinate nasal catarrh, and has suffered much from earache. She complained of difficulty in swallowing, hoarseness, and a spasmodic cough, all due, no doubt, to the pressure of the goitre upon the larynx. Her neck was markedly increased in size, measuring thirteen and three-quarter inches in circumference. The left lobe of the thyroid gland was larger than the right, and extended well into the left supraclavicular region. The right lobe, though somewhat smaller, extended into the right supraclavicular region. The gland was hard, firm, and dense, growing somewhat smaller and softer towards evening. On auscultation a bruit could be distinctly heard. She complained of sharp, shooting pains, especially on pressure over Erb's point on both sides, radiating to the tips of the fingers, to the shoulders, and along the occiput to the level of the ears. The muscles of the right arm were much atrophied, particularly those of the forearm and hand. The muscular force, as measured with the dynamometer, showed ten pounds. Trophic disturbances, such as hyperidrosis, glossy skin, etc., and disturbances of sensation, were also present. The left arm was even more affected than the right. The atrophy of the muscles was far advanced, the dynamometer giving but three pounds pressure. Trophic and sensory disturbances were also present similar to those on the right side. Pressure over the nerve trunks was exceedingly painful, and, when persisted in, the arms were thrown into a series of clonic contractions. The legs were weakened, paretic, the muscles soft and atrophied, the patellar reflexes exaggerated, ankle clonus present on both sides, and the gait spastic. The vesical reflex was impaired, retention of urine being the rule. The urine contained neither albumin nor sugar. The rectal reflex was normal. The general sensibility of the legs was somewhat blunted, trophic disturbances were

wanting. An electrical examination of the arms and legs, for obvious reasons, could not be made. The body presented no noteworthy malformation. The spine was painful and tender to the touch, especially between the fourth and tenth dorsal vertebræ. The heart, somewhat enlarged, was rapid, pulse ninety-six, prone to palpitation, and on auscultation revealed a mitral regurgitant murmur. The other internal organs, as far as could be ascertained, were apparently healthy.

The history and examination of such a case furnishes almost enough material for a first-class clinic throughout a good part of the college year. Her family history on the mother's side savors of a neurotic tendency, while on her father's side there appears to be a tubercular diathesis. I know of no combination so favorable for the transmission of hereditary disease. This is, then, briefly a story of her life. Scarlet fever at three, whooping cough at seven, asthma at fourteen, myelitis at twenty-three, exophthalmic goitre at thirty five, pressure neuritis with paresis of the upper extremities at thirty-seven, gastralgia and cardialgia at thirty-nine, and hysteria dating back to the beginning of her menstrual periods. To these must be added such minor affections as amenorrhea, chronic nasal and aural catarrh, mitral disease and uterine polypi.

I advised a partial thyroidectomy as affording the most immediate relief, believing that the neuritis was dependent upon pressure of the goitre upon the cervical and brachial plexuses at their points of origin.

The case passed out of my hands soon thereafter, and I have no knowledge of her present condition.

Case number 2 was referred to me by Dr. M., of Buffalo.

Name, S. B.; male; married; occupation, teamster; age, thirty-five; height, five feet, eight inches; weight, one hundred and seventy-five pounds; complexion, dark; hair, brown; constitution, strong, healthy, well nourished.

Antecedents.—No history of any hereditary disease of any kind could be elicited.

Early History.—He was always a strong healthy boy; was never sick; nor given to complaining.

Present History—In July 1891, he noticed for the first time that his right testicle was swollen. It was neither painful nor sensitive, but was hard and firm to the touch. Continually increasing in size until it became as large as a goose egg, he decided to consult a surgeon. Up to this

time he was able to carry on his work without any appreciable difficulty, but by nightfall was very weak and exhausted. His friends noticed that he was emaciating, his color was changing, and that he lacked much of the vim and buoyancy which characterized him in former days.

On September 27, 1891, the right testicle was removed and submitted to the writer for examination. The wound healed in a short time, and he again resumed his work. After four days trial he was obliged to discontinue on account of the severe pain in the right hip extending down the dorsum of the leg into the foot. Not being benefitted by his family physician, the writer was called in consultation December 20, 1891. The patient was found lying on his abdomen, his face flushed and bathed in perspiration, sobbing and groaning apparently in much pain. On examination the right buttock was greatly swollen, reddened, painful and sensitive on pressure. In fact pain on pressure existed throughout the whole course of the right sciatic nerve. On account of the pain the patient would not flex the right leg, but held it fixed in an extended position. There was also present anæsthesia about the anus, inner side of the thigh and leg, and outer side of the right buttock. The left leg was unaffected, motility, sensation and the reflexes were to all intents normal.

There was furthermore retention of urine with pyuria although catheterization was performed twice daily. The appetite was poor, bowels constipated and he complained of an insatiable thirst. The pulse ranged from 110 to 130, the temperature 103° to 104° F. The inguinal glands were not swollen.

The patient's condition continued in this manner with but little variation until January 3, 1892, when the left buttock began to swell, and in a few days the left sciatic nerve also became painful and tender on pressure. There existed then, at this time, a double sciatica; swelling, redness, and tenderness over both buttocks; anæsthesia extending over a considerable portion of the dorsum of both extremities; retention of urine with pyuria, a temperature of 103° to 104° F., and a pulse varying from 110 to 130. My suspicions which were aroused on the first visit to the patient, namely, that there was a recurrent growth in the pelvis, now seemed to be materialized, and proof was further adduced by finding a hard, dense nodular mass dorsad of the rectum. The patient slowly continued to sink, the buttocks were growing larger until

they seemed ready to burst, defecation became painful and irregular, and in the first week of March, 1892, there developed a pulmonary œdema, death occurring on the fourteenth. The last rectal examination was made a few days prior to his death, and the whole pelvis was found filled with a hard, firm, unyielding mass. An autopsy was not permitted, and the diagnosis of the neoplasm must be made by inference. The enlarged scrotum, removed September 27, 1891, proved to be a fibro-sarcoma with predominance of small spindle cells, and hence we may assume that the mass in the pelvis was an osteo-sarcoma of the sacrum. The clinical history of the case bears out this diagnosis. Whether the sacral tumor was the result of metastases from the scrotal tumor, or *vice versa*, cannot of course be determined. The pulmonary affection may also have been the result of metastases, with œdema as a complication.

Double or bilateral sciaticas are, as a rule, very rare, and when they do occur, do not depend, in the great majority of cases, upon any of the etiological factors which we are prone to associate with unilateral sciaticas. These latter are generally either of rheumatic, neuralgic, malarial, toxic, or traumatic origin; while the former, in nearly all instances, are produced by pressure upon the lumbar enlargement or the nerve trunks by some neoplasm, hemorrhage, or inflammatory process in the sacrum or pelvis; consequently the prognosis and treatment of the one differs from widely that of the other.

In the case just reported, the symptoms kept pace with the growth of the tumor. The right lateral mass of the sacrum was in all probability the primary seat of the growth in the pelvis. As it enlarged it encroached upon the course of the right sacral plexus—especially the greater and small sciatic and pudic nerves, then extending to the left side of the sacrum it affected in like manner the nerve trunks of the left sacral plexus. No attempt was made to remove the mass from the pelvis. The treatment of the case was palliative throughout, the pain being controlled satisfactorily with galvanism and opium.

382 Virginia Street.

GUNSHOT WOUND OF THE BRAIN, CAUSING A FORM OF APHASIA IN WHICH THE LOSS OF NOUNS WAS THE STRIKING FEATURE.[1]

BY ERNEST LAPLACE, M.D.

Professor of Surgery, Pathology, and Clinical Surgery in the Medico-Chirurgical College, Philadelphia.

AUGUST 4, 1892, Lizzie Albert, aged nineteen, received a gunshot wound in the inter-ocular region, at the apex of the glabella; there was a fracture of the skull, and penetration of the bullet, according to the testimony of the physician who saw her immediately after the accident. She became unconscious and remained so during three weeks. Meanwhile, several spicula of bone were removed from the seat of the penetration of the bullet. The wound gradually healed, leaving a slight depression. As she recovered consciousness, she complained of a severe pain in the left occipital region, ranging downwards, constant and almost unbearable, keeping her mind always fixed upon that point; suffers no pain otherwise about the cranium. The patient is a well-nourished, strong young woman, showing no evidence of any diathesis or cachexia. As a result of the injury, most interesting intellectual symptoms resulted, her physical condition, however, remaining entirely unimpaired. When complaining of the pain back of her head, she says that she "sees it;" when asked "What?" she says she "sees it;" if asked, "Does that hurt?" she answers, "Yes." If asked, "What hurts?" she says, "It hurts." When asked, "Does the bullet hurt?" she says, "Yes."

It seems that other organs of sense refer their impression to the same centres. For instance, if asked whether she hears a particular sound, such as a tuning-

[1] Read before the Philadelphia Neurological Society, December 19, 1892.

fork, she will answer, "Yes, I see it." If given anything to take, and asked whether she takes it, she answers, "Yes, I see it." Likewise, if anything is given to her to smell, she also sees the sensation of smell. It seems to her an impossibility to repeat a word spoken to her, though she understands fully everything. In her conversation she uses no names of persons or things; she knows every person and everything. For instance, if shown a hat, and asked what that is, she will say, "It is yes;" but asked the name of it, she will say, "I do not know." If asked, "Is this a book?" she will say, "No." "Is it a hat?" She will say, "Yes." Should we write on paper the word cat, in presenting her the hat, she will say, "That is not it." If, changing the word slightly, we make it coat, showing her the hat, she will say, "That is not it." If changing the word slightly, and writing the word hat, and asked whether that was it, she will say, "Yes." If asked her name, she will answer, "I do not know." If asked whether her name is Katie, she will say, "No." If asked whether it is Lizzie, she will answer, "Yes." Asking her to write her name, although she says she does not know her name, she will write it correctly—Lizzie Albert. If asked whether that is her name, she will say, "Yes." If asked what her name is, "I do not know; I cannot tell you." Should I write her name, misspelling it in any manner, she will say immediately, "That is wrong." If asked, "What is wrong?" She will point out the letter in the word which makes it misspelled, and until the name be properly spelled, she will insist on its being wrong.

Her judgment seems to be perfectly clear; that is, she says or does nothing which would in the least compromise the condition of her intelligence. There seems to be a destruction of such fibres as lead to those portions of the frontal lobe as are the centres of memory for names of persons and things.

The lady, at whose house the patient has dwelt for the last two years, has since the injury exercised continued care over her, and at no time has the patient

shown violence or other signs of dementia. While the patient insisted on having such pain in the left occipital region, and while she pleaded for an operation to remove the bullet which she felt sure was there located, but little reason existed for us to pursue any other course, and we therefore thought best to explore the brain in that neighborhood, at no time having had much hope of finding the ball in that locality; consequently, on November 4, having observed the strictest precaution for the aseptic operation, the trephine was applied over the seat of the pain, on a level with the occipital ridge; the dura mater was found healthy, rather more congested than usual. A rongeur forceps was applied and a strip of bone, an inch and a half long and three-eighths of an inch wide, was removed in a perpendicular direction, parallel with the squamous suture. A malleable wire instrument, specially devised for this occasion, was introduced, and with it the separation of the dura mater was effected to a distance of two inches all about the opening, so that an area of the brain four inches wide and six inches long was explored. A normal condition was revealed everywhere, giving us absolutely no information as to the locality of the bullet. The bone was replaced, and the wound sutured and drained at the most dependent portion. At no time after the operation did the temperature rise above 99°. The patient recovered from the ether perfectly, and the subsequent treatment was uneventful. Ten days after the operation, all dressings were removed, perfect union by first intention, and the patient resumes her occupations about the ward. A certain change, however, is already noticeable about the brain symptoms, viz., consisting in a more talkative disposition and the ability to speak the names of two or three objects, such as: home, sister, country. As far as pain is concerned, the patient seems to be much relieved, and now feels assured that the bullet is situated near the seat of entrance, and begs for another operation for its removal.

A NEW APPARATUS FOR THE RELIEF OF WRITERS' CRAMP.

By MORTON PRINCE, M.D.,

(Physician for Nervous Diseases, Boston City Hospital, O.P.D.)

THE device, of which a cut is here given, has given complete satisfaction in the case of writers' cramp, for which it was designed.

The patient, who has used it continuously for more than a year, has been enabled by its means to continue his occupation of book-keeper, which he otherwise would have been obliged to give up. He assures me that he is able to write with it with almost as much facility as he could before his hand was affected.

The principle upon which it is designed is, that of making use, for the purpose of holding the pen and writing, of the muscles antagonistic to those affected with cramp. In this particular case, the muscles in which the spasm chiefly and primarily occurred, were the flexors of the three fingers which held the pen, viz., thumb, forefinger, and middle finger. The other muscles of the hand were also similarly more or less implicated.

It occurred to the writer that if a means could be devised of holding the pen by the opposite motion of the fingers, that is opening or extending them, a rest could be given to the flexors which might tend to cure the disease, and at any rate would render writing possible.

For this purpose a cast was taken of the hand, or rather of the thumb and first two fingers while holding a pen in the position for writing. Around this cast was bent a piece of tin which followed the contour of the fingers. In this way three fingers of a tin glove were obtained, accurately adjusted to the position essential for writing. The tips were then cut off, allowing the fingers to project, and a split tube, of the calibre of a lead pencil, was soldered between the thumb and fore-

finger in the position occupied by the pen in the cast. The whole has been japanned.

To use the apparatus, a pencil or penholder is inserted in the tube and the corresponding fingers thrust into the tin glove. The apparatus is held in position not by flexing the fingers, but by separating them and slightly pressing their backs against the sides of the tin glove. The extenders are thus brought into use instead of the flexors. If we prefer, the glove can be held in position by means of friction alone, by thrusting the

fingers firmly within. With a little practice it is not at all difficult to write with facility with this instrument. The motion is obtained from the wrist, or shoulder, as preferred, but the former is better, being more natural.

The advantages of this machine are:

1. It brings into use the muscles antagonistic to those affected by spasm.

2. It enables the hand and pen to be held in the position continually used for writing.

3. Its use is easily acquired.

4. It is not unsightly, and is portable.

As cases of writer's cramp differ much from one another, this particular apparatus would not be applicable to all cases, but various modifications would probably be made to adapt it to many cases.

The spasm of the knuckles, in the case of my patient, has not been mitigated to any appreciable extent, as he still cannot write without the glove; but this may in part be due, as he says, to the fact that he has made little effort to hold it by extension of the fingers, preferring the more lazy method of thrusting his fingers firmly within and employing friction. This could easily be prevented by making the tin fingers a little larger, and closing their tips.[1]

The Use of Trional as a Hypnotic.—In the "Neurologisches Centralblatt," No. 25, 1892, Dr. Brie, of Bonn, gives an exhaustive account of his experience with this recent addition to our therapeutic armamentarium.

He describes trional as a white powder, similar to sulphonal. It is difficult to dissolve in water at the ordinary temperature, but is easy soluble in hot water, and in alcohol or ether. The watery solution has a slightly bitter taste. He had used it in forty-two cases of insanity, about 360 single doses having been administered of one to three grammes. It was dissolved in hot water and given a half hour before before retiring. As a general rule sleep followed within an hour.

According to the results of his numerous observations, trional possesses an extraordinarily favorable influence. It should be the first drug mentioned and recommended as a hypnotic. He believes it will take the place of sulphonal, and will invariably be given the preference, as it is almost tasteless, is easily administered, acts rapidly, and its after effects are rarely or very slightly manifest.

Its use is indicated in simple insomnia, and also in the sleeplessness of insanity associated with restlessness and marked excitement. W. M. L.

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[1] The apparatus was made from the cast furnished by me, at the machine shop of the Children's Hospital, this city. It would be better, though not absolutely necessary, to have a special cast made for each case.

Asylum Notes.

By FRANK P. NORBURY, M.D.

Jacksonville, Ill.

Eastern Michigan Asylum, at Pontiac, Biennial Report, 1892.

Surgical Work.—Operation of castration for the relief of sickening neuralgia of the testicle. The patient being a case of melancholia, and had been under treatment since 1886. Had suffered great pain, localized in left testicle; operation, May 19, 1890; testicle extirpated; improvement noticed in mental condition at once. Following December right testicle became similarly affected; it was removed in January, 1891; permanent improvement both mental and physical followed; patient discharged recovered, in March, 1891, and has since continued to improve. Examination of testicle showed chronic congestion with inflammatory deposits; some increase in connective tissue, and in various localities small foci resembling tubercles. A case showing intimate relation of morbid peripheral irritation and physical and mental states, relieved by surgical interference. Much good can be accomplished by well-directed surgical treatment in many cases of hyperchondriacal insanity unmarked by signs of pronounced dementia.

Alimentation of the Insane.—This problem is of paramount importance. Associated with acute mental disease is physical decline. Insanity is, in majority of cases, but an expression of impaired physical health and mal-nutrition of the brain. Dietetic management is, therefore, important. Patients refuse from various causes, hence many difficulties stand in the way of systematic dietetics in the treatment of insanity. Tact, care, and thought is necessary to overcome objections. Whims of all but a few can be thus met. Forced feeding is becoming less and less frequent with accumula-

tion of experience. Forced feeding creates more harm than good. Tablespoonful of milk at intervals of one hour is better for nutrition purposes than large amount of food by artificial feeding. Lemonade recommended in cases of great excitement attended with exhaustion.

Patients during deliriant stages of maniacal excitement should not be fed by forced feeding. The exhaustion of the process dangerous to life, impairs digestion, produces vomiting, adds to exhaustion.

Alabama Insane Asylum, at Tuscaloosa, Biennial Report, 1892.

Tuberculosis among the Insane.—The subject of tuberculosis among the insane has attracted much attention during some years past; the principal point of practical interest to alienists being its possible causative influence in the production of mental aberration.

Experience shows that so-called "phthisical insanity" differs in no essential particular from mental alienation attendant upon other forms of chronic disease; typical instances of the suspicion, depression, systematized delusions and other symptoms detailed by Clouston and others being seen in the course of chronic renal disease, valvular heart disease, etc. It is worthy of note that in event the tuberculosis runs an acute and rapid course, acute maniacal excitement is its most psychic symptom. This has been especially noticed among the negro patients.

Brights Disease.—Brights Disease is found to be extraordinarily common among the patients, it being, in fact, the most frequent form of bodily disease with which we have to deal in the treatment of insanity. Albumen and casts are found constantly present in the urine of more than one half of the patients brought to the hospital.

Valvular Heart Lesions.—A third form of chronic defect, which equally with the two above mentioned exerts a probable influence upon mental character, is valvular heart disease, which, while but rarely a direct cause of death, is present in some eleven per cent. ot the patients treated.

Table showing the number and distribution of heart lesions found in 702 white insane patients.

	Men.	Women.	Total.
Number examined	373	329	702
Number showing valvular lesions .	41	41	82
Mitral insufficiency . . .	27	29	56
Mitral stenosis	3	3	6
Aortic insufficiency . . .	2	2	4
Aortic stenosis	9	7	16

The percentage of lesions among men, . . . 10.99
The percentage of lesions among women, . . 12.46
Average, ... 11.72

Forms of insanity of eighty-two patients having heart lesions:

Mania, ...	8
Melancholia, ...	33
Dementia, ...	28
Paranoia, ...	7
Epiliptic insanity, ...	4
Imbecility, ...	2
Total, ...	82

By HALSEY L. WOOD, M.D.

Relative to Conformity in the Law of Commitment of the Insane.

Dr. Stephen Smith of this city, as Chairman of the Committee on the Commitment and Detention of the Insane, made a report in June last to the National Conference of Charities at their meeting in Denver, Col., urging unification of the laws of the States relative to the commitment of the insane. This report is printed in full in the October number of *The American Journal of Insanity*, and from which we quote:

It would seem that there could be no question as to the importance of this measure. In these United States,

there are nine different methods by means of which an insane person can be legally deprived of his liberty; and these vary widely. The benefits resulting from such unification would be, that, not only legal processes would be simplified, but that the broad lines upon which the plan would be drawn would abolish certain defective and inhuman methods of commitment now in vogue in certain of the older States, as well as inaugurating wise methods in those States more recently formed, and those yet to receive the dignity of Statehood.

In five States, two being of the original thirteen, the unfortunate can be deprived of his liberty and committed to custody on the simple dictum of a Justice of the Peace. Witnesses are called to assist the justice in forming his opinion, but his is considered the expert opinion and upon it alone is the commitment ordered. These States are Virginia, North Carolina, West Virginia, Tennesee, and Indiana. In Pennsylvania and Rhode Island the method of commitment rests upon the decision of physicians alone. "In the former State, the certificate of insanity, of the physicians, is conclusive; the judge merely certifying to the genuineness of the signatures and the character of the signers. In the latter State, even this formality is dispensed with in a certain class of cases, and the only requirement is that the superintendent of the hospital shall know of the good-standing of the certifying physicians."

And this contrast of the two methods shows clearly the progress that has been made toward a better management of the insane. In the first, closely resembling that followed at the commencement of the century, and the last the highest point yet reached in the development of the present. Between these two systems is seen a gradual growth in procedure to more rational methods.

We give the nine methods of commitment:

I. Commitment on the decision of Justices of the Peace. Five states.

II. Commitment on the decision of a judge. Eighteen states, two territories.

III. Commitment on the verdict of a jury of laymen. Five States.

IV. Commitment on the verdict of a mixed jury of laymen and physicians. Three states.

V. Commitment on decision of the Chancellor of the State. One state.

VI. Commitment on decision of a commission appointed by a judge. Four states.

VII. Commitment on decision of Commissioners of Insanity. Three states.

VIII. Commitment on decision of an Asylum Board. Two states.

IX. Commitment on the decision of physicians. Nine states, and District of Columbia.

"In the commitment of the insane on the decision of medical men alone, we have the highest development of this proceeding yet placed upon the statute book. The true nature of insanity is fully recognized, and the insane are removed from the category of criminals, and placed among that class of sick persons requiring medical care and treatment alone. The courts perform only simple notarial functions, by certifying to the genuineness of the papers, or to the professional standing of the physicians. In New York there is still noticeable in the proceedings a relic of the ancient law. The judge approves or not the certificates, according to his discretion, though in this act he is believed to assume no other responsibility in the commitment than to certify to the proceedings. But, he may institute further investigations, and may even call a jury, and may submit the person to the ordinary trial of a petty criminal. In that respect the law admits of great abuse. Practically, however, the commitment is on the decision of the examining physicians, the judge performing no other function than that of perfunctorily signing his name in approval."

In the law formulated by Dr. Smith, for the commitment of the insane in the various states, no new or untried scheme is proposed, but a law deduced from the various laws now in use in the different states.

PROPOSED LAW.

I. "No person shall be admitted to, or confined as a patient or inmate in, any hospital, asylum, or other institution, house or place, for the care and treatment of the insane, except upon the certificate of two physicians, as herein provided."

To secure competent certifying physicians, the following section is suggested:

II. "It shall not be lawful for any physician to certify to the insanity of any person for the purpose of securing his commitment to custody unless said physician be of reputable character, a graduate of some incorporated medical college, a resident of the state, and shall be in the actual practice of his profession, at the time of making said certificate."

This, it will be noticed, does away with the "three years in practice" requirement of the present law. This requirement, while intended to secure greater experience and competency in examiners does not always do so. "The error lies in the fact that the older practitioners have had little, if any, instruction in nervous diseases, and hence, are not really as competent as the recent graduates, who have attended courses of lectures on insanity, and have had the advantage of clinical instruction. Speaking from personal experience, in the examination of thousands of certificates of insanity, we do not hesitate to state that those made by recent graduates are, as a rule, far more exact and complete than those made by old physicians."

III. "It shall not be lawful for a physician to certify to the insanity of any person for the purpose of committing him to an asylum of which the said physician is either the superintendent, physician, an officer, or a regular professional attendant therein; nor shall it be lawful for a physician to certify to the insanity of any person to whom said physician is related by blood or marriage."

The last section of the proposed law contains the method of securing judicial sanction and force to the steps instituted.

"The certificate herewith provided shall have been made within one week of the examination of the patient, and within two weeks of the time of the admission of the patient, and shall be duly sworn to or affirmed before a judge of a court of record, who shall certify to the genuineness of the signatures, and to the fact that the signers are duly qualified, as provided in section first of this act."

"This project of a law is submitted as embodying the principles which, in our opinion, should govern a state in the commitment of the insane. The form may be modified to meet any existing conditions without impairing these principles."

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

PATHOLOGICAL.

On Eye-Paralyses.—After a lengthy but elaborate article on this subject, in the "Boston Medical and Surgical Journal," October 26 and 27, 1892, the author, Dr. John Amory Jeffries, concludes as follows:

1. All cases of lateral conjugate paralysis are of central origin.

2. When the paralysis is on the same side as other paralyses, the lesion is on the opposite side of the brain. Such paralyses as a rule are transitory and follow almost any sudden lesion, and often show themselves as a prevailing position of the eye, and not as a true paralysis or even paresis.

3. When the paralysis is crossed with the paralyses below, the lesion is in the pons-medulla region. The above three are equally true of spasms.

4. A gradual development of conjugate paralyses clearly points to the region of the sixth nucleus of the same side as affected.

5. Paralysis of up or down motions, or both motions, indicate disease in the region of the corpora quadrigemina, but may be due to disease in the third nerves proper at the point of exit.

6. Reasoning from analogy, paralysis of convergence points to disease in the central gray below the acqueduct, but as yet autopsies are lacking.

7. Isolated paralysis of parts of a third nerve strongly suggests central disease, but is not proof of it.

8. A majority of the cases of eye paralysis occur in the syphilitic.

9. A paralysis which changes rapidly, quickly showing fatigue, is probably central in origin.

10. Transitory paralysis in the syphilitic is strongly suggestive of future tabes.

11. An eye paralysis, however simple it may seem, is always a just cause for suspicion of trouble to come, and demands a prompt and thorough examination of the patient.

12. There is no evidence that there is any form of connection between the sixth nucleus and the third, except in the cerebrum. W. M. L.

Hysterical Amnesia.—The "Archives de Neurologie," July, 1892, contain Janet's lecture on amnesia, one of the cardinal symptoms of hysteria. It is quite as important as anæsthesia, and almost as frequent. Without a careful study of hysterical amnesia, the author considers it impossible to appreciate thoroughly hysterical paralyses, astasia-abasia, mutism, delirium, and spontaneous and induced hypnotism.

Hysterical amnesia may be systematized, localized, general, or continued. The first form is the commonest, groups of ideas or events being forgotten and others remembered. While amnesia may be general, it is rare to find it complete for all ideas and circumstances. After a certain date the patient may lose the power of remembrance. What has gone before that time can be recalled; but memories of later events, emotions, and ideas are quickly wiped out. Reading or work may give real pleasure; yet if interruptions occur, the patient cannot tell what he has just been doing. Though general or continued amnesia is not altogether complete, in any typical way, it is often diffused, in attenuated form,

through every mental activity and function. It complicates the other varieties of hysterical amnesia, and does much to give to the classic hysteric his peculiar physiognomy. His apparent indifference, his caprices, and his astonishing suggestibility depend largely upon disorders of memory.

Amnesia furnishes the starting-point of the most varied symptoms. Like hysterical anæsthesia, it is not due to destruction of elementary psychological processes of sensation or mental imagery, but it is due to weakness or want of power in the centralizing energy. It is always a question of personal perception incapable of connecting all the elements that make up the whole personality: hence, localized or general amnesia, special or general anæsthesia, mutism, somnambulism, etc. L. F. B.

Ascending Degenerations resulting from Lesions of the Spinal Cord in Monkeys.—(Mott, "Brain," summer number, 1892.) The investigations were undertaken by Mott with a view of tracing the antero-lateral tract to its destination; also of ascertaining the physiological effects of its division first on one side and then on both sides.

The antero-lateral tract was divided, either on one side or on both sides.

A summary of the results obtained by these experiments is as follows: The peripheral portion of the anterior and lateral columns consists in a great part of ascending and descending cerebellar fibres. The former may be divided into a ventral and a dorsal portion, which may be termed the *ventral and dorsal ascending cerebellar tract*, instead of antero-lateral and direct cerebellar. The ventral portion may be completely divided in monkeys apparently without producing analgesia. The ascending cerebellar tract, consisting of ventral and dorsal portions, form a connecting bridge between the superior vermis of the cerebellum and cells in the cord. The dorsal portion connects the cells of Clarke's column with the dorsal portion of the superior vermis. The ventral portion connects certain cells of the cord with the ventral portion of the superior vermis.

Section of the antero-lateral column in the cervical region produces a much denser degeneration amidst the arciform fibres than can be accounted for by the slight injury to the direct cerebellar fibres; the *very extensive tract* of degeneration corresponding to Gower's antero-lateral tract, which, with Löwenthal, the author agrees

should be called ventral cerebellar, has been traced in the monkey to the superior vermis by way of the superior cerebellar peduncle, forming in its course a remarkable loop over the fifth nerve. Scattered fibres belonging to the fillet can be traced as far as the anterior quadrigeminal body of the same side. J. C.

PSYCHOLOGICAL.

The Visual Field in the Insane and its Relation to the Other Senses.—Dr. Luigi Roncoroni, of Turin, has collected considerable material in Professor Lombroso's clinic in Turin, which he has published in the September number of the "Giornale della R. Accademia di Medicina di Torino." His conclusions are:

1. That the visual field is more frequently irregular when it is somewhat restricted than when it is normal or much restricted.

2. In mania the visual field is, in half of the cases, normal. It is frequently simply contracted, without any irregularity of its border. In one case only was it much contracted.

In melancholia it is normal in a very small proportion of cases (three out of eleven). It is more frequently restricted (eight out of eleven). In two cases it was very much restricted, and in one case the border was irregular. Those cases in which the visual field was normal were on the way to recovery.

In monomania the visual field is quite frequently normal (seven out of eighteen cases), but slightly restricted in seven out of eighteen. These fourteen cases presented no irregularity of the field. In one case it was restricted and irregular, in two cases much restricted but irregular, and in one case much restricted and irregular.

In epilepsy the visual field was found normal in only two cases out of eleven, regular in five cases (in two of which it was restricted and one much restricted). In half of these cases the field was irregular. These results agree with those of Dr. Ottolenghi, published in a former number of this journal.

In progressive paralysis the visual field was normal in one case out of four, restricted in three cases (of which one was irregular).

3. The alterations of the visual field are not always due to alterations in the fundus of the eye, of the vision, or of the refraction, but, as was demonstrated, more the

expression of the condition of the central nervous system. It was also shown that the variations in the visual field are more frequent in some forms of mental disease than in others; also that its relation to the other senses varies greatly. W. C. K.

Minor Psychic Disturbances in Women.—Before the British Medical Association, section in Psychology (of which a report is contained in the "British Medical Journal," Aug. 20, 1892), Dr. H. Campbell recently stated that women, under all conditions tending to upset the general health, are extremely liable to psychic disorders. Environment is the chief factor in producing such manifestations. Let any woman, of whatever mental calibre, be housed and fed like the average woman of the slums, and she, too, will develop certain mental symptoms, especially during pregnancy, when weakened by lactation, or by menstrual disturbances. Thousands of women, displaying distinct psychic symptoms, come annually to the London hospitals. Of these Dr. Campbell has carefully analyzed two hundred cases of non-insane women. The insane temperament and cases of hysteria are excluded. Depression of spirits is almost universally present; irritability, sensorial and emotional, generally exists; fear, like anger, is readily excited; a feeling of impending insanity is common; loss of memory and power of attention are frequent, especially at the climacteric; unpleasant dreams often occur.

In regard to the foregoing states, Dr. Campbell calls attention to the fact that the first thing to decide is whether they are due to an imperfect organization, as determined by heredity and environment, and how far to the operation on the nervous system of a vitiated plasma, such as necessarily accompanies any interference with the general health.

Defective organization predisposes to psychic disturbance. On the other hand, ptomaines, leucomaines, and uric acid can produce psychic symptoms that vanish on the substitution of normal plasma. Molecular structure, however, may be so affected by the prolonged action of the toxic principle, that some time must elapse after the blood has regained its normal composition before nerve-tissue can entirely regain its tone. The habit of depression, irritability, morbid fears, loss of memory and power of attention, unpleasant dreams, and a feeling of impending mental unbalance, remains for awhile after the original cause is removed. One by one, disagreeable

fancies disappear, to return only on occasions of undue fatigue, and then but seldom, if the case is understood and rationally treated. L. F. B.

Psychical Activity and Brain Temperature. —By Professor Mosso (Arch. Ital. de Biol). In these experiments Mosso used an especially constructed thermometer (made by Baudin, Paris) by means of which as small a difference in temperature as $\frac{1}{500}$ of a degree could be read. This method embraced the taking of the temperature of the blood of the uterus, rectum, or muscles, which was compared with that of the brain. His conclusions are based upon a large number of researches, of which the following are typical and illustrative:

1. A large dog is put te sleep by means of Tct. Opii. One thermometer is inserted into the carotid, so that the quicksilver bulb lies near the heart, a second into the rectum, a third into the brain within the motor region on the right hemisphere. A slow but constant fall in temperature is indicated by all the thermometers until a minimum for the brain is reached, which point is preserved for at least ten minutes, while the other two thermometers indicate a still lower temperature. After ten minutes a strong auditory stimulus is applied for at least half a minute. At once the respiration is deeper, the temperature of the blood at the carotid and rectum, however, sinking still lower, while a slight rise manifests itself in the brain. During the succeeding spasms which occurred with this animal, the temperature of the brain was 1° higher than that of the rectum, and after their cessation it remained constantly .4° warmer. In general the brain is colder than the rectum and uterus but psychical activities can produce such a development of heat in the brain that its temperature will be from .2° to .3° warmer than that of the rectum. In this animal the brain was 1.6° warmer than the arterial blood in the region of the heart.

2. In another dog (chloroformed but only partially insensible) the three thermometers are inserted between the two cerebral hemispheres, in the left carotid, and in the vagina. If the dog is called to, the temperature of the brain rises, while that of the blood falls. After some minutes they are again of the same temperature. Stimulate the brain with a faradic current, its temperature rises .09°, whileduring the same period that of the blood at the vagina falls.

3. A dog is deafened by means of chloral and three

thermometers are inserted—into the brain (motor centre, left hemisphere), into the muscles of the upper thigh along the N. ischiaticus, and the rectum, respectively. Electric stimulation of the loin produces muscular contraction of the hind paw and a rise of .36° in the temperature. Two minutes after the contraction, the temperature of the thigh falls still lower than before, just the opposite of the results obtained in stimulating the brain of the first dog, in which the temperature rose still higher.

4. Upon the injection of cocaine, the temperature of the brain rose gradually until, after fourteen minutes, it reached .36°. This temperature remained constant for fifteen minutes, and then fell slowly. The other organs were, with reference to their temperature, entirely uninfluenced.

From this very meagre analysis, the basis of Masso's conclusion can be seen. They are as follows:

1. The muscles can scarcely be regarded as the chief source of heat.

2. With reference to the influence of narcotics it must be said, that those chemical functions of the brain, upon which the consciousness and the sensibility are dependent, are affected detrimentally, and the theory that sleep and narcosis depend upon changes in the circulation suffices no longer.

3. These excitants increase the temperature of the nerve cells. W. O. K.

THERAPEUTICAL.

Treatment of Epilepsy by Convulsives.—The "Mercredi Médical," October 5, 1892, contains Pierret's preliminary note on the treatment of epilepsy by convulsives, such as picrotoxine, belladonna, and atropine. Especially in *petit mal* are such remedies considered desirable, as they transform this condition into *grand mal*, and bring about marked improvement in the mental and moral sphere.

Following the teachings of Schiff and Herzen, Pierret accepts the theory that all manifestations of psychic and organic life may be reduced to one ultimate—motion. The centripetal nerves themselves transmit motions from without to nerve-centres. These forms of motion accumulate in the nerve-centres, and appear again to the outside world as chemical, calorific, or muscular actions.

This circulation of "motion" through the different organs of the body coustitutes life.

Epileptics do not produce any special "motion" in their nerve-centres. They retain there motion that should constantly circulate. Being unable to get rid of it little by little, in a thousand ways, they discharge it in a lump. And the force of the discharge of this "motion," or ultimate force in nature, then becomes exclusively motor. Thus it will be perceived that in certain epilepties it is not a question of reducing the circulation of this ultimate force to the minimum, but of canaliculating it by making its ordinary routes more permeable. Diffuse excitement is exchanged for a localized explosion; and this diminishes vice, crime, and brutality. It is a well-known fact that epileptics who have seizures of both *petit mal* and *grand mal* long for a major attack to make them feel better. A vicious act will also unload the oppressive accumulation of an unknown force or ultimate motion, and give to the sufferer from *petit mal* temporary relief and comfort. L. F. B.

CLINICAL.

A Clinical Study, with Autopsy, in a Case of Alcoholic Pseudo Tabes.—A case reported by Nonne ("Neurologisches Centralblatt," No. 21, 1892) serves to show that, in the various forms of nervous disease, the central and peripheral nervous apparatus require equal attention in their examination. In the present case the clinical symptoms warranted the diagnosis of spinal tabes, while the autopsy showed a disease of the peripheral nerves.

The patient was a tailor, thirty-nine years of age, without a history or evidence of syphilitic infection. Six years before, he had an attack of delirium tremens. During the last two years he complained of weakness and darting pains in the legs. Subsequently, cincture feeling, constipation, occasional dysuria, failing vision, and alcoholic delirium. In November, 1889, after the delirium had subsided, there were diminished vision and restricted movement of the eyes (mesially and laterally, with consequent nystagmus). There was bilateral myosis, and the light reflex was slow. The optic papillæ were extremely white. The other cranial nerves and the upper extremities were normal. In the lower extremities there were marked ataxia and retarded conduction

of the pain sense, with persistent loss of the knee-jerks. There was no evidence of abnormal tension, hyperæsthesiæ, muscular atrophy, or disturbance of the temperature sense or sense of locality or position. Neither the bladder nor the rectum was involved. After loss of power in the legs, rectal and vesical incontinence, insomnia, and delirium, he died from exhaustion in about five weeks.

The brain and cord were normal, both macroscopically and microscopically. The right sciatic nerve and its muscular branches showed exquisite degeneration in the majority of the nerve-fibres, the changes being exclusively a parenchymatous process. The muscles were not examined. The optic nerves, up to their departure from the chiasm, showed nothing abnormal excepting a moderate distention of the perivascular lymph-spaces on the right side. The peripheral portions were not examined.

While during life a spinal tabes was assumed to exist, the autopsy revealed a peripheral neuritis of the sensory, motor, and mixed nerves, with normal cord and normal extra-medullary nerve-roots.

This instructive history proves that there are cases of alcoholic neuritis which cannot be differentiated from spinal tabes. W. M. L.

On Miners' Nystagmus.—A discussion upon this subject took place before the Ophthalmological Section, at the last meeting of the British Medical Association.

The discussion was opened by Dr. J. H. Bell, of Bradford, who said that whatever diminishes the degree of illumination increases the tendency to nystagmus. Deficiency of light was not sufficient, however, in most cases, to produce nystagmus: there must also be the unnatural position of the body and inclination of the eyes, otherwise it would be more frequent in young miners; but such is not the case. The average age of the miner with nystagmus is about thirty-eight years.

Dr. W. T. Cocking, of London, mentioned a case of miners' nystagmus associated with double spasmodic torticollis. He believed the torticollis to be the direct result of excessive use of the neck muscles necessitated by the patient's occupation, and that it had an important bearing on miners' nystagmus. It seemed to him highly probable that a similar spasm might affect the ocular muscles.

J. Court, L. R. C. P., of London, considered defective

illumination as the cause of the nystagmus and other ocular disorders observed in miners. A definition of the disease should include night blindness, nystagmus, photophobia, and head symptoms, because these manifestations all occur together in men working with the inferior light, and all are absent in men using the superior light. In his opinion, the complaint is a central one, rather than a local muscular trouble.

H. B. Hewetson, M.R.C.S., F.L.S., was of the opinion that the combined influence of attitude and deficient illumination was the cause of the trouble.

Simeon Snell, F.R.C.S., Ed., expressed the view that fatigue of ocular muscles, owing to constrained attitude at work, was the main cause.

J. Tatham Thompson, of Cardiff, said that nystagmus in the South Wales coal district is not associated with constrained posture, and was comparatively unknown until safety-lamps were introduced. He concludes that insufficient illumination and consequent strain of accommodation and imperfect stimulus of co-ordination were at least as great factors (if not greater) as constrained position.

Priestley Smith believed that attitude and deficient illumination were both important factors in the production of miners' nystagmus, and that nystagmus in general is caused by the continuous effort to "fix" under conditions which rendered continuous fixation peculiarly difficult.

Upon motion, a committee was appointed to collect evidence, and report upon the subject at a future meeting.

—*British Medical Journal* (Oct. 15, 1892).

W. M. L.

A Peculiar Form of Nystagmus.—In the "Boston Medical and Surgical Journal," September 29, 1892, Drs. W. N. Bullard and A. H. Wentworth describe a form of nystagmus under the name of Cheyne-Stokes' nystagmus, with the history, in the following case:

J. R., two years of age, had just recovered from whooping-cough, which had lasted several weeks. The child was markedly rachitic, and was thin and anæmic. He subsequently had a general convulsion, which lasted but a few minutes. Stupor gradually supervened. The temperature at no time showed an elevation above 100° F. The pulse was rapid and feeble, beating at the rate of 150 a minute; bowels constipated; there were slight twitchings of various muscles of the face and forearms;

pupils were equal and reacted to light. He then developed a nystagmus, which had a Cheyne-Stokes' rhythm. The nystagmus was horizontal, and began with rapid movements, the oscillations becoming progressively longer and more extended up to a certain point, and then diminishing in the same manner; a pause then ensued, which was followed by a repetition of the previousd rhythmical movements. This condition was observed carefully for a few moments, and then the movements ceased, but recurred more orless constantly throughout the whole day. There were no marked pupillary symptoms and no Cheyne-Stokes' respiration. Death took place within a few days. An autopsy could not be obtained. W. M. L.

A case of Cerebro-Spinal Meningitis due to the Bacillus of Eberth.— Drs. Enri Mensi and Tito Carbone report a case of cerebro spinal meningitis with autopsy following typhoid fever. A child of six years was taken, in August 20, 1892, with headache, anorexia, constipation and fever, and on entering the hospital eight days later showed a temperature of 40°, pulse 120, respiration 30, with a roseola over the body, diarrhœa, abdomen tender and ileo-calcal gurgling. The temperature varied between 39–39.5 in the morning, to 40–40.2 in the evening until September 29, when the fever disappeared. On October 3d, 1892, a great change occurred in the patient's condition. She suffered intense cephalgia, vomiting and chills. Temperature 39.6, pulse frequent, irregular, respiration rapid. The next day delirium set in with opisthotonous, contraction of the arms, amblyopia. The pupils were dilated and reacted slightly to light. No tubercles were found in the choroid. There were also present Herpes labialis, paresis of the right side of the face, the abdomen was retracted and constipated. The patient died October 7, 1892. The autopsy revealed a cerebro-spinal meningitis of a purulent character. The lateral ventricles were dilated, spleen small. Many typical typhoid ulcers were found undergoing cicatrization in the colon and ileum the mesenteric glands were large with softening and necrosis in the center. The authors claim that the purulent meningitis was undoubtedly due to the Bacilli of typhoid. W. C. K.

Society Reports.

THE NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held at the New York Academy of Medicine on Tuesday Evening, January 3, 1893.

SOME REMARKS ON OXALURIA AND ITS RELATIONS TO CERTAIN FORMS OF NERVOUS DISEASES.

Dr. I. ADLER read a paper on this subject. He stated that the presence of the oxalate of lime crystals in the urine has been the subject of much discussion. Our present knowledge regarding the subject is rather unsatisfactory. There is much that is still obscure pertaining to it, and on very few of even the fundamental points has unanimity of opinion been obtained. Most plants and vegetables used as food contain oxalic acid, some of them a very large percentage, and all or nearly all of this taken into the system, reappears again in the urine—some perhaps in the feces. From this it appears that oxalic acid does occur in the urine of healthy persons. On this point all authors are now agreed. It is also probable that oxalic acid may originate in the course of normal metabolic changes. The presence of oxalic acid in the urine was once believed to be due to the incomplete oxidation or uric acid; but this theory no longer obtains. The fact that uric acid can be separated into uric and oxalic acid does not prove the above theory.

Oxaluria, as an independent type of disease, Dr. Adler said, does not exist. The speaker then reviewed Cantani's treatise on this subject, in which that author asserts that oxaluria is a distinct disease characterized by certain well-marked symptoms, among them being insomnia, loss of appetite, melancholia, suicidal tendencies, headache, constipation, sexual impotence, emaciation, etc. These symptoms, Dr. Adler said, were not due to the presence of oxalic acid in the urine. To prove this fact he had had a careful quantitative analysis

made of the amount of oxalic acid (also determining the amount of urea and uric acid) contained in the urine of a large number of persons suffering from various diseases, such as neurasthenia, the gouty diathesis, etc. In some of these cases the symptoms ascribed by Cantani as due to oxaluria were present, but no possible relation could be traced between them and the amount of oxalic acid in the urine.

In concluding his paper, Dr. Adler made the following statements:—

1. That oxalic acid is a normal, although possibly not a constant constituent of the urine.

2. The amount present in a given quantity of urine can be determined with any degree of accuracy only by a quantitative analysis.

3. The chief source of oxalic acid in the urine is the oxalic acid contained in the food. It is probable, however, that minute quantities are produced in the normal metabolism.

4. Impeded respiration and diseases of the heart and lungs do not of themselves tend to produce an excess of oxalic acid.

5. The establishment of pathological oxaluria as a disease, *sui generis*, cannot be done.

6. The nervous symptoms ascribed to pathological oxaluria are not caused by an excess of oxalic acid in the urine.

7. Where such excess does occur, which cannot be accounted for by the ingesta, it is probably one of several symptoms of metabolic changes, primarily caused by alterations in the nervous or digestive systems, or both.

8. In examining the urine for oxalic acid, it is of the utmost importance to consider its other ingredients as well, particularly urea and uric acid.

Dr. C. A. HERTER referred to the various methods of making a quantitative analysis of the amount of oxalic acid in the urine, and the enormous amount of labor involved. He did not agree with Dr. Adler's statement that a great many cases of co-called oxaluria are not pathological. He is not prepared to accept the proposition that there is no such thing as pathological oxaluria. He is inclined to think that in cases where we have defective digestion, especially in the intestines, the carbohydrates are likely to be transformed into oxalic acid where normally they would not be so transformed. He does not believe, however, that oxalic acid is ever the

cause of the symptoms named by Dr. Adler. We must take other constituents of the urine into consideration, such, for instance, as uric acid and creatinine: the latter is a substance in which even more nitrogen is excreted than in the uric acid. The diphtherial sulphates in the urine must also be considered. They are often present in excess in neurasthenic conditions where there is oxaluria and where there is also an excess of uric acid. Dr. Herter said he is inclined to think that the old theory of the formation of oxalate of lime out of uric acid is an exploded one.

Dr. L. WEBER said that his clinical observations were fully in accord with the ideas expressed in Dr. Adler's paper. He does not believe in the existence of a disease to be designated oxaluria, but he has met with many cases of a disordered state of the system brought on by various causes in which he found (not by quantitative analysis, but by frequent and careful examination with the microscope) oxalic acid in the urine, besides, in every case, an increased amount of uric acid.

Dr. CHARLES HEITZMAN stated that he sees many cases of so-called oxaluria, and the appearance of these patients is usually characteristic. Sleeplessness, indigestion and fits of melancholia are the more common symptoms he has found in them. Contrary to Dr. Adler's experiments, he has usually found the specific gravity of the urine high, from 1034 to 1036. Regarding the treatment of these cases, Dr. Heitzman recommended a meat diet, the exclusion of sugars and farinaceous substances, and vigorous outdoor exercise. He stated that he felt convinced that there is a condition of the system wherein the amount of oxalic acid excreted by the urine is far in excess to that taken in with the food, and he could not agree with Dr. Adler's statement that there is no such thing as a real pathological oxaluria.

Dr. MARY PUTMAN JACOBI stated it seemed to her that Dr. Adler's conclusion that the oxalate of lime contained in the urine is rather an accessory product of a disordered function than a cause in producing it is very true. She referred to some experiments made by Dr. Chadwick, of Boston, in a series of cases in which the patients were operated upon on the supposition that there was a stone in the pelvis of the kidney. No stone was found, but the symptoms disappeared. In these cases the attacks of renal colic were followed by a copious discharge of oxalate of lime crystals in the urine, after which the patients remained quite free from pain for some time.

Dr. A. B. ROCKWELL said he was much interested to note the frequency with which oxalate of lime crystals have appeared in the urine, in certain neurasthenic cases associated with a disordered heart's action. Such a case recently came under his observation. A physician, who suffered from neurasthenia and had frequent attacks of palpitation, noticed repeatedly that this excessive heart's action was always associated with an abundance of oxalate of lime crystals in the urine. Dr. Rockwell said he has also often found them present in large quantities in spermatorrhœa.

The PRESIDENT said that we cannot study neurasthenic conditions carefully without coming to the conclusion that the trouble lies in the chemistry of nutrition. It is very easy to jump to the conclusion that any substance of an abnormal character in the urine or feces gives rise to a certain morbid condition, but this is a wrong conclusion. The oxalates, the urates, the indican, etc., may occur in excess in the urine, but they are end products. The statements made in Dr. Adler's paper, based on such careful quantitative analyses of the urine, should be regarded as very valuable. It is much more difficult to destroy a wrong theory than to originate a new one.

Dr. ADLER, in closing the discussion, said that the local precipitation of the oxalates seems to be independent of any positive excess excreted. Calculi consisting of the oxalates can form in the kidney and bladder without there being an absolute excess of the salts in the urine.

REPORT OF A CASE OF CYSTIC TUMOR OF THE BRAIN OPERATED UPON WITH SUCCESS. PRESENTATION OF THE PATIENT.

BY DR. LEO STEIGLITZ.

The patient was a female, twenty-five years of age. She was married in April, 1891. Previous to her marriage she had always been well; there is no hereditary taint of any kind and no history of traumatism or convulsions prior to her present trouble. In October, 1891, the patient, while quietly talking with her husband, suddenly felt twitchings in the thumb and forefinger of her right hand; the convulsive twitchings spread rapidly, extending up to the shoulder and face, and led, finally,

within the space of a few minutes, to a general seizure, with loss of consciousness, cyanosis, frothing at the mouth, and tonic and clonic convulsions. An attack similar in character to the first one occurred seven weeks later, followed by a number of others. Suspicion of a localized cerebral lesion was aroused, although the patient offered absolutely no further symptoms; she had no trace of headache, nausea, giddiness, choked disc, etc. She was put upon the bromides, and after January 19th, 1892, she had no general convulsions at all; simply convulsive twitchings confined to the right hand and forearm, and always beginning in the thumb and forefinger. These attacks occurred almost daily. Although no history of syphilis could be obtained either from the patient or her husband, she was put on specific treatment for a time, but no improvement followed. In February, 1892, a marked paresis of the right hand developed. The deep reflexes were increased, more marked on the right than on left side. The dynamometer test showed 25 on the right side; 55 on the left. The urine contained neither albumen nor sugar. There was no temperature disturbance. There was no disturbance of sensation in any part of the head or arm except a general feeling of numbness. The diagnosis arrived at was organic lesion, probably a tumor, situated in the left anterior cerebral convolution. An operation was performed on the patient by Dr. Gerster on June 25th, at Mt. Sinai Hospital. A lateral opening in the skull having been made, the dura was seen to bulge but slightly into it. An area on the dura about the size of half a dollar showed a diffuse yellowish tinge, different from the color of the adjacent dura. The application of the poles of a small faradic battery to the unopened dura by Dr. B. Sachs promptly determined the centre for the movements of the hand and fingers, and the point corresponded with the discolored area referred to. When the dura was opened the cortex of the brain showed no apparent change. A vertical incision into its substance was followed by a gush of yellow serous fluid, none of which, unfortunately, was saved. Perhaps one ounce of fluid escaped. The walls of the cyst were found to be perfectly smooth. A small layer of gray matter was removed from the centre exposed, upon the advice of Dr. Sachs, to prevent disturbances which might develop from possible secondary sclerotic changes. There was but little shock after the operation. The day following it the patient had lost all

power in her right thumb and forefinger, and could move her other fingers and the entire right arm but very slightly. This symptom gradually improved. On July 21st the patient had slight convulsive twitchings in her right hand, arm and face. On July 28 she had more violent twitchings. On August 7 the scalp wound was opened and adhesions found between the flap of skin and the dura. Probing revealed no recurrence of fluid in the cyst. The adhesions were separated and a flexible gold plate inserted. August 9, slight twitching in three ulnar fingers; patient could move her fingers, hand and arm quite extensively. Upon examination in November it was found that the patient had lost the sensation of position in the fourth and fifth fingers of the right hand; she could not tell whether they were flexed or extended. The strength of her hand and arm were greatly increased. December 10, considerable twitching in right arm and face. The patient had been kept on from fifteen to thirty grains of potassium bromide per day since the operation.

In concluding the history of the case, Dr. Stieglitz said he was inclined to believe that there is a glioma at the bottom of this patient's trouble. In that case there is reason to fear a further growth of the gliomatous material presumably left in the walls of the evacuated cyst. Symptoms have already developed which tend to confirm these fears. As to the further treatment of the patient, he would like to have another operation performed and the entire cyst or its remains removed, if possible.

Dr. A. G. Gerster, who had operated on the patient, said that at the time of the operation the advisability of removing the cyst wall was considered, and it was decided that it could not be done on account of the delicacy and thinness of the membrane. In his opinion it could not have been separated without tearing it into shreds. In operations on the skull, Dr. Gerster said, he prefers the gouge and mallet to the trephine; he is not hampered by the size and shape of the trephine, and can remove as little or as much of the bone as he chooses. He also referred to the profuse hemorrhage accompanying operations upon the head, and the serious difficulty the surgeon often finds in checking it. Peripheral constriction, by means of an elastic bandage, proves inadequate. The hemorrhage is not alone from the scalp, but from the diploic substance and the vessels which course through the brain itself.

THE PRESIDENT said that the futility of peripheral constriction as a means to check hemorrhage in operations about the head has been testified to by Dr. Weir and others. The least hemorrhage he has ever seen in such a case was in a patient who was kept in the sitting posture during the entire course of the operation. In another case, operated on a short time ago by Dr. Briddon, chloroform was administered instead of ether, and the amount of blood lost was much less. Regarding the excision of the cyst wall, Dr. Starr said he doubted if that was possible. Furthermore, there is probably gliomatous infiltration into the brain substance. In a brain cyst evacuated by Dr. McBurney drainage was kept up for fifteen days, when the walls were found to be adherent to one another, there being no cavity left. Out of eighty-seven recorded operations for the removal of brain tumor, 46 per cent. were successful in the finding of the tumor and in the recovery of the patient. Successful operations for the relief of epilepsy are very rare. Out of ninety-seven recorded cases, three had no recurrence of the attacks within six months subsequent to the operation. Most of these cases were reported too soon.

HEMIATROPHY OF THE TONGUE. PRESENTATION OF PATIENT

BY DR. M. ALLEN STARR.

The patient, a female, was perfectly well until last June, when she was suddenly seized with pain in the back of the neck and the occiput, and the next day she noticed that something was wrong with her tongue. It was strongly deviated to the left and has remained in that position ever since. It has become decidedly atrophied, and presents well-marked reaction of degeneration. There is no pain nor disturbance of taste.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held at the New York Academy of Medicine, February 7, 1893.

A SUBACUTE CASE OF UNILATERAL BULBAR PALSY.

DR. ALFRED WIENER presented this case. The patient was a young man aged seventeen years. Family history, negative. Patient was in good health up to two years ago, when he had a severe attack of perityphlitis, from which he recovered after five weeks of illness. He has suffered from catarrhal pharyngitis more or less ever since childhood. A year ago last spring the glands on both sides of his neck, in the region of the sterno-cleido-mastoid muscles began to enlarge. In the summer of the following year an abscess formed in one of these glands on the right side, and this was opened. Soon after this the remaining glands began to create so much discomfort that those on the right side were removed, together with a large portion of the sterno-cleido-mastoid muscle. On September 1 of the same year the glands on the left side were removed. These, under the microscope, proved to be of a tubercular nature. In the latter part of November, 1892, it was noticed that the patient's tongue, on protrusion, deviated to the right side; this was followed by hoarseness and difficulty in swallowing and later on by distinct atrophy of the middle half of the tongue. An electrical and laryngoscopic examination showed that there was complete unilateral palsy on the right side, involving the tongue, soft palate, pharynx and larynx, together with a paralysis of the sterno-cleido-mastoid and upper portion of the trapesius muscles. The lesion in this case, Dr. Wiener said, may occupy one of three positions. First: A point just external to the exit of the pneumogastric and spinal accessory nerves from the skull, namely, just behind the angle of the jaw. Second: On the surface of the madulla. Third: It may be nuclear. All the facts in this case lend support to the view that the lesion is a tubercular one, situated at the

nuclei of the nerves which govern these palsied parts These groups of cells form the conjoined nuclei of the spinal accessory, vagus and hypoglossal nerves and a very localized lesion in this part of the madulla is sufficient to effect them. The involvement of the trapezius and sterno-mastoid muscles is probably due to injury to the nerve supplying them, while the laryngeal symptoms may be accounted for by a paralysis of the stylo-hyoid muscle (due to pressure from an enlarged gland) or by the antagonistic action of the muscles on the left side of the throat over the paralyzed muscles on the right side.

A CASE OF COMPLETE ATROPHY OF THE TONGUE WITH OTHER NUCLEAR SYMPTOMS.

DR. GEORGE W. JACOBY presented this case. The patient was a female, aged thirty years, married nine years. She has had three children and two miscarriages. During the past fourteen months she has not menstruated. Her mother died of pulmonary tuberculosis at age thirty-eight. Her husband's sister recently died of consumption, and during her illness the patient nursed her. During December, 1892, the patient was treated for loss of sight, which had come on gradually in both eyes, reducing vision to such an extent that she required some one to lead her. This loss of sight was found to be due to a slight atrophy of both optic nerves, and under internal treatment the symptom disappeared. The patient has also suffered from violent headaches, which disappeared with the loss of sight. Three weeks ago she noticed a difficulty in swallowing and speaking. She vomited every morning on rising, even without eating. At the previous examination it was found that the tongue deviated towards the left and there was marked hemiatrophy of that side of the tongue. The uvula hangs to the left and there is paralysis of the left side of the soft palate. The patient has enlarged glands in the neck. There is at present complete atrophy of the tongue and soft palate. There is also motor ocular paralysis on the left side involving the internal and external muscles. Dr. Jacoby presented the case as one of progressive nuclear paralysis.

Dr. B. SACHS said he saw Dr. Wiener's patient some time ago. The idea of a peripheral lesion was considered for a short time only, and the conclusion was soon

arrived at that the basilar site was the more probable one. The lesion is, no doubt, of tubercular origin. A chronic nuclear condition must be excluded, on account of the rapid progress of the symptoms, and because they have remained strictly unilateral. Dr. Jacoby's case he considered a very interesting one, although he felt rather inclined to doubt the diagnosis, because of the rapid progress of the symptoms. They seemed to indicate the presence of some active lesion, either specific or tubercular.

MODIFICATIONS OF RESPIRATION IN THE INSANE.

Dr. Theo. H. Kellogg read an interesting paper on this subject. He gave a systematic description of the various forms of respiratory changes found in the insane. To facilitate the study of these modifications, he grouped them as follows: A. Modifications of respiration as regards frequency, depth, rhythm and sound. B. (1) Spasmodic expiratory modifications, such as occur in laughter, crying, sneezing, coughing and snoring; (2) Spasmodic inspiratory modications, as in singultus, chasmus, and laryngeal crisis. C. Dyspnoeic modifications.

Dr. William M. Leszynsky presented a new form of electrode to be employed for diagnostic purposes.

REPORT OF A CASE OF SARCOMA OF THE CERVICAL CORD: AUTOPSY.

Dr. C. A. Herter read the history of this case and presented some photographs and microscopical specimens to illustrate it. The patient was a male, aged twenty-nine, single, a merchant by occupation. He was in good health until the beginning of the present illness, barring occasional attacks of chills and fever, and repeated and prolonged colds which ended in cough lasting several weeks. The patient has never used alcohol and his habits have always been in every respect exemplary. The family history is negative. In May, 1891, the patient noticed a loss of sensation, beginning as numbness, in the ulnar side of the little finger of the right hand. This sensory loss soon extended to the entire little finger and thence to the ring finger and the ulnar side of the middle finger. At the same time there was an upward extension of anaesthesia along the hand. Three months from

the onset the anaesthesia had passed up the ulnar side of the forearm and arm and had reached outward over the hand as far as the thumb. The patient also began to have pain on the ulnar side of the right forearm and hand; slight and occasional at first, later very severe and of increased duration. This was followed by loss of power, first in the flexors of the fingers; then in those of the forearm. About five months after the first symptoms were noted, there developed atrophy of the first dorsal interosseus. This wasting soon extended to the muscles of the thumb and hypothenar eminence and to the flexors of the forearm. About the eighth month the pain abated very much. During the period of severest pain the entire right arm became œdematous. An electrical examination made in June, 1892, showed a loss of faradic irritability in the right arm and in all the extensors and flexors of the wrist and interossei. Tactile and pain sense were entirely lost along the ulnar border of the arm to the axilla and were greatly impaired along the radial border as high as the shoulder. Temperature sense (which was only roughly tested) appeared to be quite lost in the arm. There was almost an entire loss of muscle sense; the patient had no sense whatever of the position of the fingers, hand and arm. The surface of the right arm was much colder than that of the left. It was pale in color. In the left hand and arm, power and sensation were apparently normal. Both legs were a little weak. Equilibrium was maintained without any difficulty. The knee-jerks were increased, the exaggeration being more pronounced on the right side. The power of the sphincters was unimpaired. There was no vertebral deformity and no tenderness on pressure over any of the cervical or upper dorsal spines. Sight was unimpaired. The pupils reacted normally to light and during accommodation. The right palpebral fissure was distinctly smaller than the left, and the right lid drooped a little. An examination of the chest showed dullness on percussion over the upper part of the right side. Temperature 101. Pulse 100. Respiration about 30 per minute. In the course of two weeks after this examination the right leg became much weaker than before, and pain and numbness extended gradually down the entire left arm. Loss of power was also detected in the left leg. There was temporary retention of urine. In July, 1892, a tense swelling was observed over the outer end of the right clavicle and extended down into the axilla over the front of the

shoulder. In the course of two weeks this tumor grew to the size of a child's head, became very tense and was covered by greatly distended veins. The patient grew rapidly worse. Incontinence of urine and feces set in and the breathing became labored owing to paralysis of the thoracic muscles. There was total loss of sensibility extending as high as the crest of the ileum upon both sides, with impairment of sensibility bilaterally as high as the third rib. Large bed-sores appeared, and on September 12, 1892, sixteen months after the beginning of symptoms, the patient died from exhaustion and respiratory failure.

A partial autopsy was made and a mass removed from the clavicle and another from the upper and posterior part of the thoracic wall. A number of tumors occupied the posterior and inner aspects of the right upper chest, displacing the lung. Some of these masses appeared to grow from the clavicle, others from the vertabræ, but their relations could not be distinctly made out. The specimen obtained from the spinal cord was five inches long, and extended from the eighth cervical to the seventh dorsal segments, both inclusive. Sections were made from the eighth cervical, and first, second and third dorsal segments. The tumor involved at this level nearly the entire right half of the cord and encroaches anteriorly upon the left anterior column of the cord. Posteriorly, it did not pass quite to the posterior horn. The ganglion cells in the region of the tumor have undergone partial or entire destruction, or in some instances have been apparently replaced by small groups of spindle-shaped connective tissue cells. In structure, the tumor is an exceedingly vascular spindle-celled sarcoma. Sections made from the mass obtained from the clavicle and thoracic wall showed them to be fibro-sarcomata.

Regarding the diagnosis of the case, Dr. Herter said that while the anatomical diagnosis presented no difficulties, the pathological diagnosis was made with some hesitation. The presence of signs of consolidation over the lung, muco-parulent expectoration, hectic temperature, rather rapid emaciation and night sweats, all suggested a tubercular process, and the diagnosis of a secondary tubercular tumor of the cord was thought to be justified. The alternative diagnosis was sarcoma, but this appeared improbable. An examination of the sputum was not made. Twenty-six cases of sarcoma of the spinal cord collected by Dr. Herter, and compared with

cases of massive tubercle of the cord, brought out a number of facts, some of them of practical interest. They are: 1st. Sarcoma of the spinal cord occurs with about equal frequency in the two sexes; of the twenty-six cases, fourteen were in females, twelve in males. 2d. Sarcoma of the spinal cord is essentially a disease of adult life; of twenty-one cases, only two occurred before the twentieth year; seventeen occurred between the ages of twenty and fifty years. Massive tubercle, on the contrary, is a disease of adolescent and early adult life; fifteen out of twenty-four occurred between the fifteenth and thirty-fifth year and five before the fifth year. 3d. Etiological factors in the production of sarcoma of the spinal cord are practically unknown. In one case only (a fall on the ice) does it appear to have exerted any influence, and even here the influence may be questioned. 4th. In three cases of sarcoma, the first symptom appeared during pregnancy. 5th. Pain appears to be the earliest and most prominent symptom in four-fifths of the cases. Speaking generally, the early symptoms of sarcoma of the cord are mainly of an irritative and not of a destructive nature. 6th. In sarcoma, the course of the disease is in general, much slower than in tubercle. In all of the above cases the diagnosis was confirmed by autopsy. Glioma were excluded.

DR. B. SACHS said he was much interested in Dr. Herter's attempts at differential diagnosis between sarcoma and tubercle of the cord. The rapid progress and greater destructiveness of the latter disease is probably the most important symptom we have. In a case that came under his observation eight years ago, he diagnosed probable sarcoma and found tubercle, and in that case the solitary tubercle of the cord was positively the original deposit of the disease. Tumors of the cord, Dr. Sachs said, are of extreme rarity.

DR. MARY PUTNAM JACOBI referred to

A CASE OF SARCOMA OF THE CORD IN A CHILD.

Reported by Dr. Gee (St. Bartholomew's Hospital Reports), in which the diagnosis was confirmed by autopsy. In a case reported by her in last autumn, the symptom very closely resembled those in Dr. Gee's case. There was a predominence of the irritative over the destructive symptoms and unilateral paralytic symptoms.

She made a diagnosis of sarcoma of the cord, and before death a large tumor appeared in the cervico-dorsal region. No autopsy was permitted.

DR. FREDERICK PETERSON stated that sarcoma in general were more common under the age of thirty than above that age.

THE PRESIDENT said that while sarcoma in general is more commonly met with in persons under the age of thirty, yet sarcoma in the nervous system is decidedly more frequent in adult life. He has recently collected six hundred cases of tumor of the brain (three hundred in adults and three hundred in children), and among these there were thirty-four cases of sarcoma in children and one hundred and fifty-seven in adults. He agreed with Dr. Sachs' statement that tumors of the spinal cord are very rare. He was much interested in the collection of cases made by Dr. Herter, and thought it would be well to carry the investigations further and determine how many of these cases would have been suitable for operative interference.

DR. GRAEME M. HAMMOND referred to the symptoms of Dr. Herter's patient on the side of the body opposite to that invaded by the growth. These, he thought, might have been due to degenerative changes in the opposite side of the cord, cause by a cutting off of the blood supply, or the commissure fibres may have been interfered with enough to produce the symptoms.

The discussion was then closed by Dr. Herter. He stated that there was only partial interference with the nutrition of the opposite side of the cord. As regards operation, he did not see the case until a very late day, and it seemed to him that it was not an operation case. The patient had been seen by an eminent neurologist of this city during its earlier stages, and had been treated by electricity with the idea that the trouble was a neuralgic one.

DISCUSSION ON THE MOTOR DISTURBANCES OF THE HEART OF NERVOUS ORIGIN.

DR. GEORGE W. JACOBY read the first paper on this subject. He stated that in a large number (probably in more than one-half) of the persons who consult us on account of some motor disorder of the heart, no anatomical lesion is clinically discoverable, and no mechanical cause can be found. In such cases it is reasonable to seek for the cause of the altered function in some disorder of

the complicated nervous apparatus of the heart. The subject may be conveniently divided into intermittent, irregular, abnormally slow (bradycardia) and abnormally frequent (tachycardia) heart's action.

Intermittency may be true or false; in the latter form the pulse fails, but the heart is regular, while in the former the heart beat is actually dropped. In irregularity of the heart's action the number of pulsations varies from minute to minute, or the pulsations vary in height and tension. These forms of arythmia may be persistent or only temporary; when persistent, Dr. Jacoby said, they are probably due to some organic disease of the heart, whether such can be detected or not; when they are temporary, they are either dependent upon defective blood mixture or are purely neurotic. Toxic influences associated with sexual excesses, and with the excessive use of tea, coffee, tobacco and alcohol he has found to be potent in the production of arythmias. Intermittency may be due to even the moderate use of alcohol.

Slow pulse, or bradycardia is a term applied in cases where the pulse falls below sixty per minute, or according to other writers, below forty. Slow pulse should be regarded as a symptom only and may be due to a variety of causes. If we make use of the term bradycardia at all, we should limit it to such cases in which the infrequency of the pulse is due to a disorder of innervation. A slight reduction in the frequency of the pulse is very common in disturbances of the digestive tract.

In paroxymal tachycardia the attack is always sudden in its onset and usually unexpected. The pulse is increased from normal to 180–240 per minute, or even to 300 per minute, according to some observers. There is no irregularity of rhythm nor intermittence. The heart beats in a strong and energetic manner, and in direct contrast to its action is the extreme diminution of arterial tension. The cessation of the attack is sudden as its onset. The paroxysms vary in duration from a few minutes to several hours, and occasionally last even for days. The intervals between the attacks are irregular. During an attack the excretion of urine is generally diminished; it may be followed by the presence of a large quantity of clear, limpid urine. The etiology of these cases is obscure. Psychic influences, fright, error of diet, bodily exertion have all been assigned as causes. It is an affection of adult life, this we can say positively, and the best established causes are bodily and cerebral overwork.

In concluding his paper, Dr. Jacoby referred to the pathology of these cases, and gave a brief review of the various theories put forth regarding the nervous mechanism of the heart. The assumption that we are dealing with a bulbar neurosis in these cases appeared to him to be the most probable one.

Dr. J. W. Brannan said that some years ago, when he was led to investigate the subject of the pathology of tachycardia, he was inclined to believe that it was due to a bulbar neurosis, but he afterwards rather favored the suggestion made by West, to which Dr. Jacoby referred, that the cause of the trouble was to be found in the heart muscles. Up to four years ago only four autopsies were recorded, and in all of these the nervous system was found intact; in only two the heart muscles were examined, and in both cases an extensive development of fibrous tissue was found in the wall of the left ventricle. This, as some observers have said, may have been due to the rapid heart action. In another case where the disease existed only three months there was an extensive development of fibrous tissue throughout the wall of the left ventricle, in the trabeculæ and the papillary muscles. The only objection to that theory lies in the fact that there are so many cases of myocarditis without any history of tachycardia. This has been accounted for by the explanation that certain regions of the heart muscles are tolerant, while other regions are intolerant, and with the latter we get tachycardia. The intolerant regions are especially found in the intraventricular wall and the papillary muscles.

Dr. Mary Putnam Jacobi referred to Gaskell's experiments in connection with this subject. She stated that the suggestion made that an apparently functional disorder may constitute the precursor to a more serious condition, seemed to her extremely interesting and important. Such a case was recently brought to her observation. The patient was a woman who, for three years, during the period of the monopause, was supposed to be very hysterical. She suffered from insomnia, night terrors and other symptoms that were considered purely neurasthenic, as no organic disease was found. She finally had an attack of hemorrhage in the pons.

Dr. Herter referred to a case of paroxysmal tachycardia which he has had under observation for two years. The man is a sexual neurasthenic and suffers from intestinal indigestion. Each attack lasts four or five hours

and is generally induced by some indiscretion of diet. The urine passed after such an attack contains in a large amount the products of intestinal putrefaction. It is an interesting question whether the attacks are due to such poisonous substances, or perhaps to mechanical causes—such as the distention of the colon or other parts of the intestinal tract.

DR. A. D. ROCKWELL said he is of the opinion that functional diseases of the heart sometimes lead up to organic diseases, but not very often. These functional heart troubles ofttimes give more misery than a serious organic disease. If we have a disturbed rhythm of the heart which is paroxysmal in character, with intervals of normal pulse beat, the condition is apt to be a functional one, and per contra, where the rhythmic disturbance is constant and associated with profound circulatory interference, which is evidenced by syncope or vertigo, we are pretty safe in diagnosing an organic disease.

DR. LESZYNSKY stated that he saw three attacks of tachycardia in a young physycian. Each of these attacks was brought on by an over-indulgence in alcohol and tobacco. The pulse rate varied from 180 to 200, and each attack lasted for two or three days. The patient has had no attack now for five years. As regards slow pulse, Dr. Leszynsky said he is acquainted with two persons, both members of the same family, in whom that symptom is very pronounced.

DR. L. STEIGLITZ referred to a marked case of totany he had seen in Dr. Hoffman's clinic at Heidelberg. The patient was a girl aged eighteen who developed attacks of tachycardia, with the pulse ranging from 180 to 220. He stated that with totany there is often associated diseases of the thyroid gland, and this is also the case in Baoedow's disease, where we have the rapid pulse. The tachycardia may possibly be due to some toxic influence of the blood.

DR. SACHS gave the history of a case of tachycardia and two cases of bradycardia.

The discussion was then closed by Dr. Jacoby.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, December 19, 1893.

The President, Dr. FRANCIS X. DERCUM, in the chair.

Dr. ERNEST LAPLACE read a paper on

A CASE OF GUNSHOT WOUND OF THE HEAD, WITH A FORM OF APHASIA IN WHICH THE LOSS OF NOUNS IS THE MOST MARKED FEATURES. (*See page 191.*)

DISCUSSION OF DR. ERNEST LAPLACE'S CASE OF LOSS OF NOUNS.

By CHARLES K. MILLS, M. D.—In Dr. Laplace's case one of the chief features is the loss by the patient of the ability to make use of nouns, or at least of many nouns. At first sight the case might seem to be hysterical, but a close study of the phenomena, and the long persistence of a consistent symptomatology, are strong arguments against this assumption. The case can be explained in accordance with recorded facts, and on certain well-based theoretical considerations. The literature of aphasia contains a number of anthenticated cases—a few of which have gone the rounds of numerous publications—in which either the memory of nouns, or the faculty of using nouns in voluntary speech was lost. In 1887, Dr. Mary Putnam Jacobi, in a paper on *The Special Liability to Loss of Nouns in Aphasia*, published in the Journal of Nervous and Mental Diseases, as the results of the examination of the records of 116 cases, stated that 17 had this peculiar defect. These cases, most of which are well known to neurologists, are given in abstract. A few other cases are to be found in the medical literature of the last five year.

In many cases of aphasia the diminution or loss of facility and expertness in the use of nouns is a marked feature, but is associated usually with other striking disturbances of speech.

This peculiar liability to the loss of nouns has been discussed by our most eminent authorities on the subject of aphasia such as by Bouillaud, Broadbent, Kussmaul, Bateman, Ross, Jackson and Starr. It brings up an old question as to which parts of speech were first used, nouns or verbs, and the probable order in which the different parts of speech were added in the evolution of language.

The word-hearing centre is located in the posterior portions of the first and second temporal convolutions. The centre for word-vision is in all probability in the anterior part of the lateral aspect of the occipital lobe. The posterior part of the third frontal convolution is concerned with the arrangement of words and ideas, and close by is the convolution for the emission of speech. The existence of a separate area for concepts, or a "naming centre," as Broadbent has called it, is disputed, and this case is much to the point in discussing this question. Can we explain such a case in any other way than on the supposition of such a separate area? It seems to be difficult. The explanation of Ross is after all a practical admission of the existence of such a separate area. He says that it is not separate and distinct centre in the human brain, but that there is a higher organization or an expansion of the centres for word-hearing and word-vision; in the process of evolution the centre for word-hearing becomes enlarged and more highly organized; and similarly the visual area pushes outward and becomes larger and more developed, but, according to him, they are still parts of the same areas. We often become cognizant of an object and its name by the convergence of impressions from different centres, and the most rational supposition is that in process of time these pushings out from the original percept areas have become distinctly organized as a special intermediate area. Of two or three ways of explaining this case, one is by a destruction of the region where different lines converge to a common naming area.

A lesion of the lines of communication which go from this concept or naming region to the propositionizing area in Broca's convolution might partly bring about such a result. Although the patient would conceive the name of any object, he would be unable to carry the conception over to the emissive side of the brain because of the blocking of the connecting channels. An isolated

lesion of the naming centre would cause a loss of memory of names; the patient would not recall in consciousness the names of the objects; but as the patient is able to hear the word, to see the word and to recognize it, it would seem rather that the lesion has destroyed the fibres between the naming area and the out-going centres, whatever else it has destroyed. That any one is able to copy a word that is set before her is in favor of the view of a separate concept area. In two ways impressions from the visual area can go to the propositionizing area in the brain; one is direct the other indirect by way of the concept centre. Suppose that the indirect route is destroyed and that the direct commissure is intact; this would explain the fact that she can copy; and if she could repeat from hearing words, then also the direct route from the auditory centre to the out-going centre would be intact; but she cannot do this, so it would seem in this case on the supposition of separate concept centres, that the lesion has destroyed not only the indirect, but also the direct route from the auditory area, and has left the direct route from the visual centre intact.

That which is destroyed by such a lesion as this, is power of naming a tangible object represented by a noun. The nouns representing abstract qualities like home, liberty, country, love, hope, etc., are not necessarily, and commonly are not incapable of being used in cases like this, because a mental picture the result of visual or other perceptions does not rise into consciousness when we use these nouns representing abstract qualities.

Personally I believe in the existence of a separate naming centre, or at least of an area peculiarly organized, and lying between the centres for percepts and for motor speech—I believe, with Broadbent, that impressions made by an object upon various perceptive centres, as, for instance, those of hearing, sight, and touch, converge to one common cell, zone or area in which a complex impression of the object, the idea or the mental picture of the object, looms into consciousness. If such an area exists it must be placed in such a position as to be in easy relation with the percept centres, and also intermediate between these and the outgoing centres for speech in the third frontal and adjoining convolutions.

This brings up the most interesting practical point in connection with a case like that presented by Dr.

Laplace, in which surgical procedure was tried, and in which the advisability of further operation is still under consideration, and that is as to the direction and location of the lesion producing this peculiar variety of aphasia. In one case of loss of nouns reported by Broadbent, the two posterior convolutions of the island of Reil had disappeared. The island of Reil or retro-insular convolutions, or perhaps the inferior parietal convolution, best fulfil the anatomical requirements. It seems to me probable that either directly by the bullet, or, more probably indirectly, by intra-cranial traumatism or hemorrhage the left insular lobe has been injured

Let me summarize and to some extent repeat. This patient recognizes what is said to her whether nouns or other parts of speech. She can read silently, understanding what she reads. She can copy silently understanding what she copies. She can speak a little spontaneously, and more in this way than she can from dictation. She can propositionize imperfectly without nouns of a certain kind. She cannot name objects the use and meaning of which she knows and of which she probably knows the name; she cannot write the same. The auditory centre and incoming auditory tract are intact—so is the incoming visual tract and visual centre. The concept or naming centre may be partly preserved, because she has the idea of the thing, and she has the idea of the name. At first it was puzzling to understand why she did not use periphrase. Of the seventeen cases reported by Dr. Jacobi, while some of them periphrased very well, the majority did it poorly. In other words, the propositionizing power is impaired in a large number of these cases, and in some it is lost entirely. The commissure between the naming and propositionizing areas is destroyed. She can enunciate words because Broca's centre is intact, but she cannot repeat from dictation. The direct route from the auditory centre to the convolution of Broca, as well as the indirect route to the naming centre is fractured. She cannot read aloud or will not; this is difficult to explain, but a possible explanation is that when we read aloud we verify what we are reading in consciousness by the auditory centre. It is well known that a communication exists between the visual area and the auditory area. She is unable to verify by her auditory centre that which she is able to pronounce through the motor cortex. The explanation is the same as that for many aphasics who talk jargon or gibberish. The lesion

is then probably one destroying both the association fibres from the concept to the motor speech regions, and those which go directly from the auditory centre to the motor speech area; but it does not directly involve the latter.

In this connection I would like to report without comment a case of Amnesia for names following an Operation on the left Gasserian Ganglion.

The patient, a man seventy-six years of age, had during the past six years undergone five operations for the relief of trifacial neuralgia of the left side, the present one being the sixth.

On November 19th, by Dr. John B. Roberts, a horse-shoe shaped opening about three and a half to four inches in extent, was chiseled into the side of his skull for the purpose of removing his gasserian ganglion; much pressure was made upon the brain to displace it in order to reach the ganglion. The second and third division of the fifth nerve were cut near to the ganglion and turned back into their respective foramina, the ganglion itself was not removed. On the second day after the operation it was noticed that the patient could not remember the name of the street he lived on, nor that of any other street in the neighborhood of his house; he could not remember the name of the hospital, nor of his doctors who had previously operated upon him. It took him quite a little while to remember the name of President Harrison and Cleveland, though he had been much interested in the political campaign. His memory of names gradually returned to him so that two weeks after the operation he knew the names of the streets etc., as well as he ever knew them.

The PRESIDENT.—I saw this case some time ago with Dr. Laplace but since then its character has changed considerably. At that time, the aphasia was greater than at present. It was in fact a complete or almost complete motor aphasia. The case struck me at that time as one of aphasis from concussion or psychic shock. We know that such aphasias actually occur and may be persistent. Of course the fact (?) that the case is a pure case of loss of noun memory, militates against this view, although not absolutely, for cases are on record where loss of memory of nouns has followed shock and there has been no reason to suspect special lesions. Whether in such cases there might be a molecular disturbance of a certain portion of the cortex which might be persistent,

is a matter for speculation. On the other hand, looking at the case as an organic one, a clot may have formed and the change in the case would be accounted for by the partial absorption of the clot. I do not think that we can say absolutely whether or not there has been hemorrhage.

It is difficult for me to understand why she should be able to write certain names while she cannot write or pronounce from a book simple substantives.

With regard to the existence of an ideation centre (as I prefer to call it rather than a naming centre), the familiar diagram of Lichtheim answers very well to illustrate it. We have an impulse, say passing up the auditory nerve to the cortical centre for hearing and conducted by fibres beneath the Island of Reil to the third frontal convolution. Here the sound can simply be repeated, or emitted. No act of ideation is required in such a piece of apparatus. Every one of us can read sentences in a foreign language which we do not understand. Other portions of the cortex must be excited in order that sounds heard may be translated into ideas.

One peculiar feature about the case is that she does not attempt to periphrase in order to avoid the use of nouns. If she has a memory of verbs, she should be able to say what is done with certain objects. We might explain her inability to read from a book in this way—her power for repeating nouns is gone, but the power for repeating verbs is present though impaired. If she *hears* a verb repeated the motor speech centre is much more stimulated than when she simply *sees* the printed symbols. If the case be one of concussion it is strange that it is so purely a loss of noun memory as it is; if it be organic, it is strange that it presents the peculiarities that it does.

We should remember the fact that this girl was shot under circumstances of the most profound emotional excitement. When I first saw her, the condition suggested hysteria rather than any serious lesion. The aphasia was apparently complete except for a few words, such as yes and no. There was no palsy nor any other symptoms. It looked like a psychic case and this view would be favored by the partial recovery. Whether or not hysteria would explain this case, is a subject open to a good deal of discussion.

Dr. WHARTON SINKLER.—One explanation of the ability to write Dr. Keen's name would be that of visual

impression. The patient had read the name just before she was asked to write it, and may have had a mental picture of it before her.

There are several facts that make it difficult to accept the theory of an organic lesion in this case. In the first place, if the bullet is located, as is very probable, within two inches of the point of the entrance, how can we have a lesion so far back that it can affect the speech centre? Moreover, could the bullet penetrate the brain to the speech centre, without producing some other localizing symptoms? In the second place, I do not feel sure that we have established the facts as to whether she could not or would not read and write nouns.

Adjourned.

THE CHICAGO MEDICAL SOCIETY.

Regular meeting at Washington Hall, Nov. 7, 1892.

The minutes of the preceding meeting were read and approved.

The Committee on Membership reported favorably on the applications of Dr. G. W. Green, Ravenswood, Ill; J. A. Clark, 900 W. 21st St., and M. M. Ritter, 194 S. Lincoln St., Chicago, and on motion the Secretary cast the ballot of the Society for their election.

The applications of Drs. M. B. Sincere, W. C. Wermuth, Franklin C. Wells, Clement Pierce, A. F. Sippy, H. F. Kortebein and D. D. Bishop were read and referred to the Committee on Membership.

A CASE OF CEREBRAL SURGERY, WITH EXHIBITION OF PATIENT.

Dr. ARCHIBALD CHURCH.—The patient I am privileged to present to you is one of considerable interest from the point of brain surgery in regard to athetosis. She is a child of twelve years and has never had any physical illness at all. She was born without particular difficulty, and during the first two and a half years of life was a bright, active, intelligent child. At that time, following a fright, she lay for a number of weeks in a practically unconscious condition, which was called by the

medical attendant "internal convulsions." As far as I can learn from the mother there were no convulsive movements during this period, but when she emerged from this state of semiconsciousness it was found that she was completely paralyzed on the right side. She gradually regained power and was able to get about in a year, speech in the meantime having been pretty nearly abolished. At this time she commenced to manifest involuntary amœboid movements in the right upper extremity, which gradually grew worse, so that when I first saw her, a little over a month ago, the right upper extremity was so convulsed with these athetoid movements that the greater part of the time of the child was occupied in holding her right hand with her left, because if released it would go up to her face or behind her back and she could with great difficulty extricate it.

In attempting to overcome the spasm one would be compelled to use an amount of force that would lead to the fear of fracturing the bones. So vigorous were the muscular contractions that it resulted in her being utterly helpless—she had to hold her right hand constantly with her left, and she was a great burden to herself and to her family. As in other cases of hemiplegia, there occurred some mental changes and she was irrascible and difficult to manage. The lower extremity was also involved, so that in standing the hip was flexed and so was the knee, and some contraction has taken place in the hamstring muscles and the calf resulting in a loss of dorsal flexion of the ankle joint and causing difficulty in walking. I advised that an operation be done, that the left psychomotor centers be cut down upon and that the centers for the right upper extremities, having been recognized by the Faradic current, be extirpated, my idea being that it was a case of hemorrhage near the internal capsule between the basal ganglia on the left side which had resulted in this athetosis.

The operation was done by Dr. Christian Fenger, Oct. 7, at the Emergency Hospital. An opening was made somewhat larger than a silver dollar. An inch an a half trephine button was removed and the rongeur employed to enlarge the opening. The cortex was found apparently healthy. The centers for the elbow and shoulder were carefully found by means of a mild Faradic current, which produced movements similar to those she presented during the waking hours, and these were extirpated by means of a sharp spoon, the scraping or curetting

going to the depth of the cortex, so that the white fibers of the corona radiate were exposed. We were careful not to go toward the speech centers, and the finger centers were thus avoided.

She recovered from the operation without the slightest unpleasant symptom. During that night and the next day there was some slight twitching in the fingers and wrist that persisted for about twenty-four hours and then ceased definitively. As soon as she got about it was noticed that instead of the leg being in the contracted position I have described, she was now able to stand with her heels together upon the floor, and whereas she walked as with hip-joint disease, she now walks well, except for the contracted calf muscles. The arm, of course, was limp and paralyzed and has so remained, with the exception of the triceps muscle, which is somewhat inclined to be spasmodic. She has developed a small degree of voluntary power in the right hand, so that if you allow her to grasp your finger you will observe a distinct amount of voluntary pressure. Previous to the operation the slightest volitional attempt on her part would only serve to exaggerate the athetoid state and rendered purposive movement abortive. Therefore, as the result of the operation and directly following it, we have produced, as far as the child is concerned, a condition of practical helpfulness instead of absolute helplessness. She has an arm which gives her little trouble, and besides it has the appearance of commencing, and we may hope of progressive, voluntary power. She can now also rotate the arm at the shoulder joint.

The temperature sheet shows that following the operation the temperature varied between normal and 100° for ten days and has since been normal. She never experienced any pain, there was never any occasion for opiates; she is bright, hopeful, and active, and is in a better condition than before the operation in many ways. The scalp is practically healed with a linear cicatrix, and the reimplanted bone forms a solid protection to the underlying parts.

Book Reviews.

La Revista Medico Quirurgica Americana.

A new departure in Medical Journalism in America has been instituted by Drs. Samuel E. Milliken and Pedro J. Salicrup of New York. The experiment of publishing a Spanish Medical Journal in New York will be watched with much interest by physicians generally. As all new journals claim some *raison d'être*, so this journal is to be the Spanish organ of the Pan-American Medical Congress. As such, it will no doubt be greatly appreciated by our Spanish colleagues who attend the Congress or who desire to seek information regarding its meetings, etc. But as a scientific journalistic feat its existence, may seem nefarious for several reasons. The great majority of American Medical readers are totally unacquainted with the Spanish tongue, and whether its welcome in the Spanish Republics will come up to expectations, is somewhat doubtful. The Spanish Medical Journals of South America are as a rule first class, indeed, many of our journals could with much profit take a lesson or two from some of the Buenos Ayres journals. Good medical journals are, therefore, not wanting in their own countries. The English tongue is spoken by the majority of educated men in the Southern Republics, and English and American journals are carefully perused. The contributors to this journal are likewise unfamiliar with Spanish, and hence their contributions suffer at the outset with a translation, and many of the close American meanings are either lost or materially changed.

The contents of the numbers thus far published show the highest standard of excellence and worth. The authors being men of national and international reputation. Its list of associate editors includes many of the most prominent medical men in America. It is to appear monthly, the first number having been issued in September 1892. We wish it all the success it deserves, and hope its expectations will be more than realized.

W. C. K.

VOL. XVIII. April, 1893. No. 4.

THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

THE CHOREIC MOVEMENT.[1]

BY HORATIO C. WOOD, M.D.

IN A RESEARCH published by myself in the *Therapeutic Gazette*, in 1885, the observations of Chauvet, Carviler and several later investigators, that section of the spinal cord does not arrest, either in the upper or lower segment of the body, the choreic movements sometimes seen in diseased dogs, was confirmed by numerous experiments. It was further shown that whilst in advanced cases of canine chorea the ganglionic cells of the cord undergo distinct change, in the earlier stages of the disease, although the choreic movements may be well pronounced, no structural alterations can be detected in the nervous system. I also pointed out the close resemblance which exists between the chorea of the dog and the St. Vitus's dance of the child; and that since it is certain that the canine choreic movements originate in the spinal cord, it is most probable that the choreic movements in the human individual are often spinal. Since my research the matter has been considerably discussed by physiological clinicians, and it seems to me that the conclusion can, at this day, hardly be gainsaid, that whilst the movements which are called choreic may originate in the

[1] Read before the Philadelphia Neurological Society, January, 1893.

cerebral cortex, spinal choreic movements occur in man as they do in other mammals. The assertion which has been made, that the mechanism of the choeric movement is altogether different in man and in the lower animal: that is, that it is altogether different in different species of animals, is too absurd for serious controversy. It would be just as well to waste time in discussing whether the mechanism by which voluntary movement is produced, or the method by which convulsions are brought about, differs in man and in the lower animals.

In the research of 1885, no direct answer was attempted to the question, "What is the immediate method in which choreic movements are produced;" or, in other words, why does the choreic movement replace the normal function of the part. It seems to me possible that the veterinarian and the human physician will agree that usually and probably always the spinal choreic movement is associated with absolute loss of power; a loss of power which varies in degree from mere failure of endurance to almost a complete paralysis.

The problem which is presented to us for study is the examination of the conjoint excesses of motion and loss of motor power. In thinking over this problem, it occurred to me that probably in chorea there is a condition of depression or exhaustion involving the two motor functions of the spinal cord, which I believe have been proven by the modern physiologist to exist, namely, the function of inhibition of motor discharge and the function of motor discharge. In other words, that the motor power of the spinal cells is weakened, but that the power of the inhibition apparatus, which controls motor discharge from these cells, is weakened to a greater extent than is the discharge power. The choreic movement may show itself simply in restlessness or fidgetyness, or it may reveal itself by excessive muscular contractions occurring under the impulse of the will; or in the severer cases there may be an irregular or a rythmic motor discharge, occurring entirely independently of the action of the will. According to the thought which I have, the quiet individual

is one whose inhibitory spinal apparatus is so powerful as to effectually control the motor cells of the cord; whilst in the restless individual inhibitory weakness reveals itself in the restlessness. As inhibitory weakness increases, restlessness increases, and the child becomes fidgety. When the stage of pronounced awkwardness and irregularity of movement is reached, the inhibitory spinal apparatus has so far lost control that it is no longer able to arrest muscular movements at the time when the necessities of the occasion demand that the motor discharge should cease, and so an excessive muscular response occurs to the will impulse because of the weakness of the apparatus which checks discharge from the cells concerned. In the most profound case of spinal chorea, human or animal, according to my thought, inhibition has become so far weakened that it has little or no power over the motor cells of the cord. As a further extension of the theory, the thought has occurred to me that it may be possible for a cell to revert to its original physiological type, just as it is possible for a part to revert to its original anatomical type. The original type of the nerve cell is that in which the cell gives rise to intermittent discharges, and therefore it is entirely supposable that the intermittent discharges of the choreic movement is due, first, to the natural tendency of the cell to discharge rhythmically, nerve force; and secondly, to the failure of that inhibition which in the normal cord prevents rhythymic discharge of nerve force.

A remarkable fact in connection with rhythmic choreic tremors is, that they may go on continuously without sensible fatigue; whereas, if a simple to and fro movement be made by the effort of the will, only a few moments will be required for exhaustion. The theory of the reversion of the cell to its original condition of rhythmic discharge, explains this fact; for we know that those cells which rhythmically discharge force do not tire. A normal heart continues to beat, it may be, through a century, without rest and without fatigue.

In regard to this theory of rhythmic discharge, I have

no evidence to offer the Society this evening; indeed, have not thought much over the matter. For putting it aside, I set myself to thinking whether or not it were possible, in any way, to throw light upon the condition of inhibition in the spinal cord of the choreic dog. My first series of experiments was directed to determining whether the motor cells of the spinal cord in the choreic dog are still capable of being inhibited. I have found that when division of the spinal cord is made low down, during etherization, the shock of the operation prevents a repetition of the movements for a considerable period after the recovery of consciousness. Thus, in one experiment, after division of the cord in the upper dorsal region, the movements did not reappear for over a quarter of an hour after complete recovery of consciouness. They first made their appearance in the hind legs, and afterwards in the front legs. The movements were finally much more violent in the hind legs than they had been before section; but all synchronism between the front and hind legs was completely set aside by the section.

In the second experiment the movements were rhythmical, and, as is often the case, were most marked in the opposing front and hind legs. They were, as in the first case, immediately stopped by ether. The cord was cut in the lower dorsal region, and the movements reoccurred in the front leg as soon as the effect of the anæsthetic had gone off, but did not come back in the hind legs for over an hour after the return of consciousness. It is plain to my mind that the shock of section of the cord has an effect upon these movements. In the first experiment, the front legs were nearest the seat of section, and recurrence of their movements was longest put off. In the second experiment, the section was practiced very low down, and the hind legs were inordinately influenced. In the choreic dog, as in the child, the movements can certainly be inhibited temporarily by the cerebrum.

Another experiment, of which I herewith submit the tracing,

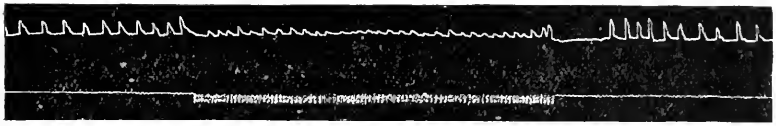


FIGURE 1. Widened space in lower line registered the application of faradic current to sciatic nerve.

confirms the fact that the function of inhibition in spinal chorea is still capable of being aroused. A complete section of the cord was made in a choreic dog, and although no evidence of pain was caused by very powerful faradization of the exposed sciatic nerve, the choreic movements were very markedly inhibited, as is shown in the photographic reproduction of the tracing made. The upper line represents the writing of the movements of the right leg, the lower line the time of application of the current. This experiment affords direct proof that there are inhibitory centres in the cord, or else that the ganglionic motor cells of the cord are directly inhibited by peripheral impulses.

In 1869, Dr. T. A. Chaperon proved that, in small doses, quinine caused in the frog a lessening in the reflex activity, which is relieved by high section of the spinal cord. The only explanation of this fact, which has been abundantly confirmed, is that the section has removed from the motor centres of the cord the influence of the stimulated inhibitory centres high up, and that therefore quinine is a stimulant to the inhibitory function of the cord. It is true that Dr. Sedgwick has combatted this theory, basing his opposition chiefly upon the fact which he discovered that atropine prevents the primary inhibition of reflexes by quinine.

It has, however, never seemed to me that the views of Sedgwick are entitled to much consideration; and the fact which he discovered is in accord with, and confirmatory of the theory of spinal inhibition. As first shown by Fraser, during recovery of the frog from atropine poisoning, there is a stage in which motor paralysis and

a reflex activity so excessive as to produce tetanus, coexist. The explanation of this as given by Fraser, has been proven to be incorrect by the experiments of Ringer and Murrell, whose views are summarized in the following passage taken from my Treatise on Therepeutics: "Drs. Ringer and Murrell believe that both the paralysis and the tetanus are due to a depressant action. The theory is that the normal cord has a power of resisting impulses received from the periphery, and especially of preventing their wide propagation among the spinal centres. During the first stage of the atropine poisoning it is supposed that the motor portions of the cord are so paralyzed as to be unable to form or propagate any motor impulse, and hence the general paralysis. Later on, however, the motor cells have so recovered themselves as to be able to generate impulses freely, although the resistive power of the cord is still in abeyance. Consequently a peripheral impulse plays as it were at will up and down the spinal cord, and instead of giving rise to a simple reflex action, gives origin to a series of reflex movements, involving all the muscles and constituting a tetanic convulsion."

It would seem, therefore, that atropine is a paralyzant; quinine, a stimulant of the inhibitory spinal function; and that one should antagonize the other is naturally to be expected.

The discovery of Sedgwick, that atropine brings back the reflexes arrested by quinine, is in verity a strong corroboration of the theory that the quinine acts upon the inhibitory apparatus. Holding, as I long have, that quinine is a stimulant and atropine a depressant of spinal inhibition, it occurred to me that if the choreic movements be due to weakness of the inhibitory centres of the cord, quinine should check the movements by strengthening the centres, whilst atropine should increase the movements by still further defining the centres.

I have made a number of experiments upon the action of quinine on the choreic movements in the dog, with results so concordant that it is certain that quinine, even

in small doses, does arrest the choreic movement. As evidence of this I offer to the Soceity the following tracing, which was made upon a revolving drum through a mechanical apparatus registering the movements of the paw of a choreic dog.

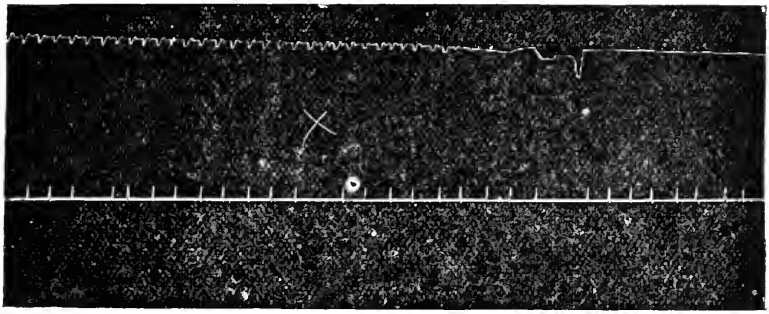


FIGURE 2. Lower line, seconds register. Upper line, register of choreic movement. Quinine injected at X.

With atropine I have had opportunity to make but a single experiment, not being able as yet to obtain another dog with chorea sufficiently pronounced to register itself well upon the drum. A tracing of this experiment I submit to you, and you will see that the results have been

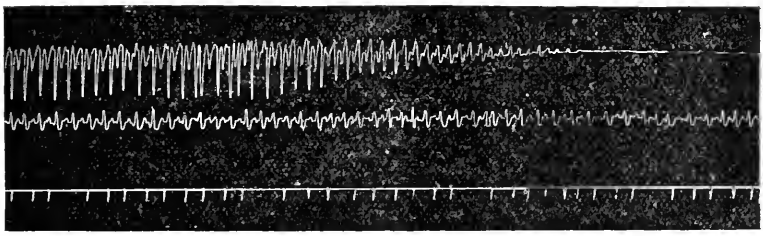


FIGURE 3. Lower line, second marker. Middle line, the register of choreic movement in the unpoisoned dog. The upper line shows same movements some minutes later after injection of atropine at position of cross. Quinine was intravenant injector.

remarkably decisive. The atropine quadrupled the extent of the choreic movements. You will notice, also, on

the tracing the registration of an immediate arrest of the movements produced by the injection of a small dose of quinine.[2]

Although in the choreic cord excessive movements occur as the result of the failure of inhibition, the partial, and finally it may be almost complete, paralysis which accompanies chorea shows that the motor cells themselves are functionally depressed, and indeed in my paper of 1885 it was shown that finally the motor cells, at least in canine chorea, undergo atrophic changes.

It is seemingly a priori, inevitable, that in chorea of a severe type the general muscular tone should be diminished, and that the reflexes, sharing in the general relaxation, should be less active, and in very severe cases even be abolished. The best explanation that has been offered of the phenomena of reinforcement of the knee jerks by voluntary movement, is that of the overflow; this widely accepted theory teaches that an influence destined primarily for a certain region of the cord has a tendency to spread itself throughout the cord. In the normal cord this overflow is more or less held in check by the inhibitory function of the spinal cord, and meets with resistance from the inhibitory function. A depression of the inhibitory function of the cord would therefore tend to diminish the resistance to the overflow, or in other words to increase the effects of the overflow. If the theory held in this paper in regard to the condition of the cord in the choreic movements be correct, we would expect to find in chorea, in the child, the knee-jerks lessened but the influence of reinforcement increased.

Knowing that my friend, Dr. Wharton Sinkler, had been engaged for some time in studying the knee-jerks in Sydenham's chorea, and knowing that his observations would be free from any possible influence by preconception, he having no knowledge of the inhibitory theory, herein propounded, I wrote asking him simply as to the

[2] Whilst this paper was going through the press a choreic dog having been secured it was found that atropine enormously stimulates the choreic movements.

condition of the knee-jerk in chorea, and received the following reply:

"I have examined the knee-jerks in the cases of chorea presenting themselves at the Infirmary for Nervous Diseases for several years. In the majority of cases the knee-jerk is diminished and in a few it is entirely absent except by reinforcement. Reinforcement in those cases where the knee-jerk is absent seems to produce excessive results, very strikingly shown in a patient at my clinic recently. This condition, I confess, I do not fully understand. One would rather expect exaggerated knee-jerks in chorea, as a result of the continuous muscular movement; supposing that these involuntary movements would have the effect of reinforcement. From this, one would infer that it requires a volitional act to cause reinforcement."

It is scarcely necessary to point out how these observations dovetail into the theory brought forward in this paper. As Dr. Sinkler says, the explanation of the reflex phenomena in chorea is extremely difficult with the older ideas of the origin of the choreic movement; that it is due to a simple excitement, of the motor cells. If, however, the choreic movement be of spinal origin, and if it be due really to a condition of depression of the spinal apparatus, no reinforcement is to be looked for from the choreic movement. It will be a matter of great interest to determine whether the choreic movement, so-called, which originate in the cerebrum, do or do not reinforce the knee-jerks. It seems to me a priori, therefore, that in cerebral chorea it will be found that the reflexes are reinforced by the motion.

As connected with the subject which I have been discussing, although I am not at present able to say what the exact relation is, I may call the attention of the Society to a discovery of Professor Reichert, of the University; namely, that it is possible to produce in the dog an artificial chorea. My friend, Prof. Chas. Richet, of the Ecole de Medecine, Paris, some years ago pointed out that if active artificial respiration be maintained, enormous

doses of strychnia injected into the veins of the mammal produce a complete paralysis. In studying this matter, Prof. Reichert has found that it is possible, by the use of the proper dose, to produce a condition in which neither the motor nor sensory nerves are able to respond to artificial stimulation, but in which the animal is violently choreic. The circulation is actively maintained but the reflexes are absolutely gone; so that violent irritation of the cornea elicits no response, and the most powerful faradization of the sciatic nerve produces no effect upon the circulation or upon the tributary muscles. Although sensory and nerve trunks are absolutely paralyzed, according to all ordinary tests, yet the motor nerve trunks still carry impulse from the centre when chorea occurs. I have found that quinine arrests these movements as it does the movements in the natural chorea of the dog. Atropine has not, in the various experiments which I have made, produced any distinct effect.

In concluding my remarks upon this subject, I want to distinctly say that the present communication has been made at this time partly on account of the interest of the subject, partly because I may have to wait months before I can get hold of another choreic dog, and partly because of the persistency of the secretary of the Society in his request for me to bring the matter before you. I do not hold myself in any way personally responsible for the correctness of the theory, and if further investigation shall disprove it, I will throw it aside as an old worn-out shoe.

The discovery of the power of quinine over the choreic movements has naturally led me to a trial of quinine as a remedy in chorea. I has, however, been only a few days since the present research was commenced. In the Clinic of the University Hospital, one case of marked chorea in a child presented itself. The child was cinchonized, and in two days the choreic movements had nearly stopped. As the case has not returned since it is probable that the relief continues.

Choreic dogs are frequently brought for treatment to

the Hospital of the Veterinary Department of the University of Pennsylvania, and speaking to Professor Pearson, he told me that at that time they had a very fine Irish setter suffering from chorea; that they had had a number of cases and so far failed to benefit any of them, and that he would try the quinine. Four grains of quinine have been given to the dog every three hours, at the present writing, for one week. The result has been almost complete disappearance of the choreic symptoms and extraordinary gain in power in the spinal cord. In the beginning of the administration the dog could scarcely stand; to-day he can walk some hundred of yards without difficulty. The future must, of course, decide whether these results are merely delusive coincidences, or whether quinine has curative power over chorea. Certainly, however, the quinine is worthy of trial.

Immunity to Tetanus.—Drs. Tizzoni and Cattani, continuing their well-known work in this line have published a note showing the activity of their antitoxen (Deutsche med. Wochensche, May 5, 1892), their experiments were made on a pair of rabbits and on white mice. The animals had from previous injections become so innerved that the injection of 3 cm. of a very highly toxic gelatine culture of tetanus was without effect. The young of the rabbits, with one exception, when, about 6 weeks old received singly varying amounts of a highly toxic tetanus culture from $\frac{1}{10}$ to $\frac{1}{2}$ a drop. The first two young rabbits showed no after developments. The third showed only local tetanic symptoms which disappeared after a short time. A fourth rabbit of the same age and weight quickly succumbed, from $\frac{1}{10}$ of a drop of the same culture with exaggerated symptoms of tetanus.

When the two young rats were a month old, one received an injection of $\frac{1}{20}$ of a drop of the same culture, the other $\frac{1}{20}$ of a drop, neither developed any symptoms although a mouse of the same age and weight which had not been innerved succumbed to $\frac{1}{20}$ of a drop in 24 hours.

These results tend to show that immunity to tetanus may be given through the parents, at least when both male and female have been treated. J. C.

IDIOPATHIC MUSCULAR ATROPHY COMPLICATED BY MULTIPLE NEURITIS.[1]

By J. T. ESKRIDGE, M.D.,

Denver, Colo.

Professor of Nervous and Mental Diseases in the Medical Department of the University of Colorado, Neurologist to the Arapahoe County, to the St. Luke's, and to the Deaconess Home Hospitals.

THE case to which I wish to call your attention today is that of Miss A. R., aet. 46, Michigan, in Colorado nine years. She gives her family history as follows: Father died of slow paralysis, which finally affected speech and respiration. Knows of no other case of nervous disease in father's family. No nervous disease in mother's family. One brother, aged about thirty-five years, a tinner by occupation, has been a resident of the hospital for some time and is affected with progressive muscular atrophy of a peculiar type. One sister, aged about forty-nine, is living and apparently well. In the brother's case the paralysis and muscular atrophy affect both the upper and lower extremities, but mainly the upper. The patient was well up to her seventh year, when she was scalded by sitting down in a pail of boiling water. The parts were severely burned, and the accident seemed to produce considerable shock. She thinks she was not as well afterwards. She suffered from the ordinary diseases incident to childhood, but enjoyed fair health up to her seventeenth year, when she first noticed a weakness in the muscles of the legs, which she expresses as weakness of the knees. So far as she knows there was no apparent cause for this. The weakness was not accompanied with pain. During the next six years, the disease did not seem to make much progress, and does not seem

[1] A clinical lecture delivered at the Arapahoe County Hospital, Oct. 8, 1892. Stenographically reported by Miss Lottie M. Page.

to have been attended by much, if any, muscular wasting; and she was only inconvenienced by a tendency of the legs to give way occasionally after standing a long time. The arms as yet were not affected. In her twenty-third year, her legs suddenly refused to support her while she was going down stairs, and she fell a distance of about five feet, striking on her spine in the mid-dorsal region. She experienced pains in the small of the back, and some pain in the right shoulder. The latter, she was told, was injured. After this accident she was much more uncertain in her gait, so that she found it very difficult to walk. The muscles of the legs since have become quite weak and wasted. She suffered with little or no pain in the legs until about eight years ago, when a dull, aching, uneasy, nervous pain began. She has suffered more or less with sharp, shooting pains in the small of the back when trying to walk, or while being on her feet. She makes no complaint of the hands or arms.

Condition, November 15th, 1891: She is unable to stand or walk without assistance. There is marked foot-drop. She is unable to dorsally flex either foot. Plantar flexion very slight, an attempt to plantar-flex the right foot causes a slight dorsal flexion of the great toe The muscles of the legs below the knees are wasted, and flabby. She is unable to extend either leg at the knee. All muscles below the knees are paralyzed except a few fibres of the posterior tibial group. Flexors and extensors of the thighs are decidedly paretic, the extensors more so than the flexors, and this is more marked in the right than the left leg. Reflexes: Plantar: R., present only for the greater and adjacent toe; L., irritating plantar surface causes no movement of the toes, but slight inversion of the foot takes place. Ankle clonus, absent. Knee-jerks, absent. Inguinal reflexes, present. Epigastric reflexes present. Dynamometer, neither hand is able to move the indicator. No wrist drop. Extensors and flexors of the wrist, and biceps and triceps on both sides still retain slight power; greater on the right side. All reflexes in the arms absent. Tongue protrudes in median

line. No facial paralysis. Pupils normal in size, equal, and respond to light and accomodation. No paresis or paralysis of any of the ocular muscles. Measurements: Calf, R., 9 $\frac{1}{2}$ inches; L., 9 $\frac{1}{4}$. Thighs, R., 14 inches; L., 13 $\frac{3}{4}$. Fore-arms lax, R., 6 $\frac{3}{4}$; L., 7. In contraction, R., 7; L., 7 $\frac{1}{4}$. Biceps, R., 9 inches; L., 9 $\frac{1}{4}$. In contraction, R., 9 $\frac{5}{8}$; L., 9 $\frac{7}{16}$. Both deltoids fairly strong and but little wasted. The great pectoral muscles, inferior and superior fibres, are paralyzed for each of their separate actions, but superior fibres contract feebly in bringing arms across the chest, while the inferior, or costal, fibres, remain inactive. The pectoral muscles on both sides are greatly wasted. Each thenar eminence is considerably wasted. Hypothenar eminences nearly normal in size. No distinct wasting of any other groups of muscles of the hands, although the hands seem unnaturally small for a woman of her size. Right trapezius and serratus magnus muscles very weak and greatly wasted; while these muscles on the left side are fairly strong, and but slightly wasted.

Reactions to the faradic current: The anterior tibial and peronei muscles on both sides fail to respond to the strongest current. The posterior tibial group on each side respond feebly to a strong current. There is some lessening of muscular irritability to the faradic current in the muscles of the thighs. The muscles of the hands respond feebly to a strong current. Those of the arms and shoulders respond better, but not normally. As no galvanic battery is at hand, the muscles can not be tested by this current.

There is slight tenderness over the spines of the first and second lumbar vertebræ. She complains considerably of pain in the back and posterior portion of the chest, but of none in legs or arms. No tenderness over the nerves of legs or arms.

Tactile sense is absent in each leg, from a point just above the knees down, including the feet, but is present and apparently normal in all other portions of the body.

Pain sense is present throughout the body, and seems

acute in the anæsthetic areas, but normal in other portions of the body. Posture sense in feet is absent, but present in legs and arms. Localization sense is perverted in legs below the knees. A pin prick in one leg is spoken of as occurring in the other leg, at a point corresponding to the point irritated, a condition known as allocheiria. Pressure sense lessened in legs below the knees. All forms of sensation normal in hands, arms and trunk. Vision, hearing and taste normal. Smell absent.

October 8th, 1892. We will re-examine the patient to-day, and compare her condition with the results of the examination made nearly a year ago.

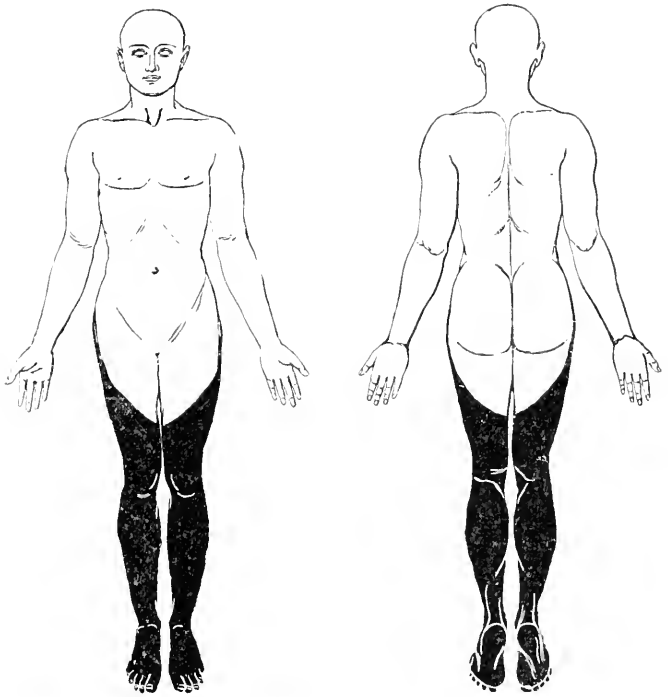
There is marked foot-drop, with inversion of both feet. All the muscles below the knees are completely paralyzed and greatly wasted. She is unable to extend or flex either leg at the knee. When she endeavors to extend the legs at the knees there is perceived a feeble contraction of a few muscular fibres, but it is too weak to move the leg. The flexors of the knees are a little stronger than the extensors, but their strength is insufficient to move the legs more than a few inches even when the feet are lying on the bed. The flexors and extensors of the thighs are exceedingly weak, but they are stronger than the thigh muscles that should move the legs at the knees. The muscular wasting is considerable in the thighs, but not so great as in the legs. The hip muscles are wasted, but to a less extent than those of the thighs. She has not been able to retain urine well during the last two or three years, especially in coughing. There is no paralysis of the sphincter of the bowels. It is probable that the loss of control of the bladder is due more to prolapsus of the womb, from which she suffers, than to any paralysis of the sphincter of the bladder. There seems to be no dribbling of urine nor involuntary evacuation of the contents of the bladder, except during fits of coughing. The trunk muscles are not completely paralyzed, but they are weak, and she is unable to sit unless she receives some support. Extensors of each wrist are stronger than flexors, but both are weak. There is absolute paralysis

and considerable wasting of the muscles of the hands. Dynamometer, R., O; L., O. The biceps are fairly strong the triceps are much weaker. The deltoid muscles are not completely paralyzed but nearly so. Yet you observe that they seem abnormally developed. The pectoral muscles are very weak, and greatly wasted. The wasting in upper arm, with the exception of the pectorals is mainly below the elbows. I want to call your special attention to this point, as I shall consider it in trying to determine the nature of the paralysis. The muscles of the shoulders are fairly large, but are weak. The arm is large for a person who has been confined to her bed for years. The deltoids are exceedingly well developed, but have little strength. Her only pain in the limbs has been a sore feeling in the muscles; what is frequently called "muscular rheumatism." It is not a sharp, shooting, pain but simply a sore feeling. The pupils are equal and normal in size, and respond readily to light and accommodation. None of the ocular muscles are affected. The tongue deviates a little to the right. Plantar reflexes, knee-jerks and ankle clonus are all absent. Abdominal reflexes are present. Deep reflexes of the fore-arm are increased. Tactile, temperature and pain senses are absent throughout the shaded areas of the drawings.

Pressure sense is lessened, but present in the shaded areas and localization sense is absent. Posture sense is absent for knee and ankle joints. Vision, hearing and taste still remain unimpaired, but smell is absent as was found about one year ago.

Muscular irritability to the faradic current is much less than was found at the former examination. No response to the strongest current can be obtained in muscles below the knees, except in a few fibres that slightly move the great toe of the left foot in the plantar direction. The muscles of the thighs, hips and arms, only feebly respond to a very strong and painful current. During the last year wasting in the muscles of the legs and arms has increased considerably, and it has been most pronounced in the muscles below the knees and

elbows; muscular weakness has become very much more marked, and electrical irritability has greatly lessened; anæsthetia has extended well up the thighs, and loss of pain and temperature senses have become absolute in the anæsthetic areas. From the extreme weakness of the deltoids and some other muscles that still appear but little wasted, it is probable that a pseudo-hypertrophic change is going on in certain muscles.



Let us inquire into the nature of the disease from which our patient is suffering.

A bilateral brain lesion, a chronic myelitis, a spinal pachymeningitis, a polio-myelitis or a multiple neuritis, may give rise to sypmtoms somewhat similar to those presented by the patient before us.

Brain lesions, as a rule, are unilateral, but there are exceptions to this rule of course. There is, in the hospi-

tal, a case, which I will bring before you in a week or two, with a bilateral lesion of the brain, producing paralysis on both sides of the body. When the lesion is in the brain, the muscles of the face are affected and speech is interfered with; if the lesion is vascular in nature it usually comes on more or less suddenly; and it may affect deglutition. These symptoms are all absent; besides, brain lesions do not cause great muscular wasting with flaccidity of the muscles and reactions of degeneration. We can exclude brain lesion as the cause of the symptoms which this woman presents.

Can we exclude chronic myelitis? Chronic myelitis gives rise to paralysis, muscular wasting, loss of faradic irritability of the muscles and anæsthesia, with disturbance of all other sensory phenomena in the parts affected. These are the main symptoms from which the patient before us is suffering, but in chronic myelitis, affecting the cord as high as the cervical region, there are other symptoms which are absent in this case, and the general symptoms are differently associated from what we find them in the patient before us.

In chronic myelitis, extending above the lumbar enlargement of the cord, but involving the lumbar and cervical enlargements, we should have contractures of the muscles of the arms, of the trunk, and possibly to some extent of the legs, although the leg muscles might be flaccid if the lesion in the lumbar enlargement were very severe; the arms and trunk would present sensory disturbances as well as the legs; anæsthesia would be found around the anus, and over the greater portion of the external genitalia, if the feet and legs, below the knees, were anæsthetic, and the sphincters of the bladder and anus would be affected. It is evident, then, that chronic myelitis will not account for the symptoms which we have studied to-day. All the symptoms of chronic myelitis are present in a modified form in chronic spinal pachymeningitis when it is sufficiently severe to give rise to such absolute paralysis as we find in the patient before us; so that we may also exclude this disease.

Is the disease one of chronic polio-myelitis (spinal progressive muscular atrophy)? In favor of this we have gradual wasting and weakness of the voluntary muscles, beginning in the legs, and later involving the arms and trunk muscles, but against chronic polio-myelitis we find marked anæsthesia, and other sensory disturbances in the legs; besides we find here heredity well marked, not of a neurotic taint, but of a characteristic form of progressive muscular wasting. The father died of some disease attended with great muscular wasting, and a brother is suffering from paralysis of the arms, in character, very much like that presented by his sister, save that her paralysis first manifested itself in the legs and is now attended with sensory disturbances. The tendency to a family disease, whose characteristic is progressive muscular atrophy, will justify the diagnosis of idiopathic muscular atrophy. But in this disease there are no marked sensory disturbances, such as anæsthesia, analgæsia, etc. How then can we account for the profound sensory affection presented by our patient? I believe the sensory disturbance is due to a distinct disease, chronic multiple neuritis, limited to the lower extremities.

It seems to me that we are justified in making the diagnosis of idiopathic muscular atrophy, associated with chronic multiple neuritis, the latter limited to the inferior extremities.

Idiopathic muscular atrophy, (muscular dystrophy), is an extremely infrequent disease, and to have added to it chronic multiple neuritis must be still more infrequent, as this is the first case of the kind that has come under my observation. This form of muscular atrophy is not due to change in the ganglion cells in the anterior horns of the cord, but it is supposed to occur in individuals, usually found in family groups, who have a developmental muscular defect.

The diagnosis of this form of muscular atrophy, from the spinal form, is based largely upon the family tendency of the disease, its beginning in childhood and involvement of the face muscles at times.

The prognosis is not good so far as recovery is concerned, but many cases become arrested in their progress for a number of years, and the more chronic the disease has been in its course the more likely is it to become arrested.

In the way of treatment but little can be done beyond keeping up a moderate amount of exercise for the affected muscles so long as exercise is possible, avoiding over exertion and exhausting influences, stimulating the nutrition of the muscles by massage and electricity, and paying attention to the general health of the patient.

Can Suicide Ever be Properly Termed Self-Murder?—G. Homan, M. D. (Medical Fortnightly, Oct. 1892.) While in a loose sense suicide may be spoken of as self-murder, still in a medico-legal sense this involves a manifest contradiction which will appear upon an analysis of the motives of murder, proper, and suicide. To constitute murder there must be the element of malice prepense and aforethought on the part of the murderer towards his victim. The motives impelling to murder may be various, involving the passions of revenge, jealousy, avarice, and the like, the perpetration of the deed depriving the victim of that which ordinarily he would give all his worldly possessions to save, namely, his life. Suicide is defined as the act of designedly destroying one's own life, committed by a person of years of discretion and of sound mind. The causes are at fundamental variance with the essence of murder. There cannot be at any time the malevolence toward self such as might lead to the deliberate killing of another. The act of self-destruction is committed to enable the suicide to escape from present or impending ills, and not to wreak vengence or bring suffering on himself. While there may be moral guilt attached to the suicidal act, yet such guilt from the common constitution of the human mind can never reach the grade of murder. Self-murder is a misnomer that should no longer stand in professional circles, but discarded as implying that which cannot be true. A. F.

THE STATE COLONY FOR EPILEPTICS IN NEW YORK.

The State Charities Aid Association, continuing its successful efforts of last season in behalf of epileptics, and in accordance with the recommendation of the State Board of Charities in its recent report to the Legislature, has caused a bill to be introduced into the Assembly for the establishment of a State Colony for dependent epileptics, following in some respects the plan of the Colony for Epileptics, in Bielefeld, Westphalia.

The poorhouses and almshouses cannot give such cases proper care, and the Superintendents of the Poor unite with the State Board of Charities, and the State Charities Aid Association, in asking the Legislature to make suitable provision for epileptics in a State Institution.

It will be remembered that the State Charities Aid Association secured at the last session of the Legislature the passage of an act providing for the appointment of a Commission for the selection of a site and plan for an Epileptic Colony in this State.

The Commission, consisting of Messrs. Craig, Letchworth and Walrath, of the State Board of Charities, made their report to the Legislature early this month, recommending the purchase of a fine tract of land, about 1,800 acres, situated in the Genesee Valley, Livingston County, and now owned by the Sonyea Society of Christian Believers, with buildings thereon.

This property is admirably adapted for the objects in view, as is fully shown by the Report of the Commission. The land is extremely fertile, there is a fine water supply, the climate is healthy, and the buildings, which include a church or chapel, schoolhouse, a structure suitable for a hospital, a laundry, dining hall, and numerous cottages for dwellings and shops, besides extensive barns and stables, are just what will be needed in the Colony.

These 1,800 acres and the buildings upon them can be purchased for the moderate sum of $125,000, and can be made ready for occupancy at but little additional cost.

The bill asks for an appropriation of $150,000 for the above purposes.

The Colony is to be controlled by a Board of nine Managers appointed by the Governor and confirmed by the Senate.

The establishment of such a colony will be an incalculable blessing to the five or six hundred dependent epileptics now scattered through the poorhouses and almshouses of the State, and to a very large number of poor and indigent epileptics outside the poorhouses, offering them a chance of education and employment in trades and industries and in agricultural life. It is intended to make the Colony self-supporting so far as practicable.

From an economical point of view a great opportunity is offered the State, and from a humane point of view, a still greater.

In the Colony, epileptics will receive special and scientific care, and let us hope that at some future time a cure for this dreaded disease may possibly be found, as one beneficent outcome of the establishment of this Colony.

The following is the bill which has been drafted by a special Committee, of the State Charities Aid Association, composed of

MRS. GERTRUDE S. RICE, *Chairman.*
PROF. CHARLES F. CHANDLER,
MISS LOUISA LEE SCHUYLER,
JUDGE HENRY E. HOWLAND,
HON. JOHN M. BOWERS *and*
FREDERICK PETERSON, M. D.

STATE OF NEW YORK.

No. 459.

IN ASSEMBLY,

February 3, 1893.

Introduced by MR. FARQUHAR—read once and referred to the committee on ways and means.

AN ACT

To establish an epileptic colony.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SONYEA COLONY.

Section 1. There shall be established in Livingston County in this State, a colony for epileptics, to be known as the Sonyea Colony.

OBJECTS OF SUCH COLONY.

§ 2. The objects of such colony shall be to secure the humane, curative, scientific and economical treatment and care of epileptics, exclusive of insane epileptics, to fulfill which design there shall be provided, among other things, a tract of fertile and productive land, in a healthful situation, with an abundant supply of wholesome water, sufficient means for drainage and disposal of sewage and sanitary conditions; and there shall be furnished, among other necessary structures, cottages for dormitory and domicilary uses, buildings for an infirmary, a school house and a chapel, workshops for the proper teaching and productive prosecution of trades and industries; all of which structures shall be substantial and attractive, but plain and moderate in cost, and arranged on the colony or village plan.

MANAGERS OF THE COLONY.

§ 3. There shall be a board of nine managers of the Sonyea Colony, seven of whom shall be men and two of whom shall be women, appointed by the governor, by and with the advice and consent of the senate. Two of said managers shall be well-educated physicians; and all of them shall be citizens of the State, and residents, respectively, as follows: One in each of the eight judicial districts of the State, with one additional manager for the city and county of New York; but no manager shall reside in the town where said colony is located, or in Livingston County. The full term of office of each appointed manager shall be eight years, after the first appointments; and the term of office of one of such managers shall expire annually. To effect such order of expiration of terms of managers, the first appointments shall be made for the respective terms of eight, seven, six, five, four, three, two and one years. Appointments of successors, and of persons to fill vacancies occuring by death, resignation or failure in attendance at meetings, shall be made without unnecessary delay. Failure of any manager to attend in each year the whole of two stated meetings of the board, shall cause a vacancy in his office. The managers shall receive no compensation for their services, but shall be allowed their reasonable traveling and official expenses, when duly verified and approved by an auditing committee of the board, and duly presented to the treasurer of the colony for payment.

LAND.

§ 4. The board of managers within sixty days of their appointment, shall submit to the attorney-general the land contract with option in the State, reported to the legislature by the State Board of Charities at this session, and an official search and abstract of the title of the tract of land described in said contract, containing eighteen hundred acres, more or less, lately occupied and owned by the United Society of Christian Believers, situated in Livingston County; and if such title be approved by the attorney-general, and certified by him to be good and free from incumbrance, the board of managers shall, within thirty days thereafter, accept a good and sufficient deed of conveyance of said tract of land to the State, to be approved by the attorney-general; and thereupon the treasurer of the State, on the warrant of the comptroller, shall pay therefore, as hereinafter provided, the consideration of one hundred and twenty-five thousand dollars, with proportionate reduction for deficiency, if any, in the quantity of land, which is assumed in said contract to be at least eighteen hundred acres for said purchase price. Provided, that if such title shall not be approved, or such deed with a good title free from incumbrance cannot be secured, the board of managers shall, as soon as practicable, report the facts to the legislature.

BUILDINGS AND IMPROVEMENTS.

§ 5. Upon securing the conveyance of said tract of land to the State, with the approval of the attorney-general as aforesaid, the board of managers shall immediately put the premises thus conveyed into proper condition for reception of patients; and shall receive them gradually and as rapidly as practicable; and for such uses and purposes, shall utilize the present buildings and improvements upon said premises, and adopt a general design including the same and the recommendations of the State Board of Charities in its said report, and subsequently from the beginning to the end make all buildings and improvements subserve such design and recommendations and true economy.

DONATIONS IN TRUST.

§ 6. The managers may take and hold in trust for the State any grant or devise of land, or any gift or bequest of money, or other personal property, or any donation, to be applied, principle or income, or both, to the maintenance and education of epilepties and the general uses of the colony.

STATE BOARD OF CHARITIES.

§ 7. The board of managers of the Sonyea Colony shall annually, on or before the first day of November, for the preceding fiscal year ending September thirtieth, report to the State Board of Charities the affairs and conditions of the colony, with full and detailed estimates of the next appropriation required for maintenance and ordinary uses and repairs, and of special appropriations, if any, needed for extraordinary repairs, renewals, extensions, improvements, betterments or other necessary objects; as also for the erection of additional buildings needed by reason of overcrowding, and in order to prevent the same, or to meet the need of sufficient accomodations for patients seeking admission to the colony; and the State Board of Charities shall, in its annual report to the legislature, certify what appropriations are, in its opinion, necessary or proper. The said colony shall be subject to the visitation and supervision, and to the general powers of the State Board of Charities.

POWERS AND DUTIES OF MANAGERS.

§ 8. Five members of the board of managers shall constitute a quorum for the transaction of business. The board shall have the government

of the patients, officers, employees, inmates and inhabitants of the colony, and the general direction and control of all the persons, property and concerns of the colony not otherwise provided for by law; including the purchase of supplies and of raw materials for the trades and industries of the colony, and the sale and disposal of the manufactured product and produce of the land, through its officers or agents, and the supply of necessary assistance to educate and profitably employ the labor of the patients; and shall take charge of the general interests of the colony, and see that its general design is carried into effect, and everything done faithfully and according to the requirements of the legislature and by-laws, rules and regulations of the colony. The managers shall elect from their number a president and a secretary, and may secure a seal. Documents and papers may be attested by the secretary with or without a seal; and, when attested under seal, shall be received in evidence as if duly acknowledged before an officer authorized to take acknowledgments of deeds. The managers shall establish such by-laws as they may deem necessary or expedient for regulating the appointments, powers and duties of officers, teachers, attendants and assistants; for fixing the conditions of admission, treatment education, support and discharge of patients; and for conducting in a proper manner the business of the colony; and they shall ordain and enforce a suitable system of rules and regulations for the internal government, discipline and management of the colony. The managers shall maintain an effective inspection of the affairs and management of the colony, for which purpose they shall meet at the institution at least twice in each year, at such times as the by-laws shall prescribe, provided that their annual meeting shall be held on the fifteenth day of October. A committee of three managers, to be appointed by the board at the annual meeting thereof, shall visit the colony once in every month, and perform such other duties and exercise such other powers as shall be prescribed in the by-laws or directed by the board. The board shall keep in a bound book, to be provided for the purpose, a fair and full record of all its doings, which shall be open at all times to the inspection of its members, the members and officers of the State Board of Charities, and all persons whom the governor or either house of legislature may appoint to examine the same.

OFFICERS OF THE COLONY.

§ 9. The board of managers shall appoint, outside its members, two officers, namely: A superintendent of the colony, who shall be a well educated physician and a graduate of a legally chartered medical college, with an experience of at least five years in the actual practice of his profession, including at least one year's actual experience in a general hospital, and who shall be certified as qualified by the civil service commission after a competive examination; and a treasurer, who shall reside in the county of Livingston, and shall give an undertaking to the people of the State for the faithful performance of his trust, in such penal sum and form, and with such sureties as the comptroller shall approve. Said officers and each of them may be discharged or suspended at any time by the said board, in its discretion. The superintendent shall appoint a steward and a matron, who, with the superintendent, shall constantly reside in the colony, and he shall employ an experienced and competent bookkeeper and such teachers, attendants and assistants as he may think necessary or proper economically and efficiently to carry into effect the design of the colony; and he shall prescribe their several duties and places, and fix their compensation; and he may, at any time, in his discretion, suspend or discharge any of them. The board shall determine the annual salaries and allowances of the superintendent, steward and matron, not exceeding, in addition to maintenance supplies, the following sums for salaries: Four thousand

dollars to the superintendent; fifteen hundred dollars to the steward; one thousand dollars to the matron; and the board shall determine the annual salary of the treasurer of the colony, not exceeding two thousand dollars. Such salaries and allowances shall be paid quarterly, on the first days of October, January, April and July, each year, by the treasurer of the colony, on presentation of bills therefore, audited, allowed and certified, as prescribed in the by-laws.

DUTIES OF SUPERINTENDENT.

§ 10. The superintendent shall be the chief executive officer of the colony, and subject to the supervision and control of the board of managers. He shall discharge the following, among other duties:

1. Oversee and secure the individual treatment and personal care of each and every patient of the colony while resident therein, and the proper oversight of all the inhabitants thereof.

2. Have the general superintendence of the buildings, grounds and farm, with their furniture, fixtures and stock, and the direction and control of all persons employed in and about the same.

3. Give, from time to time, such orders and instructions as he may deem best calculated to induce good conduct, fidelity and economy in any department of labor or of education, or of treatment of patients.

4. Maintain salutory discipline among all employes, patients, and inhabitants of the colony, and enforce strict compliance with his instructions and uniform obedience to all the rules and regulations of the colony.

5. Cause full and fair accounts and records of the entire business and operations of the colony, with the conditions and prospects of the patients, to be kept regularly from day to day, in books provided for that purpose.

6. See that such accounts and records shall be fully made up to the first days of April and October in each year, and that the principal facts and results, with his report thereon, be presented to the board at its semi-annual meetings.

7. Conduct the official correspondence of the colony, and keep a record or copy of all letters written by himself and by his clerks and agents, and files of all letters received by him or them.

8. Prepare and present to the board, at its semi-annual meetings, a true and perfect inventory of all the personal property and effects belonging to the colony, and account, when required by the board, for the careful keeping and economical use of all furniture, stores and other articles furnished for the colony.

9. Keep a record of all applications for admission of patients, and enter, in a book to be provided and kept for that purpose, at the time of admission of each patient to the colony, a minute, with the date, name, residence of the patient, and of the persons on whose application he is received, with a copy of the application, statement, certificate and all other papers received relating to such epileptic patient, the originals of which he shall file and carefully preserve, and certified copies whereof he shall forthwith transmit to to the State Board of Charities.

DUTIES OF TREASURER.

§ 11. The treasurer, among his other duties, shall perform the following:

1. Have the custody of all moneys, mortgages and other securities and obligations belonging to the colony.

2. Keep a full and accurate account of all receipts and payments, in such form as directed in the by-laws, and such other accounts as shall be required of him by the managers.

3. Balance all the accounts on his books on the first day of each October, and make a statement thereof, and an abstract of all the receipts and payments of the past year; and within three days thereafter deliver the same to the auditing committee of the managers, who shall compare the same with his books and vouchers, and verify the same by a following comparison with the books of the superintendent, and certify the correctness thereof to the managers at their annual meeting.

4. Render a quarterly statement of his receipts and payments to such auditing committee who shall, in like manner as above, compare, verify, report and certify the result thereof to the managers at their annual meeting, who shall cause the same to be recorded in one of the books of the colony.

5. Render a further account of the state of his books, and of the funds and other property in his custody, whenever required by the managers.

6. Receive for the use of the colony any and all sums of money which may be due upon any obligations or securities in his hands belonging to the colony; and any and all sums charged and due to the asylum for the support of any patient therein, or for actual disbursements made in his behalf for necessary clothing and traveling expenses; and any and all sums of money due to the colony.

7. Prosecute an action in the name of the people of the State to recover any sum of money that may be due or owing to the colony from all resources; including the bringing of suit for breach of contract between private patients, or their guardians, and the managers of the colony.

8. Execute a case and satisfaction of a mortgage, judgment or other lien in favor of the colony when paid, so that the same may be discharged from record.

9. Pay the salaries of the superintendent, the treasurer, the matron and the steward of the colony, and of all employes duly appointed as aforesaid, and the disbursements of the officers and members of the board as aforesaid. The treasurer shall have power to employ counsel, subject to the approval of the board of managers.

DESIGNATION AND ADMISSION OF PATIENTS.

§ 12. There shall be received and gratuitously supported in the colony, epileptics residing in each judicial district, who, if of age, are unable, or, if under age, whose parents or guardians are unable to provide for their support therein; and who shall be designated as State patients. Such additional number of epileptics, whether of age or under age, as can be conveniently accommodated, shall be received into the colony by the managers on such terms as shall be just; and shall be designated as private patients. Epileptic children shall be received into the colony only upon the written request of the persons desiring to send them, stating the age, place of nativity, if known, Christian and surname, the town, city or county, in which such children respectively reside, and the ability of their respective parents or guardians or others to provide for their support in whole or in part, and if in part only, stating what part; and stating, also, the degree of relationship or other circumstances of connection between the patients and the persons requesting their admission; which statements, in all cases of State patients, must be verified by the affidavits of the petitioners and of two disinterested persons, and accompanied by the opinion of a qualified physician, all residents of the same county with the epileptic patient, and acquainted with the facts and circumstances stated, and who must be certified to be credible by the county judge or surrogate of the county; and such judge or surrogate must also certify, in each case, that such State patient is an eligible and proper candidate for admission to the colony. State patients, whether of age or under age, may also

be received into the colony, upon the official application of a county superintendent of the poor, or of the commissioners of charity or overseers of the poor of cities having such officers. It shall be the duty of the superintendent of the poor in every county, and of the overseer, commissioner or board of commissioners of every city having supervision of the poor, to furnish annually to the State Board of Charities, a list of all epileptics in their respective jurisdictions so far as the same can be ascertained, with such particulars as to the condition of each epileptic as shall be prescribed by the said State board. Whenever an epileptic shall become a charge for his or her maintenance on any of the towns, cities or counties of this State, it shall be the duty of all overseers or charity commissioners, or other officers of the poor of such city, and of the county superintendent of the poor, and of the supervisors of such county, to place such epileptic in the said colony. Any parent, guardian or friend of an epileptic child within this State may make application to the overseer or charity commissioner or board of commissioners or other officers having charge of the poor of any city, or the superintendent of the poor of any county, or the board of supervisors or any supervisor of such county where such child may be, showing by satisfactory affidavit or other proof, that the health, morals, comfort or welfare of such child may be endangered or not properly cared for if not placed in such colony; and thereupon it shall be the duty of such overseer, charity commissioner, poor officer, superintendent of the poor, or supervisor, or board of supervisors to whom such application may be made, to place such child in the said colony, provided that in all cases not properly coming under section thirteen, relating to the support of State patients, the board of supervisors shall provide for the support of such cases, and may recover the same from the parents or guardians of such children. In the admission of patients, preference shall always be given to the poor or indigent epileptics or the epileptic children of poor or indigent persons, over all others; and preference shall always be given to such as are able to support themselves only in part, or who have parents able to support them only in part, over those who are able, or who have parents who are able wholly to furnish such support.

SUPPORT OF STATE PATIENTS.

§ 13. Each indigent patient and each patient who is the child of indigent parents received into the colony as aforesaid, shall be provided with proper board, lodging, medical treatment, care and tuition; and shall be denominated State patient; and the managers of the colony shall receive for each of such patients so provided for, the sum necessary for such provision and purpose, not to exceed the sum of two hundred and fifty dollars per annum, the intent of this act being that the colony shall be self-supporting so far as practicable; which payments, if any, shall be made by the treasurer of the State on the warrant of the comptroller, to the treasurer of the said colony, on his presenting the bill of the actual time and number of patients in the colony, signed and verified by the superintendent and treasurer of the colony, and by the president and secretary of its board of managers. The supervisors of any county from which such State patients may have been received into the colony, shall cause to be raised annually, while such patients remain in the colony, the sum of thirty dollars, for the purpose of furnishing suitable clothing for each of such State patients; and the same shall be paid to the treasurer of the colony, on or before the first day of April of each year.

THE SUPPORT OF PRIVATE PATIENTS.

§ 14. The superintendent of the colony may agree with any epileptic who may be of age, or his committee or guardian, or with the

parents, guardian or committee of any epileptic child, or with any person, for the entire or partial support, maintenance, clothing, tuition, training, care and treatment of such epileptic in the colony, on such terms and conditions as may be prescribed in the by-laws or approved by the managers. Every parent, guardian, committee or other person applying for the admission into the colony of an epileptic who is or whose parents or guardians are of sufficient ability to provide for his support and maintenance therein, shall, at the time of his admission, deliver to the superintendent an obligation with one or more sureties, to be approved by the superintendent and treasurer, in such manner and penalty as the managers shall prescribe, to the effect that the obligors will pay to the treasurer of the colony all sums of money at such time or times as shall be so agreed upon, and remove such epileptic from the colony, free of expense to the managers within twenty days after the service of the notice hereinafter provided for. If such epileptic, his parents or guardian are of sufficient ability to pay only a part of the expenses of supporting and maintaining him at the institution, such undertaking shall be only for such partial support and maintenance and for removal from the institution as above mentioned; and the superintendent may take security by such obligation, or in his discretion by note or other written agreement, with or without sureties, as he may deem proper, for such part of such expenses as the epileptic, his parents or guardians are able to pay; but such exercise of discretion shall be subject to the approval of the treasurer and a committee of the managers, in a manner that shall be prescribed in the by-laws. Notice to remove a patient shall be in writing, signed by the superintendent and directed to the epileptic, his parents, guardian, committee or other person upon whose request the patient was received at the colony, at the place of residence mentioned in such request, and deposited in the post-office at Sonyea, or any post-office in Livingston county, with the postage prepaid.

DISCHARGE OF PATIENTS.

§ 15. The superintendent of the colony, with the approval of the managers or of its committee duly empowered, shall have power to discharge patients, provided: that no epileptic patient shall be returned to any poor-house, directly through a superintendent of the poor, or otherwise. In case a patient, not an epileptic, shall be sent to the colony, through mistaken diagnosis of his disease, or other cause, and there received, such patient shall be returned to, and the traveling expenses of such return shall be paid by the person who sent him or her to the colony. Should an epileptic patient become insane, and be so certified as prescribed by the statute, such patient, if a State patient, shall be sent to the State hospital of the district of which he was a resident just prior to his admission to the colony, or, if a resident of New York, to the asylum of that county, or, if a resident of Kings to the asylum of that county. Said State patient shall be sent to said State hospital, or county asylum, in a manner prescribed by the State Commission in Lunacy, at the expense of the State, and any State hospital or county asylum to which said patient is to be sent may be required, by and under the regulations made by said commission, to send a trained attendent to bring the patient to the hospital or asylum. In all cases there shall be provided a female attendant for every female patient. The bills for the reasonable expenses incurred in the transportation of State patients to and from the State hospitals, or asylums of New York and Kings counties, after they have been approved in writing by the State commission in lunacy, shall be paid by the treasurer of the State on the warrant of the comptroller from the funds provided for the support of the State hospitals. In case any insane patient, his relatives, guardians or friends desire that he may become

an inmate of any State hospital situated beyond the limits of the district of which he was formerly a resident, or outside of New York and Kings, if a resident of either of those counties, and there be sufficient accommodation in such State hospital to receive him, he shall be received there upon the same grounds and terms, and the same in all respects as are or may be at any time provided by law respecting transfers of other insane persons. Private patients, who may become insane and are so certified, as prescribed by law, shall be committed, subject to the regulations of the State Commission in Lunacy, to such institution for the insane as may be designated by such patient, his or her relatives, guardians or friends, all traveling and other expenses of removal to be paid by them. After any patient has been delivered to the managers or officers of any of said hospitals or asylums, the care and custody of the managers of the colony over such insane person shall cease; and after any patient shall, as aforesaid, be so certified to be insane as prescribed by law, such patient shall come under the supervision of the State Commission in Lunacy.

APPORTIONMENT OF STATE PATIENTS.

§ 16. Whenever applications are made at one time for admission of more State patients than can be properly accommodated in the colony, the managers shall so apportion the number received, that each county may be represented in a ratio of its dependent epileptic population to the dependent epileptic population of the State, as shown by statistics furnished by the State Board of Charities.

NOTICE OF OPENING OF COLONY.

§ 17. So soon as the colony shall be ready for the reception of patients, it shall be the duty of the board of managers officially to notify the county clerks and the clerks of the boards of supervisors of the respective counties of the State, and the secretary of the State Board of Charities; and to furnish said clerks of the counties and of the boards of supervisors with the suitable blanks for admission and entrustments of epileptics to such colony.

APPROPRIATIONS.

§ 18. The sum of one hundred and fifty thousand dollars, or so much thereof as may be necessary, is hereby appropriated for the purposes of this act, out of any moneys in the treasury not otherwise appropriated. The treasurer of the State shall, on the warrant of the comptroller, pay to the treasurer of the board of managers of said colony, such sum as may, from time to time, be required for the purchase of land, improvement and betterments, erection of buildings and furnishing the same, heating, lighting and ventilating the same, and putting the lands and buildings into proper condition for the reception of patients, not to exceed one hundred and twenty-five thousand dollars for the purchase of the land as hereinbefore provided, and not to exceed twenty-five thousand dollars for such other purposes, provided, that such purposes and all requirements upon which such payments shall be made, shall be certified to the comptroller by said board of managers, in writing, specifying the items, the purposes for which the said sums are required, and be verified by the affidavit of the superintendent and treasurer of the colony, and of the president and secretary and majority of the said board of managers.

§ 19. This act shall take effect immediately.

Asylum Notes.

By FRANK P. NORBURY, M.D.

Jacksonville, Ill.

Fife and Kinrose, District Asylum, Scotland.—Twenty-sixth Annual Report.—In a former Annual Report reasons were put forward for hoping that the admission rate had reached its maximum, and that, while no decrease could be looked for, a further rise might not take place. The conditions which swell the admission are still effectively at work; the Blue-book recently issued by the General Board of Lunacy for Scotland refers to the marked increase of pauper lunacy all over the country, and ascribes cause to; 1st. The widening of medical and public opinion, as to the degree of mental unsoundness, which may be certified to be lunacy, and as such to require care and control. Thus, cases of epilepsy, senility and mild imbecility, which formerly would not have been classed as insane, are now often put on lunatic roll; 2nd. growing unwillingness to keep insane relations at home, due greatly to the public not tolerating peculiarities of conduct, which make an insane person more or less repugnant to his neighbors; 3rd. Institutional care is more appreciated, and therefore more frequently resorted to, than formerly. It is not unfairly resorted to, however, as scrutiny of admission lists show.

New Hampshire Asylum for the Insane, n-Annual Report for 1892.—The lunacy law in New Hampshire went into operation nearly three years ago. A final amendment which took effect January 1, 1892, gave the Board of Lunacy—power to commit to the Asylum, any deserving resident of the State, for medical treatment. The State thus claims the right of supervision over all the insane persons within its limits, and also possesses the authority to discharge any such persons from custody if there is no further need of detention and signifies its willingness to defray all of remedial treatment in such deserving cases as the Board of Lunacy

may send to the Asylum. This law is eminently just and beneficent and reflects credit upon those who enacted it.

It is just, because experience in our own, and other countries, has lead to the conviction that the insane are deserving of the strong protecting arm of the State for treatment, as well as for the preservation of their legal rights. Under this law the Asylum becomes, therefore, the remedial insane hospital of the State.

Missouri State Lunatic Asylum No. 2. St. Joseph, Mo.—Extract from Pathologist's Report.—A Study of Sub-Dural Hæmatoma, or Pachymeningitis Hæmorrhagica Interna Chronica, by F. C. Hoyt, M.D. Three cases with histories, autopsies and pathological findings are reported, from the study of which, the following deductions are made: 1. That the disease known as "pachymeningitis hæmorrhagica interna chronicha," is not a disease of the dura-mater primarily, and not necessarily at all. The name is therefore a misnomer, and the simpler term, subdural hæmatoma should be substituted.

2. That the condition is due primarily to a paralysis or loss of the vaso-motor tonus, associated with structural changes in the cerebral vessels, particularly those of the pia-mater.

3. That hæmorrhage may and often does, take place in the substance of the dura from the cause stated, but that its vacular supply and anatomical structure render it improbable that these hæmorrhages play any part in the formation of sub-dural hæmatoma.

4. That the hæmorrhage occurs from the vessels of the pia-mater primarily, forces its way without difficulty through the upper cobweb like layer formerly called the arachnoid, escaping into the sub-dural space. The extravasated blood becomes organized, new vessels are formed, and these assist in furnishing the recurring hæmorrhages.

5. That the inflammation of the internal surface of the dura-mater is secondary and due to the irritation of the extravasation, and then is not general, but occurs only in patches where organic union has taken place.

Extract from the Report of the Pathological Department, of the State Hospital for the Insane, Norristown, Pennsylvania, 1892.—Atrophy of the motor speech centre. S. H. aged 28, single, female. Family history good; no insanity. Patient's previous health, physical and mental, good. Present attack began

in March 1889. Onset gradual. First symptom was great mental depression. Became incoherent in speech and eratic in action. There were occasional marked remissions in the symptoms. On admission to the Hospital she was melancholy; had delusions. She was unconscious of her mental condition. She had occasional headaches, always when menstruating and usually accompanied by nausea. There was no anæsthesia paræsthesia, localized pain, paralysis, convulsive or choreic movement, tremor or contracture. The knee-jerk was present, al so slight clonus. She died ten months after admission into the Hospital. She would at times refuse food, became very excitable and walked about partially with an expression of apprehension and terror. The cause of death was phthisis.

Autopsy was devoid of special interest; excepting on the left hemisphere of the brain, in the region of the operculum, there was a depression about the size and shape of a walnut. It was bounded anteriorly and superiorly, by the anterior portion of the temporo-spheroidal of the lobe; its floor was made by the island of Reil. Below it was open. The ascending frontal and parietal convolutions escaped, except the lower-most part of the former. The atrophied portion, also involved a large part of the inferior frontal convolution, including the operculum and the most anterior part of the temporo-spheroidal lobe. It included the motor speech centre. The remaining main fissures and convolutions were normal, except the entire brain was small, weighing but 43 oz. The cerebellum was small in correspondence with the cerebrum. The halves were symmetrical.—*Remarks.*—The gross lesion of the brain found post-mortem could scarcely have stood in any casual relation to the attack of insanity from which the patient suffered during the last few months of life. The point of interest in this case is the absence of aphasia, notwithstanding the atrophy of the motor speech centre. Unfortunately we are unable to tell whether the lesion originated during fœtal life, or at, or after birth. It is highly improbable that it occurred after the faculty of speech was developed. At all events, the right brain either from the beginning on, performed the motor speech function of the left, or assumed it after destruction of the proper centre in the latter. The occurrence of this has, of course, been proven many times, but the comparative rarity of lesions of the brain as localized as in this case, renders it worthy *to be* placed on record.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

CLINICAL.

The Prognosis of Chronic Alcoholism in the Light of its Pathology.—Thomas Barlow, M.D., F.R.C.P. (The Medical Chronicle, Jan. 1893) believes that the results of clinical pathology give a reasonable basis for a more hopeful view of the possibilities of recovery than the one which we commonly adopt. He draws attention to the main features of that manifestation of chronic alcoholism, viz: peripheral neuritis, in search of any clue as to lines on which improvement might be looked for in any attempt at repair in other organs. His working hypothesis is this, that alcohol in concentrated forms given over varying periods acts as a definite poison leading to an irritative overgrowth of connective tissue and certain amount of degeneration of normal tissue elements, but that when this poison is withheld and a chance given to the living organism, though there may be for a time a tendency to the extension of connective

tissue change by continuity of structure, yet that extension is limited and that subsequently the normal tissue elements tend to be restored. The removal of degenerated myelin and the absorption of young connective tissue is he considers no more wonderful than the absorption of provisional callus round a fractured bone. He further says, we know that lead, mercury, etc., may produce results on the peripheral nerves exceedingly like those produced by alcohol and just as with alcohol if the dose of poison be too severe, death may ensue; but it is equally true that if the irritant noxa be withdrawn and food assimilated there is a tendency to complete restoration. In the recovery of alcoholic neuritis he considers the great factor to be, (1) the withdrawal of alcohol, (2) the administration of food, (3) time and the natural tendency to elimination and repair. With respect to other results believed to be brought about by chronic alcoholism, he says, there is no doubt that its existence makes the outlook much more serious in many acute and chronic diseases and it often makes a great difference as to chances of recovery. But we have attributed too much to its influence in the etiology of other diseases, especially to kidney disease and disease of the large and middle arteries. It is, he considers a most significant fact that in a large number of cases of alcoholic cirrhosis of the liver there is no albumen in the urine. But if alongside of chronic alcoholism there are other existing causes of degeneration, as valvular disease, or atheroma or granular kidney, then, he says, it is futile to expect that in such cases merely taking away stimulants will cure. A. F.

Beri-Beri.—(W. Duncan Scott, M.D., Edinburgh. The Practitioner, May, 1892.) We may attribute this disease, consistently with all available evidence, to a blood change, with symptoms due to the presence of an alkaloidal substance and an excessive acidity of the blood. The mode of production of this substance has not been ascertained. While it is possible that beri-beri is caused by a change, *per se*, in the constitution of the blood, resulting in the formation of a specific poison, it is equally, if not more probable, that this poison is the product of a micro-organism which finds in the blood, after exposure to certain climatic and meteorological conditions, a suitable *nidus*. All the conditions under which beri-beri occurs are favorable to the supposition that an ascomycetes (Lacerda) which may be in the soil, or the food (rice or fish) is the real cause of the disease. But

others attribute it to a diplococcus (Peckelharing) a bacillus (Ogata), a spirillum (Taylor). This micro-organism may, so long as it exists only in the blood, cause wet beri-beri. It generates a poison which acts like muscarine and originates an excessive acidity along with disordered action of the sweat-glands and kidneys. At the commencement of the disease this poison may be eliminated by oxidation by means of iron or by improved general wet abolism. In later stages it is best neutralized by potash and ammonia, and it may be excreted by stimulation of the urinary tubules, while its specific action on the blood vessels is counteracted by atropine, and œdema prevented. The accumulation of this poison may also be checked by restoring the sweat-glands to activity. After a more prolonged infection a chronic neuritis is set up, accompanied by paræsthesia and anæsthesia and by paresis of the various peripheral nerves of the phrenics, vagus, etc. In these later stages this neurites is very similar to that caused by poisoning with carbon bisulphide, alcohol, etc., and the noxious substance no longer causes any symptoms of blood degeneration. The treatment then required is only that of neuritis and debility. Microscopically the author saw in the popliteal nerve of a case of dry beri-beri an interstitial infiltration consisting of a few scattered foci of small cells, showing abundant nuclei, but not of sufficient extent as to be pronounced interstitial neuritis. The dorsal spinal cord of another case showed a similar appearance. There was also congestion of the vessels of the kidney and the secreting epithelium showed cloudy swelling and some fatty degeneration. In neither case was it possible to see a micro-organism or microphyte. A.F.

Hydatid of the Brain.—Ll. D. Parey. (Australasian Medical Gazette, Aug., 1892.) A boy nine years old began to complain of dimness of vision, giddiness and headache. Gradually the headache became more severe, were paroxysmal and referred to the frontal and apical regions, and he frequently vomited food. Later, hæmiplegia and total blindness appeared about the same time. The patellar reflexes were diminished. No ankle clonus. The pupils widely dilated and insensible to light. Both optic discs atrophied, with veins enlarged and arteries contracted. There was a peculiar hollow note on pecussing the scalp over the upper part of the Rolandic area, one and half inches to the right of the median line. Operation was performed and the cyst re-

moved, but he died nineteen days later. It was found that the cyst had occupied the medullary centre of the right hemisphere. A. F.

Erythromelalgy.—(Gerhardt, Deutsch. Med. Wochenschr., Sept. 29, 1892). The patient presenting this interesting neuroses was a needle woman 44 years old, who had suffered for many years from other nervous manifestations such as vertigo, migraine, bradycardia, etc. The first manifestations of erythromelalgia, pain in the fingers and toes showed themselves suddenly in the night and were accompanied by vomiting and headache. From this time the pain was constant. On examination the hands appear red and swollen, they sweat easily and profusely. Accompanying this there is great thickening of all the end and middle phalanges of both hands and feet with the exception of the left thumb. Generally the skin was dark red or bluish red, but when the pain was very severe it assumed a hydrangea color. The matrix of the nails appeared yellowish red. The swollen parts presented a very intense hyperalgesia. The fingers were always held in a position of semiflexion and attempts at farther flexing or extending them was very painful. The acuteness of the sense of touch in the affected parts was very much blunted. The musculature of the upper extremities was flabby and in parts there was considerable desqumation of the skin. In addition to these the patient presented other symptoms commonly associated with neurasthenia.

It is interesting to note that the patient was a needle woman as it is thought that such occupations play quite an important rôle in the causation of the disease.

The condition was apparently unamenable to treatment as iodides, arsenic, electricity, etc., had been used without effect. Slight amelioration seemed to follow the use of antipyrine.

Gerhardt after describing his case takes a short historical retrospect of erythromelalgia and its relationship to other neuroses.

Although the disease was first spoken of by Graves in 1843, attention was particularly called to it by the work of Weir Mitchell. This last named author is inclined to the opinion, or at least was when his paper was published in the American Journal of Medical Sciences, July 1878, that the lesion of the disease is in the spinal cord. Most recent writers on the subject attribute it to more plausible pathological conditions such as a perineuritis or even a

neuritis. Although this neurosis ordinarily presents the form such as the above case, Gerhardt believes it possible to distinguish three varieties.

I. An angio-spastic form of Nothnagel.

II. A form which expends its manifestations along the sensory nerves without external manifestation.

III. An angio-paralytic form, recognized under the head of erythromelalgia.

It is scarcely possible to recognize this classification as it would seemingly include all those manifestations commonly described under the heading of paræsthesia, or akroparæsthesia and the vaso-motor neuroses, and although there is scarcely any doubt that all these affections have a certain relationship regarding their origin, they can hardly be said to be different manifestations of a similar condition depending for their clinical differences on degrees of intensity. J. C.

The Association of Tabes Dorsalis and Diabetes.—(Guinon and Souques, Arch. de Neurol. Vol. xxii, No. 66). The authors record the following cases: A case of tabes in which the mother had diabetes. A case of tabes in which the son had diabetes. A family of three in which the eldest son, who was healthy, had a child who suffered from diabetes, and the younger one had tabes dorsalis. In another case the father had diabetes and the son had tabes. In another the mother had diabetes and the son had tabes. In another family the father had diabetes, the daughter tabes, and the son diabetes. The last given is a case in which the father had diabetes and the son tabes. The authors give likewise an explicit account of the relations of tabes to insanity. J. C.

A Case of Myxœdema, with Psychical Disturbance, Treated with Injections of Thyroid Secretion.—(Dr. de Boeck, Jour. de Sci. med. de Buexelles, 1892. Med. Rundschau, Heft 2–93). The experience of the author entails, to the highest probability, if not a positive proof, of the theory of Hosse and Eodard. The case related is that of a young woman, of twenty-four years, who had suffered since about the tenth year with myxœdema. The genital organs were undeveloped and menstruation had not appeared. The disease was complicated by mental disturbances, insomnia, anxiety, stupidity, and lastly dementia. From the 3d of January to the 28th of May, he made twenty-eight injections, the shortest interval being three days. From the third injection very visible hardening of the tissue was ob-

served, with disappearance of the œdema and loss of nine kilograms of weight. Improved intelligence, though somewhat clouded, followed; the vascular condition of the skin became as in the normal state; pleasure in life quickened and she recognized the purpose of the treatment; she was no more fretful. It appears, therefore, that myxœdema has a deep influence upon other organs as well as the skin. The disturbance, after removal of the thymus in dogs, proves the final effect upon the nervous system.

The author deplores that unexpected circumstances prevented the continuation of his experiments. F. P. N.

PATHOLOGICAL.

Nystagmus.—(H. W. Moyer, M. D., North American Practitioner, Nov. 1892.) A study of this symptom shows that it occurs in a variety of conditions, the more important of which are: 1. Congenitally defective vision, microphetalmus, coloboma, etc. 2. Congenital defect in the motor nervous apparatus without impairment of vision. 3. Occasionally in functional nervous disorders. 4. As an essential condition disconnected from all other diseases of the nervous system. 5. In certain occupations, notably colliers, who work with the eyes in a constrained position. In these cases the trouble seems to be related to the neural disorders of artisans and tends towards recovery on change of employment. 6. Associated with disseminated sclerosis, Friedreich's disease and rarely with locomotor ataxia. 7. Accompanying various pathological changes along the base of the brain and in the medulla and pons. A. F.

Enlargement of the Hands and Feet associated with vaso-motor perversions.—(Souques and Gasne, Noveau Iconograph, de la Salpetnere No. 5, 1892). These writers have recently reported an interesting condition simulating osteo-arthropathy hypertrophica pneumique occurring in a hysterical young man 23 years old. Two years after he had suffered from an attack of pleurisy he noticed that his hands and feet were getting very large and with this there was paræsthesia and vaso-motor disturbances, such as change in color, cyanosis, swelling and difficulty in using them. Repeated examinations showed no other constitutional defect, and the authors consider it one of the manifestations of hysteria, such as is the blue œdema of Sydenham which sometimes occurs with this disease. J. C.

On Cerebro Spinal Meningitis.—In contradiction of the view that sporadic cases of cerebro spinal meningitis are to be considered as due to a secondary infection produced by the migration of the coccus of a masked pneumonia, Obeke reports two cases of cerebro spinal meningitis (Berlin Klin Woch. No. 41, 1891) occurring simultaneously in two brothers, and leading rapidly to a fatal termination. The autopsy showed in a most pronounced form the pathological changes affecting the brain and cord and their envelopes characteristic of this disease. All of the other organs were carefully examined but nothing was found of etiological value, that would lead one to suspect that the disease was of secondary origin. The bacteriological examination revealed the presence of a definite microorganism in the arachnoid cavity. (Neurolog. Centrbl. No. 24, 1892). W. M. L.

Eye-strain and its relations to "Cerebral Hyperæmia," etc.—"The New York Medical Journal" of Dec. 3, 1892, contains a highly instructive article upon this subject from the pen of Dr. E. C. Seguin.

He believes that eye-strain, more especially that due to paresis or original weakness of the third and sixth cerebral nerves, produces many symptoms besides cephalalgia and migraine. He classifies these into the two following symptom-groups:

A. Symptoms of Paresis (insufficiency) of the Third Cerebral Nerves and Attached Muscles. Occipito-cervical pain and "distress" are the characteristic symptoms, sometimes the only ones. The pain, diurnal as a rule, and often not appearing until the patient has used his eyes in dressing, eating, or reading, is usually greatest between the occipital bone and the second vertebra. It is sometimes more "distress" than a true pain, and is often accompanied by sensations of stiffness and tightness. Frequently there is a sensation of weight or downward pressure on the back part of the head, with intermittent numbness and formication. The prolonged duration of these symptoms may lead to neurasthenia, insomnia, and a curious mixture of hysteria and hypochondria.

B. Symptoms of Paresis (insufficiency) of the Sixth Cerebral Nerves and Attached Muscles.

The most prominent symptom is dizziness, or "vertigo" as stated by the patient. Allied to this is nearly always a sense of indefinite fear. Various and peculiar sensations are felt in the head, such as a sense of fulness,

"as if the head would burst"; a downward pressure on the head, diffused or localized, "as if a stone or sharp stick" pressed upon it; a sense of constriction, general or cincture like; pain in various areas of the scalp; occasional feeling of numbness or of formication, also variously distributed. As these paræsthesia are increased by the sight of moving objects in a small or large space, we often meet with conditions like those termed agoraphobia and claustrophobia.

He further states that "the above mentioned symptoms, variously grouped and sometimes combined with others, have been appropriated by the advocates of a fanciful vaso-motor pathology," being termed "*cerebral hyperæmia*" (Hammond) and "*congestion of the base of the brain*" (Brown-Séquard). He does not recognize these so-called "diseases" but has always spoken of these symptoms as *cephalic paræsthesia*, awaiting the time when experience might lead to their more correct interpretation.

In the treatment of all such cases he recommends that, apart from the adaptation of proper glasses and prisms, in some the use of partial tenotomy, or myotomy, which are all of the utmost importance. The internal use of nux vomica, strychnine, and nerve tonics generally in cases of category A, and of cannabis indica, belladonna, atropine, conium, the bromides, antipyrine, etc., for cases of category B. In cases of both categories, rest, much more complete than is usually prescribed (even ocular rest by prolonged atropinization) and a general treatment, are necessary. W. M. L.

PSYCHOLOGICAL.

On the Knee-Jerks and Peripheral Neuritis in Diabetes.—R. T. Williamson, M. D. (London) M. R. C. P., (Medical Chronicle, Nov. 1892). According to the author's observations the knee-jerks in diabetes are absent in fifty per cent. of the cases. There is great variability of the reflex; thus a knee-jerk which has disappeared may return again and vary much in the course of time. The condition is influenced by age, the knee-jerks being lost in a greater proportion of cases under the age of thirty than in cases over thirty. In relation to general nutrition they appear to be more frequently absent in markedly wasted patients than in the well nourished. The loss of tendon reflex cannot be re-

garded as evidence of the nervous origin of the disease in any particular case, but must be looked upon simply as a complication. In a case of diabetes with gross lesion of the nervous system, the knee-jerks were present. Symptoms of neuritis are present more frequently in patients whose knee-jerks are absent, than in those whose knee-jerks are present. The positive pathological evidence explains the loss of knee-jerks in some cases, still in other cases, the clinical facts support the view of a toxic functional cause. Many things influence the course of diabetes, and it is difficult to come to a definite conclusion regarding the prognostic value of a single symptom. Still the author's statistics point to the absence of knee-jerks as a sign rendering the prognosis decidedly more unfavorable. The proportion of cases of diabetes that suffer from marked symptoms of peripheral neuritis is very small, but those presenting slight symtoms are common. The facts seem to indicate that the neuritis is not due directly to the presence of an excess of sugar in the blood. The changes in the nerves are probably due to the poverty of the tissue in water, the general disturbance of nutrition, acetone, or some unknown chemical substance in the blood. A. F.

ANATOMICAL.

On Disturbances on Hearing in Cerebro Spinal Meningitis, and their Anatomical Basis. —In the Zeitschrift f. Klin. med. Bd. xviii. Schwabach reports the case of a woman 32 years of age, who, as a result of cerebro spinal meningitis, became completely deaf in the right ear for all sounds. There was also pronounced deafness on the left side. In the left ear she could only distinguish the higher notes of the tuning fork such as C. II and C. IV.

The microscopical examination revealed: a turgid filling of the vessels in the course of the auditory nerve, and in all portions of the labarynth; purulent infiltration of the dural sheath of the auditory nerve; abundant extravation between the partly preserved mesial fibres and extensive destruction in its peripheral portion, especially before its entrance in the central stem of the bony cochlea (right, more than left). In addition to the bilateral inflammation of the labarynth, there was fibrinous purulent inflammation of the right tympanic cavity, while upon the left side it was in a state of complete preserva-

tion. From this it follows that the theory is untenable which assumes that in affections of the sound-conducting apparatus, there exists a special diminution of the deep tones, and in those of the sensory apparatus a diminution of the high tones. Further investigation showed extensive lesion of the superior coils of the left cochlea, while the changes in the inferior coil were only slight. This condition together with the absence of perception of the deeper tones favors Helmholtz's theory, according to which the nerve fibres in the region of the round window serve to promote the perception of the higher tones, while those situated in the superior portion are destined for the perception of deeper tones.

A case under Leyden's observation proves that acute otitis media may appear as the initial symptom of cerebro spinal meningitis. (*Neurolog Centrbl.* No. 24, 1892.) W.M.L.

THERAPEUTICAL.

The Diet in Epilepsy.—(G. M. Hammond, Merck's Bulletin, Dec. 1892). No absolute rules regulating the diet can be formulated which are equally applicable to all cases. Adults who have only suffered from a few seizures, merely need a warning not to overload the stomach and to avoid what experience has shown to be indigestable. When however, the disease has followed excesses in eating and drinking the greatest care is necessary to keep the intestinal tract free from irritation and a simple non-irritating diet is called for. The ideal diet for severe cases of epilepsy is one that contains small quantities each of proteids, fats, and carbo-hydrates. For this purpose skimmed milk alone should be used and continued until the patient has been from one to three months without an attack. In the functional epilepsy of infancy an improper diet plays a more conspicuous part in the etiology than all other sources of irritation combined. In such cases peptonized and sterilized skimmed milk is indicated, and should be continued until the age of four years. Even after this, milk should be the most important element of the diet until the seventh or eighth year. In organic epilepsy, such as results from pathological conditions within the brain, a careful and restricted diet should be maintained as long as the patient lives. Such cases are incurable, but the frequency of the attacks can be minimized by proper diet. The prognosis of the disease is materially

affected by the diet. The efficacy of medicines which diminish cerebral irritability may be totally inhibited by improper food. Hence in all cases except those in which the cerebral irritation seems to be at a minimum suitable diet must be considered a very important feature of the treatment. F. A.

The Treatment of Myxœdema.—In "The Practioner" Jan. 1893, T. McCall Anderson, M.D. records several cases of this disease which improved very markedly under treatment. His experience is corroborative of the good effects from iron, arsenic, pilocarpine, baths and frictions and he believes much may be accomplished by a line of treatment naturally suggested by the character of the symptoms, and by the circumstance that these patients suffer in cold and improve greatly in warm weather. The method of treatment recently introduced with such astonishing results, of administering the thyroid gland of the sheep or pig, or a fluid extract by the mouth or subcutaneous injection, is not antagonistic to the method of treatment just mentioned and the two can be carried out simultaneously. These injections he says, occasionally give rise to alarming symptoms, such as tonic spasm and loss of consciousness, especially if the remedy is not introduced very slowly. Abscesses are apt to result which interfere with the continuous administration of the remedy. All these drawbacks may be overcome by giving the extract by the mouth. He considers that it would be premature to speak positively with regard to the curative effect of this new remedy. That it gives great relief and dissipates all the unpleasant symptoms in a comparatively short time is now placed beyond doubt but the evidence so far tends to the conclusion, that after the treatment has been suspended for a time there is a tendency to a recrudescence of the symptoms. This however, we might reasonably expect and even if it is necessary to continue the treatment there appears to be no objections to resorting to the extract permanently. The discovery of this remedy the author believes may pave the way for similar discoveries in other fields. A. F.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held at the New York Academy of Medicine, Tuesday evening, March 7, 1893.

Dr. M. Allen Starr, President, in the chair.

CLONIC SPASM OF THE MUSCLES OF MASTICATION.

Dr. Frederick Peterson presented this case. The patient was a woman, aged 57. Six years ago she had all her upper teeth removed and artificial ones put in. The first set did not fit well, and a new one was substituted. The work about the mouth, and the necessity for keeping her mouth open for long periods of time while in the dentist's chair resulted in the development of this spasm. When she is sitting quietly, not using the jaw muscles, there is a continuous clonic spasm of the masseters, temporals, and pterygoids. The jaw opens and shuts slightly, and moves from side to side. She is tired and worn out trying to keep her teeth together. The chief difficulty, however, is when she attempts to speak; then the mouth opens widely and there is a sub-luxation of the jaw downwards and forwards from the glenoid cavity. During the first six months the mouth would not close at all, excepting at night, when the spasm relaxed.

Dr. Peterson said that while tonic spasm of the masticatory muscles, or trismus, is quite a common symptom, the condition presented in this case is very rare. As regards treatment, atropia, hyoscine, conium and electricity were used perseveringly without any special effect. Latterly, the sulphate of duboisine, in doses of $\frac{1}{200}$ of a grain, three times daily, has afforded much relief by quieting the spasmodic movements almost wholly at times. In addition, she wears an apparatus made especially for her which keeps the jaw closed, and allows her to talk between her teeth without the uncomfortable

tonic spasm of the depressors of the jaw, although the clonic movements of the masseters and pterygoids may keep on as before. The movements cease at night. The affection has lasted nearly seven years.

The PRESIDENT stated that he saw the patient four years ago. He confirmed Dr. Peterson's history of the case.

Dr. WILLIAM M. LESZYNSKY said he has seen a case of clonic spasm of both platysma, following prolonged work upon the lower jaw of the patient by a dentist. The spasm in that case only lasted three or four days. Slight spasm of the jaw muscles after dental operations is not uncommon.

A CASE OF RYTHMICAL SPASM OF THE EXTREMITIES.

Dr. EDWARD D. FISHER presented this case. The patient was a woman, aged 43 years. Previous history negative. The patient has always enjoyed good health. About one year ago she began to have these attacks of rythmical spasm of the extremities. The spasm is sometimes confined to one or both arms, or to the lower extremities, or the motion may involve all the limbs at the same time. The attacks come on by themselves and last about five minutes. A number of such attacks may occur during the day, or she may remain free from them for a day or two. The muscles are becoming more rigid and it is very difficult to bend the elbow or the arm. The woman's general symptoms otherwise are negative. She complains of fatigue. The muscles of the arm are becoming markedly developed. Various methods of treatment, hypnotism included, have been employed without apparent effect. Under hypnotism she had all four extremities moving violently. Her eye-sight is apparently normal. It seems to be impossible for her to control the spasm. There is no analgæsia. Dr. Fisher said he considered hysteria to be the basis of the attacks.

Dr. PETERSON, in reply to a question, said he did not think that duboisine would prove of much value in this case, which was probably hysterical.

Dr. MARY PUTNAM JACOBI referred to the cases of head jerking in children; the rythmical movements sometimes seen in such cases she considered rather analogous to those in the case presented.

ON INNERVATION AND THE FUNCTIONS OF THE SYMPATHETIC NERVES.

Dr. J. E. CULVER read a paper with this title. He reviewed at length the distribution and functions of the sympathetic nervous system, and traced the relationship between its disturbed innervation and the interference with the respiration, oxidation of the blood and other physiological processes.

BASEDOW'S DISEASE.

Dr. WILLIAM H. THOMSON read a paper on this subject. He began by stating that the progress of pathology often illustrates the disadvantage of the premature naming of diseases after some of their common or prominent symptoms, for further knowledge may show the disease to have much wider relationships than at first suspected, and in some cases exist without these symptoms being present. If such be the case, the symptomatic name may then operate to prevent a correct diagnosis. The name exophthalmic goitre has had much influence in preventing the recognition of Graves' disease in many instances, and still more in confusing the views of its pathology. In reading the numerous contributions on the pathology of this interesting affection, it is striking to note how predominately the conception of some textural lesion in the nervous system that would account for the exopthalmos and the goitre has diverted either the investigation or the speculation, in seeming forgetfulness of the fact that these symptoms are not essential to the affection, because they may be both present, with Dr. Graves' disease absent, or both absent with Graves' disease present. The safest rule to follow in pathological problems is to seek first for the most constant characteristics of a given complaint, rather than for the most obtrusive ones. Thus the most uniform condition in Graves' disease is what may be correctly described as a state of marked agitation: in many instances it is for a long time a purely physical state, not involving the mind or the spirits, and yet the patient acts as if greatly alarmed about something. This has led many writers to pronounce fright to a leading cause of the disease. We are thus at the outset diverted from the study of a truly characteristic condition to that of a most occasional element in the clinical history of the affection. While

fright may be the occasion of the first manifestation of chorea or of Graves' disease, a blow the occasion of the development of a mammary cancer, etc., it is only a hindrance to our progress towards a correct pathology of these diseases to put down any one of the varying occasions of their first manifestation as their cause.

Dr. Thomson then gave the histories of his last eight consecutive cases of Graves' disease in private practice. In none of these cases was fright or any other emotion an element of the clinical history. With two exceptions, they were unusually free from causes of mental strain or depression. Exophthalmos and goitre were wholly absent in one of these eight cases. Exophthalmos alone was absent in five. Goitre was absent in one, while in another it was only slightly present late in the disease. Both exophthalmos and goitre were marked only in one case. In all the cases there was pronounced tachycardia and muscualr tremor. Emaciation was marked in five and moderate in three. In four, imperfect inspiratory power was noticed.

The rapid heart action and the muscular tremor are the first symptoms to develop in this disease, and the last to disappear, and together they constitute the most invariable elements of the disease. Our attention, therefore, should be particularly directed to them as the most related to its pathology, and the most important practically, as the earlier the recognition of the disease, the better for the patient. As to its pathology, a paralytic lesion, involving the common nucleus of the glosso-pharyngeal, vagus and spinal accessory nerves, and extending to the neighboring vaso-motor centre in the medulla would account for the whole group of symptoms which make up the picture of Graves' disease. Simple irritation of the lower branches of the glosso-pharyngeal and the superior laryngeal nerves is sometimes accompanied by general muscular tremor. Such a bulbar lesion would also explain the tachycardia and the universal relaxation and throbbing of the systemic arteries. It would also explain the interference with the inspiratory expansion. Such a lesion would not, however, account for the exophthalmos or the goitre, and when we turn to pathological anatomy, we have no constant evidence of any textural lesion in the medulla, either of the above mentioned centers or of other parts. No characteristic anatomical change has yet been discovered which can be casually associated with the genesis of Graves' disease,

and we must look elsewhere for the origin of the malady. Here we may be aided by our clinical experience. Persistent diarrhœa is a common symptom in Graves' disease. In the cases referred to above, astringents and other drugs had very little effect in checking the diarrhœa, while a change of diet at once brought about an improvement in all the symptoms. Since 1880, Dr. Thomson said, he mainly relies on the dietetic treatment in Dr. Graves' disease, with such favorable results that he now has little doubt that a specific disorder of intestinal (in distinction from gastric) digestion is the primary factor in the genesis of this affection. While a structural lesion in the medulla which would account for the phenomena of Graves' disease is almost inconceivable without it sooner or later involving all the vital functions of that seat of life, yet particular functional derangements produced by toxic agents of intestinal origin are just what might be expected, for nothing is more characteristic than the narrowly selective operation of functional nervous poisons, which may go on for years, as in the case of opium, affecting certain functions without producing either progressive changes in them, or extension to other functions. One fact in Dr. Graves' disease which points much more distinctly to a digestive disorder than to a structural nervous lesion is that it occurs in women about ten times as often as in men. That the digestive apparatus in women is subject to special disorders is notorious. The speaker said he has not yet seen a severe case of Graves' disease in which diarrhœa was not, sooner or later, a pronounced symptom. As regards the diet in these cases, the amount of meat taken should be restricted, and milk, preferably in the form of matzoon, should be substituted. Medicinally, he employs the intestinal antiseptic remedies, and the tincture of stropanthus as a vaso-motor tonic.

Dr. E. C. SEGUIN said that while there are undoubtedly cases of Graves' disease in which one or two of the three prominent symptoms—the exophthalmos, the goitre and the tachycardia—are absent, he was inclined to believe that the reader of the paper had rather exaggerated the number of cases in which the principal symptoms are those relating to the circulation. Unquestionably, we see cases in which the only gross symptoms are the rapid heart action and the tremor, but these are comparatively rare. On the other hand, there are cases which present these symptoms to which

he should hesitate very much to give the name Graves' disease. It has appeared to him that in many cases of disease of the heart with dilatation or tachycardia, there is apt to be associated with it a muscular tumor and considerable nervousness. In arriving at a diagnosis of Graves' disease, there are other symptoms to assist us to which Dr. Thomson did not refer. One is the character of the pulse. The mere fact of the pulse being rapid is not in itself characteristic of Basedow's disease; it should possess a quality of tension and smallness which to the experienced finger is of value in making the diagnosis. Then again, the temperature of these patients is invariably raised, amounting to an increase of one-half to one degree F. in the axilla. In making a diagnosis of Graves' disease without the exophthalmos of the goitre, the speaker said he should wish to find, besides the tachycardia, the peculiar character of the pulse and the slight elevation of temperature. As to the pathology of the disease, Dr. Seguin said that any theory as to the location of the lesion in the central nervous system or in the medulla has failed to satisfy him. As to locating the general cause of the disease in the intestinal tract, as the author has ingeniously done, no positive conclusions can be drawn for the reason that the diarrhœa is by no means a frequent symptom in Dr. Graves' disease. He has observed in only a few cases. Furthermore, it does not resemble a fermentative diarrhœa; it is of a paralytic nature, with large, liquid, frequent evacuations. In conclusion, Dr. Seguin referred to the value of aconitia in treating the disease.

Dr. B. SACHS said he agreed with Dr. Seguin as regards the symptoms of the disease. He should hesitate to make a diagnosis of Dr. Graves' disease in a case in which both the exophthalmos and the goitre were wanting. What we do find with extreme frequency is that one of these two cardinal symptoms only is present, together with the characteristic arterial disturbance. Another symptom of the disease to which attention has lately been called is that the upper eye-lid does not follow the motion of the pupil downwards. This does not appear to be due to mechanical causes, but is an independent symptom. He has seen it present in a case where there was almost no exophthalmos. Severe diarrhœa he has found rarely associated with other symptoms of Graves' disease. A diarrhœa due to the condition of the larger intestines was present in some cases, and in these

he was struck by the peculiar fact that it did not appear to be exhausting the patient. In regard to the theory put forth by Dr. Thomson, we must remember that while putrefactive changes in the intestines are very common, exophthalmic goitre is a rare disease. Dr. Sachs said he has found the "rest treatment" extremely beneficial in treating this affection, the heart's action becoming better and the goitre diminishing in size. In addition to rest, he puts the patients on a light diet, principally milk and eggs.

Dr. GEORGE W. JACOBY said that in certain cases, where only one of the cardinal symptoms was present, it is often a difficult matter to draw the line between Grave's disease and some other form of neurosis. In undeveloped cases of Dr. Graves' disease, the "rest treatment" was particularly beneficial. As regards the ocular symptom, the failure of the upper lid to follow the pupil downwards, the patient has perfect control over the voluntary closure, but the reflex blinking of the lid is almost entirely lost. There may be loss of sensation of the cornea associated with it.

Dr. MARY PUTNAM JACOBI said that most authors referred to depressing emotions as a cause of Graves' disease. She mentioned three cases coming under her observation in which such antecedent cause was extremely obvious. In one of these, a very severe case, the patient was a woman, aged 22 years, whose marriage engagement was broken by the sudden death of her fiancé. She rapidly developed the three typical symptoms of Graves' disease, with intense anorexia and diarrhœa. She remained in a state of great prostration for six months, and subsequently recovered by marrying somebody else. Following her second pregnancy her symptoms reappeared. She was living at that time almost entirely on champagne, which seemed to greatly intensify the symptoms. The diarrhœa did not appear to add to her prostration. The patient was put entirely on a meat diet, and the pulse rapidly fell from 150 to 90 per minute, and she regained her strength. In another case, occurring in a woman aged 42 years, the symptoms appeared after prolonged family troubles. The third case referred to was also in a woman, a servant by occupation, who developed the symptoms after a prolonged nursing of her mistress, to whom she was much attached.

Dr. JOSEPH COLLINS said that if we could ascribe a

toxic origin to exophthalmic goitre, as suggested by Dr. Thomson, the prognosis of the affection would not be as it is. The speaker referred to certain experiments he has made on the thyroid in animals. Complete extirpation of the gland is almost invariably followed by death. This would controvert the idea that its function was a metabolic rather than a secretive one.

Dr. A. D. ROCKWELL said he was interested in Dr. Thomson's statement that only one or two of the cardinal symptoms were present in the cases narrated. As far as the speaker's observation goes, the three typical syptoms were usually present. He referred to the value of digitalis in cases where there is a weakness of the myocardium: he has found the drug very serviceable, in combination with iron, zinc and ergot. He also referred to the value of electricity: in order to do any good, the current must be sufficiently powerful. In reply to a question, Dr. Rockwell said that the diminished resistance to the electrical current in these patients is probably owing to the perspiration and to the better conduction due to the rapid circulation.

The PRESIDENT said he did not think that any explanation thus far given will cover all the cases of this disease, and it is doubtful that we will ever find a single explanation for any functional nervous disease. Different cases undoubtedly have a different etiology. In two cases of Graves' disease recently coming under his observation, a sudden fright was too immediate to be anything but causative. One of the patients, a woman, saw her baby fall from the second story window. She was immediately seized with palpitation, and within two weeks developed the exophthalmos and the goitre. She presents a very interesting symptom that has been referred to by Charcot, a sudden giving out of the limbs —ostasia. After such a collapse she is perfectly able to rise and walk away. In another case the symptoms suddenly developed in a patient after she had narrowly escaped being run over by a street car. Dr. Starr said he would follow Dr. Thomson's suggestions as to diet in these cases. Strophanthus he had found very valuable. Electricity has proven disappointing in his hands as a remedial agent in Graves' disease.

Dr. THOMSON, in closing the discussion, said that in his paper he did not intend to go over the entire symptomatology of Basedow's disease. Such occasional symptoms as the loss of the hair, pigmentation of the

skin, etc., he did not refer to all. Neither did he mean to imply that fright and depressing emotions are not repeatedly the occasion for the first development of the symptoms. We must try to separate occasions from true causes. The tremor of Graves' disease is characteristic; it is entirely different from the tremor of any cardiac affection he has ever met with. He did not maintain in his paper that there was any lesion in the medulla to account for these symptoms: he only meant to show that as no such lesion had been demonstrated, it lends strong light to the toxic theory. These poisonous ptomaines may act, by selection, on certain parts of the nervous system. The relapsing nature of Graves' disease is against the idea that they depend on a structural lesion.

In reply to Dr. Seguin, Dr. Thomson said that in those cases where we get a high tension pulse, it is associated with albuminuria. In Graves' disease there is a dilatation of the arteries throughout the body, and dilated arteries and a high tension pulse do not go together. As regards the temperature, the speaker said there is a slight elevation, such as we find in any serious neurosis, but it bears no proportion to the rapid heart action, and the affection may be essentially regarded as a non-febrile disease.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, January 23, 1893.

The President, Dr. FRANCIS X. DERCUM, in the chair.

Dr. H. F. HANSELL, read a paper entitled

THE POSSIBILITY OF THE EARLY DIAGNOSIS OF LOCOMOTOR ATAXIA FROM THE EYE-SYMPTOMS.

The eye symptoms of the earliest stage of tabes may be described under three heads, those arising from affections of the extrinsic muscles, of the pupil and of the optic nerve. A number of observations from clinical cases and pathological studies has been recorded to prove that partial or complete paralysis of any one of the straight or oblique muscles or the elevators of the lids of one or both eyes, is at times a fore runner of ataxia. The muscles most frequently affected are the external rectus and the levator palpebrarum giving rise to ptosis and crossed diplopia. A strong diagnostic feature between paralysis from tabes and that from other causes, is that in the former the paralysis is incomplete and transitory. In the late stages when the nuclei in the floor of the fourth ventricle become implicated in the sclerotic process the paralysis recurs and the condition known as ophthalmoplegia results. The cause of the transient paralyses is ascribed by a few writers to nuclear disease, but the majority incline to the view of a vaso-motor disturbance.

The pupils are studied with reference to their size and shape and their reactions. Interference with the conduction of the sense of light, with its preception by the vasal ganglia, with the nuclei in the floor of the fourth ventricle or their connecting fibres, with the cilia-spinal centre in the cord, or with the pupillary branch of the third nerve, or vaso-motor fibres of the sympathetic, will determine anomalies of the pupil. Myosis is a characteristic of the tabetic pupil and must be regarded as a vaso-motor paralysis originating in disease of the centre. Berger in an analysis of 109 cases of tabes, followed

through the three stages, declared that in all, the pupils were altered in size, and that this alteration was found in the great majority of cases, in the preataxic stage. The same writer and many others, have shown that the Argylle-Robertson pupil, not only is common in tabes, but is one of its earliest signs. A peculiarity of the contracted pupil of tabes is its medium dilatation to myonatics and the comparatively long time necessary for its return to its previous size.

Both myosis and the Argylle-Robertson pupil may precede altered locomotion and sensation by many years. The pupils may, also, be irregular in outline and unequally contracted.

The accomodation is seldom affected in the early stage. Two of the three cases briefly mentioned below have myosis and Argylle-Robertson pupils with no other spinal symptoms and showed other signs of tabes develop. They will furnish strong evidence in favor of the possibility ofdiagnosing that disease in its earliest stage, from the eye symptoms. The third case died from tabes eight years after myosis was first noticed.

The first sign of altered function of the optic nerve is limitation of the color field without narrowing of the field for white, deterioration of central acuteness of vision for form or opthalmoscopic changes. Later the field for white becomes concentrically limited, central vision declines, and the opthalmoscope shows the well known characteristics of non-inflammatory, incipient or advanced, atrophy. Emphasis should be laid on the superiority of the perimeter over the opthalmoscope in the early diagnosis of tabes. Dilatation of a retinal vein, which later returns to its normal calibre has been observed before evident involvement of the optic nerve. There is no doubt that incipient or even pronounced atrophy of the optic nerves may be a forerunner of tabes.[1]

CASE I. Mr. B., age 61.—Neurotic history. Pupils very small and have been so for ten years. L. slightly irregular in outline. Both respond to convergence but not to light. Four months ago he commenced to see double from a paresis of the L. external rectus. The double images were fused at my first examination by a prism of 12°, later by 30°, and, at my last examination, made two weeks ago, by 4°. The lower, nasal retinal

[1]The presence of inflammatory exudation from the iris must be excluded and the repeated observations necessary to estimation of size be conducted with the same degree of illumination.)

vein was dilated, but soon regained its normal calibre. The color fields were temporarily limited, optic discs normal in color and outline. No general symptoms.

CASE II. Mrs. V., age 55. Unilateral myosis and Argyll-Robertson pupil. Pain in lower extremities, no alteration of fields, no paralysis or incoordination.

CASE III. Mrs. G., age 60. Myosis, loss of color perception and night blindness preceding for eighteen months, spinal optic nerve atrophy. Death eight years after first examination, from tabes.

Conclusions:

1. Transient ptosis or external ocular paralysis may, be one of the earliest symptoms of locomotor ataxia.

2. The Argyll-Robertson pupil, inocular or binocular, may precede for a variable length of time the general symptoms of locomotor ataxia.

3. Idiopathic, non-inflammatory optic nerve atrophy may be the first manifestation of locomotor ataxia.

4. Transient ptosis or diplopia, Argyll-Robertson pupil, incipient optic nerve atrophy associated in an individual past middle life, of inherited neurotic tendency, are strong presumptive evidence of the first stage of locomotor ataxia.

DISCUSSION.

Dr. H. C. WOOD.—I should like to call attention to one point which I think has not been dwelt upon and that is that the Argyll-Robertson pupil is not rarely seen reversed; in other words, there is preservation of the ocular reflex for light and loss of the reflex for accommodation. I think that this is not so common as the true Argyll-Robertson pupil, but it frequently occurs and has not been much spoken of. It is probably as significant as is the Argyll-Robertson pupil of organic disease of the nervous system.

Dr. JAMES HENDRIE LLOYD.—Cycloplegia occurs in some forms of multiple neuritis which simulate tabes. It is also observed in post-diphtheritic paralysis. I do not think it is common, as Dr. Wood states, to have the reversal of the Argyll-Robertson phenomena in true tabes. I have, however, seen cycloplegia come on in one or two cases of multiple neuritis, post-diphtheritic, simulating tabes in some of the symptoms. This might be called, on hasty observation, a reversal of the Argyll-Robertson pupil, although of course it is not truly so.

I was struck by a reference in Dr. Hansell's interesting paper to a form of ophthalmoplegia, I think external, coming on with symptoms of migraine, in the early stage of locomotor ataxia. Charcot, in a clinical lecture, has reported a case of that rare form of disease, "migraine ophthalmoplegique." It occurs to me that there might be some connection between this migraine and late coming tabes, especially as it is claimed by some that migraine is not an altogether uncommon predecessor of tabes or even of general paresis.

Dr. WHARTON SINKLER.—My experience has been the same as that of Dr. Lloyd as regards the reversal of the phenomena of the Argyll-Robertson pupil. I have seen two or three instances of it in tabes, but I think that it is not often met with.

Dr. Hansell's paper has interested me greatly. I really think that when we meet with cases of transient diplopia or ptosis, we ought to suspect the on-coming of tabes. I saw only a couple of days ago a patient who is in an instance of the truth of what Dr. Hansell has said. The gentleman who even now has only incipient tabes, has myosis, absence of knee-jerk and slight incoordination, but he has no ataxic pains. He has, however, well-marked disturbances of sensation with loss of thermal sense. On inquiry, he told me that several years ago, he had attacks of diplopia which were attributed to indigestion. This was six or seven years ago, before the other symptoms of tabes were observed.

Dr. J. MADISON TAYLOR.—Some time ago, I showed to the Society, a boy with Freidreich's ataxia, in whose case, the pupillary symptoms were reversed. I do not know whether or not this has any significance in that form of ataxia. In looking over the literature, I find the pupillary symptoms of Freidreich's ataxia are rather irregularly stated. In this case they were absolutely reversed.

Dr. CHARLES K. MILLS.—Dr. Hansell has given an excellent resume of these pre-ataxic eye symptoms, and the only remark that I have to make is that perhaps too much stress might be laid on these ocular symptoms in making the diagnosis of future ataxia. This might be misleading. It is true that these symptoms do frequently precede this disease, but on the other hand, it is true that in a fair percentage of cases, one or more or all of the ocular symptoms which have been mentioned, may be the precursor of some other form of degenerative disease,

or indeed so far as the symptomatology is concerned may be the only clinical picture of the degenerative disease itself. While of course it is valuable to emphasize the importance of these symptoms, a word of caution should I think be given with reference to hastily making the diagnosis of coming ataxia from their presence. Myosis is seen in paretic dementia. It also occurs in pseudo-paretic dementia, of syphilitic origin, and also in some forms of multiple neuritis.

Dr. H. C. Wood.—I did not mean to be understood as saying that the reversed Argyll-Robertson pupil, but only that it was not very rare.

I recently reported in a clinical lecture to be published in *La Semaine Medical* a case in which the diagnosis rested partly upon the pupillary condition. The case, I believe, is one of a new form of locomotor ataxia crisis which I have proposed the name of ataxic lympho-pathy. The patient is a man with a long history of exposure to the elements as a boat captain. When 58 years of age, he was seized with a frightful pain in the left angle of the jaw. This was associated with great swelling. He consulted his family physician, who believed that there was going to be suppuration of the gland. The pain amounted to agony. In three or four days, however, the swelling subsided without leaving any trace. Shortly afterwards the man had a similar attack and this has been followed by repeated attacks with frightful pain, with swelling of the glands, this swelling subsiding in a few days and the gland apparently going back to its normal condition. as a result of a series of the attacks, however, the cervical glands have become slightly enlarged.

Without going into the details of the case, I found that the character of the pain and swelling indicated a neurotic origin and this led to the suggestion that possibly I had a form of ataxic crisis to deal with. I found myosis with reversed Argyll-Robertson pupil, complete loss of the knee-jerks and marked retardation of the sensation in the legs with pronounced parasthesia, and that during the last three years, the man had gradually lost the power of equilibriation. I do not see how this case can be looked upon as anything else but a case of locomotor ataxia with crises affecting the region of the lymphatic glands, with enlargment of these glands.

The President.—I should like to remark that the history of swelling and painful crises related by Dr. Wood is somewhat like that of the cases of Adiposis

Dolorosa, which I have reported, in which was swelling of the tissues and in which shooting and darting pains accompanied the pain. Afterward the swelling would somewhat, though not altogether, subside. It is possible that Dr. Wood's case might be explained on the theory of neuritis.

Dr. H. C. Wood.—In the case to which I have referred, there was no tenderness over the nerve trunks and there was evident enlargment of the lymphatic glands. Neuritis would hardly explain the loss in the knee-jerks, the retardation of sensation and the condition of the pupils.

Dr. H. F. Hansell.—With the reversion of the Argyll-Robertson phenomenon, I should look for a different pathology. The paralysis of the sympathetic fibres to the pupil from destruction of or pressure upon the cilio-spinal centre, is accepted I believe, as the cause of the Argyll-Robertson pupil. If the condition is reversed, we should have to explain it by disease of the nucleus of the iris in the floor of the fourth ventricle.

Dr. Lloyd's statement that paralysis of the accomodation is found in central diseases of the nervous system is true, but that fact does not bear upon the eye symptoms found in the earliest stages of the ataxia since the accomodation is seldom affected in that disease. The pupil, which has its sympathetic centre in the higher part of the spinal cord, is the only one of the muscles within the eye, commonly involved.

In conclusion, I wish simply to say that my paper was designated "the possibility," and that its conclusions are not absolute because a large material is hard to collect and the cases difficult to follow to their termination, for reasons that will readily occur to you. The association of the three symptoms, however, transient paralysis of the external muscles, Argyll-Robertson pupil and loss of green in the visual field, would warrant a careful study, and search for other symptoms of tabes.

Miscellany.

SECTION OF NEUROLOGY AND MEDICAL JURISPRUDENCE, AMERICAN MEDICAL ASSOCIATION.

The American Medical Association will meet at Milwaukee, Wisconsin, June 6th, 8th and 9th, 1893. A preliminary programme of the Section of Neurology and Medical Jurisprudence has been prepared and is appended, and it will be seen that the meeting promises to be one of great interest. The first session will be held on the afternoon of June 6th. Two sessions will be held June 7th and 8th, one in the morning and one in the afternoon. The last session will be held on the morning of June 9th. Papers will be accepted for the final programme until May 1st, but not later, as all titles must be sent to the Chairman or Secretary by this date in order to allow sufficient time for the preparation of the programmes for the meeting of the entire Association. If you have not yet indicated your intention to take part, you are earnestly requested to contribute a paper, to present cases, or to exhibit gross or microscopical specimens. It is desired by many of the members of the Section to have a dinner on one of the evenings of the meeting, the subscription to which will be three dollars. If you favor this proposition, please notify the Chairman or Secretary of your willingness to subscribe.

OFFICERS.

CHARLES K. MILLS, M. D., *Chairman*,
1909 Chestnut St. Philadelphia, Pa.
JAMES G. KIERNAN, M. D., *Secretary*,
834 Opera House Block, Chicago, Ill.

Executive Committee:

O. EVERTS, M. D. Cincinnati, Ohio.
H. N. MOYER, M. D., Chicago, Illinois.
JUSTIN E. EMERSON, M. D., Detroit, Michigan.

PARTIAL LIST OF PAPERS.

1. Dr. William Osler, Baltimore, Md.
Anorexia Nervosa.
2. Dr. Irving C. Rosse, Washington, D. C.
Evidences of Paranoia Gleaned from the United States Patent Office.
3. Dr. Harold N. Moyer, Chicago, Ill.
Acromegaly.
4. Dr. Henry A. Donaldson, Chicago, Ill.
On the Weight of the Brain.
5. Dr. Harriet C. B. Alexander, Chicago, Ill.
Paretic Dementia in Women.
6. Dr. Daniel R. Brower, Chicago, Ill.
Suggestions on the Treatment of Sclerosis of the Spinal Cord.
7. Dr. Archibald Church, Chicago, Ill.
I.—Occupation Neuroses Affecting the Muscles of the Neck.
II.—Syringomyelia.
8. James G. Kiernan, Chicago, Ill.
Malpractice in Insane Hospitals.
9. Dr. L. Harrisson Mettler, Chicago, Ill.
I.—Hemiparaplegia; Report of a Case Completely Recovered After One Year's Duration. II.—Aural Vertigo (Meniere's Disease.)
10. Dr. E. S. Talbot, Chicago, Ill.
Race Degeneracy and the Jaws.
11. Dr. G. F. Lydston, Chicago, Ill.
Remarks on the Theropeutical Use of Static Electricity.
12. Dr. T. H. McBride, Milwaukee, Wis.
Thoughts on the Causation of Insanity.
13. Dr. James J. Putnam, Boston, Mass.
Recent Discoveries and Observations Bearing on the Subject of Poisoning from Exposure to Arsenical Wall Papers.
14. Dr. Thomas D. Crothers, Hartford, Conn
American Inebriate Asylums.
15. Dr. E. D. Fisher, New York, N. Y.
Transverse Myelitis.
16. Dr. Landon Carter Gray, New York, N. Y.
What Should Constitute Legal Responsibility, in the Medical Sense, in Insanity.
17. Dr. Græme M. Hammond, New York, N.Y.
On the Proper Method of Determining Whether an Alleged Lunatic shall be Declared Legally Insane or Not.
18. Dr. Fredrick Peterson, New York, N. Y.
Care of Epileptics.
19. Dr. Bernard Sachs, New York, N. Y.
Syphilis of the Cord Simulating Tabes.
20. Dr. Thomas G. Morton, Philadelphia, Pa.
Some Medico-Legal Experiences in Railway Cases.
21. Dr. Wharton Sinkler, Philadelphia, Pa.
Some Points in the Weir Mitchell Rest Treatment.
22. Dr. James Hendrie Lloyd, Philadelphia, Pa.
A Study of the Gliomatous Process in the Spinal Cord. Illustrated by Microscopical Sections.
23. Dr. Francis X. Dercum, Philadelphia, Pa.
The Symptomatology of Cerebellar Tumor.
24. Dr. Charles A. Oliver, Philadelphia, Pa.
A Study of the Ocular Symptoms in Friedereich's Disease.
25. Dr. Hobart A. Hare, Philadelphia, Pa.
Has the So-Called Suspension Treatment of Diseases of the Spinal Cord Proved an Addition to our Therapeutics?

26. Dr. J. Madison Taylor, Philadelwhia, Pa.
I.—Notes on the Treatment of Exophthalmic Goitre.
II.—Insanito in Childhood.

27. Dr. Charles W. Burr, Philadelphia, Pa.
A Contribution to the Study of Friedreich's Ataxia.

28. Dr. D. D. Stewart, Philadelphia, Pa.
The Diagnosis of Lead Convulsions.

29. Dr. John B. Deaver, Philadelphia, Pa.
A Consideration of the Different Trigeminal Operations for the Relief of Pain.

30. Dr. Henry Leffmann, Philadelphia, Pa.
Experiences of a Chemist with Delusional Insanity.

31. Dr. Charles K. Mills and Dr. G. E. de Schweinitz, Philadelphia, Pa.
Hemianopsia and Certain Symtom-Groups in Sub-Cortical Lesions.

32. Dr. Charles K. Mills, Philadelphia, Pa.
Paranoia in some of its Medico-Legal Aspects.

33. Dr. Isaac N. Kerlin, Elwyn, Pa.
Early Recognition and Rational Treatment of Moral Imbecility.

34. Dr. Theodore Diller, Pittsburgh, Pa.
A Case of Sub-Cortical Cyst of the lower Part of the Ascending Parietal Convolution; Operation—Recovery.

35. Dr. Frank T. Norbury, Jacksonville, Ill.
Insanity of the Aged.

36. Dr. Annette McFarland, Jacksonville, Ill.
Gynecology in the Insane.

37. Dr. C. H. Hughes, St. Louis, Mo.
Nervous Aspects and Relations.

38. Dr. J. T. Eskridge, Denver, Col.
Case of Syphilis of the Pia, Simulating Tumor of the Brain; Mono-Spasm and Mono-Paresis; Operations; Death on the Third Day.

39. Dr. H. A. Tomlinson, St. Peter, Minn.
The Inadequacy of the Morbid Anatomical Changes Found Post Mortom to Explain the Manifestations of Insanity.

40. Dr. R. M. Phelps, Rochester, Minn.
Degrees of Responsibility as Found in the Insane.

41. Dr. C. B Burr, Pontiac, Mich.
Surgery in the Insane.

42. Dr. T. L. Wright, Bellefontaine, Ohio.
The Special Influence of Alcohol on the Body.

THE AMERICAN NEUROLOGICAL ASSOCIATION.

DEAR DOCTOR:

The Council of the American Neurological Association has decided that the Nineteenth Annual Meeting of the Association shall be held at Saratoga, N. Y., on July 25th, 26th, and 27th, 1893.

There will be two sessions daily, one from 10:30 A. M. to 1 P. M., the other from 2 P. M. to 6 P. M.

G. M. HAMMOND, M. D. *Secretary*,
58 West 45th Street, New York.

A PALATABLE PREPARATION OF SENNA.

Bartholow says that senna would be one of our best cathartics, "if it were not so disagreeable." This disagreeableness is not only removed but pleasantness is put in its place in that preparation of senna known as Syrup of Figs. It forms the active principle of that effective laxative, and, because of the pleasant taste of the combination, it has a large use in all cases where a general laxative is indicated.

The great contrast between the old dosing of castor oil, when there was almost open war declared in the home, and the modern method of preparing drugs to please the palate as well as to accomplish the desired result, is best appreciated by those of us who remember our childhood days, and now have children of our own. These thoughts come to us as we notice with what indifference a child or sensitive patient takes the laxative—Syrup of Figs. But we can assure our readers the results are far from indifferent.

In this connection it is well to observe, for it is a matter of no small importance to the public, that the highest courts in the land have decided the validity of trade-marks, trade-names, or trade-words, for it is the safest protection against the selling of worthless imitations and base frauds. For instance, a company places a most eligible preparation on the market and presents it to the public at a great outlay before the least profit is derived. These unscrupulous imitators place worthless combinations on sale and derive at once their share of the large sales which the energy and capital of the originators ensured. Soon, however, these worthless samples injure the sales, and a preparation which was originally a very desirable combination becomes known as uncertain and disappointing. Now a trade-mark or trade-word is a protection to the public from these evil designers. Take the recent case of the California Fig Syrup

Co. The United States Court of Appeals, which is the court of highest resort in such cases, rendered a decision on the 30th of January last, that this company had acquired a reputation for the excellence of this medicine under the name of "Fig Syrup," or "Syrup of Figs," and *they only* had the right to use this name in connection with a laxative remedy.

MICROSCOPES, OBJECTIVES AND ACCESSORIES.

Queen & Co. of Philadelphia, have just issued a clearance list of a great many valuable microscopes and their various accessories.

We would suggest to any who are interested to immediately send for this list and avail themselves of the advantages offered.

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Original Articles.

MODIFICATIONS OF RESPIRATION IN THE INSANE.[1]

By THEO. H. KELLOGG, M.D.,
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INSANITY is a widely varying manifestation of disease of nerve-centres. It frequently involves disorder of the motor, sensory, and trophic functions of the nervous system, as well as derangement of the mental faculties.

It would be strange indeed, in the midst of the turmoil of disturbances of sensation, motion, digestion, and circulation, which insanity often presents, if the function of respiration alone should remain intact.

The clinical fact is, that modifications of respiration in the insane are frequent, though their systematic description has failed to find its way into the text-books on insanity, so far as the writer is aware.

To facilitate the study of this subject the chief modifications of respiration in the insane have been tabulated.

[1]Read before the New York Neurological Society, February 7th, 1893.

TABLE OF MODIFICATIONS OF RESPIRATION IN THE INSANE.

GROUP A.

(*a*) Modifications in frequency.
(*b*) " depth.
(*c*) " rhythm.
(*d*) " sound.

GROUP B.

(*a*) Spasmodic expiratory modifications } Laughter, crying, sneezing, coughing, snoring.
(*b*) Spasmodic inspiratory modifications } Singultus, chasmus-laryngeal crises.

GROUP C.

Dyspnoic modifications.

Brief consideration will now be given to each of the subdivisions in the above arrangement.

In the first place then the frequency of respiration may have an average variation in accordance with the general form of the mental disease. Respiration as a rule is less frequent in complete states of mental depression and more frequent in fully developed states of mental exaltation.

In melancholia attonita it will sometimes sink as low as eight per minute, while in acute mania it may range as high as thirty, and in delirium acutum, and in certain epileptic and paretic maniacal exacerbations, it may even attain the rate of forty or fifty per minute.

In certain cases of terminal dementia with capillary stasis, in low forms of imbecility and cretinism and in idiocy there is often found a greatly diminished frequency of respiration.

Occasionally there is a well marked diurnal variation in frequency of respiration, which attains its maximum in the evening hours in phthisical and paretic insanity.

In organic dementia with gross brain lesions the respiration for brief periods may sink to the infrequent

limits of from five to ten per minute and this is also the case in cataleptic and ecstatic states.

The depth of the respiratory movements in the insane is likewise subject to modifications.

In pronounced melancholic states the inertia of the muscular extensor-groups extends in a measure to the respiratory muscles, and the respiration often becomes superficial, and contrasts strongly with the full breathing in maniacal conditions.

There is the same lack of full depth of respiration also in some stuporous forms of mental disease, and in numerous cases of dementia with vaso-motor paresis, blueish skin, cold extremities and feeble cardiac action.

Superficial respiration again is found in precordial panic, and in the final stages of maniacal exhaustion, in which it is one of the early prognostic signs of a fatal termination.

There is also the diminished depth of breathing from paralysis of respiratory muscles on one side in cases of dementia following hemiplegia, and in cases of malarial insanity with pleurodynia and intercostal neuralgia.

The insane also under the influence of delusions may in some degree for considerable periods of time voluntarily inhibit complete respiration just as on the other hand breathing may become deeper than usual from the violent and uncontrollable emotions to which they are all so subject.

In some cases of acute mania with great motor excitement and accelerated pulse rate there is a corresponding increase in the extent of the respiratory movements, and one of the protean manifestations in hysterical mania consists in a most exaggerated depth of respiration continuing for hours at a time.

The modifications of respiration in rhythm are not so often met with as those in depth and frequency but they are the more interesting on that account.

In insanity from gross brain disease, in feeble cases of senile dementia, and in general paresis there is sometimes found a considerable prolongation of expiration, while in

hysterical mania there is to be witnessed at times a decided lengthening of inspiration or in other cases a shortening of both expiration and inspiration, and an undue pause between the respiratory acts. There is furthermore among the insane occasionally either from powerful emotions or delusions a respiration voluntarily forced for a brief period followed by a pause, and then comes another sequence of exaggeration and suspension of breathing.

In hysterical insanity also there is in rare instances a remarkable rhythmical variation which consists in an exaggeration of all the respiratory movements for a few moments followed by a state of quiescence or actual apnœa, which is succeeded again by the increased breathing. These symptoms are quite distinct from the Cheyne-Stokes respiration, which although very exceptional in hysterical insanity, has, in the writer's observation, been several times present during the convulsive seizures of general paresis.

Something of the nature of Cheyne-Stokes respiration is also an occasional phenomon in the "status epilepticus," and in the final stage of delirium acutum among the insane. There is also in cataleptoid states an alternation of light and deep breathing with undue pauses between expiration and inspiration. In fully developed trance there may be for brief periods, apparently complete suspension of respiration.

The most constant rhythmical variation during the sleep of the insane is the prolongation of expiration, and a change in the actual number of the respiratory acts. It is also to be here noted, that the insane are especially subject to incubus, which is accompanied by decided changes in the rhythm of respiration.

Voluntary prolongation of expiration and other rhythmical changes are brought about by the shouting, singing and whistling of maniacs. These forced expiratory acts, continued without intermission, as they sometimes are, over long periods, may prevent the venous blood return from the brain and cause both pulmonary

and cerebral congestions, chronic laryngeal troubles, and such other untoward symptoms as are found among singers, public speakers, and players on wind instruments. It is interesting to observe in these shouting cases of acute mania, when exhaustion sets in, and feebleness and hoarseness prevent an audible articulation, the respiration still continues modified in the direction of prolonged expiration from the shere automatic force of recent habit.

Modifications of sound in the respiration of the insane are comparatively rare, one of the most common of these is to be heard only on auscultation and is likely dependent on some inequality of the innervation of the respiratory muscles. It consists in an unevenness or full interruption in the passage of air into or out of the lungs. The inspiratory interruption however is more common than the expiratory, and is to be found independently of any lung disease. It is seen in its most extreme form in hysterical and paretic cases. Passing over various spasmodic and congestive states of the respiratory organs especially common in mental diseases, and which modify respiratory sounds, attention is invited to the voluntary modification of sounds in respiration due chiefly to emotional and delusional influences. Thus some patients for hours at a time will render both expiration and inspiration audible, and although sitting or recumbent will give forth a panting respiration as if from an excess of muscular effort.

The character of the modified breathing in this instance is imparted by the contraction of pharyngeal and laryngeal muscles, and the resulting sound is essentially of a throaty nature. This modification differs from the wheezing and dry rales often heard in the respiration of idiots, and senile dements in whom these sounds are exclusively formed in the bronchial tubes. Finally under this head is to be mentioned the sighing respiration of cerebral anæmia and hyperæmia of the insane, and in the various convulsive seizures to which they are specially liable.

The spasmodic modifications of respiration have been divided into an expiratory and an inspiratory group on the ground of objective symptoms rather than of any true pathological difference. The first modification to be considered in the expiratory group is laughter, which consists in prolonged expiration with explosive interruptions, and reflex action chiefly of muscles in the facial region, but also extending at times to abdominal and other muscles.

There is no more interesting or startling phenomenon in the whole range of neurological symptomatology than the automatic laughter of the insane. The writer has seen patients for hours at a time a prey to this form of reflex convulsive action, which was as effectually beyond voluntary control as any other form of convulsive seizure. Not only is the laughter involuntary, but it is in some cases completely severed from any pleasing emotion, and may be positively painful. It may begin as an emotional reflex, partly under voluntary control, and be continued until it completely escapes all power of the will, and this is more frequently the case, or it may from the very first be of a purely automatic character and even contrary to the dominant feelings.

This spasmodic modification of respiration is most common in hysterical, epileptic, and paretic insanity, though it may be found in any of the acute forms with active pathological changes in encephalic centres, and the pathology of the symptom is to be sought more especially in intense irritation of cortical regions.

One of the most remarkable instances of this affection within the writer's observation was that of a young male epileptic dement subject to occasional cataleptoid conditions and maniacal exacerbations. The laughter in his case was automatic and prolonged for hours, and so loud and disturbing to others that isolation was necessary, and it finally left the patient in much the same state as a severe epileptic seizure of which in all probability it was vicarious in this case.

Another interesting feature of laughter, in mental

diseases, is that it is sometimes severed from the facial muscular contractions, which usually accompany it, and has a heightened secretory reflex of tears, so that the striking spectacle is presented of laughter without the expression of hilarity and with lachrymation. This is the explanation of the fact, that it is sometimes difficult to distinguish between laughing and crying in some cases of mental disease. The insane now and then make unnatural efforts to suppress laughter, and then burst out into some strangely explosive sounds, or manifest various painful modifications of respiration in their forced attempts to avoid audible laughter.

Crying like laughter in the insane may become continuous and automatic. It may occur in the absence of distressing emotions. It is often, though not always, accompanied by the ordinary change of physiognomy, but tears frequently fail to appear. The attacks of hysterical maniacs, during which there is violent spasmodic action of the vocal and expiratory muscles, furnish extreme forms of crying partly voluntary or wholly involuntary.

The writer has had a case of insanity with one sided spasm of face and neck accompanied by a sudden involuntary outcry. This spasmodic modification of respiration occurred in this case every few moments of the day. It might be well to mention in this connection also the loud and frequent eructations from which some insane patients suffer for long periods of time, and which in some degree modify respiration. These eructations are not infrequently due to gas formed in the gastro-intestinal canal, but when the belching is loud and constant it is more apt to be the immediate result of the habit of swallowing air.

In cases of hysterical insanity with gastric tympanitis, and diaphragmatic spasm another rare form of eructation is heard as the air is suddenly forced from the stomach through the œsophagus.

Sneezing furnishes another type of spasmodically modified respiration. It is ordinarily caused by excita-

tion of the nasal distribution of the fifth nerve, but it may arise through the most varied reflex channels from irritations of a peripheral nature. It is to be observed most frequently in hypochondriacal and hysterical cases, and in those complicated with disorder of the reproductive organs. In one case walking over snow or sand uniformly caused sternutatio convulsiva, and, a similar reflex spasm may arise through optic channels from the sight of bright objects or colors. Sneezing is especially troublesome from its recurrent and continous nature and it may be present for days at a time. In certain cases it seems to be an acquired habit recurring with rhythmical regularity much like a spasmodic tic. One of these chronic sneezing cases in a ward, through imitative contagion, gives rise to others, who thus come to cultivate rather than to inhibit, every tendency to sneeze.

Cough as a spasmodic respiratory modification presents several points of practical interest. In the first place the pharyngeal and laryngeal anæsthesia of mental disease not infrequently excludes cough from the category of objective signs even in the most severe cases of lung disease. Thus has the writer seen walking cases of pneumonia and phthisis pulmonalis in all its stages without any cough whatever.

On the other hand a dry rasping chronic cough, without any organic pulmonary change, is a common symptom in insane women, as a reflex of uterine disorder, though it also exists independently of any disorder of reproductive organs both in men and women. There is again the barking cough of choreic and hysterical insanity, loud and oft-repeated, and accompanied by spasmodic movements. There are also among the insane modifications of this barking cough, which imitate more or less nearly the sounds of various animals. These strange sounds involuntarily made by spasm of the laryngeal and expiratory muscles furnish the explanation of some of those cases of lycanthropy, described by ancient writers as making noises like dogs and wolves. Prolonged cough is in some cases of mental disease a serious complication

causing venous hyperæmia of the brain, and thus interfering with the nutrition of an organ, which is already the weak spot in the organization.

It is of interest to know, that in some hypochondriacal cases of insanity, cough is purely the result of delusion.

Space will only permit an allusion to the suffocative cough of the bedridden stage of organic dementia, and of the sudden spasmodic seizures of cough, which form in exceptional instances one of the earliest symptoms in general paresis.

Attention is next invited to respiratory modifications in the insane during sleep. These are favored by the rhythmical reductions of organic functions during sleep, by lessened excitability of the medullary respiratory centre—by diminished oxidation,—and by an almost complete suspension of cerebral inhibition.

Thus it frequently happens that the insane, exhausted by the motor and emotional excitement of the waking hours, sink into a profound sleep, which borders on a pathological condition. The respiration becomes deep and labored—the expiration is prolonged—through inadequate innervation of the temporal and masseter muscles, the lower jaw drops, and mouth breathing and its attendant evils are superadded. The sounds, which modify respiration in this deep sleep are well worthy of clinical study. In the first place then let a word be said about snoring.

It is chiefly the expiratory current of air, though sometimes also the inspiratory, which throws the uvula and velum pendulum palati into vibrations, which, modified variously by the oral and nasal cavities, constitute the different kinds of snoring.

There is also another sound made during expiration by the vibration of the lips, which usually indicates a very profound sleep. In extreme exhaustion from mania, there may be added to this labial vibration the blowing and puffing out of the cheeks. The sleep of general paretics in the dorsal decubitus from prolapse of the palate, and the falling back of the base of the tongue,

gives still different and sometimes alarming obstructive forms of breathing.

There is in some of these cases interference of breathing from collapse of the alæ upon the septum nasié with the formation of more or less noisy inspiration.

The vocal chords themselves, in rare instances, not only furnish the obstruction to respiration, but also by their vibration, either in expiration or inspiration, cause a variety of sounds.

To sum up in a word, then, there are labial, nasal, oral, palatal, pharyngeal and laryngeal obstructions and sound-modifications of the respiration of the insane, who, with exhausted nerve-centre, fall into a sleep which is often of the nature of true sopor.

Even positive stertor is often encountered during the sleep of alcoholic, epileptic, paretic, and post-hemiplegic cases of insanity.

In the respiratory disorders which have been described, the prominent modifications have been in expiration, but there are others now to be noticed in which the spasmodic phenomena are more especially to be witnessed in inspiration.

Singultus, which comes first, in this inspiratory group, is a very common and distressing symptom in insanity. It consists, as is well known, in diaphragmatic spasm causing a sudden inspiratory current of air, which is interrupted by a characteristic noise from abrupt closure of the glottis.

This glottic closure may at first be simply due to sudden atmospheric pressure upon the vocal chords, but in prolonged cases it ordinarily becomes spasmodic. It is of clinical importance to know that it may not be present at all, as the essential part of the disorder is the spasm of the diaphragm.

Perverted appetite, disordered digestion, and gastric flatulence, so constant in the insane, are the common causes of hiccough, which may spring also from a great variety of reflex sources, such as irritations of abdominal organs, and diaphragmatic pericarditic, or intestinal in-

flammations. The most direct etiology of singultus is irritation of the phrenic nerve. In tabetic and paretic cases, the pathology of singultus is probably irritation of the roots of the phrenic nerves from the cervical spinal lesions. It is not easy to offer a rational explanation of singultus, which is so often present in insanity with cerebral lesions far removed from the respiratory centre. In one instance, under the writer's observation, hiccough was almost constant for several days, and a post mortem examination revealed partial thrombotic occlusion of the basilar artery.

Singultus is to be observed also in anemic, malarial and toxic cases of insanity; and it may be that the cause, in these instances, is poisoned blood supply and irritation of the respiratory centre. In hysterical and hypochondriacal cases, singultus exists in a continued and most troublesome form, and the pathology of these cases is imperfectly understood. In fact, this spasmodic modification of respiration in some of these cases becomes chronic, and constitutes in itself a species of neurosis.

Oscedo, or yawning, is another respiratory modification, which is not without considerable interest in mental diseases. It consists in a gradual, audible, and deep inspiration, with open mouth and with general action of the extensor muscles of the trunk and limbs, followed by a prolonged expiration, which is also often attended by characteristic vocal sounds.

There is also, at times during this act, an increased flow from lachrymal and salivary glands, and hissing or clicking in the ears. In paralytic cases there may be witnessed during this spasmodic act certain tremors, and partial or complete contraction of muscles, which are entirely beyond the control of the will.

Long-continued yawning is most common in hysterical, hypochondriacal, epileptic, and paretic cases, in which it not infrequently passes beyond voluntary control. Thus, in hysterical insanity, chasmus hystericus may be as completely beyond control as globus hystericus, or any of the rest of the spasmodic phenomena, and it may continue for days at a time.

Oscedo, sometimes, becomes a chronic habit; and it is true, also, that there is a contagion by example, in regard to this affection among the insane.

Sobbing is another respiratory modification, which is a common means of expression of the painful emotions to which the insane are so constantly subject. It takes the place of crying often in mental diseases, and is a spasmodic, noisy interruption of inspiration. It is ordinarily somewhat within the control of the will, but when it has long persisted it becomes, not only completely spasmodic, but very difficult to arrest except by the most powerful sedatives.

During these sobbing seizures, the diaphragm may act so violently as to expel gas from the primæ viæ per annum or per oram, and cerebral anæmia and pulmonary congestion with mucous rales may become epiphenomena of this spasmodic affection, which, if allowed its full course, may continue until the patient sinks exhausted into a soporific state.

Finally, in this inspiratory group are to be classed changes in breathing due to laryngeal spasmodic affections, which are most common in mental diseases with organic lesions of brain or spine. In tabetic cases is sometimes found imperfect action of the abductors of the vocal cords and difficulty of inspiration, and in general paresis from central sclerotic changes and irritation of the laryngeal branches of the pneumogastric, spring noisy and labored inspiration.

In one case of general paresis under the writer's care, this suddenly recurring spasmodic difficulty of inspiration was one of the very first symptoms antedating the disturbances of speech, gait, and pupillary reflexes, at least a whole year.

There are, also, in what are known as ascending cases of general paresis, laryngeal crises corresponding essentially to those found in locomotor ataxia.

In concluding this subject there remain to be mentioned dyspnœic modifications of respiration, which, of frequent occurrence, are of obscure pathology.

In hysterical insanity, feelings of suffocation and most distressing dyspnœa are exhibited for hours at a time. In hypochondriacal insanity there is a similar dyspnœa, and so painfully conscious does the patient become of his respiratory acts, that every breath is a labor.

In alcoholic and paretic cases of mental disease severe attacks of dyspnœa are occasional symptoms, and are, perhaps, due to medullary lesions in the neighborhood of the respiratory centre.

There are, also in these forms of insanity seizures of dyspnœa, in connection with cardiac crises, which even continue to the point of syncope.

The respiratory modifications which attend acute and chronic diseases of the thoracic and abdominal organs, diathetic states, and intercurrent diseases in general have been purposely omitted from the brief limits of this paper, and may at some future time be described in a separate article.

The object on the present occasion has been to sketch the chief modifications of respiration arising from the functional or organic disorders of nerve-centres so constantly present in the insane, and to briefly present to my hearers an interesting subject of neurological study, which seems in a great measure to have escaped the attention of writers on mental diseases.

Treatment of Chorea.—According to the "Gazette de Paris," Juin 18, 1892, Baumel considers anæmia the predisposing cause of chorea. Its chief exciting cause is the work of detention, principally the large molars that appear between the age of six and fourteen years. The author recommends two grammes of bromide of potassium in thirty grammes of syrup of orange peel and ninety grammes of water, to be divided into three or four doses and taken within twenty-four hours; and five centigrammes of reduced iron during breakfast and supper, together with twenty grammes of extract of quinquina in a glass of sweetened milk night and morning. L. F. B.

NOTE UPON A HYDROCEPHALIC CRANIUM OF UNUSUAL SIZE.

By E. D. BONDURANT, M.D.,

Assistant Superintendent of the Alabama Insane Hospital at Tuscaloosa.

ALTHOUGH but an imperfect account of the case can be given, the unusual size of the cranium, together with the fact that the patient lived to the age of forty-eight—most subjects of such extreme hydrocephalic enlargement die in infancy—and possessed a sufficient intelligence to earn a living for himself during a number of years, renders the case of some interest and justifies its record. The man died at the Insane Hospital fifteen years ago. The facts given are taken from the record books. The cranium is still in the pathological collection of the institution.

B. M. A., a white man, born in South Carolina, of American parentage. Father and mother, strong and vigorous, lived to old age. Patient was one of ten children; all living and in good health at time patient came under observation.

It is stated that at birth the head was abnormally large, though delivery was accomplished without especial difficulty. At six months of age it was remarked that the head of the infant was increasing in size; a progressive and very rapid enlargement continued during about six months, so that by the time patient was a year old his head had attained its present enormous proportions.

Patient was brought to Alabama by his parents in early youth, and later became known as an eccentric and rather amusing half-imbecile creature, with, however, a good deal of low wit and business acuteness, who earned a

living by vending cigars in the streets of Tuscaloosa and neighboring towns; at the age of forty, having become irritable and excitable, and being annoying to others, he was committed to the hospital as insane. The following facts were noted at time of admission: height, five feet three inches; weight, 125 lbs.; figure, much bent; gait, shambling and unsteady; convergent strabismus and nystagmus; pupil of right eye, widely dilated; horizontal circumference of head, 29 inches; physical examination of chest and abdomen, negative.

He remained at the hospital until his death, eight years later. There is no record of the autopsy, and consequently the amount of fluid contents and the general condition of the brain is unknown. The cranium was preserved. Its sutures are open; Wormian bones, numerous and large; marked asymmetry. Its principal dimensions are given below, with measurements (after Peterson) of normal male cranium for comparison.

	Average of normal male skull.	Skull of B. M. A.
Horizontal circumference	52.0 Mm.	70.6 Mm.
Anterior demi-circumference		32.4
Posterior demi-circumference		38.8
Naso-occipital arc	32.0	47.2
Binauricular arc	32.0	43.5
Antero-posterior diameter	17.7	24.8
Greatest transverse diameter	14.6	18.5
Binauricular diameter	12.4	11.5
Bi-zygomatic diameter		13.4
Index		71.7 (Dolicocephalic)

The skull ranks well to the front of the reported instances of hydrocephalic enlargement, though several of greater size have been observed. Aitken mentions the head of a child measuring 29 inches in circumference; the head of Cardinal, a noted hydrocephalic man, of the London hospitals (died at Guy's, some years ago), was

33½ inches in circumference, and contained more than 10 pints of fluid; while in a case referred to by Blackader, 27 pints of fluid were removed, *post mortem*, from a hydrocephalic head.

The above very defective report is given for what it may be worth.

Destruction of the Pituitary Body.—Drs. Vassale and Sacchi made an extensive experimental study on the effects of the destruction of the Hypophysis or pituitary body in dogs and cats, and came to the following conclusions, published in the "Rivista Sperimentale di Freniatria, l de Medicina Legale," December 31, 1892:

1. The operation, indicated by the authors, permits of destruction of the pituitary body in dogs and cats with facility and precision.

2. The complete destruction of the pituitary body in dogs and cats is followed with serious consequences independent of any complication arising from the operation.

3. The partial destruction of the pituitary body in these animals is compatible with long life, but typical phenomena of functional insufficiency of the gland arise. The authors were not able to determine just what these phenomena were, but eventually they become aggravated and lead to a fatal cachexia.

4. The increase of the chromofil cells in the pituitary gland depended more upon a degenerative than upon a compensatory process.

5. Although the symptoms arising from the complete destruction of the pituitary body are somewhat analagous to those after extirpation of the thyroid body, yet we are not able to affirm that the two glands are in such close relation that in case of the destruction of the one, the other would perform the functions of the two in the needs of the animal economy.

6. Relative to the nature of the hypophysis, it must be placed with those glands of the body whose destruction gives rise to the formation and accumulation in the organism of special toxic substances. W. C. K.

NEURITIS OF THE GREAT AURICULAR NERVE, CHARACTERIZED BY RECURRENT HERPETIC ERUPTIONS OVER THE COURSE OF THE NERVE.

BY THEODORE DILLER, M.D.,

Physician to Neurological Department of the Free Dispensary; Fellow of the Pittsburg Academy of Medicine; visiting Physician to the Insane Department of St. Francis Hospital.

THE case about to be described was seen by me at the request of Dr. C. R. Barham, to whom I am indebted for permission to publish it.

Herpetic eruption over the course of an intercostal nerve, secondary to neuritis or peri-neuritis of the nerve is common enough and well recognized. It is called herpes zoster or "shingles." But similar eruptions accompanying, or secondary, to neuritis of nerves other than the intercostal are comparatively rare and worthy of note.

N. E., aged fifty years, received a number of small shot in the front of the left shoulder, nine years ago, from the accidental discharge of a shotgun. No large or painful cicatrices resulted from the wounds, from the immediate effects of which the patient quickly recovered. Several times, during the past few years, he experienced more or less severe pains in his left axilla, arm and neck, but chiefly in the axilla. Pain seemed to run from axilla up over point of shoulder to back of neck. In July, and again in August, 1892, he was seized with attacks similar to the one about to be described.

November 13, he was taken with pain just behind the sterno-mastoid muscle where the great auricular nerve makes its exit and running upward behind the ear. A

few days after the initial appearance of the pain, an eruption over the painful area rapidly developed and became very marked. Being referred to a dermatologist, he came into Dr. Barham's hands who recognized the eruption as herpetic. Soothing ointments externally and administration of tonics internally soon brought about an entire disappearance of the eruption. A careful examination of the neck and shoulder was then made by Dr. Barham, which resulted in his discovering four small shot beneath the skin, a little above the summit of the shoulder. These were removed.

Doubtless the old pains in the axilla, of which the patient complained, were due to attacks of neuritis of the axillary plexus, probably subacute in character. It is not unlikely that some of the nerves of the cervical plexus were also involved. The attack in question, was clearly due to neuritis or peri-neuritis of the great auricular nerve, as the pain preceding the eruption followed the course of the nerve, and the herpetic eruption was exactly over it. Moreover, the previous attacks, according to the patient's statements, were similar in character to the present one.

As to the cause of the disease it plainly appears to have been due to the gunshot wound which the patient received nine years ago. The appearance of axillary neuritis upon several occasions, and the fact that injury is the most frequent cause of neuritis, would confirm the view of the traumatic origin of the neurosis.

Critical Digest.

ANATOMICAL, PHYSIOLOGICAL AND PATHOLOGICAL NOTES.

By HENRY H. DONALDSON, Ph.D.,
University of Chicago.

Notes on the Arrangement of some Motor Fibres in the Lumbo-Sacral Plexus.

By Chas. S. Sherrington, M.A., M.D., Lecturer on Physiology, St. Thomas Hospital, London, Fellow of Gonville and Caius College, Cambridge. (Plates xx., xxi., xxii., xxiii. The Journal of Physiology, Vol. xiii., No. 6, October, 1892.) This very extensive paper of 150 pages, illustrated by four plates, contains an amount of detailed information which is almost bewildering.

The observations are taken up under six sections as follows: Introduction; Method Employed for the Study of the Limb Muscles; Motor Roots to Muscles other than those of the Limb; Relation of the Limb to Cell-Groups in the Spinal Cord; The Significance of the Arrangement of the Limb Plexus; and the General Features of the Distribution of the Motor Nerve Roots to the Musculature of the Limb.

This series of investigations was made in order to clear the way for the study of reflex action in monkeys; for which the relation of the muscles examined, to the nerve roots, needed to be known.

In trying to determine which spinal roots were requisite for the contraction of a given muscle, the number of the problems here examined was developed.

To put it briefly there are two views concerning the structure of the ventral spinal roots.

According to the one which is current, viz, that supported by Ferrier and Yeo, the fibres which make up a ventral root are so related that their simultaneous stimulation causes a co-ordinated and purposive movement; or to quote the Authors: "represents some one highly co-ordinate functional synergy in the musculature."

The older view of Panizza considers that all the

muscles of a limb are more or less represented in each of the spinal roots, supplying the limb.

The significance of the two views perhaps best comes out when the consequences of injury to the nerve roots are considered. According to the former view injury to a given root would cause a distinct loss of certain definite muscular combinations. According to the second view injury to a given root would only weaken the muscular power of the limb; but leave the combinations for the most part unaffected. In studying the limb-muscles, Sherrington used all the common laboratory animals including a number of monkeys.

To study the relations between a given nerve root and the muscles which it supplied, the animals were anæsthetized, the roots severed at their origin from the cord, and the root branches stimulated one by one within the spinal canal.

At times, in order to avoid any criticism from the possible escape of current, the roots in the neighborhood of the one to be investigated were all sectioned, and the electrical stimulus applied at the cortex. In almost all the animals examined the numerical designation of a ventral root would not necessarily indicate its function, for in different individuals of the same species there might be a displacement of a root with a given function through an extent of the spinal cord equal to one or two segments.

The relative position of roots with fixed functions was however the same whether the whole series had moved slightly cephalad or caudad. The former individuals are classed as those of the "prefixed" type and the latter as "postfixed."

In the frog, cat and monkey (Macacus Rhesus) details of these variations were worked out.

In this connection, Sherrington made an instructive study on the nervous mechanicism controlling the knee-jerk; which from its segmental limitations offers an admirable index for determining to which type a given animal belongs.

These types enumerated have been based on a study of the motor roots and a corresponding examination of the sensory roots has still to be made.

In considering the motor roots to muscles other than those of the limb, the author has something to communicate on the innervation of the anus, vagina, urinary bladder, the cremaster muscle, the round ligament of

the uterus, the vas deferens, the penis and the hair. Not of the least interest in this connection is his demonstration of a cortical centre in the monkey, stimulation of which is followed by movements of the anus; and in the dog of a similar centre from which closure of the vaginal orifice can be obtained. The nerve supply to the anal sphincters and vagina is such that the whole sphincter contracts on the stimulation of the nerve from either side of the body, although the contraction can be shown to be more vigorous on the side of the nerve stimulated. On the contrary, the contraction elicited from the cortex is more marked on the opposite side. In studying the bladder the rhythmic contractions of that organ, while of interest in themselves, are very disturbing to the further determinations of its nerve supply. Since in the limb the distal muscles are most closely connected with the lowest nerve roots supplying the limb; and since the motor nerve roots emerge from the spinal cord at very nearly the level of the cells from which they arise, it was thought possible that a study of the cell-groups in the cervical and the lumbar enlargment of the cord would afford some ground for determining which group of cells in the ventral horns were connected with the different segments of the limb.

It appears that the postero-lateral cell-group is associated with the intrinsic muscles of the most distant segment of the limb that the medial group of cells is associated with the axial muscles of the trunk, and that in a general way the anterior group of nerve cells is connected with the more proximal segments.

In this connection, Sherrington discusses the lateral group of cells in the thoracic portion of the spinal cord, and their very interesting sympathetic connections.

Returning to the significance of the arrangement of the limb plexuses, we have to ask whether this arrangement is adapted to any particular physiological end, or whether it is the mere result of displacement due to the inequalities of growth, and having no particular physiological value.

If we consider the origin of the plexus, as some do, to be caused by the shifting of the limb along the axis, no physiology is needed by way of further explanation.

However, sharp distinction must be made between the constitution of the nerve roots and the plexus, which is formed by them. As far as the nerve roots are concerned, the innervation of the same muscle from several

of them, and the fact that the strength of the muscular contraction increases with the number of roots that are stimulated, would indicate that perhaps under ordinary circumstances this subdivision was a protection against fatigue; the muscle being controlled by the fibres of one root for a time and then by the fibres of the other. Different nerve elements and different muscle elements being in both cases involved.

That this subdivision is carried very far, is indicated by the fact that even the small natural bundles, composing the nerve roots, contain fibres distributed to antagonistic muscles. It is interesting to note in this connection, that at least within the enlargment of the spinal cord, the segmental arrangement of the nerve cells has been quite obliterated, and instead of cells segmentally grouped, we have long columns of cells running through several segments, and what is more, not terminating in every case at the ends of segments, but often in the middle of a segment.

The last section of this paper is something of a resumé of what is gone before, with additional data on the kind of motion produced by the stimulation of the several roots.

As regards flexion and extension in the monkey, it appears that, "of the opposed movements of joints, the one directed towards the anterior aspect of the limb, has always a spinal representation more an erior in the spinal roots than is the representation of fellow movement of opposite direction."

A Microscopical Study of Changes due to Functional Activity in Nerve Cells.

C. F. Hodge, Ph.D. (Journ. of Morphology, Vol. vii., No. 2., 1892). Since 1887 the author has spent more or less time in studying the problem, indicated by the title, and the present paper collects together, and adds to, several smaller papers which had been published during this period.

At the present time the constituent cells of different tissues are being analyzed in much the same way that, a few years since, the tissues themselves were studied, and the detail of cellular structure thus brought to light is very great indeed.

With a knowledge of the finer anatomy of the cell, it becomes possible to study the changes which take place within it under certain conditions; in this connection

the changes in the nucleus and the changes in the granulation and reticulation of the protoplasm are the ones to which attention has been directed. The paper opens with some description of changes observed in cells of non-nervous tissues as the result of their activity.

On nerve cells but very little work has been done, and the observations, thus far, made to depend upon a differential staining—reaction for cells which have been active.

The first problem, which the author had, was to determine whether changes took place in nerve cells as a result of artificially exciting them. To this end the dorsal nerve roots in frogs and cats were stimulated by electricity on the peripheral side of the ganglion; and the cells of the ganglion were then examined.

Technically the method of examination was very perfect: the cells of one ganglion, which had been stimulated, were compared with those of the symmetrical ganglion, which had been at rest.

From the animal to the slide they were passed through each stage of preparation, side by side, and treated absolutely in the same way. As a result, the differences in appearance that were found might be fairly attributed to the difference in activity which had preceded their preparation.

In both frogs and cats, micrometric examination showed that as the result of stimulation, both the cells and their nuclei had shrunken and also that the nuclei of the cell capsule had shrunken. Further, the nucleus stained more deeply with anilines, and the protoplasm stained less deeply with these and with osmic acid, and was vacuolated.

Having shown that changes did occur which could be measured, the attempt was made to see whether the amount of this change was related to the length of time during which the cell was stimulated, and to the strength of the stimulus applied.

As might be expected, if the results were genuine, such a relation was found to exist whereby, the longer the stimulus was applied and the stronger the stimulus, the greater the changes occurring in the nerve cell.

If these changes were the result of physiological processes, as they were believed to be, it would be possible for the cells to come back to their original condition; in other words, to recover from fatigue, if a certain amount of time was allowed to elapse between the

cessation of the stimulus and the death of the animal. Experiments were therefore made on the recovery of cells thus stimulated, and such a recovery was found to take place to a degree and in a manner which showed that the changes observed could be fairly ranked as physiological.

If the conclusions from these observations were correct, it was plain that these changes ought to be found in animals as a result of their daily activity, and with the rhythmical alternation of rest and activity, we should have a corresponding alternation in the condition of the nerve cells.

Birds and insects have the periods of rest and activity very sharply marked off, and a study of the nervous system, in these cases, showed that in the morning the cells were in the resting condition, whereas in the evening, after a hard day's exercise, similar cells were much shrunken, and exhibited the other changes so well marked in cells artificially stimulated.

Finally, the author points out that many so-called pathological conditions of nerve cells, as in tetanus, for example, must necessarily be considered in connection with the above observations, since the nerve cells of an individual dying after repeated and long-continued convulsions must be expected to exhibit the characteristics of exhausted cells, an appearance which does not necessarily imply that such was their permanent condition.

The plates accompanying the paper admirably illustrate the points described in the text.

By JOSEPH COLLINS, M.D.,

New York.

A Study of the Artefacts of the Nervous System.—(Van Gieson, N. Y., D. Appleton & Co. Reprinted from N. Y. Med. Jour.) Dr. Van Gieson has made a complete study of heterotopia of the cord and the results of autopsy bruises, and has embodied his labors in a monograph which marks the most important contribution that has yet been made to this subject.

Within the past few years quite a number of articles on heterotopia of the cord have seen light, and have attracted considerable attention. It was noticeable that most of the recent articles emanated from Mendel's lab-

oratory, and are apparently instigated by Kronthal's investigations on the spinal cord of an ox, which seemingly presented a congenital malformation. Van Gieson labors to prove that all the published cases of congenital heterotopia, with the exception of the cases of Pick, Virchow and Cramer, are simply dispersions of the substances of the cord by bruising done in its removal at the autopsy. That is, of the thirty-two cases in the literature of spinal-cord malformations, the only real instances of heterotopia are but eight in number. In Kahler and Pick's case the deformity is considered to be secondary to the tabetic lesion. Schultze's two cases are unhesitatingly pronounced to be due to artificial bruising, as is likewise the case of Fürstner and Zacher. The author tells us that he has been able to duplicate exactly the artificial doubling of the cord that was seen in the cord described by the last-named writers. The remaining cases are taken up, considered critically, and contrasted with artefacts produced by the writer. His deductions and conclusions are positive and convincing.

This work of Dr. Van Gieson's is very timely, as we were in danger of having artefacts made responsible for certain clinical manifestations. Kronthal after reviewing his own case and other cases of bruises, says "It can now be affirmed, that we must speak more definitely than formerly, and declare that a spinal cord with heterotopia of the gray matter has a diminished resistance to disease."

That portion of the book devoted to the consideration of experimental bruising of the spinal cord is extensive and the artefacts are illustrated by a large number of wood cuts.

A section devoted to the methods of removing the cord at autopsies and their relation to the production of malformation by bruises is well prepared and suggestive.

The labor involved in the preparation of this monograph must necessarily have been very great, and we are glad to remark that the work is of lasting value.

PSYCHOLOGICAL NOTES.

WILLIAM O. KROHN, PH. D.

Steps have been taken at Northwestern University to establish a laboratory in experimental psychology and an instructor or laboratory demonstrator will soon be appointed.

The work in pedagogy and psychology at the University of the State of Missouri, heretofore undertaken by one man has just been divided and an additional professor is to be appointed, who will devote his time entirely to psychology. This must of course ultimately lead to the founding of a well equipped psychological laboratory.

The change in administration in Illinois has made it necessary for Dr. Dewey to resign his position as superintendent of the Illinois Hospital for the Insane, at Kankakee—a position which he has so ably filled for fourteen years. Dr. Dewey has achieved his international reputation largely through his ardent advocacy of the "detatched ward" or "cottage" system which he has brought to such a degree of perfection at the Kankakee hospital. As one result of his championship of this idea there are at this asylum excellent accommodations for 1000 male and 1000 female patients. Dr. S. V. Clevenger, so widely and so favorably known, is to be Dr. Dewey's successor. In such a change it is a delightful satisfaction to know that the position is to be held by a man who brings with him such a large amount of experience and skill as Dr. Clevenger certainly does. Dr. Dewey will locate in Chicago where he opens a private sanitarium for the treatment of nervous and mental diseases.

Hypnotism among the Insane.—By George M. Robertson, (Journal of Mental Science, January, 1893). Writer simply recounts result of observations made during visits at Nancy and Paris, the real work having been done by Voisin, Bernheim, and Luys. To give the the article color of originality he refers to some experiments made at the Morningside Asylum which he uses Bernheim's method. R. acknowledges what others have known for years that the insane are especially difficult to hypnotize. Also with the insane the hypnotic sleep is of shorter duration than with the normal individual. Summarizing R's results it is found that hypnotism may be used among the insane:—

1. *As a therapeutic* in (*a.*) insomnia. Hypnotic sleep is more closely allied to healthy normal sleep than drugged sleep—therefore is of great service where brain nutrition is bad without depressing effect of drugs.

b. As a sedative in excitement.

c. To dispel temporary hallucinations.

2. *May be used for* purposes of management.

a. To overcome the morbid resistance of patients. Patients often refuse to do what is necessary for their highest good, and by hypnotizing them they can be made to do what is desired.

b. As a substitute for restraint.

Neuroses Convulsives et Affaiblissement Intellectuel.—By Prof. X. Francotte, (Bulletin de la Société de Médecine Mentale de Belgique, December, 1892). The association of convulsive phenomena with psychical disturbances is very common, but it is still a question as to whether there is any causal relation between them. From three interesting cases which have been carfully observed by Prof. F., the following summary may be made.

All three of these cases have a common character:—chronic convulsive neurosis accompanied by intellectual enfeeblement ending in insanity. Is it not possible, he says, to attribute the intellectual weakening to the convulsive condition? His theory is based on Ribot's "Psychology of attention," which demonstrates from numerous examples, that a great expenditure of motion and the condition of attention are antaganostic. Every one knows that reflection is impossible while running, or during any intense movement. On the other hand, when an audience is deeply attentive, it is said, according to the French, "*on y entendrait voler une mouche*," or as our localism gives it, "one could hear a pin drop." How quickly a flutter of movement passes over an audience after a period of strained attention.

Prof. F., concludes then, that chronic convulsive conditions, to say the least, favor and never inhibit intellectual degeneracy.

Visual Cerebral Centres in the case of the Dog and the Monkey.—By Vitzou, (2. Congr. de Physiol, tem. à Liège, an 1892). After having anæsthetized a dog by atropo-morphine and chloroform, the posterior part of the left hemisphere of the brain was extirpated. Awakening the animal, and placing a bandage over the eye corresponding to the injured side, the sight was indistinct, and he stumbled over obstacles. He took no notice of a

piece of meat which was held opposite the internal angle of the right eye, but attempted to seize it when it was moved to the external angle of the same eye. Covering the right eye with the bandage, and placing the meat before the external angle of the left eye, the animal remained indifferent. Moving it to the internal angle of the same eye, and he again tried to obtain it. These facts prove that the intersection of the fibres of the optic nerves is incomplete.

Similar experiments were made—the right occipital lobe being extirpated. As a result of these researches—it was demonstrated that, after the extirpation of the posterior portion of the brain, dogs lose the sense of sight. These facts contradict the statements of Goltz who maintains that a dog, eighteen months after the extirpation of the brain would exhibit no signs of blindness.

In the case of the monkey, as demonstrated by Vitzou, the extirpation of the occipital lobes was accompanied by total and permanent blindness.

Cerebral Condition in Hypnosis.—By De Sarlo and Bernardini, (Rev. Sperin. de Fren., 1892). The following results were obtained from experiments on a portion of the brain of an epileptic, laid bare by a fall. During the experiments the subject lay in a cataleptic state, it being found impossible to produce in him the typical somnambulic condition. The cerebral circulation varies according to the hypnotic condition; the peripheral and cerebral circulations are not antagnostic during hypnosis; a more rapid pulse and a normal and regular respiration are characteristic; hypnotic influence is but transient as pertaining to cerebral temperature.

How does the Visual Apparatus React to Electrical Stimulation?—By A. Hoche, (Arch. für Psychiatrie, 1893). A study of the effects of electricity upon the normal eye. The least current necessary to produce a luminous sensation varies from $\frac{1}{5,0}$ to $\frac{1}{5}$ of a milliampere. The first sensation of light is found to appear at the closing of the anode but not the closing of the cathode; the opening of the anode has the weakest action, while the opening and closing of the cathode have but medium strength.

Entirpation of Large Portions of the Spinal Cord.—By Goltz and Ewald, (Neurol. Centralblatt, 1892). The reviewer is interested in this account of the authors, because he saw the animal thus experimented upon while in Strassburg, in August, 1891. There was removed from

the dog, the posterior portion of the spinal cord 13 centimeters in length, extending to the height of the fifth cervical.

The lower limbs and posterior part of the body was of course paralyzed. No trophic changes in the skin. The movements of the intestines, the bladder and the blood vessels, as well as, digestion were normal. The evacuations were consistent and regular; micturition difficult but urine is normal. In spite of total paralysis of the voluntary muscles the vascular *tonus* persists in the upper part the body. The skin becomes red when rubbed at any point whatever. There is also in the case of this animal, regulation of the temperature, as with the normal dog.

Arthropathia Tabidorum.—A. E. Sterne (Med. Record, January 28, 1893). Arthropathia tabidorum, and the spontaneous fractures which occur in tabes patients, are trophic affections, due to a general disturbance of weakened nutrition in a weakened organism. They stand in near relation to tabes dorsalis, if not directly connected with that disease. These affections have a characteristic stamp. They may be traumatic in origin; are so, however, only in the minority of cases. They occur in every stage of tabes, yet seem to have a certain predilection for the pre-ataxic period. From a pathological-anatomical standpoint, these affections should be considered in part as peculiar, their classification as arthritis deformans is not permissible. In part, however, they may be regarded as examples of the latter disease, and their commencement is often an intracapsular fracture. The cause of these conditions is to be sought for in a degeneration of the peripheric nerves, a lesion probably constant in tabes. Furthermore, the neuritis of the spinal nerves stands to the sclerosis of the posterior columns of the cord, as does the neuritis of the cranial nerves to the cerebral lesion. The ataxy, the analgesy, and the fragilitas osseum, are factors which influence, considerably, the course of these affections. They cannot, however, be looked upon as their causes. Each of these factors may be absent, most readily the ataxy. The therapy should be as conservative as possible. Resource to surgical measures should be taken only in special instances. A. F.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

PATHOLOGICAL.

Dental Reflexes.—Quoting from the "Dental Record," the "France Médicale," August, 1892, calls attention to reflex troubles of dental origin that are not sufficiently understood and recognized. They occur oftener in women than men. The fifth nerve has numerous connections that may explain the phenomenon of transferred pain or painful irradiation. The motor nucleus of the fifth pair is connected with the cortical centre of the opposite side and with the descending root. There is anastomosis of the sensitive branch with the nuclei of every cranial nerve except the sixth (Landois and Stilling). Reflex manifestations may also depend on the existence of branches from the fifth nerve extending to the dura mater and pia mater. Ramifications of this nerve go as far as the hairy scalp. This connection explains the co-existence of dental and cortical neuralgias. The fifth pair of nerves also communicate with the facial,

auditory, and glosso-pharyngeal nerves. This distribution explains the ocular, auditory and nasal reflexes. The consideration of other ramifications to the sympathetic makes plain the various vaso-motor disturbances that are due to irritation of the dental branches. The author, Macnaughton Jones, is of the opinion that such irritatations explain in great measure the pathology of infancy. Convulsions cease when dentition is over. Vomiting, diarrhœa, spasmodic cough, and eczema of the face, in certain instances, are distinctly due to the dental irritation that accompanies teething. This is also a cause of laryngismus stridulus, and of intermittent strabismus, following convulsions. In the latter case there should always be careful examination of the eye, to insure a positive diagnosis. Henoch has already shown that dental irritation may induce infantile paralysis, a condition that rarely develops after the age of three or four years. Trismus is of similar origin. The extraction of the offending tooth cures it. Spasm of the orbicularis palpebrarum has been known to follow caries of the incisors and molars. Tic douloureux is sometimes due to the same cause. Amblyopia, ciliary and conjunctival congestion, together with ocular hypertension such as glaucoma, may be induced by decay of the teeth. Headaches of dental origin (Lauder Brunton) affect chiefly the temples and occiput. L. F. B.

Relation of General Paresis to Locomotor Ataxia.—In the "France Médicale," August 26, 1892, Pierret, of Lyons, gives certain interesting opinions concerning the mooted question of tabes and paresis in the same patient. Arbitrary separation of brain and spinal cord diseases the author considers a mistake. So-called psychic phenomena obey the same laws as sensitive and motor phenomena. Pathologically, and synthetically as regards brain functions, including the function of mind, there are but two generic diseases: those of the centripetal system of receptivity and those of the centrifugal system of expression. One morbid entity has been proved to involve every element of the sensory system, and that is locomotor ataxia. Neurologists affirm that ataxics are never insane. But this error has been refuted by Westphal and Baillarger. The latter has demonstrated the fact that ataxics have morbid psychic manifestations similar to the characteristic mental troubles of general paresis; also that the delusions of paresis may utterly disappear. Pierret himself has

found regions of atrophy (sclerotic encephalitis) in the brains of tabetics who were without delusions or any insanity, and this lesion has also been observed by Jendrassik.

The characteristic insanity of locomotor ataxia consists in delusions of persecution, together with maniacal excitement based upon delusional interpretation of the pains that are due to the disease itself. This delusional interpretation of pain is not based upon an hallucination, but upon indisputable sensitive and sensory phenomena. Occasionally, delusions of grandeur arise, together with motor disturbances, as tremor, and difficulty in standing. Such patients sink into dementia, and even in this last stage, there still remain vestiges of the former characteristic mental state of locomotor ataxia. On the other hand, the form of mental trouble that accompanies systemic sclerosis implicating the entire psycho-motor system, is pure paretic dementia, general paresis without delusions. To speak correctly, persons thus afflicted are neither megalomaniacs nor melancholiacs. They are motor dements in whom thought cannot, so to speak, evince itself otherwise than by motor expressions. The two clinical forms thus described have been confounded with paresis, due at the onset to diffuse lesions. Henceforth Pierret thinks, that they should be considered and described as separate entities. L. F. B.

Changes in the Pia Mater of the Insane.—The "Journal de Médecine de Paris," April 17, 1892, gives an abstract of Francesco Del Greco's histological report on the examination of the brains of eighteen insane persons. In general paresis, there were evidences of periarteritis of the small vessels of the brain substance and the pia mater, together with diffuse nuclear infiltration of the membrane, particularly in the portion nearest the cortex. There was nearly always present a chronic fibrous meningitis. Sometimes the small vessels presented an obliterating endoarteritis as well as a periarteritis and fatty degeneration of the muscular coat. The uniform finding of periarteritis in the brains of paretics, even if in those who died on the the outset of the disease before the brain substance became the seat of sclerosis and atrophy, strengthens the observer in the belief that vascular lesions resulting from chronic hyperæmia, constitute the initial factor in the histological changes of the brain. Changes in neuroglia and nerve cells are secondary.

The autopsy of insane persons subject to pellagra re-

vealed in some instances a diffuse opacity of the pia mater; and in others, slight nuclear infiltration, diffuse in the small vessels of this membrane and in the brain substance. In those who died of pellagrous typhus, especially when death occurred during the stage of acute delirium, there were signs of recent meningeal hyperæmia. In other forms of mental disease—periodic insanity, epileptic insanity, secondary dementia, etc.,—the only brain change found were such as exist in the brains of persons of sound mind who are advanced in years and cachetic. In a very few instances, there was notable thickening of the pia mater, atrophy and hardening of the brain substance, and the lateral ventricles dilated and filled with serous fluid. L. F. B.

Pathogeny and Treatment of Tetanus.—At a recent meeting of the *Societe de Chirurgie*, Paris, France, (Session March 29th, 1893), Schwartz reported four cases of tetanus, which presented some interest from this point of view of pathogeny and treatment.

Case I. was that of a carter, aged thirty years, who fell under the wheels of a loaded manure cart. Four days after the accident he presented a contused wound of the face, and comminuted fractures of the metacarpals and phalanges of the four last fingers of the left hand. The taguments of the hand had begun to slough, and a lymphangitis was extending up the fore-arm. We immediatedly amputated the fore arm, notwithstanding which, three days later, tetanus set in and carried off the patient in three days, despite the employment of chloral and morphine in large doses.

Case II. was also a carter who had met with a slight wound by a hook over the thenar eminence. When Schwartz first saw the patient, fifteen days after the injury, the wound was nearly cicatrized, but for two days this man had been suffering from trismus and stiffness of the back of the neck. He was admitted to the hospital and put on chloral and morphine. Hypodermic injections of a phenic acid solution ($\frac{1}{50}$) were made in the arm of the injured member according to Baccelli's method; these injections were continued morning and evening. A perceptible amelioration was produced at the end of a few days; the stiffness of the nucha diminished and the patient began to use his jaws. Three weeks later, all the signs of tetanus had disappeared; there was shortly afterward a slight return of spasms confined to the abdominal wall, but ultimately, recovery was complete.

Case III. was a child aged twelve years, who, during the month of November last was run over by a wagon, receiving a contused wound on the thigh. The wound was carefully disinfected, but tetanus set in. Three days after the appearance of the first symptoms Dr. Roux injected, in the little patient, in the two lower limbs, 165 cubic centimeters of the serum of a horse rendered refractory to tetanus. The days following, new injections were made of the antitoxic serum; morphine and chloral were also administered. The phenomena of contracture gradually disappeared, and the cure was complete in three weeks.

Case IV. was also a carter who had met with a compound fracture of the middle of the thigh, which was the seat of a vast contused wound. The wound was washed and drained, and several loose pieces of bone removed; disinfection was accomplished as thoroughly as possible. On the eighth day, trismus supervened. The same day, Dr. Roux began the injections of antitoxic serum, 150 cubic centimeters three times, with an interval of several hours. The next day there seemed to be a slight improvement; the trismus was intermittent; but the general state soon became worse, and despite two new injections of 50 and of 40 c.c. of serum, practised within twenty-four hours, the patient died the next day.

From this point of view of etiology, Schwartz remarks that in three of his four cases, carters were the victims, and that in three of these cases, the wounds had been in direct contact with the soil; save in the case of the carter who was wounded with a hook, a telluric origin might then be affirmed.

As concerns the treatment, he remarks that in the first case, the appearance of the morbid accidents three days after the amputation, itself made on the fourth day of the traumatism, in no way tells against the efficacy of surgical intervention, seeing that, independently of the lesions of the hand, complicated already with lymphangitis of the fore-arm, there existed also a contused wound of the face which might have had something to do with the ultimate result.

The phenic injections, made according to Baccelli's method, may or may not have conduced to the recovery of the second patient, who was at the same time treated by chloral and morphine.

Among the effects of the antitoxic serum, he noted an eruption of urticaria in the third patient, and Dr.

Roux has often noticed this result after the injections of serum. He insists on the perfect innocuousness of these injections. In one of these patients, the antitoxic treatment, though applied early did no good. "Perhaps," adds Schwartz, "it is the duty of physicians in cases of this kind to make preventive injections as soon as they find themselves in the presence of a suspected wound." He has lately treated a man, twenty-four years of age, who, while working in a ship-yard, received a contused wound on the hand, the wound being at the same time covered with dirt; he immediately practiced an injection of antitoxic serum, and the man got well without any unfavorable complication.

In the discussion which followed, Terrui said that he had just received a letter from Nocard on the subject of the telluric origin of tetanus in which this pathologist reaffirmed the views which he was the first to formulate. Nocard recognizes that the horse may, like the other herbivorous animals, serve as a vehicle to the infectious germs, but he does not consider the horse from the point of view as more dangerous than other animals, the real danger being the soiling of wounds by dirt impregnated with animal matters.

Verneuil affirmed the connection between outbreaks of tetanus and exposure to foci of infection in the vicinity of tanneries. Water may also serve as a vehicle to the microbes of tetanus when it receives the germs, "and it is a fact that jockeys and others do not take the same precautions with respect to horses that have died of tetanus, and whose skins are freely sold to the tanners as they take when they have to do with animals that have died of anthrax."

He communicated the following fact, which supports the equine theory: a pharmacist was wounded in the wrist by a broken bottle; the wound was dressed by a veterinary surgeon, and a few days afterwards the patient was taken with tetanus from which he died. E. P. H.

PSYCHOLOGICAL.

Primary Mental Confusion.—In "France Médicale," August 26, 1892, there is note by Seglas and Chaslin, describing primary mental confusion, and claiming a distinct place and name for it in French classification. In Germany it is known as Verwirrtheit, or Amentia. Delasiauve, in France, has described it under the name

of mental confusion. Chaslin says: "There exists one form of mental disease that is neither mania nor melancholia, and which is due to some abrupt and rapid exhaustion of the nervous system. Caused frequently by infection or auto-intoxication, this condition should be kept separate from forms of degeneration. It occupies a middle ground between psychoses and insanity of definite profound lesions. Often primary mental confusion appears to be a true disease on account of somatic phenomena that accompany it, as malnutrition, fever, etc. Psychically, this state is characterized by confusion of mind. This confusion is due to feebleness and incoördination in the process of association of ideas, in perception, and in personal feeling. It may or may not be accompanied by hallucinations. Muscular excitement may exist, or there may be depression or stupor. The emotional tone is that of indifference or abrupt changes. There is much analogy between primary mental confusion and insanity following chronic intoxications. The term primary is used to distinguish this confusion from similar states that are secondary and of a nature as yet undetermined." L. F. B.

Alcoholic Insanity.—Dr. S. V. Clevenger, (N. A. Practitioner, March, 1892). The writer remarks that chronic alcoholic insanity is rarely seen outside of asylums, where its victims are gathered in considerable numbers.

The delusions of such cases are rather characteristic and consist of delusions of persecution, of having been poisoned, uxiorial unfaithfulness. Mutilation of the genital organs is not uncommon. The physical symptoms of alcoholic insanity, such as tremors, anæsthesia, abnormal sensations, are the same as may be found in ordinary alcoholism.

The great danger to the community is that the alcoholic insane appear at times to be sane. J. C.

CLINICAL.

A Case of Isolated Paralysis of the Serratus Magnus.—Bruns reports a case of pronounced paralysis of the serratus in whom the most important symptom—the inability to elevate the arm above the horizontal plane—was completely absent.

In the beginning the patient was attacked with severe pain in the entire right arm and shoulder. At first the

arm could not be moved, which made it difficult to determine whether this absence of motion was due to pain or paralysis. For about six weeks there was actual paralysis of the arm and shoulder. Subsequently, the isolated serratus paralysis became evident. Six months later he still had slight pain in the axilla, but no objective sensory disturbance. Neither galvanic nor faradic reaction could be obtained at the corresponding motor points over the clavicle or at the serrations of the muscle. The other muscles of the arm and shoulder, especially the trapezius, were strong, and gave normal electrical reactions. The upper portion of the trapezius, the region of the infraspinatus and the deltoid were flatter than upon the left side. The patient's arduous labor as a brassfounder was not interfered with. No cause could be discovered indicative of paralysis from neuritis. There were no evidences of lead poisoning. He thus explains the elevation of the arm to the vertical position: at first the deltoid acts in association with the supraspinatus, and probably the infraspinatus, in order to forcibly place the arm at a right angle with the external border of the scapula. For the further elevation, the well-known rotation of the scapula with its point outward must now take place, and this, in a deficiency in the serratus, is accomplished by the middle portion of the trapezius, which at the same time draws the scapula downward.

In this case the external rotation of the scapula could partly be executed by the posterior fibres of the deltoid, and partly by the teres major and minor and the infraspinatus.

It is of interest to note from a clinical standpoint that the most important symptom of serratus paralysis, the one that causes the essential functional disturbance, does not exist in every case. We do not know positively why this should occur in one case and not in another.—*Neurolog. Centrbl*, No. 2, 1893. W. M. L.

A Case of Hysteria, Associated with Morphine Habit, Cured by Extirpation of Ovaries.—(Dr. Eichholz, in Frauenarzt, Vol. VII., No. 11.) He justifies the operation, when, as in severe cases of hysteria, both physical and psychical impairment is considerable. The patient, aged forty-five, unmarried, had been, since sixteen years of age, under thirty or more physicians' care for a host of diseases. She had been treated at a water-cure establishment; had received electrical treatment; had been through a gymnastic training, and also had

been hypnotized. But still the intense cramps which had made life miserable continued; nothing but morphine would relieve her, and she became a morphine habitué. She was very much exhausted physically, and her nervous system was completely disorganized when she came to Eichholz for treatment. He discovered that her uterus was enlarged and introverted, while on the posterior side was a sub-peritoneal fibroid tumor, and the left ovary was enlarged and painful. Treatment by use of pessary was first given, then hypnosis, but without success. She grew worse, necessitating hospital care, and after a winter spent at Rostock, where only by the use of morphine and chloroform could a bearable condition be realized, the operation was at last agreed to. On examination the original fibroid was found much enlarged, while two smaller ones had also appeared. The three fibroids, together with both ovaries, and their tubes were removed. The right ovary was normal, but the left was much enlarged and in a state of chronic inflammation. It did not seem advisable to reduce the quantity of morphine until after the fifth day, when its gradual reduction began. The patient improved gradually, and excepting at the menstrual periods, when the tormenting pains would appear, she was in a condition to appreciate life. These distressing pains disappeared entirely at the end of a year. Her mental and physical condition improved steadily, and with this improvement the desire for morphine or other narcotics disappeared. It is worthy of note that the menses were unaffected by the use of morphine during all these years. Thus controverting Lutland, who says they are suppressed in morphine habitués. The transition to convalescence was gradual and permanent, showing the cure was by removing the cause. F. P. N.

ANATOMICAL.

On the Histology of the Spinal Cord of Man.— Dr. G. Mingazzini, of the University of Rome, comes to the following conclusions regarding the histological elements of the spinal cord:

I. That the network of the anterior horns is composed almost entirely of terminal fibres which place the cerebro-spinal and spino-muscular systems in relation with each other.

II. That all the groups of cells of the anterior horns are motor.

III. That the commissure is composed of two parts. A dorsal portion formed by the crossing of a portion of the posterior root fibres, and a ventral, formed in part by by the prolongations of the cells of the anterior horns and of the anterior root fibres. W. C. K.

A Contribution to the Study of the Anastomosis between the Ulnar and Median Nerves in the Palm of the Hand.—From a careful study of the anastomosis of the nerves of the palm of the hand, Dr. Enrique Tornú arrives at the following conclusions:

I. That the anastomosis between the ulnar and median nerves in the palm of the hand is constant.

II. That the anastomosing branch arises indifferently from the ulnar and median.

III. That its position, direction, length and size are very variable.

IV. That for these reasons it is not possible to give a typical description of this anastomosis as various authors have done.—*Anales del Circulo Medico Argentino*, Dec., 1892. W. C. K.

SURGICAL.

Trepanation of the Vertebra in Spondylitis.—Prof. Kraske, "Med. Chirurg. Rundschau," No. 24, December, 1892. He reports the case of a boy, aged thirteen, who had been operated upon one and one-half years ago, by trepaning the vertebral column, for abscess in the vertebral canal. Paraplegia was, at that time, complete. Three vertebral arches were resected, and a tuberculous abscess with sequesters of bone was found. The cord was drawn to one side, and after emptying the abscess, by spooning, was returned to its place; normal position and pulsation being obtained. Shortly after the operation the functions of the bladder returned, so that catheterization was no longer necessary; mobility and sensibility returned gradually, and, after fourteen days, improvement was very noticeable. Later, however, depreciation began anew. A supplemental deviation of the vertebral column was treated by extension, with good results. After remaining stationery for some time, the symptoms, have, in the last few months, shown great improvement, so that the patient, whose wound has entirely healed, can go about with the aid of a corset support. Kraske says the number of cases, in which such procedures are applicable, are relatively small, and in those only where compression is not due to acute angle in the

vertebral column, but where it is due to tuberculous exudate in the vertebral canal.

In this direction, Kraske holds the appearance of positive *root symptoms* at the inception of paralysis, of much diagnostic worth: their presence indicates exudation, and is against angular compression. He demonstrated that compression of the nerve roots through kyphotic deviation, cannot take place, and sudden paraplegia may be due to acute curvature.

The operation has, under all circumstances, some weighty doubts, as the primary process in the bodies of the vertebra cannot be made out with any claim to certainty.

Then the removal of the vertebral arches takes away important support of the vertebral column, so that deviation can, and is apt to follow. Going about is only possible with a suitable corset.

Kraske concludes that the operation of resection or trepanation is justifiable, only, when by other treatment the paralysis continues to augment, especially the bladder and rectum. F. P. N.

THERAPEUTICAL.

Treatment of Sciatica.—In "Médecin Moderne," May 12, 1892, there is an observation by Quenu concerning sciatica. The existence of severe pain due to deep-seated varices is universally admitted. Certain pains in the sciatic nerve are the result of deep-seated varicosities along its course. Whenever sciatica and perceptible varicosities co-exist, the first indication is palliative treatment in the form of external support. In a case cited, pain disappeared for two years with the use of an elastic stocking reaching to the groin. Blisters, the actual cautery, powers of chloride of methyl, etc., had proved unavailing. In conditions of sciatic pain and varicosities, the veins are often adherent to the nerve, exercising direct pressure and inducing neuritis. When the veins are disengaged, pain ceases. In two cases operated upon, this freedom has been maintained fourteen and five months respectively. L. F. B.

Certain Organic Extracts.—In the "New York Medical Journal," Jan. 28, 1893, Wm. A. Hammond, M.D., publishes a paper on the substances extracted from the brain and other organs, their preparation, and physiological, and therapeutical effects. According to the

author, organic beings assimilate from the nutritious matters they absorb the peculiar pabulum which each organ demands for its sustenance. The brain selects that part it requires and never takes liver nutriment. But in diseased conditions of the organs this power may be lost, and, as a consequence, disturbance of function or death may follow. Now, if we can obtain the peculiar matter that an organ requires and inject it directly into the blood, we do away with the performance of many vital processes which are accomplished only by the expenditure of a large amount of vital force. After a hypodermic dose of brain extract, the most notable effects observed were: increase in rate and strength of pulse; at the same time a feeling of distension in the head and flushing of face lasting only a few minutes; a feeling of exhileration continuing for several hours, together with unusual mental activity; increase in the quantity of urine excreted; a notable augumentation of the expulsive force of the bladder and peristaltic action of the intestines; an increase in the muscular strength is noticed at once. The author found he could "put up" a 45-pound dumb-bell fifteen times with the right arm, and thirteen times with the left; while after a dose of the extract he could lift the weight forty-five times with the right arm and thirty-seven times with the left. In some elderly persons an increase in the power of vision is produced. The appetite and digestive power increases. The most notable effects are seen in the general lessening of the phenomena accompanying advancing years. To the extract of brain tissue the author has given the name "cerebrine." He has employed it with decided advantage in cases of nervous prostration—the so-called neurasthenia—in insomnia due to cerebral hyperæmia, in migraine hysteria, general paralysis, hebephrenia, and epilepsy. These extracts should, he says, be given by hypodermic injections and not by mouth, as the gastric juice destroys their activity. Although having expressed the opinion that the substance extracted from the brain, and other organs, is the material required for the nutrition of the corresponding organs, he adds, that this is only a theory to which he is not not in the slightest degree attached, although it is physiological and plausible. He considers it possible that the mixture of uric acid, alcohol, and glycerine, contained in the preparation may exert a metamorphic influence and cause the formation of a ferment having the power of restor-

ing to the weakened brain or other viscus the lost power of assimilation. A. F.

Large Doses of Nitro-Glycerin.—(G. A. Himmelsbach, M.D., Medical News, Jan. 7, 1893). A man with angina pectoris was given gr. $\frac{1}{100}$ nitro-glycerin, but this dose being found to be too large, only gr. $\frac{1}{400}$ was administered, which succeeded for a long time in lessening the severity of the attacks. The disease, however, grew worse, but the patient learned to anticipate the paroxysms some two minutes in advance of their onset, and would resort to nitro-glycerin which lessened or dispelled the attack like "magic." He finally acquired the habit of taking from six to ten, gr. $\frac{1}{100}$ triturates, *ad libitum* as a prophylactic dose. This amount was gradually increased until he took a total of one hundred and twenty-five, gr. $\frac{1}{50}$ triturates, in twenty-two hours; then for the eight succeeding days he took exactly *one thousand*, gr. $\frac{1}{50}$ triturates, or a total of gr. xx. About this time nitrous oxide and oxygen in the proportion of 1 to 4 was administered at the approach of a paroxysm, and by this means the glonoin was reduced to a minimum, and the patient suffered comparatively little pain. Brandy ℥ii several times daily seemed to be the only means of inducing restful sleep. He, himself, acquired the technique of administering the gas and went to his home, but died about two weeks later. A. F.

The Preventive Treatment of Tetanus.—(T. W. Simmons, M.D., Medical News, Dec. 31, 1892). Remove all foreign substance from the wound and thoroughly cleanse the surface about it with a probe or olive-pointed hypodermic needle, made of gold, about two inches long and something longer than an ordinary hypodermic needle. With this attached to an ordinary syringe, inject into the wound, if sensitive, a 4 per cent. solution of cocaine and allow to remain a while. Then draw out any excess and inject the following: argenti nitratis grs. v, aquæ ℥ss, hydrarg. or chloride corrosiv gr. ii, acidi carbolici gr. xv, alcoholis ℥ss. This operation should be done as soon after injury as possible, and surely before granulation begins. A. F.

Exalgine in Painful Nervous Affections.—(Krauss, N. Y., Medical Journal, December 10, 1892). The experience of this writer in treating nervous affections attended with pain by the use of exalgine is at variance with the statements of most writers. In nine cases, mostly neuralgia of the fifth nerve its use was

disappointing. In two cases of chorea in which the same drug was used, the course of the disease was not perceptibly shortened. J. C.

Electricity in Sciatic Neuralgia.—In the "Boletin de Terapéutica," Doctor Rouveix comments upon the use of electricity in this affection, and gives the following advice. It is very important to differentiate between acute sciatica, characterized by the symptom *pain*, and of chronic sciatica, characterized by *difficulty of motion*. In the acute form the constant descending current should be employed, while in the chronic form the ascending current is most beneficial. When the sciatica is symptomatic of some osseous lesion, the strong current may be followed by serious consequences.—*Gaceta Médica Municipal, Habana*, January 15, 1893. W. C. K.

Sulphate of Duboisin in the Treatment of Insanity and Paralysis Agitans.—In the "Neurologisches Centralblatt," No. 3, 1893, Mendel reports his experience with duboisin. He recommends its use in the treatment of insanity where there is pronounced motor activity. From five to ten minutes after the injection, muscular relaxation takes place and sleep is thus produced as a secondary effect. It is useless as a hypnotic in melancholia, paranoia, etc., when there is no motor disturbance. In the insomnia among sane people it fails to produce sleep when administered in the usual doses, although complete muscular relaxation occurs. It has proved efficacious in insanity where chloral and morphine had failed. The usual dose, subcutaneously, was one milligramme ($\frac{1}{65}$ of a grain), a larger quantity being given only in exceptional instances. The toxic effects which regularly appear (even after a dose of 0.2 mg.) are, dilated pupils and the accompanying disturbance of vision, dryness of the throat, and often a moderate acceleration of the pulse. Increased temperature was never observed. He has, however, seen vertigo and staggering take place the morning after the evening's injection, which is ascribed to the action of the drug on the central muscular apparatus and not the result of somnolence. In one case, after the injection of one milligramme, in addition to the mydriasis, and the weakness and rapidity of the pulse, which reached 140, there was such a feeling of oppression and difficulty in breathing that the patient constantly exclaimed, "I shall suffocate." He therefore advises caution in the use of larger doses. From his experience with duboisin in cases of insanity, he was led

to give it in paralysis agitans for relieving the tremor and muscular rigidity. It was used in twelve patients and proved beneficial in every case. Frequently the tremor promptly ceased and locomotion was also decidedly improved, fifteen minutes after the injection. Patients who could only write illegibly previous to its administration were enabled to write in a satisfactory manner. These beneficial effects lasted from three to five hours. When the injection was given in the evening it usually produced sleep. The dose was 2 to 3 decimilligrammes ($\frac{1}{650}$ to $\frac{1}{325}$ of a grain), subcutaneously, three times a day.

Mendel considers duboisin the best symptomatic remedy for paralysis agitans, and has discarded the use of hyoscin in these cases on account of the toxic symptoms which frequently follow even a small dose. W. M. L.

The Treatment of Diabetes Mellitus by Pancreatic Juice.—(H. W. G. Mackenzie. M.D., F.R.C.P. British Medical Journal, Jan. 14, 1893). In two cases of this disease half ounce doses of liquor pancreaticus three times daily after meals, was followed by marked increase of strength, diminution of thirst and the passage of a smaller quantity of urine than formerly. The specific gravity of the urine and the relative amount of sugar were not altered. In another patient the amount of fluid imbibed fell from twelve to six pints in the twenty-four hours, with a similar decrease in the amount of urine passed. It is evident that this preparation is no specific, but the effects are encouraging, and it is possible that in cases of true pancreatic diabetes the benefit might be greater. A. F.

Trional.—Cases of sleeplessness, whether dependent upon functional or organic troubles, are of frequent occurrence in the practice of every physician, and often prove extremely rebellious to treatment. Of the many hypnotics and sedatives in the pharmacopœia few combine the qualities of efficiency with the freedom from toxic action or unpleasant after effects; and aside from this, after continuous tolerance is established, necessitating a change of remedies. For this and other reasons the recent discovery of a new hypnotic, Trional, to judge from careful clinical experimentation, is both safe, prompt and efficient, will be welcomed by every practitioner. Dr. Boettinger (Berlin Klinische Wochenschrift, Oct. 17, 1892) has subjected Trional to an exhaustive clinical investigation in Professor Hitzig's clinical, employing it in seventy-five cases. The usual dose was one

to two grammes administered in the evening, but sometimes it was given in divided doses during the day. In cases of simple sleeplessness occurring in functional and organic diseases, a single evening dose of one gramme often produced uninterrupted and deep sleep from fifteen to forty-five minutes, and with the exception of slight giddiness in one instance, there were no unpleasant after effects, such as are so frequently observed after the use of other hypnotics. In the insomia of mental disease the hypnotic effect of Trional was always promptly exhibited if excessive mental excitement did not exist; but even in some cases of marked non-alcoholic delirium an excellent result was obtained by the administration of fractional doses. It may be given per rectum in somewhat larger doses with as prompt effect as by mouth—a point of importance in cases of severe mental disorder. Another advantage is that patients do not become addicted to it even after continned administration for a long time. Aside from cases of sleeplessness due to severe bodily pain, acute alcoholism, and severe mental excitement, Trional seems to be a hypnotic, efficient, safe, prompt and pleasant in its action, and a valuable addition to the materia medica.

In the Treatment of Nervous Diseases and General Debility McArthur's Syrup Hypophosphites demonstrates its restorative powers. Here it is not the stimulating action of the remedies usually classed as tonics that is needed. The organic powers of the system are already taxed to their utmost ability to carry on the physiological processess of life. The Hypophosphites of lime and soda gives the much-needed effect in these conditions—not that of a stimulant by irritation, but that of a true nutriment to the starving tissues. Its tonic effects are permanent as they are the effects of a richer blood supply, bringing healthy food and oxygen to the tissues. Thus the patient is gradually brought up to his normal condition.

Society Reports.

THE NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held at the New York Academy of Medecine, Tuesday evening, April 4th, 1893.

Dr. M. ALLEN STARR, President, in the chair.

Dr. G. M. HAMMOND, presented a case of locomotor ataxia which he has been treating with hypodermic injections of cerebrine. Six years ago the patient, a man of 40 years, began to suffer with double vision. This, after several months of treatment, disappeared, and for a time he was quite well. Then the typical symptoms of locomotor ataxia came on. There was a complete loss of the knee jerks; he had sharp pains in his legs; the ataxic gait was well marked; there was inability to stand with the eyes closed, even when the legs were some distance apart; he had difficulty in evacuating his bladder and bowels; his sexual power was lost; he had a sense of constriction around the waist; there were no eye symptoms. The man denies syphilis. Treatment was commenced about ten weeks ago, and consisted of a daily hypodermic injection of Cerebrine, five minims, combined with five minims of water. Dr. Hammond said he presented the case with some diffidence, on account of the method of treatment employed; no one has had less faith in these animal extracts than himself. The improvement in this case, however, has been very marked. The man's sexual functions have been perfectly restored; he has complete control over his bladder and bowels; the sharp pains have disappeared; his general health has improved; he is able to run up and down stairs and stands fairly steady with his eyes closed. The knee jerks, however, have not returned. No other treatment was employed. The improvement was gradual and steady, and began about a week after the first injection. The cerebrine employed was that prepared by Dr. William A. Hammond.

Dr. JOSEPH COLLINS said that he has employed subcutaneous injections of Cerebrine, as prepared by Dr. Paul Gibier, in a few cases of locomotor ataxia; the improvement in those cases was about equal to that in Dr. Hammond's patient. It is not uncommon, he said, to see the virile powers return in these patients; this has occurred after applying blisters to the spine. A case has also been reported in which the shooting pains disappeared with the injections of phosphate of soda.

Dr. HAMMOND also presented a boy, with the following history: Two years ago, while rowing a boat, the oar in the left hand slipped from his grasp, and his fingers lost their power. In about five minutes he was unable to use four fingers, but not the thumb, and from that time on the paralysis has progressed, first spreading to the other muscles of the hand and gradually to those of the arm. Fibrillary twitchings were very marked. There is now hemiatrophy of the tongue and paralysis of one of the ocular muscles, with double vision. The boy has lost the power of whistling and of speaking certain words. There is incoördination on standing with the eyes closed, and loss of knee-jerks on both sides; no other ataxic symptoms. No sharp pains; no bladder nor bowel symptoms; no anæsthesia nor parasthesia; The expression of the boy's face is rather characteristic of hereditary syphilis; the boy's father is now under treatment for that disease. There is no history of acquired syphilis. There are no objective symptoms. Dr. Hammond presented the case as one of progressive muscular atrophy, probably of specific origin.

SYPHILIS OF THE SPINAL CORD.

Dr. B. SACHS read a paper on this subject. He first reviewed the recent work of Erb on this subject. Erb has sought to establish a "type" of spinal cord disease, which he proposes to label "syphilitic spinal paralysis." This special type is to be recognized by the following characteristics: 1. The usual symptoms of spastic paraplegia, with its peculiar gait, carriage and movements. 2. The reflexes are very much exaggerated. 3. The muscular contractures are slight as compared with the exaggeration of the reflexes. 4. Involvement of the bladder. 5. A slight but distinct disturbance of sensation. 6. Gradual onset of the disease. 7. A decided tendency to improvement.

Dr. Sachs said that while he did not mean to dispute the existence and the propriety of establishing Erb's type of spinal disease, he believes there are other and broader points of diagnosis which should not be disregarded. To illustrate these points, he gave the history of four cases of undoubted syphilitic disease of the spinal cord. In these cases, the following were the salient features which led to the diagnosis: In three of them there was spastic paraplegia of the most pronounced type. In these the reflexes were excessively exaggerated. In two the muscular contractures were slight; in one of them they were extreme. In one there was permanent involvement of the bladder; in the others there was no such involvement. In all but one of them sensation was disturbed. In two the onset was gradual; in the others it was quite sudden. All of them have shown a decided tendency to improvement. In one instance there was a distinct atrophic paralysis, with all the symptoms that pointed to a widespread affection of the gray matter of the cord. In one case, in which the diagnosis of syphilitic disease was more evident than in any of the others, the contractures were extreme, the bladder has remained involved, up to the present time, and bed-sores formed, as in most typical cases of acute transverse myelitis.

Dr. Sachs said that the following points have impressed themselves on his mind as the more characteristic of spinal cord syphilis. 1. The usual distribution of the disease over the greater portion of the cord, involving, in some cases, the cervical, lower dorsal and lumbar enlargements. 2. The relatively slight intensity of the morbid process as compared with the extensive area involved, as evidenced by the preservation of some of the functions of the cord with complete loss of others. 3. A rapid dwindling of some of the symptoms and a very chronic persistence of others. 4. The very frequent history of other symptoms pointing to specific disease in the same or in other parts of the central nervous system.

In specific spinal cord disease there is not, as in cases of acute myelitis, a morbid process which is rapidly destructive and which quickly advances through the entire cross-section of the cord, involving all the symptoms due to loss of function of the various spinal systems. If the syphilitic disease be the result of a specific endarteritis of the vessels of the cord, we know that some, and by no means all, of these vessels are affected, and that the disease advances slowly from one

group to another. If there be diffuse specific infiltration, it also invades very slowly one part after the other. It has a remarkable tendency, too, to increase for a time and then to recede, whether as a result of treatment or not, and then possibly to increase with renewed force. If the infiltration start from the meninges, it invades most frequently the lateral columns first, often at symmetrical points, and advances very slowly from white to gray matter. The intensity of the process is spent upon the lateral columns; hence the frequency of the spastic symptoms. It may invade the gray matter, giving rise to sensory symptoms, sometimes to atrophic symptoms.

Dr. C. L. DANA said that in one case of spinal cord syphilis coming under his observation, the patient died of an intercurrent disease and an autopsy was obtained. The type of symptoms in that case resembled so closely what Gowers described as ataxic paraplegia that that was the clinical term applied to it. The autopsy showed a transverse myelitis, of specific origin, in the dorsal region, and the appearance of the lesion was much like that described by Dr. Sachs—starting from the meninges and gradually invading the substance of the cord. Dr. Dana said he has almost come to the conclusion that whenever we get a transverse myelitis, which is not manifestly due to hæmorrhage, tumor, injury, etc., and which does not develop suddenly, but comes on gradually and irregularly, we have presumptive evidence of its specific origin.

Dr. E. C. SEGUIN said that Dr. Sachs' description of syphilitic disease of the cord coincided very closely with his own experience. The irregularity or lack of completeness of the symptom group is a very characteristic feature in these cases. Dr. Seguin also referred to another class of cases, namely, those in which the symptoms are those of pressure upon the spinal cord, as we get in paraplegia dolorosa, or the myelitis of compression. He gave the histories of two such cases coming under his observation.

Dr. L. C. GRAY said he has long regarded with suspicion any case of paralysis of the upper or lower extremities, with marked contractures, with or without increase of the tendon reflexes. This is particularly true in cases where the symptoms are unequal or asymmetrical. The poison of syphilis, however, is so diffused that it is unsafe to assume that its effect is spent entirely upon any particular set of fibres in the spinal cord, and it is difficult

to lay down a certain class of symptoms which should be present in these cases.

Dr. ROBERT S. NEWTON gave the history of a patient who developed the symptoms of a transverse myelitis while under active treatment for syphilis; at the time of the attack, the treatment had been persisted in for over a year.

The discussion was then closed by Dr. Sachs.

THE PRESENT STATUS OF CRANIECTOMY.

Dr. L. C. GRAY opened the discussion on this subject. He stated that about three years ago Lannalongue proposed the operation of craniectomy for the relief of mental defects in children. The causes of such mental defects are, in the main, the following: Porencephalitis; meningitis and meningo-encephalitis; hæmorrhage, either diffused or localized; trauma; hydrocephalus; myxœdema; possible premature ossification of the skull, mainly in the region of the sutures and fontanelles. The latter cause has been brought into prominence lately by Lannalongue's operation, although the idea did not originate with him; it was advocated, as far back as 1851, by Virchow, in his memoir upon cretinism, and it has been under discussion since in various other writings. It is impossible to obtain, in this country at least, a sufficient number of skulls of idiots whose histories have been carefully recorded, to pass upon any question of this kind by the examination of skulls. Tacquet has examined 29 skulls of idiots, and believes as a result of this investigation that obliteration of the sutures of the cranium is not more premature in idiots than in healthy individuals, so that the arrest of cerebral development was in none of his cases the result of an arrest of development of the skull. Dr. Gray said he is entirely at a loss to understand how an examination of the skulls of these idiots could throw any light upon the question as to whether primary ossification of the sutures and fontanelles arrested the development of the cerebrum. Tacquet's conclusions, he thought, are not supported by his cases.

Of all the causes of idiocy above mentioned, only the premature ossification of the sutures and fontanelles, recent traumatic injuries and hæmorrhages, Dr. Gray said, can possibly be benefited by craniectomy, for porencephalitis, meningitis, meningo-encephalitis and myxœdema are lesions that the surgeon's knife cannot

in any way affect. A correct diagnosis in these cases is of the utmost importance. If, in any case of idiocy, we can obtain a reliable history from some one who has been with the child since birth, best of all its own mother, and we can positively exclude trauma, meningitis, hæmorrhage and myxœdema, we shall then only have to deal with so-called tuberous hypertrophy, porencephalus and premature ossification of the sutures and fontanelles. Tuberous hypertrophy is so rare as to be practically of no account. Porencephalus occurs generally in fœtal or early infantile life, and will in a vast majority of cases cause some paralysis of motion or sensation. Porencephalus, meningitis, hæmorrhage, trauma and tuberous hypertrophy are very likely to cause some organic destruction of the cerebrum or cerebellum, and this must manifest itself by mutism, blindness, motor paralysis, localized convulsions or contracture of a single limb or of both an upper and lower limb on the same side. If, in an idiot child, we can exclude these symptoms, it seems quite reasonable to make a diagnosis of a premature ossification of the sutures and fontanelles as causative of the mental condition. The speaker said he was quite willing to believe that the pressure of a non-expanding skull upon a cerebrum, expansile with developing tendencies, is sufficient to cause such symptoms of cerebral irritation as strabismus, generalized convulsions, inability to walk, contractures, violent temper, involuntary micturition and defecation, and various general muscular movements that cannot be classified. This is precisely the point which has not yet been tested by the operations that have been done. In concluding his remarks, Dr. Gray narrated five cases of craniectomy that have come under his observation.

Dr. C. L. DANA presented a boy, six years old, upon whom Dr. S. D. Powell performed a craniectomy about a year ago. The child was an illegitimate one, and nothing is known of his history up to the first year of his age. He was rachitic, the fontanelles were large and closed during the third year. During the first three years of his life, the boy suffered with general convulsions, three or four such attacks occurring daily. Up to the time of the operation he was unable to swallow excepting when in the semi-recumbent position, and he could only take liquid food. He could not say a word nor express a thought. Measurements of the head showed it to be below the normal size. A few weeks after the operation he began to talk and could masticate and swallow solid

food. There has been a very decided and striking increase in the child's intelligence; this became noticeable a few weeks after the operation. Measurements of the skull since the operation have not been particularly instructive. The great circumference of the head has increased only one-half centimetre; the naso-occipital circumference has increased nearly two centimetres. From this it will be observed that the head has grown a little faster than is usual in children of that age.

Dr. Dana also narrated three other cases of craniectomy coming under his observation. All three of these patients died from shock soon after the operation. In conclusion, he stated that he does not see how we can draw any conclusions, one way or the other, as regards the determination of what class of cases should be operated upon. Cases of infantile hemiplegia, with epilepsy and idiocy can hardly ever be benefited by the operation.

Dr. S. D. POWELL gave the details of his operation, in the first case narrated by Dr. Dana. A longitudinal incision 5½ inches long was made, and extending from this two cross-sections of bone were removed, each two inches long. The longitudinal incision was one-fourth of an inch wide. The child made an uneventful recovery, and by the fifth day perfect union was obtained. The dura was not opened. It appeared to be much thickened and there seemed to be a collection of fluid underneath it.

Dr. B. SACHS gave the histories of three cases of craniectomy coming under his observation. In the first two cases, death rapidly resulted from shock. In the third case a longitudinal section of bone was removed from one side of the skull and the child recovered. Some months afterwards a second operation was undertaken for the purpose of removing a like section of bone on the opposite side of the head. This operation proved fatal. Dr. Sachs presented the skull of this patient. It showed that the longitudinal opening made at the first operation had become firmly closed by the dura (which had not been opened) and by a dense fibrous mass. This occurred during the two months intervening between the first operation and the time of the child's death. This specimen clearly showed, Dr. Sachs said, that the removal of a long strip of bone, as suggested by Lannalongue, is not effective and does not relieve the general pressure, as he said it would. Our results would no doubt be better if we took out a large flap of bone in the frontal region

thus giving that portion of the brain which needs it most a chance to develop. In a considerable number of cases of idiocy, it is the frontal portion of the brain that is deficient. The proper cases for operation, he thought, are those in which there are all the symptoms of idiocy, without any symptoms of organic disease of the brain, excepting that of retarded development.

Dr. G. M. HAMMOND said that five cases of idiocy for which craniectomy was performed have come under his observation. His own experience, as well as the experience of others with Lannalongue's operation has led to the conclusion that it only stops idiocy by stopping the life of the child. Of the five patients he has had operated on, two died from shock. In the other three cases—each operated on by a different surgeon—there was a very slight improvement in the intelligence of the children. Not a single case has thus far been reported in which the idiocy was cured. The patients are merely transferred from one degree of idiocy to another. In his opinion, the proper cases to select for operation are those where the patients are only slightly idiotic—not the hopeless cases—and it is well to operate early, before degenerative changes have occurred. The operation should not be undertaken after the sixth or seventh year.

Dr. STARR, in reply to a question, said that craniectomy has apparently been undertaken without regard to age. Keen operated on a patient aged 19 years; Hammond, Sr., operated on one aged 22 years, and Weir operated on one aged 18.

Dr. NEWTON gave a short review of the literature on this subject. The idea of operating in these cases probably originated in the suggestion made by Virchow, in 1851, when he attributed cretinism to the premature closure of the cranial sutures. Later on, however (1875), he modified his statements.

Dr. E. C. SEGUIN said that for a long time he has held the opinion that the early closure of the fontanelles and the premature ossification of the cranium were secondary to the arrest of development of the brain, and he has always advised against operative interference in these cases. Now he stands ready to be convinced as to the value of craniectomy for the relief of such patients. The cases thus far reported, he thought, were not very hopeful. The improvement noted in a few cases has been slight while the surgical results are far from encouraging.

Dr. MARY PUTNAM-JACOBI said that according to her recollection of Virchow's monograph, his observations regarding the early closure of the sutures in cretinism only referred to those sutures at the base of the skull—the union of the basilar process with the sphenoid bone.

Dr. SACHS said he regards the operation of craniectomy as an extremely dangerous one, much more so than operations for epilepsy, tumor, etc. The patients are usually very young, and the shock and hæmorrhage are severe.

The PRESIDENT said he thought the members took too pessimistic a view of the operation. He has had six patients operated on without a single death. The total number of cases reported by the speakers, he said, was 23; of these, 7 proved fatal. Aside from these, he has collected 37 cases with 14 deaths, a mortality of about 33%. This rate of mortality he thought was not so very high when we bear in mind that the operation is undertaken to relieve an apparently hopeless condition.

Of the six cases that have come under his observation, three have materially improved in intelligence; the other three were operated on too recently to warrant any definite report at present. The operations were performed by Dr. McBurney. Lannalongue's operation was found to be inefficient, as the area of bone removed soon becomes filled up with a dense fibrous tissue. Wagner's operation was adopted. With the grooved chisel a curved Omega-shaped incision is made through the skull on one side. This flap of bone is then firmly grasped and raised upwards, until it becomes fractured, thus giving plenty of room to the brain underneath. The flap of bone is permanently fixed in its raised position. In one case, both sides of the skull were treated in this way. The chisel, when properly used, causes very little shock. By means of it, the work goes on much faster than with the trephine. The chisel must be very sharp, such as is used for cutting ivory. In conclusion, Dr. Starr said that his experience in these cerebral cases has led him to believe that we know as yet very little about the various pathological conditions of the brain.

The discussion was then closed by Dr. Gray.

The following officers were re-elected for the ensuing year:

For President: Dr. M. Allen Starr.
For 1st. Vice-President: Dr. B. Sachs.
For Secretary: Dr. E. D. Fisher.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated meeting, February 27, 1893.

President, Dr. CHARLES K. MILLS, in the chair.

Dr. CHARLES L. DANA, of New York, read a paper entitled:

A CLINICAL AND PATHOLOGICAL STUDY OF SHAKING PALSY, WITH A REPORT OF TWO AUTOPSIES.

In the clinical part of his paper, Dr. Dana gave the results of examinations of the blood, using Ehrlich's stains; these showed the presence of a progressive chlorosis, but not an anæmia; also some changes in the myelocytes. A number of sphygmographic tracings of the pulse were shown, and the conclusion reached, that there is in paralysis agitans, a general vaso-motor paralysis affecting the skin, viscera, nerves, and lower nerve-centres, but not the brain.

In the pathological part the author first went over the literature of the pathological anatomy of paralysis agitans giving a summary of the findings in all authentic cases. The number of available cases was found to be only fourteen. The findings in late years were much more uniform and definite. The author then reported his own two cases, and gave the results of his microscopical examinations. These, in brief, revealed the presence of great vascular dilatation, connective tissue, proliferation, and nerve-cell degeneration. The lesions were most marked in the central gray of the cord, and the vagus, and glossopharyngeal nuclei. The brain cortex, internal capsule, and basal ganglia were normal.

Dr. Dana believed the vascular and connective tissue changes to be primary, the nerve-cell changes to be secondary. He thought the process resembled a low grade of chronic inflammation. At any rate, he considered the primary cause of paralysis agitans to be a toxine of autochthonous or microbic origin. Shaking palsy was a toxine disease. The primary seat of the trouble was in the spinal cord, more particularly in the central

and anterior gray matter, supplied by the central arteries.

Dr. Dana thought that the time was past when paralysis-agitans could be called a functional disease without a morbid anatomy. The most recent and thorough post-mortem studies showed results in conformity with those reported by the writer. The practical conclusions in regard to therapeutics, were that remedies for the disease in in its earlier stages should and probably would be found. Such remedies would be of the character of anti-toxine or diathetic drugs modifying metabolism and promoting excretion. Some results of the author's therapeutical experience were given.

DISCUSSION.

Dr. FRANCIS X. DERCUM.—I infer from what Dr. Dana has said that he places on the changes which he finds in paralysis agitans rather the significance of terminal than the significance of causal changes. One of the points about his paper that strikes me as subversive of our former ideas is that he describes the disease as of spinal origin, and that we have a tremor of spinal and not of cortical origin. Tremor has always been looked upon as indicative of cortical and not of spinal disease.

We are still absolutely in the dark as regards the primary cause of this so-called functional trouble. Dr. Dana believes the cause to be a toxine, but this is evidently speculative only. It is to my mind fitting that in a disease in which we have motor symptoms, that we should have terminal changes in the motor tract. We have, as Osler pointed out in a paper read before this Society, terminal changes in the motor tract in other diseases such as the hopeless chorea of adults. It may be that there is some poison circulating in the blood, which leads to these peculiar changes, but there is as yet no evidence of it.

Dr. JAMES HENDRIE LLOYD.—It seems to me that the vital suggestion in Dr. Dana's paper is that of a microbic or humoral pathology of this disease. We recall that first hydrophobia, then tetanus and more recently chorea have come within the domain of the modern microbean pathology. It remained for Dr. Dana to come to Philadelphia and give us this original suggestion of some vito-chemical change in the blood; probably of microbic origin, being the cause of shaking palsy.

I cannot help thinking that some of the changes which Dr. Dana has demonstrated are rather commonplace, and possibly are identical with what we might find in the cords of many persons of the age of his patient. They certainly are not suggestive of any very distinctive disease process. Slight thickening of the blood vessels, increase in the neuroglia, and increase of the epithelium of the central canal, are rather indefinite conditions on which to establish a distinct disease process. They are terminal changes which might be attributed to a variety of irritants in the blood. The one vital suggestion is as to the possibility of this being of vito-chemical or microbic origin. The proof of the correctness of this hypothesis must be sought in systematic experimentation in the biological or bacteriological laboratory. At present it is simply an ingenious hypothesis resting upon not very broad anatomical grounds.

Dr. JAMES TYSON.—In considering the toxic origin of paralysis agitans, one is met with the thought that in diseases of acknowledged toxic origin, we have ordinarily a shorter duration than in this class of cases, with the exception of lead poisoning; while it might be expected, also, in such a disease as paralysis agitans, that the large number of cases observed would have permitted one to have established some such causal relation, if it were present.

Dr G. BETTON MASSEY.—After hearing this interesting account of the pathological changes, I feel that, personally, I shall approach the treatment of paralysis agitans with more hope of effecting results. I was one of those who believed that there was no pathology recorded in literature, and, from what I have observed, the treatment of others seems to be based on the same view, being directed toward a peripheral effect, whether internal or external remedies are used, or electricity employed. Attempts are often made to lessen the irritability of the centres by the use of Franklinic sparks, and I have seen pain apparently lessened by that form of treatment, but no arrest of the progress of the disease.

This new suggestion in regard to the microbic origin of the disease, while very interesting, does not help us a great deal, since we are already face to face with the fact that but few microbic diseases are capable of being treated directly, in spite of a positive knowledge of their microbic origin.

It appears to me that we must direct our treatment

towards the removal of the result of microbic action by stimulating nutritive changes. If further attempts are to be made in the electrical treatment of this disease, we should direct our work to the passage of strong currents through the spine. I am continuously increasing the strength of currents used to the nerve centres of the spine, and I feel sure that therein we have a large field of usefulness. We have also, in these interpolar electrical applications, a means of carrying drugs into the body, by the recently revived process of cataphoresis, by which a more profound impression may be made on internal morbid processes.

Dr. J. MADISON TAYLOR.—I would ask Dr. Dana, if, in his study of this disease, there have been revealed to him any points bearing upon the early recognition of this affection and its differentiation from other forms of tremor. If there is any hope of doing good in such a disease as this, it will be in the early stages before degenerative changes have taken place.

Dr. A. A. ESHNER.—I could wish that Dr. Dana had used the term intoxicant rather than toxine in speaking of the etiology of this affection. The development of a toxine seems to commit one to the view of a microbic origin. Probably a better word still, in the present state of knowledge, would be "irritant." It seems to me that the disease belongs to the degenerative period of life, in which changes analogous to those described occur in many organs. One cannot, therefore, be surprised to find in the cord changes similar to those which we find in spleen, kidney, liver, and blood-vessels. I should have been glad if the lesions found had conformed with those of a diffuse sclerosis, affecting not only the cord but the cerebrum as well, and not necessarily confined to any group of cells or system of fibres. In conformity with this line of thought, a vascular irritant would have suggested itself in an etiologic connection. Still another point. Dr. Dana stated that paralysis agitans presents no cerebral symptoms, but it seems to me that there are occasionally cerebral symptoms of which impairment of memory is, perhaps, the most prominent. The delayed cerebral psychic tremor, sometimes noticeable, may, perhaps, be explained by an interference with the transmission of psychic impulses, as a result of changes in the conducting fibres analogous to those that are conceived to be responsible for the muscular tremor by interfering with the transmission of motor impulses. It seems to

me that by the assumption of an intoxicant or irritant, dependent upon defective elimination by the emunctories, we need not extend the range of speculation to such a limit as to have to include a possible microbic origin.

The PRESIDENT.—It seems to me that in some respects the discussion is hardly just to the paper. Some of the suggestions are new. We cannot say that only terminal or the ordinary degenerative changes have been described. The histological changes of degenerative disease will almost necessarily be the same or similar, however they may be described. Dr. Dana has suggested to us something definite. The extent and the location of the most intense changes which he found are different from those found in other degenerative diseases. The suggestion as to place of initiation of the changes; the question of the degeneration of the lateral columns of the cord; the fact that he has shown that in this one case at least no definite changes were found either in the cortex or in the cerebral tracts, or anywhere above the pons, and also that he has pointed out that the changes were especially marked in the nuclei of certain of the cranial nerves, are of considerable importance, and some of them have a decided bearing upon the peculiarities of symptomatology.

Dr. C. L. DANA.—When gentlemen now-a-days speak scornfully of microbe and microbic products, I am reminded of the Rev. Mr. Jasper, and his assertion that "the sun do move." And I am content to allow those who enjoy thinking that microbes are still theoretical things to join the ranks with the Rev. Mr. Jasper. I believe thoroughly in their pathogenic importance myself, and there is nothing of late years that has advanced us so much as bacteriology, or that gives us so much hope for the future of therapeutics. At the same time, I did not say that paralysis agitans was a microbic disease. I said that it probably was a toxic affection, and that the toxine was either of microbic or of humoral origin; and by humoral origin, I mean the same kind of origin as is supposed to produce the changes in rheumatism and gout, which we take to be the result of some defect in tissue metabolism or glandular activity.

These changes have been spoken of as terminal changes. All anatomical changes are terminal. The changes which you find in the lungs in pneumonia are terminal. They do not cause pneumonia. There is something that causes the anatomical changes. No one

thinks that pneumonia is caused by the presence of leucocytes in the air cells. I fancy also that the changes in Bright's disease are terminal, due to the constant irritation of the parenchyma of the kidney.

It has been intimated that the changes which I have described as occurring in paralysis agitans are of the same nature as those found in senility. I have considered this point in the paper, but did not dwell upon it when reading. My own experience is that the changes are not the same. I have examined the cords of old persons, and have compared them with the cords from these cases. The arteries are not thickened here as in senility, and there are peculiar changes in the cells. I think that the changes are such as would be produced by an irritant acting upon special parts of the spinal cord.

I can only say with reference to tremor that, so far as my experience goes, the tremor produced by irritation of the cortex of the brain, is a fine tremor of vibratory character, and that, when a coarser tremor has been observed, it has been due to some lesion lower down. I have had cases of myelitis where there was distinct coarse tremor like that seen in paralysis agitans.

Adjourned.

Miscellany.

A TRIBUTE TO PAPOID.

Laboratory tests and clinical experiences like new friends often disagree.

To harmonize and adjust clinical discrepancies which are based on laboratory inferences, leads into rather uncertain roads and the contradictions of the ardent explorers makes uncertain tempers and often fools of wise men.

The list of new remedies never seemed so crowded as it is at the present time.

The claims, vauntings and pleas for recognition of their various merits from the discoverer to the manufacturer are endless. One cannot help wondering why all physicians should not be greater doubting Thomas'.

The drug we are considering, Papoid, is not really to be classed among the strictly new remedies, yet its merits are not fully recognized.

When pitted in the arena with pepsin it has but a chance in the estimation of the busy physician. It has taken many years to fasten pepsin upon his confidence. It will take more time before he relinquishes his allegiance in favor of a rival.

It will take many recommendations, of the circus poster dimensions, to attract attention. The incredulous smile or shrug of the shoulders shows he may be looking but has no faith.

We do not blame him, yet like the good Samaritan, if we see our aid, in a good cause, is needed, though no matter how humble or meagre the service, it should be rendered.

Our prompting, to enter the lists, in favor of papoid, and which makes us offer tribute in its praise, is the

"positive" and "absolutely correct" conclusions of a late writer,[1] viz:

"That the Pawpaw melon and its derivatives, as manufactured in this country, are worthless."

This infers that foreign makes may be of some utility. The absolutely correct conclusions become erroneous in the light of the fact that Pawpaw melons and their derivative compound, papoid, are not made in this country.

Pawpaw melons are fruit, and not manufactured, and and papoid is manufactured, from them and other parts of the plant, *abroad*, in Germany.

The fact of the author's not mentioning having used papoid in his experiments leads us to judge that he either has not done so, or does not desire to squarely criticise it under its recognized name. We believe his references are applied to some inert domestic preparations of the *carica papaya*.

We have no knowledge, of any writer or careful observer of the action of papoid, having ever said anything detrimental of it as a digestive ferment. Any one who will read Professor Chittenden's carefully prepared monograph on "Papoid Digestion"[2] cannot help but feel impressed with the fact that in this vegetable substance we possess a wonderful and reliable proteolyte.

The following brief conclusions from Professor Chittenden's experiments are interesting and so we will quote them in full:

1. "That papoid is a true, soluble digestive ferment, or mixture of ferments, of vegetable origin.

2. "That it has marked proteolytic action in acid, alkaline and neutral solutions and in the presence of many chemicals, antiseptics and therapeutic agents.

3. "That it has a peculiar softening and disintegrating action on proteids, and that its general proteolytic action is that of a genuine digestive ferment similar to the ferments of animal origin.

[1] G. T. Hunter, M.D., "Digestion and Digestive Ferments," Medical Record, February 4, 1893. Page 140, middle of second column.

[2] Transactions of the Connecticut Academy, Vol. IX, 1892.

4. "That it has a certain amount of amylolytic or starch dissolving power.

5. "That it has a marked rennet-like action upon milk and a pronounced digestive action upon milk-casein.

6. "That it exerts its peculiar digestive power at a wide range of temperatures.

7. "That the ordinary conditions of health and disease in the stomach and intestines are not liable to check its action, while certain possible conditions may accelerate it."

These conditions are confirmed by Herschell[3] and Woodbury.[4]

Herschell says:

(*a.*) "It has a distinct tonic action on the secreting mechanism of the stomach, stimulating the secretion of gastric juice.

(*b.*) "It has a local sedative action relieving pain in a marked degree, and this it does, whether the pain is due to the presence of irritating ingesta or, is a local neuralgia.

(*c.*) "It dissolves unhealthy mucus, coating the interior of the stomach, and interfering with the gastric secretions and absorption by the stomach walls.

(*d.*) "It is distinctly antiseptic in its action. It thus prevents abnormal fermentative processes from taking place in the stomach and intestines."

These things said of papoid are said over and over again by many others. We have studied the action of this substance clinically for over a year, chemically in its predigestion of milk, egg albumen, and fresh blood. It has served us well in preparing absorbing rectal nutrient injections. The brilliancy and reliability of its control over abnormal fermentative processes in the digestive tract to us is a fact. Its emphatic control over certain forms of diarrhœa and vomitings, and its inhibitory action on the formation of mucus, and its dissolving action upon this class of abnormal secretions, are not creatures of imagination. Its practical sedative action in

[3] New York Medical Journal, July 30, 1892.
[4] "Manual of Modern Treatment of Dyspepsia."

cases where pain is conjoined with the hosts of other digestive disorders, stamps papoid alone as of incalculable value.

We can now truthfully affirm that papoid has earned a high place in the estimation of hundreds of sufferers, and he who will fairly investigate its action, clinically, will testify, that, at least in its case, laboratory information has not mislead.

The tenacity of its digestive action on albumenoids and carbo-hydrates as well, under most any conditions, and in most any media, gives us a surety of confidence that it must act throughout the gastro-intestinal tract. This may be what Doctor Arch. Dixon means by his "Papoid conditions[5]," when he says:

"Papoid, under papoid conditions, produces greater results than animal pepsin under pepsin conditions, for papoid certainly exerts its power under a variety of associations and conditions."

While other animal ferments only act under special conditions, papoid is indicated in all forms of disorder of the digestive tract. Not only in the various dyspeptic states, diarrhœa and more severe associated organic changes, but it also will be found of value in disorders which not only engender deranged digestion, but which are often abetted by this condition as well; such as anæmia, rheumatism, gout, diabetes, nurasthænia, and Bright's disease.

As a proteid its action is not by any means confined alone to membranes. Its absorption is probable, and its action upon the blood and distant organs is not pure fancy.

As an adjuvant to the treatment of typhoid fever and the gastro-intestinal disturbances of other contagious and infectious diseases, it must not be forgotten.

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[5] Doctor's Weekly, December 24, 1892.

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THE
Journal
OF
Nervous and Mental Disease.

Original Articles.

THE EPILEPTIC INTERVAL—ITS PHENOMENA AND THEIR IMPORTANCE AS A GUIDE TO TREATMENT.[1]

By WILLIAM BROWNING, M. D.,
Brooklyn, N. Y.

A RESTATEMENT and amplification of the known interparoxysmal manifestations of the epileptic may in two ways aid us to a rational treatment:

1. To a certain extent by furnishing positive indications for the transient or constant use of various remedies, especially with a view to the more exact application of those recognized as possessing some value.

This is simply in line with present demands, as various writers (Seguin, J. Stewart, Diller), have called attention to the diverse nature of the cases classed under this head, the necessity for individualization, and the importance of training the nervous centres, and of "general measures conducing to the proper performance of function in every organ and tissue of the body."

[1] Read in part before the Brooklyn Society for Neurology, Feb. 11, 1891, and in abstract at the meeting of the Medical Society of the State of N. Y., Feb. 7, 1893.

2. Principally by supplying an index to the progress of the disease, independent of the seizures, and hence a guide to the regulation respecting abatement of treatment where progressive improvement results.

General descriptions of epilepsy, and statistical works bearing thereon, are numerous, and in their way fairly satisfactory. But the symptoms of the seizure, the general type of the accession, pre- and post-spasmodic phenomena, and pathological findings have absorbed the attention of observers and a large space in all descriptions. These are largely intermittent, often not observable by the physician, and withal of little importance to us except diagnostically. Commonly there are some phenomena immediately preceeding or following the convulsions, that are attendant rather than interparoxysmal. Where the attacks are very frequent these quasi-spasmodic manifestations may, of course, be present during the whole interval. These need only be mentioned here when closely allied to the phenomena to be described,—though it is not always clear how far the latter are but residual effects of the convulsions, and how far independent symptoms.

Then there are various continuous conditions occurring in or affecting these patients, and that go to complete any full description of epilepsy, but that must here for the most part be ignored.

But there is a mass of other phenomena, fairly continuous or frequently recurring in the interim of attacks, not characteristic, and hence diagnostically of only relative value, yet of the greatest importance in guiding treatment. As confirmative evidence of the existence of epilepsy, however, their value is greatly enhanced by the fact that most of these aberrations are *objective*. Some may choose to class them as neurasthenic symptoms; but if so, they are those of epilepsy and none the less valuable. These matters are usually passed as insignificant or too uncertain to be further considered. Little, if any, notice is taken of them in the recent works on this subject; though more in a few special articles. The best con-

sideration of them, so far as it goes, is in an old but most admirable paper by J. R. Reynolds. ("Some Phenomena of the Inter-paroxysmal Condition of Epileptics, and their Relation to Treatment." (*London Lancet*, 1853, ii, 100; 120).

Hence we may clinically distinguish paroxysmal, pre- and post-spasmodic, interval, and continuous conditions in epileptics,—these, of course, to some extent, overlapping and passing into each other. This brief recapitulation and classification of clinical features shows more definitely the limitations of the field included in this paper. It was my original purpose to present only personal observations, but some reference to the work of others will help to make this outline more interesting and systematic. As a basis are taken the notes made in 150 consecutive cases of epilepsy seen in dispensary practice, in years 1884 to 1891 inclusive. Of course, such data are in many cases very incomplete. In estimating the frequency of single symptoms, only a portion of this number can consequently be utilized according as each symptom or its importance was recognized. As regards many of these, some inconstancy of occurrence even in the same person was common. The patients have been, for the most part, of fair mental ability, thus contrasting with the more degenerate and advanced institution inmates on which many of the large records have been based. From the nature of observations made under such conditions, the proportion of anomalies found will err, if either way, in being too small. For convenience these will be considered under the various organs or functions as headings.

(1).—The Pupil.

A. Inequality in size. This matter has already been treated (Journal Nervous and Mental Disease, Jan., 1892.)

B. Oscillation of the Pupil (Hippus pupillæ).

This proves to be one of the most constant interparoxysmal manifestations in epileptics. Excluding the insane, it is with few exceptions to be found in all cases

when carefully sought, though, of course, varying greatly in degree. Some note regarding this was made in 41 cases. These were not all consecutive, as some were too restless for a satisfactory examination of this point, and others were referred or briefly seen once and then lost sight of. But the proportion of positive and negative results must be fairly correct [2] for this class of patients.

In two of these cases, both girls, no definite oscillation was detected (but two absolute negatives in forty-one cases). In five others it was absent or doubtful at some time, but reappeared; resp. was first detected at a subsequent examination. In perhaps eleven others (9 m., 2 f.) it was usually slight in extent though unquestionably present. Of the thirty-nine positive cases twenty-three were males and sixteen females. This corresponds to the proportion of males and females in the whole series, and certainly shows that it is not a special result of feminine characteristics (oversensitiveness, hysteria), though possibly more marked in that sex.

It should be remembered that normally, on reducing illumination, the pupils dilate evenly and steadily, and on arriving at the proper maximum width simply rest there. This does not exclude a decreasing rapidity as they approach the resting point; nor a considerable variation as to the promptness with which they respond, the speed with which the response ensues when once begun, nor the extent of their response.

But in the cases here referred to, there are excesses and irregularities of pupillary movement not to be explained by any of these normal variations.[3] Several distinct but frequently co-existing types of this anomaly can be distinguished.

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[2] In private practice, perhaps owing to the quieter circumstances under which the patients are seen, the proportion of positive cases has seemed to be less, though not radically so.

[3] In the every-day use of the ophthalmoscope, as my friend Dr. Alleman informs me, it is not uncommon to observe a slight fluctuation in the pupil on first throwing the light into the eye. Whether this be due to involuntary changes in accommodation or to other influences is not clear.

1. In this form the act of dilating only is peculiar. This takes place in a series of jerks; a very slight contraction often, but not always, occurring at the pauses. As a result, the whole period to the maximum dilation is considerably prolonged. When present, this peculiarity is usually bilateral; *i.e.*, it may then be observed in either eye on covering the other. However, it may not be equally marked in the two eyes. It is occasionally observable in older children, in adults and in those suffering from other troubles, or, at least, not known to be epileptic. This form was noted in eight cases, although the minor distinctions were not always recorded. Even more minute descriptions might be given, as *e.g.*, a slow wavering dilatation that ends with a big jump.

Charpentier has called attention ("Behavior of the Pupils in Epileptics," quoted in *Therapeutic Gazette*, May, 1890,) to a condition that he describes as "a rapid, transient, and variable difference in the size of the two pupils, somewhat resembling the temporary inequality produced by closing one eye for a short time and then suddenly opening it. The phenomenon is produced sometimes at very short intervals in the same subject; it is unconnected with any fit or vertigo, or other symptom of epilepsy, and it has no prodromal significance; but it would appear to be liable to be evoked in any epileptic when he is under the influence of emotion, especially if he has difficulty in expressing himself." C. has not seen it occur apart from emotional disturbance and effort, and so far has only noticed it to be a dilation of the pupil, progressively increasing or alternately dilating and contracting. He thinks that if these observations are confirmed by others, the sign may be of value as revealing the existence of the epileptic neurosis. From his erroneous view that the pupils become unequal on covering one eye for a time, it is probable that what C. really observed was hippus of the type just described.

2. The reverse of this—*i.e.*, a serrated contraction—has not been observed with certainty in any of these cases,

and is withal of rare occurrence. Recently H. C. Wood (*Univ. Med. Magaz.*, April, 1889, p. 385,) published such an observation in a non-epileptic case, but where there was lateral homonymous hemianopsia from a tumor in one temporal lobe, with softening, etc.

A simulation of this reversed serration may occasionally be noticed in epileptics, viz.: when the reflex-contraction is limited (*e. g.* in very poor illumination) and immediately passes into that form of tremor soon to be described (*v. infra*, form 4).

3. This form is also a part of the dilating act. It seems to be intermediary between the first and fourth forms, although less frequent than either. Here the primary dilation occurs smoothly, but instead of stopping at the right point it goes too far. Then it contracts back also too far. This leads to a short period of diminishing contractions and dilations until the pupil settles down steadily at the proper width. The first dilation usually achieves the greatest maximum, each succeeding one being less.

4. This form, although classed under hippus, might be distingushed as tremor pupillæ. Here the oscillatory movement of the pupil does not occur as an apparent feature of the reflex act, but is more or less continuous. If pronounced, it can be observed when both eyes are exposed (illuminated). It is the most common form (34 times). The extent of this spontaneous motion is very variable, and in the two eyes not always equal, *i. e.*, on covering one eye the tremor of the opposite pupil is greater than is observed on reversing the procedure. But in many cases its average is fairly constant for considerable periods—weeks and even months—though the seizures be fully controlled.

The motion may be called rhythmic, though it does not seem to follow any sequence, a slight movement being followed by a larger or an equal one, or conversely, without any apparent rule or equal interval of rest.

Evidently, a variety of this is where, on exposing one pupil, a steady, even slow, dilation occurs and seems to

stop quietly at its maximum; on continuing the observation for some seconds, however, a variable, slow, but often increasing oscillation, becomes apparent.

In examining for these pupillary movements, there are certain necessary or favoring conditions:

(*a*) Vision should be directed to a distant object, *i. e.*, convergence, and accommodation excluded and the irides correspondingly relaxed—an attitude of staring. With many patients this is easily accomplished; but there are numerous epileptics at least, including older and willing patients, who seem quite unable to keep their gaze steadily fixed.

(*b*) The phenomenon is decidedly more pronounced on exposing only the observed eye, the other being covered. Frequently it can only be detected in this manner, and in all cases the type can thus be more satisfactorially studied.

(*c*) The oscillation is greater in poor than in strong light. Consequently a dull day, twilight, or some distance from the window or source of light is most favorable. In total darkness these movements might be still greater, but, for purposes of observation, some illumination is imperative. Of course, whatever be the illumination, it should not vary during any single observation.

(*d*) Mental or psychic stimulation has been found to greatly increase the extent of the oscillations. Some have attributed similar mobility wholly to mental effects.

(*e*) Before excluding every form of hippus the observation should be continued for a full minute or two, should be made on each eye singly, and should even be repeated after a week's interval.

On the contrary, very dark eyes, browns and blacks, render such observations far more difficult, and as they require better illumination, a negative result is more probable.

Some few previous observers have remarked the occurrence of hippus in epileptics. Charpentier has been already mentioned.

Schmeichler (*Wiener Med. Wochenschr.*, 1885, No. 41) says

that he has seen what he terms "spontaneous pupillary movements," "besides in healthy, generally sensitive individuals, mostly in females, the number of which is not great; in drinkers,[4] *e. g.* directly after an attack of delirium tremens, and in epileptics on the slightest psychical stimulation." In one of S's cases (suspected epilepsy in a soldier) it served to warrant the diagnosis until more certain proof was obtained. He adds, that so far as he knows the only previous observer of anything of the kind was Schadow, "who says he had seen variations in the size of the pupil during continuous equal illumination: these he referred to the influence of psychic and sensory stimuli."

Schmeichler concluded that these pupillary movements were synchronous with the respiratory as observed on the cerebral vessels. My various attempts at confirming this explanation, so far as it applies to epileptics, has been but partially successful. In a majority of such patients—S's explanatory observations were made on other cases—there is no visible connection between the respiration and these movements. In a few, however, some relation between the two can be made out, although even then the dependence is but partial, the respiration merely affecting or increasing the hippus without entirely controlling it. Occasionally the winking act also affects it either as a coördinate action, or more probably through a quickly responding light-reflex. The interesting observations of Dr. C. A. Oliver in a case of migraine are also against the theory of a respiratory cause, (noted in Sinkler's article, *Med. News*, July 19, 1890, Repr.): "Spasmodic action of the right iris, causing the pupil to dilate and contract irregularly; this spasmodic action being felt by the patient as a twitching or a series of movements." A couple of years later, at an attack, the following was noted: "The right-sided hippus was again complained of, and upon careful study was found just as pronounced as at the previous examination. The

[4] This cause is noticeable since alcohol, in the case of some individuals, suffices to bring on convulsions.

iris excursions, which were quite extensive, were found to be fifteen times in each half minute upon monocular exposure, and but six times in the same length of time upon binocular exposure."

Damsch has observed "hippus,[5] aside from affections of the eye itself, in changes in the chiasm with subsequent hemianopsia, in paralysis of the oculomotor nerve, in nystagmus, in epilepsy, in the early stage of acute meningetis, but relatively, most frequently in multiple sclerosis. * * In chorea there was no hippus. Neurasthenic patients showed it occasionally."

It is true that hippus is very common in disseminated sclerosis; in fact sclerosis, chronic alcoholism, and epilepsy are its main causes.

Are these pupillary movements simply the result of the convulsions, or are they coördinate phenomena, indicative perhaps of an unstable condition of the sympathetic? The latter view is undoubtedly the correct one in the main. For, in several cases, it has been possible to follow them months after the cessation or subjection of all paroxysmal manifestations. In such instances the hippus may continue for a long time unchanged, eventually to subside by degrees if a real cure is achieved. This is further indicated by the fact that, in the first form, the oscillations occur only during passive dilation, and in the fourth are stronger, the more the influence of the oculomotor is excluded (*v.* also Damsch's observation, above cited, of hippus in oculomotor paralysis), *i. e.* they occur in either form so soon as the dominating influence over the pupil is left to the sympathetic. This view must be correct unless we assume that the oculomotor innervation becomes rythmic when weakened.

This might suggest the old theory that the convulsive disorder rests on vasomotor spasm, or, better, that in epilepsy the sympathetic control is unstable, weakened or wavering. And C. A. Vanderbeck (*Phila. Med. and Surg Reptr.*, 1877, i., p. 411) mentions oscillatory movements

[5] "On Pupillary Unrest (Hippus) in Diseases of the Nervous System." *Neurolg. Centbl.*, 1890, (*v. Knapp's Arch.*, April, 1891).

of the iris as a premonition of an epileptic attack, whilst other observers have noticed rapid pupillary changes as occurring in the post-paroxysmal stage (exhaustion or reaction).

The ages of the epileptics showing hippus have ranged from $6\frac{1}{4}$ to 51 years. There were six observed therefore, over twenty-one years of age, and of these six but one failed to show some hippus. The oldest was a man of fifty-one years (attacks for four years but only every few weeks; a moderate drinker). The number of these older patients showing hippus is too limited to warrant such positive conclusions as to its frequency in them as do the younger cases.

In fifty-six epileptic insane (15 f., 41 m.) whom I was enabled to observe at St. Johnland last summer through the courtesy of Dr. H. J. Knapp, then of the Asylum staff, this phenomenon was not marked in any case and was absent in a majority:—negative, or so slight as to be doubtful, 33; slight, but distinctly obtainable, 17, including five in which it was unilateral; too restless for observation, 6. This small proportion was not due to age, as of the ten minors included only two were positive. The trouble in controlling, accommodation, etc., in such patients render their statistics on this point of less value except as showing the general fact that the epileptic insane exhibit this manifestation to but a slight extent. Hence, as its degree or occurrence in them also bore no relation to the frequency of their attacks, it is evident that the hippus is not an effect resulting from the seizures but is a separate or coördinate matter.

It is of course necessary, in order to correctly estimate the value of this symptom, that we should know the frequency with which it occurs in non-epileptics of like age.

Schmeichler (*l. c.*, No. 41, 1248) says: "These spontaneous pupillary movements—so far as they occur in normal individuals—are less often observable in males than in females; the puberty-years present the largest contingent; in old people I have never seen them." However, in fact they do occur in morbid conditions now and then in persons up to middle life and thereafter.

As to their frequency in non-epileptic children, the large number of choreics under observation at the same time as the epileptics furnish a good criterion, inasmuch as they are also suffering from a nervous affection. Occasionally a choreic child also exhibits this hippus, despite the statement of Damsch, but the proportion is small. In fully healthy children I have never discovered any indication of it.

As to the differential diagnostic value of this sign, it follows from what has been said, that it can only be relative like most other symptoms. But as it is objective, it may at times prove very valuable. A better knowledge of its frequency in other troubles will here prove useful.

Before closing with the pupil, it might be specified that these phenomena of themselves do not call directly for any treatment. Possibly they may suggest the propriety of remedies specially acting on the sympathetic system.

NOTE.—It was claimed by L. C. Gray (*Am. Jrnl. Med. Sc.*, Oct., 1880, also *Am. Jrnl. Neurlg. and Psychiatry*, vol. i., 1882), that a dilated and mobile pupil was diagnostically significant of epilepsy. He says: "By a dilated and mobile pupil, I mean one that is always more or less dilated, even in bright light, and which undergoes the changes from contraction to dilation; and conversely, in response to light or accommodative movements, much more quickly than does a normal pupil."

This was quickly combatted by P. Maric (*l. c.*) from Charcot's clinic. Musso (*v.* Hare) made similar tests on seventy epileptics and ten healthy persons, with conclusions, as regards Gray's statements, corresponding to those of Maric.

There is, however, a probable element of truth in Gray's claim to an unusual proportion of wide pupils amongst epileptics as he observed them, his critics examining a different class of patients and under other circumstances. The assumed over-mobility of pupil described by the above quotation would, however, be something quite different from hippus, and is only mentioned here to avoid possible confusion.

As to the condition of the pupil in the attacks, Seguin (*Bost. Med. and Surg. Jrnl.*, 1891, i.) gives dilation and immobility as constant in *grand mal*, frequent in *petit mal*, and uncommon in psychic epilepsy.

ZONULAR THICKENING AND PIGMENTARY CHANGE OF IRIDES.

There is another peculiarity, of the iris rather than the pupil however, that is frequently noticeable in epileptics. It is also common in a variety of other subjects, as old drinkers, one case of slight rheumatic neuritis, persons giving evidence of premature senility—in a word, the physically degenerate. Perhaps it is on a par with the well-known *arcus senile*, though coexistence of the two was noted in only one case.

The peculiarity *in appearance* consists of a thickening of the iris, progressively increasing on its exposed surface from its periphery to the outer border of the narrow circularly contracting inner ring (*i. e.*, to the zone of the constrictor pupillæ), which latter preserves fairly its natural thin appearance. During the contraction and dilatation of the iris this outer band is seen to remain immobile like a shoulder-ring, inside and perhaps beneath which the active part plays. At the same time this major part of the iris in seen to have lost its bright "finished" and mottled surface, and to be of a dull, sodden, even color. This condition has alway been bilateral—apparently equal on the two sides. In younger epileptics there is often an iridial condition present that may represent an early stage of this peculiarity. The outer surface then has a hazy indistinctness almost impossible for the observer satisfactorily to focus, without, however, having, to any great extent, lost the general tint of its original color, nor as yet developed a marked shoulder. Irregularity and variety of pigmentation in the same iris is then not rare.

My records do not warrant any exact statement as to the frequency of these conditions in epileptics, except

that they are common (especially noted in ten cases, the youngest 13 years of age).

As to any tendency to a narrowing of the pupil or slighter reaction to mydriatics—both of which might be suspected if there is an analogy with senile conditions—I have no observations to communicate. And the same holds as to whether the condition, even in its partial form, is recoverable. My ophthalmological friends have not been able to offer any information with regard to the matter, unless the suggestion of an œdema-like infiltration of the relatively inactive portion of the iris. Possibly in the epileptic cases the continuous pupillary oscillations above described are a factor in its causation.

(2).—Other Ocular Peculiarities.

A. of the Motor Apparatus.

1. The various anomalies in refraction and the relative muscular insufficiencies are matters that have been so recently discussed that they may be quickly dismissed. Briefly, the theory seems to be that the effort required to overcome temporarily these impediments to perfect vision tires the nerve-apparatus and so excites or frees the convulsive centres. However, in many cases, these ocular weaknesses or defects may more justly be regarded as results, or as interphenomena of the epilepsy and of the attending weakness of the nervous system than as its source. Ocular errors in epileptics certainly should be corrected as carefully as possible, just as all other aberrations from the normal.

2. Distinct paresis paralysis or contracture of external eye-muscles is much more frequent in epileptics than in average persons. This may develop suddenly at some convulsion. Mauthner has suggested that such an occurrence often depends on the development or existence of a tubercle (somewhere in the central path), and this probability may be worth remembering in the treatment. Where the epilepsy proves amenable this condition may improve and even disappear.

Altogether, there has been such easily recognizable weakness of one or more external eye-muscles in ten of the last sixty-seven cases. Of these ten, there were six with distinct paresis or strabismus, and four of latent diplopia; of these four, however, one showed unilateral ptosis, another slight latent anisocoria, and a third slight (paretic) nystagmus on extreme conjugation as also relative weakness of one abducens. By deducting from the sixty-seven the twenty-four who were over 21, we find that all the ten cases were in the forty-three consecutive patients under age—certainly a surprising proportion and perhaps too large for general application.

Schleick (*l. c.*) notes the frequent occurrence of squint in the absence of any motor paralysis of the eye. Hare (p. 22) mentions diplopia or hemiopia as sometimes existing for twenty-four to forty-eight hours before an attack.

The fact that in one patient strabotomy had been performed before onset of the epilepsy, that one patient has a healthy boy with congenital unilateral ptosis, and another, a sister, with a turning-in of one eye from fright, suggests that we should be guarded in attributing grosser disturbances in the eye-muscles to the effect of the seizures.

3. Various epileptic patients have shown a peculiar restlessness of the eyes, an inability to steadily concentrate or long continue visual attention, whether for far or near objects. This is quite different from nystagmus which, aside from paretic eye-muscles, does not seem to be common.

B. OF THE RETINA.

1. Ophthalmoscopic changes.

The condition of the retinal circulation in epileptics has been the subject of much observation and mild contention. Vance (*N. Y. Med. Jrnl.*, 1871, i., 144,) endeavored to obtain a therapeutic indication from the state of the retinal vessels. In anæmic conditions he used strychnine, alternating this with bromides when any hyperæmia was noticed. Clifford, Albutt, Cross, and others, have noted

changes believed to be more or less characteristic. But Gowers, and many expert ophthalmologists have since thrown discredit on the availability of such observations. Knies' investigations (1888) had reference only to the period of attack. Oliver (*l. c.*) has, however, since reached the following positive conclusions: "(10) Optic disk superficially over-capillary, with a decided grayness in its deeper layers, showing a low grade of incipient optic-nerve degeneration. (12) Fibre-layer of retina increased in thickness, as evidenced by dense and course massings of striation extending in all directions from the disk, these being more particularly marked in the superior and inferior portions of the eye-ground, even hiding the edges of the disk itself in many instances. (14) The retinal veins exceedingly tortuous, and in a few instances pulsating. (15) Retinal arteries frequently wavy and sometimes tortuous, especially the temporal and macular twigs. (16) Retinal lymph-channels visible in the majority of cases, particularly seen along the larger vascular distributions and at the vessel-entrance as glistening and yellowish opacities."

Schleick found no gross ophthalmoscopic retinal changes, although in 52 of his 127 cases (41%) slight deviation from the normal.

Gottardi (*v.* JOURNAL NERVOUS AND MENTAL DISEASE, Oct., 1881, p. 843): "Permanent alterations of the fundus of the eye are most frequent in cases presenting a symmetry of the face and skull, already recognized by Voisin, Müller, Dumas, and Hasse. During the attack, and better still, after the attack, temporary alterations occur in the vascularization of the fundus of the eye, or, isolatedly, of the central vessels of the retina. These alterations are, however, of no value as a means of diagnosis in cases of simulated epilepsy, as they occur under the influences of other causes."

It is scarcely necessary to quote further on this point. Until the ophthalmologists can offer more definitely accepted positive results, we are warranted in ignoring the retinal appearances so far as the epilepsy is concerned.

2. Limitations of Visual Perception (field, color, etc.).

C. A. Oliver found (in Asylum cases, however,) the visual fields for form and color reduced from $\frac{1}{3}$ to $\frac{1}{20}$ of normal areas, the diminution being regular without indentations or scotoma, and the color-perception being subnormal to a slight degree.

This hamonizes with the investigations of Wilbrand, Ottolenghi, Thomsen, and in part, Lombroso, who found even concentric contraction of the visual field with sometimes a diminution of visual activity, such changes, however, being largely due to the paroxysms.

(3).—The Heart and its Action.

Though numerous recorded cases have shown that abnormal cardiac manifestations occur in epileptics, often with irregular action of the vasomotors, the matter does not appear to have received its share of attention. The subject is here followed out almost exclusively on the pulse, or by auscultation. With a little experience and care everything of importance can thus be detected, and this with greater certainty and satisfaction than by any of the common sphygmographs. Tracings in several cases, made with a Dudgeon instrument, showed graphically such variations as could be most readily followed in that manner. But equally important matters can not easily be thus recorded.

It soon transpires that a sound and normally acting heart is the exception rather than the rule in epileptics. Of the following deviations therefrom—these are simply such divisions as I have found clinically convenient—more than one is often observable in the same patient, and some individual variation from time to time is not uncommon.

Rarely there is organic disease of the heart, in the shape of valvular defects, dilatation, hypertrophy, fatty degeneration, etc. Far more frequently functional disturbance is all that can be made out. From the nature of dispensary work it has not been possible to examine

many by percussion, and the few so examined failed to show much of interest.

No mention of the pulse or heart is made in thirty-six cases. Some of these did in fact also present cardiac symptoms but that failed to get recorded. This impairs the exactness of the statistics, though not their general bearing. In sixteen of the remaining 114 cases it is specially stated that nothing abnormal or worth mentioning was found. As nine of the sixteen were seen but once, it is possible that they were not studied with the requisite thoroughness. There were, however, definitely negative results sufficient to show that, so far as the methods of examination practiced could determine, there is a certain proportion of cases—not over one-third at the most—that fail to show any cardio-vascular symptoms. It is on the other ninety-eight cases that the following positive observations were made, these representing per contra at least two-thirds of the whole series.

The so-called epilepsia vasomotoria is a special form of attack, and therefore is here excluded.

A. VALVULAR LESIONS.[1]

Rarely these are factors in causing epileptic seizures, though, even when present, their significance has been questioned. Whether or no such a lesion is ever produced by the paroxysms, certainly when once started it may thus be increased in degree. The fact that it is often the mitral does not help much in deciding.

There were four of these cases (in the 150) besides four others in which the sounds were blurred or obscure. Although many cases were not auscultated, still this was done in all presenting suggestive symptoms, and it is believed that few, if any, marked cases of this kind were overlooked. The four positives all showed mitral murmurs (regurgitant). Two were in females (aged 7 and 50 yrs.), and two were in males (aged 48 and 63 yrs.).

[1] These, with the furred tongue, the adenoplasias, etc., described below, of course really fall under the head of continuous conditions mentioned in the introduction.

Hence this condition is evidently more common in adult than in young epileptics. In at least two of the three adults, the seizures developed each time on signs of the heart failing, but were quite banished as soon and so long as the heart worked well. In such cases there can be little question of the etiological relation of the cardiac injury. Here the seizures have some of the elements of a syncope, but their suddenness, an occasional biting of the tongue, and some convulsive movements attest their kinship to epilepsy. Doubtless, the weakening effect on the circulation is the factor for evil. In one case, as the heart-trouble became less and less compensated, the seizure diminished to forms of *petit mal*, though recurring much more frequently.

The literature on this point is considerable, as a few references will show.

Flint once described ("Diseases of the Heart and Epilepsy," *Am. Med. Ti.*, Jan. 12 and 19, 1861) the case of a man of thirty-two, in whom epilepsy was believed to have developed after damage to one or more valves, although considered merely a coincidence. The Index Catalogue mentions an early case of Horn—"Merkwürdiger Fall einer Epilepsie von einer organischen Krankheit des Herzens entstanden," *Arch. für med. Erfahr.*, 1808. J. W. Martin has published such a case ("Epileptic Seizures; Presystolic Mitral and Systolic Aortic Murmurs; Anæmia; Health Improved Under Treatment." *Med. Press and Circ.*, 1875, i., 383).

In four of the five cases given by Hollis ("Epilepsy with Cardiac Complications," *Practitioner*, 1879) there were signs of valvular trouble and cardiac enlargement. Lemoine (*Rev. de Medc.*, 1887, quoted by Hare) reports "five cases of cardiac epilepsy, in which valvular disease of the heart existed, and where great amelioration of the symptoms or recovery occurred upon the use, either singly or together, of such cardiac stimulants as digitalis and caffeine."

Valvular murmurs were made out by Dr. Knapp in eleven of the fifty-six insane. These were all aortic but

two, and none were very marked—representing presumably slight and purely secondary changes.

CARDIAC EPILEPSY.

Evidently some confusion exists in the use of this term. Various writers have endeavored to distinguish a so-called *cardiac* epilepsy due to organic (valvular) disease of the organ. This form is sufficiently illustrated by the cases just cited, except that any disabling organic affection of the heart may doubtless be as deleterious as exclusively valvular affections. As to the real existence of this form and as to its importance there can be no question. The confusion has arisen from the designation chosen therefor; since, under a like title, an altogether different form—and one not further belonging here—has been described and seems to be more often intended (Stokes, "The Partial Epilepsy of Trousseau"—more strictly a local epilepsy like the various tics; the "Cardiac Epilepsy and Essential Tachycardia of Talamon," 1891; "Paroxysmal Essential Cardio-motor Nerve-storm" of H.C. Wood, 1891).

B. RAPID PULSE—TACHYCARDIA.

The paroxysmal form of this just referred to, is, of course, not here intended. But otherwise, this is very common. It was noted in fifty-three of the cases, besides a dozen or more others in which it was but slightly, or at times increased in speed. By this is meant a pulse that is commonly or continuously fast, and not merely so from some passing cause. In children, especially, allowance must be made, not only for the normally increased rate, but also for excitement from the examination, though this latter disappears on gaining the little patient's confidence.

Hence, we may conclude that an overrapid pulse is more or less constantly present in from one-third to one-half of all cases of epilepsy.

As to what should be termed a fast pulse when the person is sitting quietly, it is here assumed as eighty or

over for adults and ninety or over for (older) children. Twice (in children) it has run as high as 120, while 116, 108, 104, 100 are fairly common. After making the above allowance of ten more beats for children, there does not seem to be any special influence attributable to age or sex, although some to the frequency of seizures.

This symptom can usually be controlled by digitalis. But it requires a very careful adjustment of the dose, as an over-effect is but too readily produced, or a fast but regular pulse gives place to an intermittent or irregular one. It seems impossible in some cases to get the desired even regulating effect of the drug. The more the rapidity is due to local conditions of the heart, the better the effect of digitalis; the more it is due to central and nervous conditions, the less amenable does it seem to this drug (as to influence of enlarged lymph-glands, *vide infra* sub 9). The average in forty-one male epileptic insane, as determined for me by Dr. Knapp, was $91\frac{1}{5}$, and for fifteen female $92\frac{1}{4}$.

THE PULSE-RATE AT DIFFERENT AGES.

As a standard for estimating aberrations in speed, the results recently worked out by Langlois (*vide Bost. Med. and Surg. Jour.*, 1891, II., p. 68) for the normal pulse may serve: "Between the ages of fourteen and forty-five the normal rate is very nearly 70 beats per minute. Below the age of fourteen the normal rate may be found by the formula $P = 140 - 5A$, the pulse-rate being represented by P and the age by A. After the age of forty-five it is found by the formula $P = \frac{1}{2}(95 + A)$."

However, in applying any such standard to ambulatory patients some little margin should be allowed before classing a speed as either abnormally fast or slow.

C. WEAK HEART.

A small or weak pulse was noted in twenty-nine cases (11 m., 18 f.) exclusive of the few showing valvular troubles. To a large extent these were the same cases

as those with a rapid pulse (eighteen of the twenty-nine cases), though the reverse is not as striking.

Of course this is largely a matter of judgment, and can only be estimated after duly considering the patient's age, sex, physique and activity. The fact that an over-proportion were females suggests that due allowance may not have been made for sex.

Again, often there is so much variation after either short or long intervals as to exclude the case from this category.

In twenty-four of the fifty-six insane, a weak heart was specially noted by Dr. Knapp—and this does not include those with valvular lesions.

D. SLOW PULSE—BRADYCARDIA.

An abnormally slow pulse, 48 to 60 beats per minute, was noted in only six cases—the youngest aged sixteen, the others over thirty. Though the pulse-rate in none of these was below 40, it is now recognized that bradycardia, even in the latter restricted sense, is occasionally an epileptic accompaniment. The more pronounced of these cases, as also the more typical of those quoted below, were all in males.

Recent investigations show further that it may be difficult to distinguish between slow and certain forms of intermittent pulse (*v. infra.*). Many of the cases are reported by English writers, usually under the qualifying designation of Epileptiform.

F. St. George Mivart (*Lancet*, Jan. 3, 1885) describes this in a man of sixty-one years—P. 20 sitting, 24 standing.

A. F. Gibbings (*ibid*, No. 7) reports a case in a man of sixty years, with a previous intermittent pulse of about 60, but which on the development of epilepsy dropped to 12 and then until death continued at from 24 to 30 beats.

Drummond (*Brit. Med. Assoc.*, reported in *N. Y. Med. Rec.*, 1890, ii. 333) tells of a man with a pulse of 13, in-

creasing to 36 and 40 during an attack of influenza, and then falling to 5, 10 or 15 per minute before the advent of the epilepsy.

Corkey and Hubberty have also (*Brit. Med. Jrnl.*, May 10, 1890) contributed a case in a man of sixty, whose pulse ranged from 11 to 76. The convulsions occurred during the intermissions of the beat. Autopsy showed mitral incompetency.

In Sigg's case (given by Seguin in Sajous' Annual, 1889) the pulse-rate finally sank until it was only "24 to 21 per minute, with intervals at times of from 5 to 15 seconds. In many of the attacks the pulse was only 9 per minute, with indistinct tremulous heart-sounds and a faint systolic murmur."

These cases are somewhat different from those of the present series. The slow pulse seems in part to have been a paroxysmal occurrence; again some more or less marked organic change in the heart was evident. No particular significance seems as yet to have been attached to this symptom, except that when very pronounced it favors the advent of the seizures. Dehio (1892) has found that atropine relieves bradycardia when due to nervous and not intra-cardiac troubles.

E. IRREGULAR HEART—ARYTHMIA, INTERMITTENT PULSE.

Under this head are often included the three types next following, but in practice it is nearly always possible to distinguish them.

In arythmia, as here intended, there are more or less sudden breaks or changes in speed. The jump may be either slight or great, and either to faster or slower rate. Commonly these sudden alterations show no definite regularity in their recurrence or extent. In the closely allied Intermittent Pulse the beats may be dropped, only now and then, in some of which cases it is accordingly necessary to observe a long series of beats and even on different days before it is detected. In other cases there are sudden pauses and complete breaks in the pulsation.

Naturally the first form of this shades off at times to the next type—that of Variable Rhythm. Exclusive of the valvular cases an Irregular Heart was distinctly observed in only ten (6 m., 4 f.). In at least some of these it had no direct dependence on the convulsions. Distinct irregularity or variability was noted in ten of the fifty-six insane epileptics.

Hollis (*l. c.*) says: "In the majority of these cases this [cardiac] derangement showed itself in that rapid and irregular pulse which has been * * * * * described as diagnostic of muscular feebleness of the cardiac organ." The following from a German review of Bard's article (*Gaz. hebd.*, 1890, No. 18) is especially relevant to this form: "Permanent rhythm couplè, of which the so-called pulsus bigeminus is the lightest form, occurs in severe affections of the nervous system. In these are found the highest degrees of the arythmia in question, and which can very easily be mistaken for an abnormally slow pulse. According to Tripier this form of pulse is found particularly in epileptic affections, especially in larvated forms of the same."

F. VARIABLE SPEED OR RHYTHM.

This is very frequent. It was noted in forty-five of the one hundred and fifty cases (27 m., 18 f. or as 3 : 2). As forty-one of these were in the last one hundred cases it may be concluded that like the rapid pulse this is present in over one-third of all cases. However, tachycardia and variable rhythm were both observed in the same patient only 21 times, showing that there is only a limited interdependence between the two.

The change in rapidity of beat may take place almost suddenly and then, though slight, be very noticeable—approaching definite arythmia. Or the variations may be quite gradual, *i. e.*, the change may be of either quick or slow completion. Again, the variation in speed may follow a regular sequence, or be entirely irregular in its occurrence. In still other cases it is only noticeable on

comparing different days, one day regular at say 84, the next time 108, then 90, etc.

To examine for this point fairly, all influences that ordinarily suffice to affect the rhythm should be excluded; the patient must first have settled into as quiet a condition as possible, both physically and mentally.

G. VARIABLE FORCE.

This is closely allied to the previous form, yet the two are far from parallel. The rhythm may continue perfectly uniform and yet the force vary (two cases).

This also may occur slowly, like a long wave, up and down, or it may intersperse level intervals, or again be characterized by some suddenness without becoming distinctly irregular. Like the Weak Pulse, its estimation is largely a matter of judgment.

This peculiarity was noticed in ten cases (6 m., 4 f.), but this limited number probably includes only those in which it was prominently marked in comparison with the previous forms.

H. IRRITABLE, SUSCEPTIBLE, OR CHILDISH HEART.

This is where its action is too much or over-easily affected, as by mental effort or rising and sitting. It is closely allied to Variable Rhythm, and in several cases (8) both were present. This peculiarity is rather common, both with and without other definable aberration in the heart's action. Still it was specially noted in only twelve cases (7 m., 5 f.). One of these patients was but eight years old, the others all over fourteen.

Though Irritable Heart has been recognized since the time of Graves, it is not often mentioned and has perhaps no mathematically exact significance. As an example, if on directing a youth's attention to some unexciting matter or on simply engaging him in conversation, his pulse-rate suddenly increases 20 beats, he has been credited with an Irritable Heart.

1. SENSATIONS (PALPITATION, PAIN, ETC.) IN THE HEART REGION.

Such subjective phenomena throw little light on the primary condition; nor is it always possible to say with certainty what is the real seat. An aura from this part is not rare, and in some other cases the sensations are associated with the attack. Otherwise, palpitation is most frequent in adult females (16 cases in all; 6 m., 10 f.) and is withal more common than all other sensations together. In two of these (1 m., 1 f.) it was, however, only associated with the attacks, 1 (m.) only suffered at night, and 1 other (m.) had a mitral lesion. Of these sixteen, there were thirteen over twenty-one years of age, indicating that it is principally an adult symptom.

There was also eleven cases (7 m., 4 f.) that complained of unpleasant feelings in this region. Direct complaint of pain is now and then heard (in one case associated with dyspnœa, in one in the mornings, in another from walking), though it is more often a "lump" in the cardiac region, "in the left side," in the region of the stomach, etc.—perhaps gastralgic.

It is principally in angina pectoris that there is any understanding of the relation of local sensations to the cardiac condition. However, Nothnagel has recently described the frequent painful sensations—anginal and continuous, also cutaneous hyperalgesia of precordial region—in valvular affections especially aortic. He adds that quite analogous painful sensations occur in affections of the myocardium without valve-trouble (myocarditis, fatty heart, hypertrophy, both idiopathic and especially from arterio-sclerosis). Chew (1892) divides cardiac pain into three forms—true angina, pain from Bright's disease, pain from dilatation of heart.

Fear and timidity as a characteristic is so common to children that little account can be made of it. That its physical basis is so often associated with cardiac irritability or undefined sensations from the cardiac region, and that fright and sorrow are among the recognized causes of epilepsy, are the reason for mentioning it here.

REMARKS ON THE CARDIO-VASCULAR SYMPTOMS.

Observations of some length and at different times are requisite before all these abnormal features can be excluded. Mental and physical excitement in the patient must also be guarded against.

It is proper to consider whether other persons similarly circumstanced do or do not present like phenomena. Without giving exact figures, it may be said that a continuous series of choreic and other children have been brought to the clinic during the same period as the epileptics. But, although attention has been directed to it, no similar proportion of aberrations has been found. In the choreics, irritable heart, cardiac murmurs, and regional pain are frequent, but the other deviations exceptional.

The further question arises, how constant is any one or any combination of these in the same individual? The influence of the attacks on the cardiac phenomena is more marked than on the pupillary. Otherwise they persist for weeks and months with but slight variation, diminishing gradually if the person be progressing towards a cure.

PRE- AND POST-PAROXYSMAL CARDIO-VASCULAR PHENOMENA.

The variations in cardiac action, above described, are not always the same about the time of the seizures. Where these latter are frequent the short intervals may present only spasm-phenomena. But where the intervals are longer we can usually distinguish the symptoms attending the paroxysms from those intervening and more continuous. They are not altogether alike even in kind.

Towards the approach of a seizure there may be a decided accentuation and increase, occasionally even sufficient to warrant the prediction of an impending attack. The opportunity of observing shortly after a

seizure is more frequent. In a possible majority of cases we then find the aberrant action more marked, and it may be only at such times that any of these peculiarities appear. But not rarely the opposite is then found—a full regular pulse where at other times weak and fast; and this latter may occur even where the seizure has been *preceded* by an increased disturbance.

Voisin, Magnan and Féré have described and studied the pulse-changes about the time of the seizure. The last observer, from experiments on healthy subjects, showed that after violent muscular efforts the same modifications were present; but he also (1889) found an increase of 200 to 300 grammes in the arterial pressure *during the aura.*

François-Franck (1887) by cortical irritation produced changes in the blood-pressure and the heart-action, both with and without epileptic seizures.

PATHOLOGY.

Are these cardiac phenomena—representing, as they collectively do, a weakening and irregularity of the heart's action—exclusively the result, more or less grossly mechanical, of the repeated heart-strains which the convulsions certainly produce?[2] That those of the interim may be to some extent, and those directly after the paroxysm are largely of this origin is clear. Or is there also a direct nervous influence affecting abnormally the heart or vascular system? And secondary to the latter question is another—whether such morbid nerve-influences are active only about the time of the paroxysms, or are they to some extent continuous?

[2] This is doubtless the cause of the total hypertrophy of the heart with dilatation observed in epileptics by Jastrowitz of Berlin (reported in *Wien. Med. Wchr.*, 1889, No. 31, 1212-1213). The dilatation is on a par with that which sometimes occurs acutely in severe chills, only that by repetition it is increased and becomes chronic. To meet the repeated strains the heart, if able, hypertrophies just as *e. g.* from the hill-climbing of oertel. J. however calls it idiopathic disease of the heart-muscle, and assumes an unknown nervous influence.

The fact that as a premonition of the seizures there may be decided alterations in the pulse, that during the aura-stage there may be a great increase in the arterial pressure, that where the free intervals are of much length it may be quite possible to distinguish between the paroxysmal and the inter-paroxysmal pulse-changes, and finally that in cases of definite heart-lesion it has repeatedly been possible to fully control the convulsions by regulating and strengthening the heart's action, and yet only so long as this latter was possible, all these facts disprove the hypothesis of a purely mechanical or secondary origin of these pulse-changes. They indicate that there is some other factor, evidently some form of nerve-influence and not limited in time of action to the paroxysms alone. That this is of cortical origin is rendered probable by the experiments of Franck already mentioned.

THERAPEUTIC INDICATIONS.

These cardio-vascular manifestations give a strong warrant for the use of digitalis in selected but numerous cases. This drug has been mentioned favorably by various writers, but has hardly been accorded its full right. The fact that it acts not alone on the heart but on the arteries in general makes it especially useful. In a certain minority of cases it is far more important and lasting in its benefit than the bromides, though readily combinable with them. But both to secure its best effect and to allow of its prolonged use, *small doses are demanded.* A drachm to a drachm and a half of the tincture a week is all that can advantageously be given for any length of time. Two drachms a week is the maximum for even short periods. Later it may be tapered to half a drachm before stopping. Of course this applies to youths and young adults.

Occasionally strophanthus may better fill some indication, but its different action makes it less generally available. My trials of it in epilepsy have not been

encouraging, however satisfactory in troubles of other kinds. But possibly the later commendations (*e. g.* by Poulet) should be accorded some consideration.

Nux or its alkaloids are known to be occasionally invaluable for a short preliminary treatment in conditions of weak heart.

In most cases the use of tobacco in any form, especially by youths, is to be condemned. Various tonics (as tobacco, coffee, tea, alcohol) are amongst the best recognized causes of tachycardia and other functional heart troubles, and hence are to be considered injurious for most epileptics.

In some cases, not only of valvular trouble, but where there is a weak heart without special lesion, the plan of lying down if warned by a sufficient aura or other premonition—will abort an attack. This plan has proven more often possible in private than in the duller dispensary patients. It is also attested by a well-known case of Stoker. Some intelligence on the patient's part is necessary and an imperative realization of the urgency and importance of this little procedure. In the same sense, lifting or overwork (too rapid, prolonged or excessive) is in cases with such weak circulation to be carefully guarded against.

Occasionally, on the contrary, it is true that labor improves the patient, and without doubt, as urged by Putzel, some occupation suitable to the patient's physical ability is advantageous rather than otherwise. It is only to be remembered that many of these subjects are not able to do a fair average and are greatly injured by any excess.

(To be continued.)

MENTAL EPILEPSY.[1]

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THE induction of spasm by stimulation of the cerebral cortex conveyed the earliest suggestion of the cortical origin of epilepsy, initiated a new line of investigation, and promised discrimination of the idiopathic disease from the heterogeneous mass of epileptiform and epileptoid conditions taking its name. "Inorganic," "functional," "structural," "sympathetic," "eccentric," "renal," "gastric," "uterine," and a host of other so-called epilepsies, were thus differentiated, and many diverse conditions were placed in proper relation in the lower economy of the nervous system, subordinate to the superposed and controlling cortex. Brown-Sequard's reflex origin of convulsions, Schröder von der Kolk's degeneration of the medulla, Todd's disease of the quadrigeminal bodies, Nothnagel's convulsive center in the pons, Meynert's sclerosis of the cornu ammonis, Echeverria's lesion in the cervical sympathetic, yielded to the later studies of Hughlings-Jackson, determining epilepsy to be a "disturbance in the coördinating and inhibitory apparatus in the highest regions of the brain cortex that originate and control voluntary motion and volition itself."[2]

The array of facts contributing to this conclusion is augmented by the results of examination of fresh sections of the brain. Vacuolation of cortical cells "produces a disparity betwixt nucleus and protoplasm, and the displacement and degeneration of the former which appears to bespeak a convulsive constitution."[3]

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[1] Read at the annual meeting of the New York State Medical Society, held at Albany, February 7, 8 and 9, 1893.

[2] Clouston, "The Neuroses of Development," p. 98.

[3] Bevan-Lewis, "A Text-book of Mental Disease," p. 528.

Subject, of course, to the modifications necessary to all pioneer work, this summary of Bevan-Lewis' investigations opens the way for a pathological basis for epilepsy, clinically regarded, in conformity with the definition of Hughlings-Jackson, as "occasional, sudden, excessive, rapid, and local discharges of gray matter."[1]

The seat of the epileptic discharge in the mental citadel emphasizes the close alliance of the so-called neurosis with mental disorder, and limits the symptomatology only to the capacity for disease of the cortex, in which are reflected the life history and capabilities of the individual. The locality of the initial discharge and its area of diffusion characterize the special case as motor, sensory or psychic, all more or less intimately related, and approximated by many transitional forms in which two or all of these elementary features are blended. For the theoretical difficulty besetting the differentiation of mental epilepsy from other forms, usage offers an expedient in distinction between convulsive seizures and attacks from which convulsion is absent or complicated by mental obsession.

Mental epilepsy is, consequently, a psychosis, characterized by "occasional, sudden, excessive, rapid and local discharges of gray matter," not necessarily attended by convulsion, and not limited to any pathognomonic symptom except the nature of the discharge.

Maniacal disturbance preceding or following convulsions is a comparatively common incident, especially frequent in asylum practice; cases so affected depict the transition from the purely motor levels to the higher volitional centres presiding over organized motion. Rarer are the instances from which convulsion is absent, the explosion limiting itself to the region of voluntary movement. If associated with transient facial pallor or flushing, momentary fixation of the eyes or limbs, or vertigo, indicating the preliminary attack of *petit mal*, the diagnosis is not difficult.

[1] Hughlings-Jackson, "The West Riding Lunatic Asylum Medical Reports," Vol. III., p. 33.

Whether the initial *petit mal* is theoretically present or not, it is often impossible of detection, and the attacks, characterized solely by ill-directed and causeless fury, simulate genuine recurrent or transitory insanity, for the frequent abuse of which terms epilepsy affords ample excuse.

M. G., a young woman of nineteen years, was admitted to the St. Lawrence State Hospital September 22, 1891. Her sister was an inmate of the institution; no other family history has been ascertained. The medical certificate of insanity stated that the physicians were "unable to have any conversation with her. She met them at the door with a bottle and brick in her hands. They were unable to talk with her as she threw bricks whenever she saw any one." Newspaper reports of her actions prior to admission gave accounts of outbreaks of sudden and excessive violence, with intermissions, in which she "astonished the police by talking rationally." It was also stated that she had assaulted officers and had bitten them, and had carried and freely used various weapons. Her insanity was said to have existed for two weeks. She was sullen and irritable on admission, and a few moments later began maledictions against policemen and policemen's clubs and made a sudden and destructive assault upon persons and furniture. After a few hours of continued excitement she became comatose, and awoke quiet, rational, orderly and well-disposed. Numerous similar attacks have since occurred and have occasionally been controlled by bromide, ergot and chloral. She has frequently complained of toothache, sciatic neuralgia and headache, which have always borne time relation to the maniacal outbreaks. During the attacks her pupils are dilated, expression vacant and face pale. Coma has been an invariable sequence and convulsion has never been ascertained. In the intervals between the attacks she is affable, cheerful, courteous and industrious. She is aware, because of post-paroxysmal discomforts, that she has had an attack, but has never known of its inception or events. She has requested that she be removed from others during the seizures in order that she may inflict no injury, which she afterwards always regrets.

Here were genuine epileptic attacks, in which spasm

was replaced by coördinated, involuntary motor fury, with complete and instantaneous lapse of memory and without especial dependence upon an excitation in the environment. In the following case, the ascent toward cerebral areas of higher than motor function is shown in an "intellectual aura," with ensuing mania, occurring simultaneously with obliteration of memory.

J. S., a young woman of 23 years, was admitted to the St. Lawrence State Hospital June 19, 1891. There was family history of tuberculosis. It was stated in her commitment that she had broken headstones and had otherwise mutilated property in the village cemetery. She had written letters to prominent men, threatening to kill them, and at the same time pleading for protection. No motive for these acts could be ascertained, and she had claimed that she had "no recollection of the destruction of property and no reason for doing the same." When admitted she was anæmic and emaciated; and later, physical examination revealed slight dullness and broncho-vesicular respiration in the right infra-clavicular space. Patient was depressed, stated that she had no hope of recovery and desired to die. Four days afterward she was reported by nurses to have had an epileptic convulsion, the exact character of which could not be ascertained. Once afterward she was said to have had an attack of *petit mal*, during a period of excitement. With these exceptions, no convulsive attack has been observed during her residence in the hospital. On the same day in which the epileptic seizure was first noted, she developed a paroxysm of extremely destructive, active and homicidal mania, which was finally controlled by medication. Attacks were repeated at intervals of about six weeks until the summer of 1892, when they became more frequent and were often characterized by suicidal frenzy, but without sufficient intellectual coördination to effect a design. A characteristic attack was noted in April. She manifested some irritability in the early part of the day, and in the afternoon was annoyed by the moaning of an agitated patient. She became very angry, suddenly jumped from her seat, ran rapidly through a corridor, and broke some windows with her hands. She stared into space and talked about "murderers," as if influenced by hallucinations. When grasped by nurses she resisted and struggled, the

hallucinations having been transformed by the restriction of her activity into ideas of persecution. The excitement continued until evening, when she fell asleep, awakening later in normal condition. She stated that she recollected the groaning of the patient who provoked the attack, but retained no memory of events during her frenzy. Several other seizures, which took place in July, September, November and December, 1891, and March, April, June, July and August, 1892, were characterized by prolonged periods of excitement.

Neuralgia in one case, and hallucinations in both, suggest the intimate and intermediate relation of perverted sensation to motor and mental epilepsy. Occurring alone, the various paræsthesiæ—migraine, temporary loss or disturbance of vision, crashing noises, shrieks and whistles, anosmia, offensive odors and tastes, or the "indescribable" and "voluminous" sensations of Hughlings-Jackson, may constitute sensory epilepsy, signaling the approach of the lesion to the loftier cortical areas whose function is purely that of mentation.

In these highly organized regions, the epileptic discharge, rendering inactive certain mental elements, and paralyzing inhibition, permits novel and unusual associations and combinations. Reflex and affective regions, deprived of the higher coördinating power of the will, run riot, and natural tendencies, passions and emotions prevail. The Dr. Jekyll of health in the transformed state becomes the epileptic Hyde, vexed by trifles, incited by delusions and false perceptions to the commission of crimes and the perpetration of atrocities limited only by the boundaries of human accomplishment.

"On the 16th of January, 1858, Jared and Clarissa Comstock, living near the town of Hamilton, in the county of Madison, New York, were murdered. They were about 70 years old, and held in general esteem. A neighbor, looking accidentally through a window, saw their lifeless bodies upon the floor. The man lay extended upon his back, his left side presenting a gaping wound about six inches in length; the heart had been removed. The woman lay in the same position a

few feet distant; her left side had a gash of a similar kind, and the heart had likewise been dragged from the chest. The disorder and torn state of their dress showed that there had been a struggle. The two hearts were afterwards discovered in the oven of the stove half roasted and half gnawed.

"Between the two corpses, and seated on a sofa, slept tranquilly William, the eldest son and murderer of the Comstocks. The police arrested the parricide, a man 32 years of age, medium height, whose physiognomy indicated dullness rather than ferocity. William was regarded as gentle and inoffensive, and lived upon excellent terms with his parents, who never complained of him. 'My father still breathed when I tore out his heart, which I wanted. As to my mother, the affair was easier, but my father was thicker-skinned. I intended to have gone to my brother and sister and finished the job, but I fell asleep.' Laboring under epilepsy and hallucinations of the worst kind, William Comstock was unwilling to give any explanation as to the motive which impelled him to roast and eat a part of the hearts of his aged parents."[5]

Prolonged automatism is here represented in one of the repulsive and brutal forms which bespeak epileptic degeneracy, often regarded a consequence of *petit mal*, which is better described as one of its incidents, its essential feature has been thought to be loss of consciousness. As Hughlings-Jackson determined, loss of consciousness is not necessary to the definition, if by consciousness is meant appreciation of events or retention of memory, although, physiologically, loss of use is coincident with loss of consciousness attributable to the elements involved. The loss of consciousness which throws its victim headlong to the ground in convulsion, or precipitates him in blind fury against hurtful obstacles, cannot be identical with the loss of consciousness accompanied by the commission of a crime so complicated and cunning as to render belief in premeditation almost inevitable. The sources of error are the misuse

[5] Le Grand du Saulle, *The Medical Critic and Psychological Journal*, Vol. II., p. 716.

of the word consciousness for cognition, and the assumption of cognition as the basis of all mental activity. Upon the fallacy of this depends the doctrine of automatic cerebration, under which Dr. Carpenter has adduced so many forceful illustrations from ordinary experience. In health the rise into cognition of the hitherto "sub-cognitive" or "sub-conscious" idea, is an every-day occurrence; in transitional states between health and disease, automatic cerebration is the underlying principle of the phenomena of dreams, somnambulism, hypnotism and other forms of partial anæsthesia; and in disease it reaches its highest development, of which epilepsy gives the most clearly defined types.

J. D., male, single, 45 years of age, was admitted to the Rockwood Asylum, Kingston, Ontario, February 19, 1892. He is said to have been insane for three hours at the time application was made, had had a previous attack sixteen years before, and many brief attacks described as violent outbreaks of temper. These attacks made their appearance when the patient was much bothered. The medical certificate stated that J. D. had on several occasions been seen in a very uneasy state, talking to himself; that his statements were contradictory, and his conversation disconnected; that he frequently became violent, and in this state beat the ground, fences and buildings, with clubs, at the same time loudly yelling. Ten day before admission he had attacked with a club and injured two small children, one a baby nine months old, the other a child of four years. On one occasion he had stripped off all his clothes, in the winter, and had gone out to work, and on several other occasions had exhibited fits of violence, striking with a stick anything that came in his way. When admitted he was quiet and rational, and during his stay in the asylum, from repeated conversations with him, it was ascertained and believed that almost all knowledge of his attacks of passion disappeared when the attack had passed, and he appeared quite truthful when stating that he had not the slightest recollection of injuring the children.[6]

[6] For the history of this case, and others, extracted from the records of the Rockwood Asylum, and for many other courtesies, the writer is indebted to Dr. C. K. Clarke, Medical Superintendent of that institution.

The possible dependence of such impulsive acts upon preceding unobserved or nocturnal seizures has had abundant demonstration, more especially by Delasiauve, Dumesnil, Le Grand du Saulle, who regarded nocturnal incontinence sufficient evidence of epilepsy, and Trousseau, to whom all nocturnal accidents suggested epilepsy. To their observations have been added the extensive researches of Echeverria, to whom a search for stains upon the bedding, lacerated tongue, petechiæ upon the face, neck or chest, dislocation and fracture, headache and drowsy intellect, was indispensable in the examination of any crime characterized by instantaneity, fierceness, brutality, and unascertained motive.

In the case of the fratricide MacDonald, the prisoner passed through an epileptic paroxysm during the night preceding the day set for his trial, and in great fury grasped a fellow prisoner's throat and nearly strangled him before the keeper came to his assistance.[1]

More subtle and of still greater medico-legal interest are epileptic attacks characterized by the grafting of delusion upon impulse, intensifying an apparently flagrant crime by the added aspect of premeditation and motive. Such was noticeably the feature in the case of J. L. J., admitted to the Rockwood Asylum, July 12, 1886.

The patient, a well-built, muscular man, weighing 170 to 180 pounds, was forty-two years of age at the time of admission, and was said to have had epileptic seizures for five or six years. He had made an assault upon a prominent lawyer in Ottawa and nearly succeeded in taking this man's life. He had some legal business to transact with Mr. Mac T., and there was some trivial dispute regarding a technical point. Suddenly J. left the lawyer's office, went to a hardware store, where he purchased a sharply pointed knife, returned, recommenced the conversation, and without warning stabbed Mr. Mac T., when his back was turned, inflicting a slight wound near the jugular vein. The patient has never been able to give any connected account of the affair,

[1] Echeverria, *American Journal of Insanity*, Vol. XXIX., p. 517.

which was undoubtedly an impulsive act, whose details are not clearly defined in his mind. J. was arrested and confined to jail, where he had several fits, after which he appeared much exhausted. In the asylum, under bromide treatment, he gradually improved, and became fairly quiet and industrious, though subject to epileptic seizures upon slight excitation. In the spring of 1888 the bromides were omitted through some oversight, and he became irritable and unusually cross. On May 2nd he was working near the dock with a gang in charge of several attendants; while resting for a few moments, he sat down on a log about thirty yards from the edge of the lake. Suddenly he jumped up and ran towards Dr. C., the Medical Superintendent of the asylum, who was standing at the edge of the lake with his back toward the patient. Dr. C. did not see him, and in a moment both were in the water. The patient made a desperate attempt to drown Dr. C., and said, "Doctor, we will drown together." A very bitter struggle took place, but fortunately a tragedy was avoided, as after a time help arrived. The patient, when rescued, implored the others to kill him, but after a few minutes seemed to be much as usual, though suffering a good deal from his immersion in the cold water. He said, after a day or so, that he had no reason for the assault, any more than that he thought an attendant had given him an overdose of some simple medicine; that he regarded Dr. C. as responsible for the attendant, consequently to blame for the mistake, and that while he was sitting on the log he felt an irresistible impulse to kill both himself and the doctor. In October, 1888, J. made an impulsive attack on an attendant and nearly choked him before assistance arrived; this was an impulsive attack without reason. In November, 1888, he made another assault of the same kind on an attendant and shortly afterwards made another attack on Dr. C. In July, 1889, he attacked a patient without reason, and in March, 1890, attacked two attendants without the slightest warning. At present, November, 1892, he is showing a tendency to degenerate. His memory is failing so that he cannot remember the names of those about him without making a great effort. He has become stout, cannot reason about the most trivial matters, and is much more stupid. If not carefully guarded he will still make impulsive attacks. The fits are of short duration and are of the Jacksonian type.

The association of hallucinations with epileptic impulse has had prominent illustration in the cases already recorded, and may be emphasized by reference to the history of the jurisprudence of insanity. Brierre de Boismont describes the countryman who suddenly "seized a scythe and commenced cutting everything before him, incited by a voice which bid him to do so. After having traversed a great extent of arable land, he stopped, worn out by fatigue, and then fell asleep beneath a wall."[8]

The murderer of Dr. Geoffrey, chief physician of the Arvignon Asylum, for several days before the murder heard a voice which said to him, "Kill the doctor; if you don't you'll be unlucky." "When the doctor came he complained of a pain in his foot; begged him to examine it, and while the medical man was stooping, seized him round the body, and plunged into his left side a piece of iron that he had sharpened some days before for this purpose."[9]

Mental epilepsy, the type of the fulminating psychoses, the *epilepsie larvée* of Morel and Falret, is thus distinct in periodicity, severity and instantaneity of attacks; ensuing stupor and coma; aggressive violence without cause, and irresistible impulse leading to suicide and murder; delusions and hallucinations; reproduction of identical insane ideas in each seizure; loss of consciousness of the cerebral regions involved, either in the primary discharge or its subsequent diffusion; and gradually increasing debility of the mind, manifested by irritability, weakened power of attention, failure of understanding and memory, eventuating in more or less complete dementia, and possibly in death.

At first the *morbus sacer* of the ancients, epilepsy was chosen by the Pythian priestess for the affliction of intruders upon the sacred oracle; later, as the falling sickness, its mental manifestations intensified the al-

[8] Brierre du Boismont, *The Medical Critic and Psychological Journal*, Vol. II., p. 78.

[9] *The Medical Critic and Psychological Journal*, Vol. I., p. 78.

lliance of medicine with magic, sorcery, and witchcraft the victim, when fortunate, receiving the benefits of the science of the day, such as the administrations of the "brains of mountain goats drawn through golden rings," or the interment of a "living black cock along with a lock of the hair and some parings of the nails;" or, if less favored, he was immolated at the stake.[10] After centuries of superstition and ignorance may we hope that light will finally come from the teachings of modern pathology?

A CASE OF CHOREA CURED WITH STRYCHNIA.

In the *Gaceta Medica Catalana*, Feb. 28, 1893, Dr. Bonfilio Gorriga reports a case of chorea in a boy 14 years of age, of nervous temperament, with a family history of rheumatism and nervous troubles, cured completely with strychnia. The first few days the lad was treated with the bromide of potassium and chloral, and then the following prescription was used: Syrup of citron, 300 grammes; sulphate of strychnia, 5 centigrammes; dose, three teaspoonsful daily, which was increased to eight daily. W. C. K.

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[10] D. Hack Tuke, "History of the Insane in the British Isles," pp. 4, 20, 37.

REFLEX DISTURBANCES IN THE CAUSATION OF EPILEPSY.[1]

By WILLIAM C. KRAUSS, M.D.,
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EPILEPSY must be considered as a complex symptom arising from a multiplicity of causes. That form of epilepsy due to peripheral irritation becomes every day more and more realistic to me, so that I am fast becoming a skeptic on the question of idiopathic spontaneous epilepsy.

The tendency of the times is to find a cause for every effect, and to regard with suspicion every effect that has no appreciable cause. If, after an unsuccessful attempt to find some provocative agent, and the epilepsy dates from infancy, coupled with an inherited neurotic temperament, then I am satisfied with the term idiopathic. This designation, however, signifies but little except perhaps to believers in spontaneous generation; it does not imply that some cause may or may not have been present—only that we are unable to find it, and so puts a scientific varnish on an otherwise faulty and unpolished conclusion.

We learn by studying the fundamental laws of nature that all matter is in a constant state of motion, and anything that hastens or retards this vibration produces an equivalent amount of heat or heat values. Moreover, that force cannot be annihilated. If destroyed in one form it reappears in another, without suffering any loss. Apply these laws to the human system and we can account for reflex epilepsy perhaps as follows: A perfectly normal nervous system holds sway over a healthy, vigorous organism; the functions of secretion, excretion

[1] Read at the 87th annual meeting of the Medical Society of the State of New York, held at Albany, N. Y., Feb. 7-9, 1893.

and assimilation follow closely the physiological laws governing them. The result of these metabolic forces means work, either mental, or physical, or both along some clearly defined channel. The whole system, then, is in a normal state of motion, each fiber and gland working faithfully and assiduously to keep the structure in a state of perfect equilibrium. Perchance a nerve trunk or nerve terminal is subjected to some insult causing obstruction, retardation or interference of its molecular vibration; accordingly, heat units or heat values are generated because of this irritation, reflected to the great heat centre, the brain, and these converted into heat equivalents such as pain, tremor, spasm, etc., referable to the seat of the initial lesion. This process continuing indefinitely without relaxation, accumulation of heat values ensues and an explosion of nerve force is the result.

Reflex epilepsy means, therefore, a state of irritation of the cerebral centres produced not by a central but by a peripheral lesion. The peripheral irritation is reflected to its cerebral center in the same manner that a central or cerebral lesion reflects the irritation to the extremities. Thus in Jacksonian, epilepsy a lesion pressing upon the motor center of the right arm is manifested by spasms beginning in that arm; and likewise, in general epilepsy, the point of origin of the aura denotes most probably the seat of irritation in the cortical centers of the brain.

The line of demarcation between reflex and traumatic epilepsy should be sharply drawn. In the latter the irritative lesion is direct and local, the result of a trauma to the cranium, and the consequent convulsions are in a degree amenable to the surgeon's art, still not to such an extent as was claimed by observers a few years ago. This form of epilepsy will receive worthy attention in a subsequent paper.

It is true that not every scar, ingrown toenail, phimosis, pinworm, or what not, begets reflex cerebral disturbance, or else this form of disease would be as wide spread and prevalent as was the itch during the middle ages. Therefore some other property or idiosyncracy

must be present in order that the conditions be fulfilled. A neuropathic disposition, either inherited or acquired, is the *sine quâ non* of this symptom-complex. This need not necessarily be present at the time the irritation commences, but may be saddled upon the system, the result of the tireless, unceasing effort of the brain to counteract the nerve strain. The patient in a short time becomes peevish, excitable, anæmic, and the parents will state that the child has of late "become nervous." In those cases of an inherited neurotic disposition, the convulsive attacks appear much sooner after the advent of the irritative lesion, and as a rule the epileptic habit is early and fast ingrafted upon the constitution. This irritation once relieved or remedied, the habit still persists in these latter cases, and to all intents and purposes the patient has the appearance of suffering with idiopathic epilepsy. When such is the case, the nature and origin of the disease is almost impossible to ascertain, and the epilepsy is erroneously classified as spontaneous or inherited.

The question may now be asked, what shall we look for in deciding the immediate causation of reflex epilepsy? As a rule, whenever practicable, I have the patient remove all his clothing and examine him thoroughly, beginning with the feet.

Ingrown toenails, corns and callouses are not infrequently the cause of epilepsy. Scars about the limbs, disorders of the genitalia, incomplete descent of one or both testes are some of the causes in youth. In girls the condition of the clitoris and mouth of the vagina should be carefully ascertained; also whether there is incontinence of urine or the presence of oxyurides in the vagina or rectum. Hare, in his monograph on epilepsy, says "that it may be laid down as a fact that in all cases in girls, in which epilepsy of unknown cause develops, the vagina should be examined for the presence of any pin worms which may have emigrated from the rectum." The condition of the rectum should not be overlooked, but carefully explored for ulcers and irritating hemorrhoids. Coming to the head we have an extensive field for ex-

amination. The mouth, nose, ears, eyes and scalp may all harbor seemingly trivial disturbances, which under other circumstanceswould pass unheeded and unnoticed. Disorders of dentition, such as faulty direction in the growth of the teeth, hidden fangs, caries, neoplasms in and about the buccal cavity, retained foreign bodies in the pharynx, scars, the result of ulcerative or specific processes about the tonsils, tongue and larynx, polypi and foreign bodies in the nose and ears, disorders of refraction; in short, whatever can impinge either directly or indirectly upon nerve trunks or nerve filaments, other conditions being equal, may produce reflex symptomatic epilepsy. These, then, are some of the external causes, and to discover them is easy, very easy, as compared with the probable internal causes. No doubt you are all acquainted with the stomach as a very frequent contributor to this subject. Those of us who pay special attention to nerve diseases receive many cases labelled epilepsy due to stomach trouble. The round worms of the intestine are a common cause, and have been recognized as one of the most prolific agents in the etiology of this disease. Disturbances of nearly every internal organ have, according to various writers on this subject, at one time or another produced epilepsy.

There are two organs, however, in this list of causative agents, to which I briefly invite your special attention—namely, the stomach and the urethra—two of the most important canals known to man, lay or professional. The stomach, because it receives not only that which nourishes and sustains the human economy, but nearly everything else that cannot be conveniently sewered in some other way; the urethra, because through it flow little drops of water mixed with little grains of sand, and at times another fluid coming from another gland. In a boy, and not necessarily such a small boy, either, what two organs are subject to more use—abuse—and refuse—and what two organs call forth more care—repair—and despair? Surely none. The importance of the stomach as a primary etiological factor in the causation of reflex

epilepsy is, in my opinion, overestimated. I will not deny that the indigestion of indigestable matter invites convulsions, and that after a brisk purge or emesis they disappear. Many patients tell their physician that such was the cause, the starting point of the first attack, and the physician confidingly tells the specialist the same story. They will further testify that they can foretell the approach of an attack by the voracious appetite, peculiar sensation at the pit of the stomach, vomiting of watery fluid, and the patient's desire to eat *anything* and *everything* that comes within his reach. Put this patient on a bland or exclusive milk diet and keep him on it for months; give him pepsin, trypsin, papoid, etc., and if your experience is similar to mine, he will continue to convulse and froth at the mouth, and you are fortunate indeed if his parents do not become similarly affected. I believe that in many of these cases we are on the wrong trail and must seek the cause elsewhere. The symptoms denoting gastric affinity are not so much epileptogenic as epileptopathic. These disturbances, as the patient and parents declare, hold a close relation to the paroxysms, and I believe they are only localized epileptic attacks or epileptic equivalents. The increased tension in which the nervous system is held just prior to an attack, stimulates the gastric glandular system, through the sympathetic and pneumogastric nerves calling forth an abnormal secretion of gastric fluids, and the flow of gastric juice means an appetite. The stomach naturally becomes tender and hyperæsthetic under such rule long continued, and anything that irritates or demands undue attention is rewarded with stern rebuke. I have seen the stomach perform similar antics in hysteria and general paresis, and yet neither you nor I would affirm that the gastric trouble was the cause of these ailments.

Now turn to the urethra, such as is controlled by a boy from his eighth to eighteenth year. He may live high or live low, be a street urchin or mother's pride, a country lad or a city tough, it matters little, he is for all that a boy—and as dogs will be dogs so boys will be boys.

The same old story—he has eaten green apples and has had fits. He has been doctored for his stomach, and strangely enough the fits still persist. As he comes into your office you notice that his head hangs, his eyes are dull and sunken, his gait labored and heavy and his answers are backward and evasive. You put the question direct and with some force, and he admits that he has occasionally masturbated, but that he learnt it from the other boys. Now, instead of upbraiding and threatening him you do your duty, and examine his genital organs inside as well as outside, and in nine cases out of ten you will find some irritation seated most generally in connection with the penis. The prepuce may be too long or too short, adherent or constricted; the frenulum too short, producing a mild form of hyporpadias; or the prepuce has never been everted, and large accumulations of smegma are present. Supposing that none of these conditions are found, you have still the most important examination to make—the exploration of the urethra—and how often is it undertaken in these cases. The boy has never had connection, and hence you infer no gonorrhœa with its attending inflammation and strictures. But try to pass a No. 12 or 15 Benas catheter; and, although they glide along so nicely at other times, you are beset with obstacles in passing through constrictions, evading the boy's hands, and in convincing him that his urethra is anæsthetic and he cannot have any pain. I am thoroughly satisfied that there are many disturbances present in a good boy's urethra which prompt him to vicious habits; and they, in turn, if his constitution is impressionable, lead to serious nervous disorders, such as chorea, epilepsy, neurasthenia, etc. Vegetations, polypi, cysts or other neoplasms in the walls of the urethra, producing constrictions, hyperæsthetic areas, slow forms of inflammation are translated by such symptoms as priapism, spasm of the urethral muscles, frequent micturition, spermatorrhœa, masturbation, and sexual excesses. The influence of these morbific agencies upon the nervous system is too well known to be here reviewed. In a

short period of time I have treated six boys with reflex neuroses, five of whom had reflex epilepsy due to disturbances along the urethral canal. In some of these cases I have found the meatus urinarius surrounded by a red border or ring, portraying perhaps the congestive state of the urethral lining. An urethroscopic examination should never be omitted, for by its revelation the exact nature of the lesion can be determined.

My treatment of these cases has been, besides the administration of bromides, in the use of a mild galvanic current of from one to five miliamperes, each treatment lasting about three minutes, three times weekly. In the employment of the ordinary urethral electrode I have been annoyed by several inconveniences. The common olive point electrode is more or less inflexible; besides, having a metallic point, its introduction in many cases becomes difficult, owing to the fact that a contraction of the walls of the urethra is produced by the stimulus imparted to the mucous membrane by the metal. Then, too, in cases of stricture, vegetations, etc., where the electrolytic action is desired, the metallic point is liable to produce injury in its passage; or when the olive is in close proximity to the sphincter vesicæ, a strong current may cause unpleasant sequellæ.

To overcome these drawbacks Messrs. Geo. Tiemann & Co., of New York, have made, at my instigation, an electrode possessing lightness, flexibility and a non-metallic bulbous point.[2] A Benas catheter, *c*, or bougie, is encircled by a narrow steel band, *b*, about 1 to 1½ inches from its bulbous extremity, *a*. This band is connected with the attachment, *d*, by means of a soft copper wire extending through the interior of the catheter. The electrode is made in two sizes, No. 15 and No. 20 of the French scale.

In all cases in which it has been employed thus far it has given perfect satisfaction.

[2] See *The Journal of Electro-Therapeutics*, Vol. X, No. 4.

In conclusion, I wish to report a case which to me is a typical one of reflex epilepsy:

Bessie B.: *Age*, 3 years, 10 months; *weight*, 31 pounds; *height*, 37 inches; *constitution*, rather delicate; *complexion*, fair; *hair*, brown; *eyes*, blue.

Antecedents.—Parents both living and healthy, offering no hereditary taint of any kind; no history of syphilis or tuberculosis.

Early History.—Born at full term. Dentition passed off smoothly, with the exception of some slight gastric trouble which lasted but a few days; had no convulsions of any kind. She learnt to walk in her tenth month. When two years old she was troubled with ascarides, diagnosed by their presence in the feces, condition of the child and reflex phenomena. She did not, however, at any time fall into convulsions.

At three years she passed through a severe attack of whooping cough. Otherwise the child passed its early infancy without any serious disturbance; seemed to be in perfect health, never complaining, always bright, active and cheerful.

Status Præsens.—Rather anæmic, but well developed child, offering no particular stigmates except the one to be described later on. Sensation, mobility and organs of sense unimpaired; organs of secretion and excretion in good working order; no glandular enlargements, and percussion of head is not sensitive. Of late she has become uneasy, restless, touchy, or, as the mother aptly terms her condition, "she has become nervous."

On March 8th, 1888, as the mother was scrubbing the floor, the child, unnoticed, entered the room, stumbled and fell sideways into the tub of boiling water. The outer side of the left leg from the hip to the foot was badly burned and blistered. She was put in bed, suffered great pain for two weeks, then made a rapid recovery. At first she was timid about walking, and limped about for some weeks, complaining of pain at the left knee-joint. An examination of the left leg revealed a cicatrix nearly quadrilateral in shape, situated at the bend of the knee. With the leg extended it measured 5 centimeters in length, and varies from 4–5 centimeters in width. Situated on the outer side of the leg between the outer edge of the patella and the tendon of the biceps muscles. Free movement of the knee-joint is not inter-

fered with. The cicatrix is non-adherent, tender and painful, of a pinkish color, and presents one nodosity cord-like in appearance.

In May, 1888, the mother noticed that at times, while the child was walking, she would suddenly stop, the left leg would stiffen, and the toes, acting as a fulcrum, the whole member would rotate outwards, the child's expression would change, but it remained conscious, complaining of a pain seeming to radiate from the vicinity of the knee-joint. The attacks lasted from 1 to 2 minutes. No other phenomena were noticed, and the mother thought the trouble was caused by a faulty shoe.

These attacks occurred at first once daily, sometimes twice, continually growing more severe until both extremities became affected. About November, 1888, the child would awaken at night, generally soon after retiring, cry out, the legs would stiffen, then would kick violently for a few moments. The arms remained motionless; no incontinence of urine, no frothing at the mouth and no loss of consciousness. These attacks lasted from 3 to 5 minutes, the mother thinks, and would occur nightly for sometime, then cease for one to two weeks. Soon these spasms became general. The arms as well as the legs would be seized with tonic, then clonic contractions, followed by loss of consciousness, incontinence of urine, frothing and bleeding at the mouth, pathognomonic symptoms of classical epilepsy. This condition of things existed at the time that I first saw the child in September, 1889.

I made a diagnosis of epilepsy of reflex character and laid out the following treatment: The cicatrix being too large for excision, I advised painting it daily with collodion. Internally, I prescribed equal parts of the Bromides of sodaammonia and potassium, 5 grains three times daily, and the administration of cod-liver oil. On this treatment the child reacted nobly and the attacks became less severe and less frequent. After two months' treatment the cicatrix appeared more healthy and not painful to pressure. At the end of six months the attacks had disappeared and since then there has been no recurrence. The bromides were gradually dispensed with, and at the present time the parents consider the child cured.

TETANY, WITH REPORT OF A CASE.[1]

By J. W. McCONNELL, M.D.,

Assistant Physician to the Epileptic Hospital of Philadelphia; Instructor in Electro-Therapeutics in the Philadelphia Polyclinic.

THE comparative infrequency with which tetany occurs in this country, the interesting phenomena presented, the necessity of recognizing it, and its obscure pathology, are my reasons for reporting the following case:

H., female, aged thirty-three years, unmarried, tailoress, a native of Ireland, with a family history exceptionally good. She had no illness except those common to children. She commenced menstruating when twelve and and a half years old, has always been perfectly regular, and other functions are normally performed.

Her present illness occurred December 8, 1892. A few days before, she was caught in the rain and wet through, and as a result, seemed to be suffering from a severe cold, stoppage of the air passages, slight discharge from the nostrils, irritation of the mucuous membrane of the pharnyx, and slight swelling of the tonsils. The usual home remedies were used, and the trouble seemed to be relieved.

On the day of the first attack of spasm, December 8th, while at her work she commenced to feel ill with headache, vague pains throughout the body, and a general sensation of numbness and prickling. About four hours after the first feeling of illness she was seized with tonic contractions of the muscles, first of the right hand and arm, and afterwards gradually involving the left hand and arm, both lower limbs, tongue and diaphragm.

At first the fingers were flexed at the metacarpo-phalangeal joints and extended at the carpo-metacarpal and phalangeal joints, with the thumbs adducted and opposed to the index finger. Later the hands became flexed on the wrists, giving a cup-shaped appearance to the hand. The muscles of the forearms and arms were all involved, causing a rigidity of the upper limbs in a

[1] Read before Philadelphia Neurological Society, March 27, 1893.

perfectly straight position. The muscles of the shoulder seemed to be affected, also the right sterno-cleido-mastoid, the head being drawn somewhat to that side.

The lower extremities were not affected to so great a degree as the upper. The feet were in a condition of extreme extension with the toes flexed. The thighs and legs were extended and straight, all of the muscles of the lower limbs seeming to be in a spastic state of almost equal degree. The muscles of the abdominal walls were contracted, the recti standing out very prominently.

The only muscles of the face that showed marked involvement were the zygomatics, and in consequence there was a peculiar smiling or sardonic expression. The tongue became stiff, making articulation very difficult, and when attempted causing pain in the tongue.

A hypodermic injection of morphia (grain $\frac{1}{4}$) was given, but before any effect was noticed the diaphragm was attacked with spasms, causing difficulty of respiration, and quickening the pulse. In a few minutes all the symptoms were relieved, and the patient dropped off to sleep, having been in the condition quite an hour. Fifteen grains of bromide of sodium, combined with eight grains of chloral, were ordered to be given every two hours. Voluntary motion caused great increase of the spasms and pain. The muscles were intermittently relaxed and contracted. Pressure on the brachial artery and nerves caused intensification of the spasm in the forearm and hand. There was free perspiration but no increase of temperature as taken in the axilla. The second attack lasted about thirty minutes, and left the patient in a condition of extreme fatigue, with sensations of soreness in the muscles. She had no third attack, but on the next day she developed symptoms of throat trouble, and for a few days suffered from an attack of follicular tonsilitis. Up to the present time, nearly four months after the onset, there has been no return of any sign of the muscular condition above described, and the patient seems to be in perfect health.

The manner of onset, the absence of history of traumatism, the absence of cerebral disturbance, the fact of the trouble having commenced in the extremities, the retention of consciousness, the bilateral involvement, the intermittent character of the attacks, and the increase of the spasm when pressure was made on the artery and nerves, were the points by which the diagnosis was made.

There was no foundation for a supposition of ergotism, and organic brain disease was excluded.

Three points in this case of most interest are: the severity of the attacks, especially the first; the rapidity with which the patient recovered; and the subsequent throat trouble.

From the reports of cases, the spasms seldom involve the muscles of the abdomen, face, tongue and diaphragm. Trousseau[2] recognized three classes of the disease, separating these according to the severity of the symptoms. In the first he places mild cases affecting the limbs solely; in the second, those in which the muscles of the face and neck were involved; in the third, those in which the spasm was both very severe and widely diffused. This case properly belongs to the third class. Perspiration, which occurred in it, is not present in the other classes. Dance[3] speaks of one case in which the perspiration was so profuse as to form a cloud of steam about the patient. In many instances abundant perspiration marks the crisis of the attack, and in this case it became noticeable just previous to the relaxation of the spasm.

In most cases of tetany the condition of spasm will last with varying severity and periods of recurrence for weeks or even years. Erb[4] regards cases that terminate in a few days as a great rarity, and thinks that usually a long time elapses before complete recovery takes place. Althaus[5] says that most patients recover in two or three months, especially under favorable circumstances. Gowers[6] claims that a case of any degree of severity may last only a few days. The subject of this report had but the two attacks occurring within twenty-four hours, and I have seen her from time to time until three weeks ago, and there has been no recurrence in the slightest degree.

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[2] Trousseau: Quoted by H. N. Lyman, *Trans. Assoc. Am. Phys.*, Vol. i. Reported in *Med. News*, 1886, Vol. ii., p. 13.

[3] Dance: Quoted by Althaus, *Med. News*, 1886, Vol. ii., p. 485.

[4] Erb: Ziemssen's Cyclopedia of the Practice of Medicine. Vol. xi., p. 375.

[5] Althaus: Tetany and Tetanilla, *Med. News*, 1886, Vol. ii., p. 470.

[6] Gowers: Manual of Diseases of the Nervous System, Am. Ed., Phila., 1888, p. 1054.

The history of an acute cold preceding the attack, and the subsequent quinsy, suggest that the disease may be of toxic or infectious origin. Shattuck[7] reports a case in which the symptoms of tetany were noticed immediately after recovery from diphtheria.

Stewart[8] gives an account of a patient who had been suffering with chronic diarrhœa for ten years. Symptoms of tetany made their appearance two years after the commencement of the intestinal trouble, and were associated with exacerbations of that condition. In this case, also, there was a possibility of a myxœdemoid state.

Kussmaul[9] describes the case of a boy six years old, whose surroundings and food were of the poorest kind, and in whom tetany occurred in connection with a bad diarrhœa. The first attacks were relieved, but three months later he had another spell of vomiting and purging and the tetany returned. Althaus describes a like cause in a child three years old, who had attacks recurring every few hours.

Ord,[10] of London, exhibited a woman with symptoms of myxodema and peculiar symmetrical contractures of the flexor muscles.

Removal of the thyroid gland appears to be an exciting cause of a very fatal form of tetany. But little is known of the function of this gland, but experiments have shown that removal of one half of it does not produce tetanic symptoms. When, however, the whole gland is extirpated, symptoms of tetany quickly appear and are often quickly followed by death.

Stewart,[11] who studied the condition in animals, offers the theory that the function of the thyroid gland may be to remove from the blood matter which, if retained, would be injurious to the nervous system.

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[7] Shattuck: *Boston Med. and Surg. Jour.*, 1889, p. 231.

[8] Stewart: *American Journal Medical Science*, 1889, Vol. xcviii., p. 549.

[9] Kussmaul: Quoted by Althaus, *Medical News*, 1886, Vol. ii., p. 486.

[10] Ord: Quoted by Althaus, *Medical News*, 1886, Vol. ii., p. 484.

[11] Stewart: *American Journal Medical Science*, 1889, Vol. xcviii., p. 553.

Gowers[12] speak of diarrhœa, either acute or chronic, as one of the most fertile causes of this disease. Lyman[13] contributes a case in which the tetany appeared in a man who was affected with phthisis. Trousseau[14] mentions a case where the patient eventually died of phthisis. Müller[15] reports cases in which dilatation of the stomach was also found. Other writers speak of the probability of sepsis, rickets, the puerperal state, fevers, and other conditions in which a toxic condition might be originated. Erb,[16] in speaking of the nature of the disease, regards "the increased electrical excitability seen in it as due to molecular changes in the nerve substance. These changes are probably caused by delicate trophic disturbances occasioning great increase in the excitability of the motor apparatus, hence spasmodic attacks should be expected to occur whenever any unusually strong stimulus affects the motor nerves. Such a stimulus may be found in the voluntary efforts to perform muscular movements."

Althaus,[17] who seems to have made a thorough study of tetany, tends to regard it as due "to an undue and exalted state of excitability of the gray cells in the anterior cornua of the cord, and the motor nuclei in the medulla oblongata in accordance with the localization of the symptoms."

The exact pathology of the disease is as yet unknown, but Hirt,[18] Dana,[19] Gowers,[20] and others, mention the possibility of the disease being peripheral in origin, the seat of the lesion being located in the gray matter of the spinal cord. Erb mentions the trophic disturbance, and as a suggestion as to a possible cause for these changes I offer the query: can the disease be due to the absorption of toxic products, the result of putrefaction or infection?

[12] Gowers: Op. cit. p. 1050.
[13] Lyman: *Medical News*, 1886, Vol. ii., p. 487.
[14] Trousseau: Quoted by Althaus, *Medical News*, 1886, Vol. ii., p. 487.
[15] Müller: *American Journal Medical Science*, 1889, Vol. xcviii., p. 552.
[16] Erb: Op. cit., p. 373.
[17] Althaus: *Medical News*, 1886, Vol. ii., p. 488.
[18] Hirt: The Diseases of the Nervous System, N. Y., 1893, p. 486.
[19] Dana: Text-book of Nervous Diseases, N. Y., 1892, p. 444.
[20] Gowers: Op. cit., p. 1056.

Critical Digest.

ANATOMICAL, PHYSIOLOGICAL AND PATHOLOGICAL NOTES.

By HENRY H. DONALDSON, PH.D.,
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The Functions of the Ganglion Cells of the Cervical Spinal Cord.

By DR. OTTO KAISER. (19 Plates; Haag; Martinus Nijhoff, 1891.) This important paper was written in response to a prize question proposed by the Society of Arts and Sciences of Utrecht.

This question called for the discussion of the Functions of the Ganglion Cells of the Cervical Spinal Cord, on the basis of an anatomical investigation, including also their arrangement, number, size and chemical characters at different periods of life in man, the monkey, the bat, the insectiveors and the rabbit.

The prize was awarded to the essay before us, which covers some eighty pages, and is accompanied by numerous plates and figures.

The facts set down in the introductory portion are historical.

In this, the various lines of evidence, showing, on the one hand, what groups of cells in the spinal cord give rise to nerve fibres innervating the arm; and, on the other, the portions of the arm to which these different nerve roots are distributed—are brought together; and the results are found to be fairly harmonious.

It is between the fourth cervical and the first thoracic segment, inclusive, that the centres lie; and in a general way, the more proximal portions of the limb are innervated by the centres lying most cephalad in the cord; whereas, the distal portions of the limb are innervated from lower lying centres.

Departing from this general outline, the author begins his own investigations with the study of the arrangement of the cells in man.

The cord was hardened in Müller's Fluid, cut into serial sections one-fiftieth of a millimetre in thickness, and stained with naphtylamin brown.

Not every section was preserved; but, according to the size of the animal, one section in every three, five, ten or twenty was retained.

Some of these were carefully drawn with the camera forming the plates: in others, the counting was carried on, and the number of cells in a given region estimated by multiplying the number of cells counted by the number of sections which had been cut.

The size of cells was measured, in length and breadth, and then their number determined according to groups into which they were classified.

According to the manner in which they took the stain, the cells were designated as chromophobic, or those which did not stain; and chromodectic or those which stained in a slight degree; and chromophilic or those which stained deeply.

The anatomical portion proper opens with a description of the grouping and number of these cells in man.

When this enumeration is thrown into the form of a curve, it is found that in passing down the cord from the third segment there is very rapid increase in cells which lie in the lateral portions of the grey anterior horn.

This occurs in man at different ages, and is present in all animals with which the human cord is here compared.

According to our author, the cell groups found in this region of the cord are not continued through the entire length of the cord, but are peculiar to this portion; and all the evidence goes to show that this group of cells, extending from the fourth cervical to the first thoracic segment, is to be associated with the muscles of the arm.

In no animal here examined are these cells so numerous as in man; they are, however, large, and not easily stained in such creatures as the mole and the bat, in which the motions of the forelimb are under less voluntary control. Indeed, here and throughout, it would appear, the cells most under voluntary control stain better, and are of smaller size, than the cells whose activity is more largely reflex.

With size, the author associates the increased capacity for discharging energy; whereas, with number he associates the increased refinement of coördination in the muscles controlled.

As regards the number of cells at different ages, his observations bring out some interesting facts concerning man.

In a male of thirty-six years, he finds approximately 250,000 cells in the ventral horn, from the fourth cervical to the first dorsal segment, inclusive.

When one compares this with the old account of Stilling, which gives but 300,000 ventral fibres in the entire cord, it is plain that either Stilling's account is far too low, or that there are present in the ventral horns a very large number of cells whose axis cylinder prolongations do not contribute to the ventral nerve roots, and it would seem that the former was the more probable explanation.

As regards the number of cells in the cervical region of man at different ages, his estimations give the following for the space between the fifth cervical segment, and the first dorsal segment, inclusive:

A fœtus at the beginning of the 5th month	shows	59,500 nerve cells.
" " 9th	"	118,330 "
A new-born child	"	104,270 "
A boy of fifteen years	"	211,800 "
An adult man of thirty-six years	"	221,206 "

There is here evident a very interesting increase in the number of nerve cells with the age of the individual, and although the fœtus of nine months possesses a few thousand more than the new-born child in this case, a certain amount of latitude must be given for individual variations.

The same argument might also apply to the difference noted between the boy of fifteen years and the man of thirty-six.

But, in general, there is a progressive increase which is sufficiently exemplified by comparing the figures for the fœtus at the beginning of the fifth month, those for a new-born child, and those for the boy of fifteen years.

It is, interesting, though perhaps not exactly just, to bring into comparison, with these results, those of Harting, published in 1845, in his "Recherches Micrométriques."

This author estimated the number of fibres in both the median and crural nerves, in both the new-born and adult male and female, and found in many instances that the number of nerve fibres in these nerves was the same in the new-born as in the adult; and also, a few years since, Schiller, working under the direction of Forel, determined the number of nerve fibres, in the oculo-motor nerve of the cat, at birth and at maturity, and found the numbers practically identical.

On the other hand, we know from the work of Birge, that the number of nerve fibres in the ventral roots, increases in the case of the frog, with the size, and therefore with the age of the individual.

The correctness of Harting's results may be fairly questioned, and we have then in the frog and man an increase in the number of nerve fibres after birth whereas, in the cat, judging from the condition in the oculo-motor nerve, the number of nerve fibres is fixed at birth.

Man, then, as compared with the cat, would have a nervous system which developed more slowly; and, as compared with the frog, it would appear that the development of nerve elements was more limited in the time of its occurrence.

The subject is certainly worth the most careful investigation, and is of the utmost importance from many standpoints, since it appears that the increase in the number of nerve cells, in later years, is due to the growth and expansion of the simple cells which are laid down early in the fœtal existence of the individual.

It is found that the chromophobic cells are larger than the chromophilic, and that both in man and the rabbit, which were alone examined, the size of the individual cells slowly increased with the age of the subject.

With regard to the grouping of the cells in the cervical region, the figures are necessary for a detailed criticism, and therefore we shall simply give the author's conclusions:

The cervical regions contain the following groups:

(*a*) The nucleus for the muscles of the back, which extends as a medial column through the entire length of the spinal cord.

(*b*) The nucleus of the accessory nerve, which lies on the lateral side of the nucleus just mentioned, and extends from the medulla oblongata into the sixth or seventh cervical segment.

(*c*) The nucleus of the phrenic nerve, which is placed between the two nuclei just mentioned, and extends from the third to the fifth or sixth cervical segment. Besides this, some fibres for the phrenic nerve are in the part derived from the medial portion of the dorsal cell groups.

(*d*) The nucleus for the upper extremity, which is located laterally, begins in the fourth or more rarely in the third segment, behind the nucleus for the acces-

sory nerve, and reaches to the first or second dorsal segment.

The cephalic half may be divided into several groups, which innervate the muscles of the shoulder-girdle, the flexors and rotators of the forearm as well as of the radial muscles.

The cordal half may be divided into a ventral and dorsal portion. The former innervates the adductors of the upper arm, the pectoral muscle, the lattissimus, the teres major and the triceps. The latter, the flexors and extensors of the fingers, the ulnar muscles, and the small muscles of the hand.

On the Brain of the Late George Grote, F.R.S., with Comments and Observations on the Human Brain and its Parts Generally.

By the late Prof. John Marshall, LL.D., F.R.S., Professor of Surgery in University College, London; President of the General Medical Council. (Plates i., ii., iii., Journal of Anatomy and Physiology, Vol. xxvii., 1892.) At his own request, the brain of Mr. George Grote, the historian, was examined at his death.

The examination was made by Prof. John Marshall, and to the description of the brain itself the author adds a number of interesting general observations.

It is best, perhaps, at the outset, to say that this paper has two peculiarities: in the first place, it is a posthumous publication; and, in the second, we should say from internal evidence that the manuscript has been completed some fifteen or more years ago.

For these reasons it is not subject to the same sort of criticism that should meet a publication of the day.

Mr. Grote weighed about 165 pounds, was 5 feet $11\frac{1}{2}$ inches in height, and died of renal disease at the age of seventy-five, in 1871.

It would appear that the brain had softened somewhat before the post-mortem examination.

The entire encephalon, with the pia mater, was found to weigh 1410 grammes, and about 21 grammes of fluid escaped upon the removal of the brain.

The subdivisions of the encephalon, viz., the cerebrum, cerebellum, pons and medulla, had the following weights:

Cerebrum,	1239 Grammes.
Cerebellum,	145 "
Pons and Medulla,	27 "

This encephalon is somewhat above the mean weight of 1389 grammes given by Welcker for males or 1366 grammes given by Boyd for males. One interesting point is the author's attempt to correct the brain weight as found for the influence of the various circumstances which may modify it.

He considers that, by age and disease, the weight has been so diminished that probably, at the prime of life, Mr. Grote's brain weighed 1474 grammes.

The relation of stature to the brain is connected with the question which Mr. Grote especially wished to have answered, viz., whether, in proportion to the rest of the brain, the cerebellum was in his case large or small.

As the weight of the cerebellum is more closely correllated with stature than is the weight of the cerebrum, the matter could only be investigated with due regard to this fact.

It appears that in Mr. Grote, whose brain may be designated as large, there was a disproportion of slight amount, but of such a nature that it was the cerebrum which showed the somewhat excessive development.

As a consequence the cerebellum was proportionately small; and Prof. Marshall points out that this may perhaps stand in some relation to the shape of his head, which was moderately brachycephalic but very high, the occipital fossa being therefore not very well developed. By a method which can hardly be recommended, the cerebral lobes in this brain were separated from one another and compared with those of three other brains, treated in the same way. The result of these weighings showed that Mr. Grote's brain, as compared with the three, controls, was most developed in the parietal region; the frontal, temporal and occiptial following in the order named, although ocular inspection indicated that the frontal lobe was very highly developed in his case, especially, on the orbital surface and along the line of the first frontal gyrus.

The surface of the brain was characterized by broad gyri, and therefore had the appearance of simplicity in its markings. For those interested in such matters, it is of interest to note that the anterior central gyrus was on the right side almost completely interrupted at the point where such interruption usually occurs. The measurements of the cortex, which are given, hardly permit of any inferences; but it would appear that the callosum was unusually well developed and that the white matter of this brain was, to say the least, abundant.

It is with this development of the white matter that Prof. Marshall associates the breadth of the gyri.

The latter part of the paper is taken up with the discussion of the significence of asymmetry in the human brain.

Prof. Marshall attempts to associate this to a certain extent with the "one-handedness" in man; and, of course, in this connection has to discuss the problem of localization of function in the cerebral cortex.

It is in this portion, especially, that the paper bears evidence of having been written a number of years ago.

The plates which accompany the paper, we are sorry to say, leave much to be desired.

Quain's Anatomy. *Tenth Edition.*

By E. A. Schäfer and G. D. Thane. Vol. i., Part ii., General Anatomy or Histology; Vol. iii., Part i., The Spinal Cord and Brain.

In the above-mentioned portions of the tenth edition of Quain's Elements of "Anatomy," we have a discussion, first, of the nerve elements; and, second, of the central nervous system.

The portion on the nerve elements contains some of the newer views on the structure of the nerve fibre, and somewhat less that is new concerning the nerve cell.

The structure of the medullary sheath receives proper attention, and the axis cylinder is described as showing a fibrillar structure without discussing the cause of the appearance.

The relation of the nerve process of the cell body is described in the text, but in the introductory pages cells and fibres are spoken of as two different elements.

In the part devoted to the central nervous system, one is struck by the number of new and very excellent illustrations; and here the cerebellum and cerebrum receive more attention than has hitherto been given to them in this work.

The fibre tracts in the spinal cord are carefully illustrated, and a number of other new illustrations of sections of the nervous system are introduced after preparations made by Prof. Schäfer.

Although many of the old cuts have been retained, it is certainly a distinct advantage that illustrations of specimens prepared by newer methods, and reproduced in different ways, should be found side by side with them, since the very method of reproduction, giving as it does an impression of texture, more or less different, from that of the thing itself, is thus balanced and modified.

The ample and systematic references to the literature, and the concise and full account of the best work, will make this part more useful than ever to the general student.

A Physiological, Histological, and Clinical Study of the Degeneration and Regeneration in Peripheral Nerve Fibres after Severance of their connections with the Nerve Centres.

By W. B. Howell and G. C. Huber. (Reprinted from the Journal of Physiology, Vol. xiii., No. 5, 1892; Vol. xiv., No. 1, 1893.)

The authors take up their subject under three subdivisions: a review of previous experimental work; an account of their own experimental work, and a critical resumé of surgical cases of primary and secondary suture.

Each subdivision is accompanied by very full reference to the literature.

It would seem as though a careful study of the manner in which the nerve breaks down in the process of degeneration, and builds itself up in that of regeneration, would add greatly to our understanding of the axis cylinder, the medullary sheath, and the nuclei of the sheath.

The observations of these authors were made upon dogs.

It appears that a nerve, separated from its nutritive centre, degenerates completely, almost simultaneously through its entire length, the medullary sheath being first affected, then the axis cylinder, the active agents in this process being the nuclei of the medullary sheath, which become greatly increased in number.

Of necessity, the method of investigation gives a series of separate, slightly different pictures; and the conclusions drawn depend upon the interpretations given to these pictures when considered in panoramic view.

As a natural result a great deal must be left to interpretation; and, after the very careful and cautious work by the authors, such questions as the origin of the medullary substance, and of the axis cylinder in the regenerating fibre, can receive no positive answer; nor is it plain from their work that the processes of regeneration are a repetition of the processes of development.

Concerning the response of the regenerating nerves

to different forms of stimuli, and the separation of the two functions of irritability and conduction, they have some good experiments. They also show that the central end of one mixed nerve may form functional connections with the peripheral end of another; and in the few instances in which this was tried in dogs, there was no consequent disturbance of function. We must have much more investigation along this line before general conclusions are permissible; but that there should not be a disturbance of function, when such an abnormal arrangement of the nerve fibres is effected, is difficult to explain in accordance with the current views concerning the architecture of the central nervous system.

Just here the subject of the third subdivision of their paper may be touched upon.

This critical resumé of surgical cases was taken up largely with the view of determining what evidence could be furnished for the idea that in man union of cut nerves was effected by first intention that is, without the preliminary degeneration of the peripheral portion of the nerve.

It turns out that multiple innervation of the skin and of muscles, whereby the section of one nerve trunk does not completely remove all the sensory or motor fibres going to a given region, will explain practically all the cases in man of so-called union by first intention; and it is just possible that the same condition of affairs is part of the explanation for the absence of functional disturbance following crossed sutures in dogs.

I give the conclusions drawn from the second portion of their paper, so far as they have placed them in their recapitulation.

1. After complete severance of connection with the nerve centres, the peripheral end of a nerve suffers degeneration throughout its entire extent.

2. The degenerative changes and the subsequent regeneration take place as follows:

(*a*) Segmentation of the myeline and axis at the intersegmental lines.

(*b*) Proliferation and migration of the internodal nuclei.

(*c*) Secondary fragmentation and absorption of the myeline (and the contained debris of the axis), most active in the neighborhood of the nuclei.

(*d*) Increase of protoplasm round the nuclei, forming

finally a continuous band of protoplasm lying in the old sheath.

(*e*) Formation of a new sheath on the periphery of this band, thus making an "embryonic fibre."

(*f*) Union of the embryonic fibres of the peripheral end with these similarly formed in the central end—the union taking place in the intervening cicatricial tissue.

(*g*) Formation of myeline in the peripheral end as isolated drops usually seen first near the nuclei. These afterwards unite to form a continuous tube. The formation of the myeline proceeds centrifugally, starting from the wound.

(*h*) The outgrowth of new axes from the old axes of the intact fibres of the central end—the outgrowth following quickly upon the development of the myeline.

(*i*) In the central end, especially when connection with the peripheral portion is not made, several new fibres may form within the sheath of an old one, taking the place of the one degenerated.

On the Structure of the Nerve Cells and on the Relation of their Axis Cylinder or Nerve Process, to the Protoplasmic Processes.

By A. S. Dogiel (Archiv F. Mikroscopische Anatomie, B. 41, Heft. 1., Bern, February, 1893.)

The observations recorded in this paper have been mainly made upon the nerve cells occurring in the retina of man and the lower vertibrates. With these cells the author is particularly familiar by reason of his careful researches into the structure of the retina, which he has carried on with the aid of the methylene blue method, which in his hands has been brought to a high degree of perfection.

As is well known at the present time, the majority of investigators dealing with the histology of the central nervous system, do not find the cell prolongations, either protoplasmic or nervous, anastamosing among themselves or with the prolongations of other cells.

Dogiel, in this present article, emphasizes several points which are novel, and contrary to accepted opinion.

He finds among certain nerve cells an abundant anastamosis of the fine branches of the protoplasmic processes.

He finds the nerve process arising at points very remote from the nucleated portion of the cell.

Among those cells whose nerve process soon breaks up into a large number of branches, he also finds anastamosis between their terminal branches.

To the two types of cells which have been described by Golgi and others, he adds a third, viz., cells which have no nerve processes, but in which the protoplasmic processes finally unite to form an axis cylinder.

This last point is certainly more a matter of interpretation than any of the others which have just been mentioned; and for ourselves we are inclined to consider the so-called protoplasmic processes in this third type of cells as simply the terminations of an incoming nerve fibre which surround the cell after the manner described by many other observers.

Finally, our author takes up the question of fibrillation in the nerve cell, and attempts to make it a basis for physiological inferences.

His very striking pictures of the relations of the fibrilla in the nerve cell are certainly impressive, although the older literature contains drawings not at all dissimilar.

There is, however, from the histological standpoint, so much yet to be proved, concerning the meaning of fibrillation, that we can hardly give very great weight to inferences based on our present information.

In discussing the fibrilla, he also discusses the interfibrillar substance; and suggests that in the various forms of touch-corpuscle, the portions which are not continuous with the axis cylinder proper may be considered as homologous of the inter-fibrillar substance of the nerve cells, again a suggestion which seems to us rather more picturesque than plausible.

It must be remembered, however, that at the present moment there is no graver question than that of continuity among the nerve elements, and a well supported demonstration of such continuity as a general character of the vertebrate nervous system would be a contribution of very wide-reaching importance.

Such continuity appears to be beyond doubt in special localities; for example, the spinal cord of some electric fishes, in which the large nerve cells in the spinal cord are united by broad protoplasmic bridges.

Asylum Notes.

By FRANK P. NORBURY, M.D.,

Jacksonville, Ill.

Extract from Pathological Supplement of the Thirty-seventh Annual Report of the Government Hospital for the Insane, 1892.

Summary of results found in seventy-three cases of mental diseases in females, with special reference to the condition of the organs of generation.

The study was undertaken mainly for the purpose of bringing together the lesions found in the generative organs; a complete synopsis of the cases is embodied in the report.

Gross organic disease of the brain was found in quite a number of cases, and the microscope revealed interesting changes in the majority; in many, however, the vascular changes and cell degenerations were only those incident to long standing insanity and to old age in common. In the sixty-nine cases in which the abdominal organs were examined, leiomyomata of the uterus, often multiple, were found in seventeen cases, fifteen of which were colored. The tumors were all small, the largest not over two inches in diameter, so that the disturbance occasioned by them could not have been great. Uterine polypi of small size occurred in six cases. Adhesions of the uterus, or some of its appendages, were present in seventeen cases; of these, fifteen were colored women. Cysts of the ovaries, usually small and unimportant, were found in eleven cases; atrophy of the ovaries was noted in twenty-three—usually in elderly women, and therefore physiological. The uterus was apparently smaller than usual in twelve cases, chiefly in aged women. There was but one case of malignant disease affecting the uterus, and that was due to an extension from the urinary bladder; there were only five malignant tumors found in any part of the body. It is somewhat surprising that so little serious disease was found in the organs of generation in so many women, the greater number of whom were from the lower walks of life. A great many of the conditions noted were unim-

portant, and though in some cases the lesions found may have, at some time, caused reflex mental symptoms, it must be concluded that in the majority the changes present at the autopsies had little to do with the mental disease. The occurrence of the tumors was merely incidental, and had nothing to do with the mental disease.

Toledo, Ohio, Asylum for the Insane, Ninth Annual Report, 1892.—Extract from the Report of the Gynecologist.

Fifteen cases of chronic endometritis have been treated successfully. Cœliotomy for diseased uterine appendages has been performed four times, all resulting in recovery.

The effect of relief upon the mental condition has been favorable in all of the cases, and very marked in some, though it is too soon after operation to know whether improvement will be permanent.

The hysterical element has been more or less pronounced in each case, and there has been least improvement in chronic cases. Five of the fifteen cases have gone to their homes, and remain well, so far as known. The result in the four cases of cœliotomy cannot be told so soon after the operation, but there is every prospect of complete restoration to mental health in two and marked improvement in all.

Connecticut Hospital for the Insane, Twenty-fourth Report, 1892.

The 176 female patients admitted last year were subjected to studious inquiry as to the state of the pelvic organs. In about one-third of the cases physicial examination was unavoidably incomplete for various reasons.

In one-half of the total number admitted pathological conditions were observed, and in fifty-three of these persons local treatment appeared to be unquestionably indicated.

Several, who recovered their reason, may have owed mental restoration partly to the measures, which, by allaying a source of irritation, contributed to the comfort and physical well-being of the patient. While this bit of experience did not tend to support the idea, sometimes suggested, that insanity in women is largely due to uterine disease, it strengthened the opinion that abnormal conditions of the sexual organs, if not searched for, may fail to receive requisite attention.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held at the New York Academy of Medicine, Tuesday evening, May 7th, 1895.

Dr. M. ALLEN STARR, President, in the Chair.

ATAXIC PARAPLEGIA.

Dr. L. STIEGLITZ presented a patient, a man aged 40 years, who has been under observation for a year. He first complained of weakness and paresthesia in the lower limbs. The knee-jerks were greatly increased; there was pronounced ankle clonus; slight ataxia; slight Ramberg symptom; some paralysis on the right side of the face. His condition remained about the same for a few months. Last December the ataxia of the lower limbs became more pronounced, and the upper limbs were also affected; the sensory disturbances were increased. All these symptoms have steadily progressed. There is also slight disturbance of the functions of the bladder. The thermal sense to heat has been lost. Dr. Stieglitz presented the case as one of combined systemic sclerosis of the lateral and posterior tracts (ataxic paraplegia), with involvement of the right facial nerve.

EXHIBITION OF A NEW INDUCTION COIL FOR CURRENTS OF QUANTITY AND TENSION.

By Dr. A. D. ROCKWELL. The apparatus shown consisted of a stationary helix, having the primary coil movable, so that the current can be increased from zero by imperceptible gradations. The coil consists of about 7,500 feet of wire, varying in thickness and length, and from it a current of any quantity and tension can be obtained. It can be run by any form of coil. To run it satisfactorily, it requires from five to ten cells. By the use of this induction coil, instead of having three

or four cumbersome helices, only one is required, and the current can be increased from zero to the desired point.

SOME CONSIDERATIONS CONCERNING GENITO-URINARY NEUROLOGY.

Dr. THOMAS H. BURCHARD read a paper on this subject. He stated that the intimate connection, anatomical and physiological, that exists between the general nervous system on the one hand, and the genito-urinary system on the other, finds a counterpart in the reciprocal manifestatiors of these symptoms under conditions of disease. Diseases of the brain, spinal cord and sympathetic systems, produce corresponding disturbances in the genito-urinary system, and conversely, diseased conditions of the uterus, ovaries, bladder, prostate and external genitals, are not infrequently the cause of serious nervous disease. The extent to which the brain is susceptible to general irritation is, of course, largely a matter of conjecture. That inordinate sexual indulgence, particularly during the period of adolescence, may seriously weaken the system by sapping its vitality, all will doubtless admit. Even here, however, and especially among the insane, the sexual manifestations, which are essentially symptomatic, must not be regarded as causative. The important point is that long continued irritation of the genito-urinary system, and entirely independent of all sexual indulgence, is capable of producing, *sui generis*, insidious and profound nervous disease.

Dr. BURCHARD then gave the history of three cases, in which there was a direct relationship between the genital irritation and the nervous phenomena, the latter disappearing entirely upon the removal of the irritation. The first case was one of epilepsy. The patient was a boy, aged 12 years. He had been delicate from birth. At the age of eight years he began to complain of painful micturition, which increased to such severity that he would hold his water for hours, passing it involuntarily during sleep, when he frequently would awake screaming with pain. At this time he had frequent hysterical attacks of crying, during which the muscles of his face first, and then those of the body would undergo contraction and irregular spasm. He did not lose consciousness. When the boy was ten years old, he had distinct epilepti-

form seizures, remaining unconscious fully five minutes, and having both tonic and clonic spasms. At first, these attacks occurred about once a month: later on they increased in frequency and severity, occurring at intervals of from five to seven days. The patient had been under the care of a number of physicians, among them Dr. Loomis, of this city, and Drs. Charcot and Brown-Sequard, of Paris, and by all of these gentlemen the diagnosis of epilepsy had been made. He was taking bromides in large doses. Upon examination, the boy presented the listless, hang-dog look of the chronic masturbator; he was covered with a profuse bromide eruption, was markedly anæmic and physically weak. The penis was so sensitive that contact with the clothing caused intense pain. His mother said this had been the case for over a year. The penis was abnormally small, with an elongated, twisted prepuce of over an inch in length. The meatus was badly inflamed, and secreted a purulent discharge. It was decided to perform circumcision. The entire prepuce was adherent to the gland, and had to be dissected out. On the day following the operation, the boy had a slight convulsion accompanied with partial loss of consciousness; this was repeated the second day. After this his convalescence was rapid. Five months after the operation, his father reported that his condition was excellent, and that he never had had a return of his convulsions. Last spring Prof. Loomis reiterated this statement. It is now over sixteen years since the performance of the operation.

The second case reported was one of aggravated hysteria, melancholia with delusions and suicidal tendencies, and epileptiform convulsions. There was cystic degeneration of the left ovary. This was removed and the patient made a complete recovery. The third case was one of neurasthenia, with sexual delusions; nymphomania. In this case, an extensive rupture of the perineum, and a bilateral laceration of the cervix was the cause of the genital irritation. Trachelo-perineorrhaphy was performed and the nervous phenomena rapidly disappeared.

These three cases, Dr. Burchard said, he has selected as the most typical in his practice illustrating the proposition advanced—that it is possible for irritation in the genito-urinary system, of both sexes, to produce the highest forms of reflex nervous and cerebral irritation. In many diseased conditions of the nervous system, a pains-

taking and thorough investigation will carry the diligent neurologist into an exhaustive examination of the pelvic viscera, and the genital apparatus.

Dr. A. D. ROCKWELL said it is always interesting to consider the question as to whether any particular form of neurosis is peripheral or central in its origin. Many of these cases, no doubt, are out of the domain of the neurologist. The cases of central origin, however, give symptoms quite different from those that are functional. The surgeon naturally looks for some source of peripheral irritation, and he may possibly find it in hæmorrhoids, in varicocele, in an elongated prepuce, etc. But if these morbid conditions are not the cause of the nervous phenomena, and he subjects the patient to a surgical operation, then it is not a good thing, because the nervous conditions are thereby often made worse. In cases of central origin, the character of the symptoms is quite distinct; they are mental, in a great measure; their sufferings are more than physical.

Dr. JOSEPH COLLINS said he fully agreed with the statements made by Dr Burchard regarding these cases of reflex neurosis. The trouble is that the matter has gotten into bad odor on account of the number of operations that have been performed on just such cases with no good results. A case similar to the first one recited by Dr. Burchard has come under his observation, in which the removal of an elongated prepuce and a varicocele, permanently relieved the patient from epileptiform seizures. While the pertinency of such cases cannot be doubted, we must not allow ourselves to be carried away by them. Where one cure has been reported after such an operation, a dozen cases can be cited where no beneficial results were obtained.

Dr. E. D. FISHER said he did not think that genital irritation due to masturbation alone could cause mental disease, unless there exists a previous degenerative type of brain. Masturbation is common among the insane, in all forms of degeneration where dementia is present. We all agree that genito-urinary irritation is capable of producing functional nervous disturbances. As regards operation, if we find a diseased organ, and the symptoms point to that organ as the cause of the irritation, we must remove it; but to remove a healthy ovary for epilepsy or hystero-epilepsy is not good practice. In the cases cited by Dr. Burchard, operative procedures were certainly clearly indicated.

Dr. L. C. GRAY said that in men disorders of the urethra are prone to lead to a prolonged form of hypochondriasis, which it is difficult to relieve. In women, the genital organs play a larger role. About seven or eight cases have come under his observation—women who have been operated on while insane, and who have made either relatively good recoveries, or have been improved. But all these belonged to the same type: they were of the class of hallucinatory insanity. In three or four cases of melancholia there was no improvement at all.

We must also consider the converse side of this question. It is a well known fact that operations on the genital or urinary organs have produced insanity. Dr. Thomas, some six years ago, reported a series of such cases, and a resumé of the literature on the subject was given by Dr. Mary Putnam-Jacobi. There is a singular reluctance on the part of many, Dr. Gray said, to admit that the brain is in the skull-cap and can do business on its own account; each specialist wants to transfer it to his chosen field.

The PRESIDENT said that the typical cases of nervous and mental diseases are never reflex in their origin. Certain cases are of reflex origin, but the proportion of such is small. Of 472 cases of epilepsy coming under his observation, only 11 were of reflex origin. One of the latter cases was a boy, who began to have epileptiform convulsions at the age of three years, having sometimes as many as sixty attacks (*petit mal*) in one day. On examination it was found that the boy had a very tender penis, the prepuce of which could not be retracted. He was circumcised: the attacks ceased, and at the end of four years he was pronounced cured. That operation was performed in 1883. Nine months ago the boy was brought to the clinic by his mother, who stated that the epileptiform convulsions had come on again about six months previous. No local source of irritation could be found, and this suggests that these cases which we consider merely reflex may after all be constitutional.

In neurasthenics of the genito-urinary type, the seat of irritation is often situated in the deep urethra, about the prostate, and these can usually be promptly cured by local applications of silver nitrate. A number of cases, however, have come under his observation, which failed to yield to that treatment, and in four of these one or more small ulcers were found in the anterior wall of the

rectum, adjacent to the prostatic gland. The irritation rapidly disappeared after the ulcers had been excised or treated with pure nitric acid. This suggests the importance of making a careful rectal examination in these cases.

Dr. BURCHARD, in closing the discussion, said he has yet to see any disease of the genito-urinary organs that, of itself, is capable of giving rise to distinct and profound nervous disease unless the patient is predisposed either by heredity or some acquired condition. In the three cases presented by him, the patients were all more or less broken down and hysterical.

ON THE SELF-REGULATION OF THE BEAT OF THE HEART.

Dr. S. J. MELTZER read a paper on this subject. He first reviewed the various theories that have been advanced to explain the mechanism of the heart's action, among them the accumulation of blood in the heart, automatism, etc. All these theories have been disproved, and after centuries of labor and research we stand to-day, with the same apparent helplessness as centuries ago, before the puzzling problem: what makes the heart beat?

Dr. Meltzer said that his theory of the mechanism of the heart may be briefly presented as follows: The heart harbors in some of its anatomical sub-strata two antagonistic functions; namely, the functions of contractibility and of inhibition. These functions belong to the heart itself, and not to the endings of the peripheral nerves. By any stimulus which we may apply to the heart directly or otherwise, we affect both functions simultaneously. During each systole a degree of pressure is developed sufficient to stimulate mechanically both functions at once. But during the stimulation the inhibitory effect prevails and therefore the heart is bound to relax. With the relaxation, however, the stimulation subsides, and we then have before us the period of the after-effects. Here we first see the short period of the inhibitory after-effect, winding up as a diastolic pause, after which the after-effect of the function for contraction makes its appearance, which means that a contraction of the heart is bound to appear. This contraction would last many minutes if the whole after-effect would be allowed to wind up. But since this contraction means a new systole and a new stimulation, it is then cut off by a newly

aroused inhibitory effect; therefore, instead of a prolonged contraction, a new cycle of relaxation, diastolic pause, and consequent contraction takes place. In other words, the consequence of each contraction is a cycle of relaxation, diastolic pause and contraction. Thus each heart beat generates its subsequent diastole and systole, and we may therefore say that the beats of the heart are regulating their own rhythm.

In conclusion, Dr. Meltzer said that his theory of the self-regulation of the beat of the heart is similar, in the main points, with his theory of the self-regulation of respiration, which he has described elsewhere. Here, as well as there, we have the antagonism between inhibition and contraction; here, as well as there, the inhibition prevails during the stimulation, while the contraction over-lasts in the period of the after-effects; here, as well as there, the pause corresponds to the shortened inhibitory after-effect, and here, as well as there, the stimulus is a mechanical one, produced by the natural function of the acting organ; here it is the contraction of the heart; there it is the expansion of the lungs. Certainly neither of these theories suffer by their mutual resemblance.

After some remarks by Drs. SACHS and COLLINS, the Society passed a vote of thanks to Dr. Meltzer for his excellent paper.

A Resolution was adopted by the Society, respectfully requesting Governor Flower to grant his approval of the measure passed by the Legislature providing for the establishment of an Epileptic Colony in Livingston County, N. Y.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Stated Meeting, April 24, 1893.

The President, Dr. CHARLES K. MILLS, in the chair.

Dr. WM. J. TAYLOR, presented

A CASE OF DEFORMITY OF LEFT FOOT IN A CHILD ELEVEN MONTHS OF AGE.

The family history is perfectly good in every respect, d except the deformity of the left foot, for which she brought here to-night. she is in perfect condition.

As is seen, the left foot is much enlarged, not only in length, but in bulk, especially the anterior portion.

The first, second and third toes are much enlarged, from five to six times their natural size. This is especially marked in the second toe, which is much longer and thicker than the first toe. This enlargement includes both the phalanges and soft parts and the metatarso, phalangeal articulation as well.

She came some six weeks ago to the Orthopedic Dispensary of the University Hospital.

The mother says the deformity existed at birth, but has increased very much within the past few months, but no increase since first seen. There is no pain or discomfort whatever.

The doctor never had seen such a deformity before, and he brought her here to-night in the hope that some member of the society may aid him in his efforts to form a diagnosis.

DISCUSSION.

Dr. FRANCIS X. DERCUM.—I can speak of this case only in a negative way. We have all of us recently been interested in dystrophies and especially in acromegaly, and the question naturally suggests itself whether or not this is a case of that character, perhaps irregular in type. I think, however, we must dismiss the suspicion of acromegaly. We have here a local deformity, and one that is limited to a subdivision of one extremity, while in acromegaly all the extremities are more or less enlarged, and the enlargement is uniform in all directions except in length.

No one has suggested an explanation of these peculiar deformities which are exceedingly rare. The only case that I recall at present is one reported by an Indian medical officer some years ago, in which a child had one toe as large as the adult finger while the other toes were of normal size. As regards the pathology of these cases we can only speculate. If there be such things as trophic centres, as there is every reason to believe, it may be that future investigations will show some deformity in the centres which govern the growth of the affected part.

Dr. J. MADISON TAYLOR.—In a more than usually large experience in diseases of children, I never saw a similar deformity but once. This was a patient of the late Dr. Hayes Agnew, and I made

drawings from life at his request, which are still in my possession, and should have been exhibited to-night as the conditions are strikingly analogous. The left foot, as here, was involved. The second and third toes had united in a solid mass to the very ends, making one huge toe, but with two nails, and projected nearly an inch beyond the normal limits. If my memory serves me this double toe had one jointless bone appearing like two bones cemented together, even as a double-barrelled gun.

In many points it closely resembled the case my brother exhibited to-night. Dr. Agnew removed these by amputation.

Dr. J. K. MITCHELL presented

A CASE OF LOCAL CATALEPSY. AN UNDESCRIBED NERVOUS DISORDER, PROBABLY HYSTERICAL IN NATURE.

The following very curious case I believe to be one of an entirely undescribed disorder, for which, in want of a sufficiently descriptive name, I have suggested the title of "local catalepsy," although this does not cover all the symptoms. The patient, a hearty girl of seventeen, a native of this state, was seen March 28th, and had every appearance of perfect health. Her left hand was two or three times, in December, 1891, and thereafter, suddenly weak, dropping the articles it held. A slight cut of a knife at the base of the left thumb in July, 1892, was followed by symptoms out of proportion to the injury, and suggesting the possibility of a local poisoning. The whole hand swelled, ached and grew red and hot, and an abscess discharged in the region of the wound. After this the fingers gradually became stiff and assumed the condition described below, in which they have ever since remained. The fingers are about one-fourth flexed, the ulnar fingers slightly adducted, the fourth lying a little on the palmar surface of the third, the thumb in contact with the palmar surface of the index, a posture which, I shall call for brevity "the obstetric attitude."

The wrist has voluntary motion; the fingers none. Even when it shares, as sometimes happens, in the rigidity of the fingers, it still can be moved at will. The fingers may be passively placed in any position, and will retain it indefinitely. They are passively moved with great difficulty, against a constant waxy or rather lead-

pipe-like resistance, which yields slowly and without jerk to the force used. Whatever posture of flexion, extension or abduction the fingers are moved into, it is with equal difficulty, and they remain in it until the patient voluntarily moves them with the right hand into the obstetric attitude, which is their most comfortable position. She thus moves them after thirty or forty minutes, because any other placing of them, if long continued—and especially if it be a position of extension—causes, after a time, pain in the wrist.

Sometimes the fingers pass slowly of themselves into an extreme abduction and extension, and so remain a long while, gradually returning again to the formerly-described attitude of easiest rest. This is the nearest approach they ever make to a voluntary movement.

There is analgesia of the whole hand below the annular ligament. There is no touch-sense or perception of temperature change in the hand. A pin-prick, unless deep, does not bleed. There is no evidence whatever of neuritis or degenerative neural change, nor any nerve tenderness, except a spot of tenderness over the median on the flexor aspect of the wrist, just above the annular ligament.

The nails have not grown so as to need cutting in three months past. They look like the nails of the right hand, which has no anomaly of sensation. Electric contractility is alike and perfect in both hands. The rigidity persists during sleep.

There were absolutely no evidences of hysteria in the patient's person, history, or manner, and the eye-grounds and color-fields were normal.

In spite of some want of direct evidence of hysteria it must be concluded that this is a hysterical case. In no other way can the involvement of *all* the nerves of the hand in a functional derangement of this kind be accounted for, with no degenerative or inflammatory changes, neural, spinal or cerebral, to be found. Nothing else could present such paralysis and so abruptly outlined a loss of sensibility, with no alteration of nutrition.

While to call it, as I have provisionally suggested, "local catalepsy" is only an attempt at naming it by its most striking feature, this does not describe inclusively all the symptoms presented, but as I can find no report of any case at all similar, this title will do until some better one is found.

DISCUSSION.

Dr. JAMES HENDRIE LLOYD.—It seems to me that the correct diagnosis of this case is hysteria. The association of segmental anæsthesia sharply defined, (a symptom which French observers insist upon as one of the most characteristic hysterical stigmata, especially when it exists in a paralyzed limb) with non-bleeding on pricking with a pin, suggests in the most direct way hysteria. An interesting thing would have been to etherize this young woman. I have now under my care a young woman with hysterical contractures of both limbs below the hip, but under ether they disappear. It is of first importance in all such cases to make careful search for all the hysterical stigmata. The element of heredity ought always to be inquired for.

Dr. FRANCIS X. DERCUM.—I would ask Dr. Mitchell why the patient returns the fingers to their ordinary postion after they have been in a constrained position for fifteen or twenty minutes? Did stroking of the muscles of the forearm, which must have played some part in the position of the hand, bring on a rigidity at the wrists?

Dr. JOHN K. MITCHELL.—I did not trouble you with a detailed report of the examination of the case, or give all the reasons that it led me to the conclusion of hysteria. I thought, however, that I had said that I could find no hysterical stigmata. The patient is a stout, blooming, ruddy-cheeked, well-nourished country girl. The family history is most excellent.

The reason that she changes the position of the hand is on account of pain in the wrist. There is no pain in the hand. There is no paralysis in any proper sense of the word. I did not try the effect of stroking of the muscles.

Dr. J. W. MCCONNELL read a paper on

TETANY, WITH REPORT OF A CASE (See page 418).

DISCUSSION.

Dr. FRANCIS X. DERCUM.—The third case presents so many difficulties that I could hardly attempt to solve it. I can not understand why this man with trigeminal palsy should have difficulty in swallowing, or why liquids should enter the trachea or regurgitate through the nose.

If we look upon the case as of nuclear origin we are also involved in considerable difficulty because the trigeminal nucleus and the glosso-pharyngeal and the facial nuclei while relatively close together or not in such juxtaposition, that if trouble spread from the motor nucleus of the fifth to the glosso-pharyngeal, it would involve only a few cells in the nucleus of the facial. I cannot understand why there should not be complete facial paralysis at the same time.

The case of the negro is an interesting one, inasmuch as it involves the diagnosis of pressure at the base of the brain or nuclear palsy. To determine what is actually the matter in a given case is, I believe, something impossible. I recall a very interesting patient in which I at first thought that the lesion was nuclear but the rapid improvement which followed in twenty-four or forty-eight hours, the administration of the iodides showed that the case was specific and probably due to pressure at the base of the brain.

Dr. JAMES HENDRIE LLOYD exhibited a photograph of

A CASE OF HEMI-FACIAL ATROPHY.

The patient is a young Danish woman, aged thirty-three years, who has hemi-facial atrophy involving the scalp and extending down on the right side of the forehead to a region almost between the eyes, and extending as a scar-like tissue on to the cheek beneath the eye. There is atrophy of the skin and of the subcutaneous tissue and atrophy of the bone. The disease has been progressing for about a year. The prognosis is bad and the disease will probably progress, involving more extensive areas than shown in the picture. There is no history of heredity and no history in the patient of antecedent disease. She is an exceptionally healthy young servant girl who has been in this country about two years. The case will be reported more fully hereafter.

Dr. JAMES HENDRIE LLOYD exhibited

A SECTION OF THE SPINAL CORD

removed that morning from a young child in the Home for Crippled Children. The patient was one of our old chronic cases of spinal caries of which we have quite a large number in that institution. She had large ab-

scesses running down in front of the iliacus muscle into the groin, and another opening in the sacral region and communicating directly with the spinal canal. I removed, simply, enough of the cord to show what we have in these cases before pressure symptoms become marked.

This child, with extensive caries and marked angular curvature, had presented only the symptoms of commencing pressure on the spinal cord. She had somewhat increased knee-jerks and contractures of the legs (probably due in part to the abscesses), without distinct paralysis of either the motion or sensation, and without involvment of bladder. We find on examination of the specimen quite extensive pachymeningitis. At one point, just at the angle in the spine, where the abscess cavity opened into the canal on its anterior surface, the dura mater was perforated and partially adherent to the jagged edges of the cavity. The fact that this permitted free drainage probably explains the fact that the cord escaped as it did. The cord was bent to almost a right angle, and still preserves this shape since its removal from the body. There is slight leptomeningitis. The substance of the cord is firm. It is quite remarkable how the cord escapes for a long while in these cases; a fact which, as I have said, is probably explained in cases like the present by the establishment of drainage through a discharging sinus.

In addition to the spinal lesion, this child had tubercular deposits in the lungs and mesenteric glands; also extensive tubercular meningitis at the base of the brain. She had also amyloid kidneys.

NOTE ON THE TREATMENT OF MYXŒDEMA WITH RAW THYROID GLAND.

Dr. Francis X. Dercum.—I should like to mention that I am now treating a patient with myxœdema by feeding her with raw thyroid gland. Within ten days the patient improved so much and the hands were so shrunken that they were no longer typical. Neither is there so much swelling in the face as before. There is also improvement in the mental condition. The patient receives half a gland a day. It is chopped up with raw beef, seasoned with salt and pepper and a little onion added. It is taken without difficulty. I shall later report the results obtained.

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Original Articles.

THE EPILEPTIC INTERVAL—ITS PHENOMENA AND THEIR IMPORTANCE AS A GUIDE TO TREATMENT.

By WILLIAM BROWNING, M.D.,

Brooklyn, N.Y.

(*Continued.*)

(4).—Respiration.

(*a*) Cases. Special respiratory phenomena during the interval are not common. In 4 cases the patients had suffered much from bronchitis, but 2 of these also presented mitral murmurs. In 6 others dyspnœa had been troublesome, especially on walking fast, climbing stairs, or other vigorous exercise. These were to some extent persons that tired easily on any muscular effort. In 3 further cases frequent sighing was noted. In others the unfavorable influence of bad air is mentioned.

(*b*) Respiratory capacity. Féré (1888) finds that in the intervals the expiration is prolonged in most epileptics, and that the whole respiratory curve is spasmodic and jerky. He points out that epileptics, more often than is generally supposed, seem to present permanent

convulsive phenomena. He also (1889) finds the respiratory capacity of the chest in epileptics to be decidedly less than normal. "The diminution of the respiratory capacity is augmented with the number of fits, and seems to be dependent upon paresis of the muscular mechanism of the thorax." Féré's work indicates that the bromides do not deserve all the blame for the occurrence of phthisis in epileptics that has been attributed to them; and a recent paper of Agostini's (*v. Neurlg. Centralb.*, 1891, p. 568), directly combats the reality of any such influence of the bromides.

(c) Seasons, climate, atmospheric pressure, etc. In a small percentage of cases only is the influence of the seasons noticeable—*e. g.*, decreased severity during the winter months—although in reality this factor has quite as much bearing on the circulation as on the respiration. The paper of Eskridge of Colorado (JOURNAL OF NERVOUS AND MENTAL DISEASE, 1887), indicates that altitude and moisture probably have little influence. Ingram has pointed out (N. Y. Neurological Society, Feb. 4, 1890), that sudden barometric and thermometric changes, particularly the former, are potent in producing epileptic explosions.

(5).—APPETITE, ASSIMILATION, BLOOD, URINE, ETC.

A. The peculiarities and capriciousness of the epileptic's appetite are well known, though it is too often assumed that they are all over-eaters.

1. Not rarely there comes an epileptic who, for considerable periods at least, has but a poor or indifferent appetite (20 in 150; special notes regarding these matters were, however, made in only 85 cases). That anoxexia may be a temporary sequence of the attacks disappearing quickly of itself, and that bromides may produce a like effect, are every day observations. But in the present cases it is usually either a symptomatic manifestation disappearing as the disease improves, or often is due to putrefactive processes about the oral cavity, upper air

passages or stomach, and then requires some direct attention in treatment. When any further appetizer is required the bitter stomachics usually suffice.

Not to be confounded with these are the unfortunates who have been subjected to severities in diet. We oftener see this from the mistaken zeal of friends in restricting the allowance of food than from poverty. Such starvation-cures do not help, but injure epileptics. What with their convulsions, insufficient food, unsatisfied cravings of hunger, and perhaps the exclusive use of bromides, their condition soon becomes pitiable. It is quite time to discredit such unnecessary and harmful severity. Even as regards the seizures, such a case immediately improves on receiving proper nourishment. Pepper even advocates (*N. Y. Med. Record.*, 1881, II.), a hygienic course resembling Weir-Mitchellism, to include rest in bed, feeding, bathing, etc., as very advantageous in numerous selected cases.

2. Many of these patients, on the contrary, have a large, even a voracious appetite. However, exclusive of bulimics, a good appetite was specially noted in only twenty-two cases. For the most part they crave meat, sometimes a particular kind of meat, as pork, or even more exclusively, ham; the hobby, however, may be for bread, cabbage, sweets, tea, or other articles. This appetite is not capricious, but fairly continuous,—unless at certain meals, or about the period of attacks, or during intercurrent troubles. Hence it seems to be a natural longing, to offset the exhausting effects of the disorder, and should not be too much restricted—beyond regularity of meals, the avoidance of any single excessive meal, the exclusion of recooked meats, cabbage, or fried articles, and possibly the limitation of meat to two or even to one meal a day. Various reported experiments with nitrogenous and non-nitrogenous diets have shown how little influence these matters exert.

3. Quite separate from the general condition of the appetite, or from the freakiness of this type of individual, are the true bulimic attacks to which certain

epileptics are subject (specially noted in but six of this series). This bulimia usually, if not always, bears some relation to the seizures, preceding them a short time—from a few hours to a couple of days. Hence it belongs rather to the premonitory phenomena, though possibly at times substitutive. It must not be wrongly inferred that these overfeedings bring on the attack, for this will occur no matter how sharply the food-supply may be controlled. Such transient but insatiable ravenousness, however, is clearly a nervous manifestation and no warranted craving of nature. Hence it is imperative at such times to limit and closely watch the dietary. Some cases of alcoholic epilepsy are probably of this nature, the craving for spirit like that for food being but a preliminary to an attack.

B.—THE MOUTH.

1. Coated tongue. This is important not only symptomatically, but also as constituting an evil in itself. It is very common. The tongue is usually more furred far back, gradually lessening until the tip and sides are free. It is very resistent to treatment, though sometimes improved by care as to diet and constipation.

2. Drooling was troublesome in three weak-minded patients. Gingivitis, a bad taste in the mouth, a bluish (metallic) line on the gums, were noticed a few times. Dental troubles, as a direct cause, have been described by a few writers, notably by Brubacker of Philadelphia.

3. Enlarged tonsils. This condition is, perhaps, closely allied to the hyperplasia of cervical glands considered below, and to nasal and ear troubles. When at all obstructive direct treatment is demanded.

4. Foul breath. This, quite independent of that form so often noticed after use of the bromides, is overcommon amongst epileptics (5 cases in a series of 25; and of these 5 there were 4 under seventeen years of age). When possible these patients should be taught to take scrupulous care of the teeth and mouth, as the oral conditions just mentioned often play a part. Or there

may be a rhinitis or nasal obstruction that needs attention.

These indications suggested by the condition of the breath are important, as the usually present decomposing material, wherever it be, must continually poison and weaken the system as well as affect the digestion injuriously.[1]

C.—CONSTIPATION, ETC.

1. Intestinal torpor is recognized as one of the frequent banes of epileptics. It was noted in eighteen cases as being continuously or often troublesome; whilst in twelve the bowels were regular, or even over free (exclusive of paroxysmal diarrhœa). This condition is in many of these patients subject somewhat to their vagaries in eating. Consequently eructations, pyrosis, abdominal pain and bloating, colics, diarrhœa, etc., may be simply from indigestion. The dyspeptic symptoms and constipation have been attributed to the direct action of the drugs on the gastric mucous membrane. This assumption is but partly true, as epileptics *not* under medication often enough have these troubles, whilst per contra they frequently subside as the epileptic tendency abates, even where bromides are employed.

2. The character of the bowel-discharges of epileptics has scarcely received sufficient attention. My first observations on this point were quite casual, but a little further attention thereto has thrown some light on various of their digestive disturbances. The passage of coarse unmasticated and undigested fragments occurs to

[1] The idea of Thomson (JOURNAL OF NERVOUS AND MENTAL DISEASE, 1890, p. 246), that ptomaines from the intestinal tract may, by their toxic effects, sometimes be a factor in epilepsy, serves to emphasize this, and Griffiths has (1892) extracted a poisonous leucomaine from the urine of epileptics. Herter, of New York (American Neurological Association, June 22, 1892), from comparative estimation of ethereal sulphates in the urine, finds that in numerous cases there is evidently increased putrefaction just before the seizures. Pommay (1881), Massolongo (1889), and others have described a form of "gastric epilepsy," considered by the former to be a reflex and by the latter an autotoxic effect.

a surprising extent. The stools at times seem largely composed of such material. This indicates that in the first place they do not properly masticate their food, and on this point a few words of explanation may be in place. The foods that should be thoroughly chewed, include vegetables, cereals, fruits, nuts, etc. (hydrocarbons). For their proper digestion it is desirable that they be reduced to a state of fine division, and then, also, well mixed with saliva. But as regards meats, fish, etc., this is not as imperative. It has been found experimentally that the muscle-fibers are more easily digested if not in a state of overfine division; the stomach then retains them longer and can better roll and reduce them. All recooked meats and hashes are objectionable as compared to fresh cooked or cold meats.

Again, as to the manner of chewing. There is a prevalent idea that slow eating is very favorable to digestion. But this is largely fallacious. The important point is not that we eat slow or fast, but that when we do eat we chew with energy. Of course, where the haste is due to some mental anxiety this may injuriously inhibit the secretions. Slow eating begets a habit of simply mumbling the food without really masticating it, whilst the hurried eater is inclined to swallow before proper mastication. Hence, hurried eating is bad, but rapid mastication is advantageous. It concentrates our energies on the act in question, and hence more thoroughly accomplishes it. Moreover, energetic chewing stimulates the secretion of saliva in the most favorable manner.

These various points are so commonly misunderstood at least by the laity, that they demand our frequent attention. Especially is this matter important in the case of epileptics, whose guardians and attendants should be carefully instructed to supervise not so much the food of their wards as the manner in which it is consumed. As to the success of such watchfulness, the physician has a fair control by taking frequent occasion to inspect the passages for evidence of the nature suggested.

D.—SYSTEMIC CONDITIONS.

1. The body weight. A record of this gives a valuable clinical control over various matters, irrespective of the claim of Kowalewsky (1881), that there is a fall of 1 to 12 pounds in weight after every kind of an epileptic attack. Various observations counter to K.'s claim are summarized by Hare. But other than this an estimation as to the natural or morbid character of the appetite, the too excessive loss from use of the bromides, etc., is thus possible. In children it also gives a measure of their growth,—and not rarely these attacks begin or change at the period of most rapid development.

2. The blood—chemical changes. The few that have been noted, unless anæmia, are of paroxysmal origin. The anæmia also may, as shown by Féré, be thus caused, but where persistent should raise a suspicion of toxæmia or other basis. Schmitz (reptd. in *Neurlg. Centbl.*, 1892), has found that a venous hum can often be heard over the jugular in epileptics.

3. Dyscrasias. These fall largely under the head of continuous conditions. In any large series of cases there will be one or more due to congenital or acquired syphilis, malaria (*v.* the writer's article in *Brooklyn Med. Jour.*, January, 1893, p. 23–4), rickets, gout, rheumatism, lead, alcoholism, etc.

4. The urine. Any special frequency of albuminuria in epilepsy, even as a post-paroxysmal occurrence, has been disproven (*vide e. g.*, the summary in *Univ. Med. Magz.*, December, 1888). It thus becomes a valuable symptom in distinguishing uræmic convulsions from epilepsy.

According to Dr. Johnston Smith (*Jrnl. Ment. Sci.*, October, 1890), the phosphoric acid is slightly increased. Charcot's conclusions regarding the different ratio of earthy to alkaline phosphates in epilepsy and hystero-epilepsy, refer to paroxysmal conditions.

(6).—SEXUAL LIFE.

The influence of epilepsy on the sexual functions and period is known to be considerable, although this applies

chiefly to the female. Fertility rather than sterility is unfortunately common. Some of these women are relatively exempt from attacks during pregnancy and to this is probably due the mistaken notion, popular in some countries, that pregnancy is curative of epilepsy.

At least 13 of 36 females between the ages of fourteen and forty-five years, showed some disorder of the sexual apparatus. Amenorrhœa (8 cases) and irregular menstruation are common,—exclusive of certain cases attributable to medication (bromides). Occasionally in girls, and even in women, a fœtid vaginal discharge is troublesome. There was one case of small ovarian cyst, one of prolapsus uteri, and one of ovariitis, besides others of pain in ovarian region.

Physicians often comfort mothers of young girls with the hope that the convulsions may cease upon the advent of menstruation. Except in the rarest instances such hopes are bound to suffer disappointment. Puberty is far more liable to bring an increase than any decrease in the severity of the morbid condition. The exceptions are only the occasional respites that occur at any time. It it well known that in women the attacks, even of idiopathic epilepsy, often recur with greater frequency about the menstrual epoch.

(7).—Skin and Extremities.

(*a*) Cold hands or feet—subjective or objective, usually both—are common, more, of course, during the cooler months. In a few the immediate unfavorable influence of the seizures is the chief cause, but many suffer much at all times. Of the latter there were twenty-one cases (1 only at night, another variably cold, then hot; in 6 only the hands were specified; in a few general chilliness also). This condition is usually assumed to indicate a sluggish circulation. But sweating of the soles and palms is generally the intermediary cause of the coldness, as this leads to abstraction of heat both by conduction and evaporation. Bromhydrosis also may be troublesome, perhaps more during the warm weather.

Whilst these perspiratory troubles may demand local measures, it is their constitutional treatment that has more than symptomatic significance. The dermatologists teach that the most powerful excitomotors, notably strychnine, are amongst the most serviceable internal remedies.

(*b*) General hyperidrosis. Excluding the palmar and plantar surfaces, perspiration to any noteworthy extent, is perhaps not more common in epileptics during the intervals than in other persons.[2] It was specifically stated in fourteen cases (1 in sleep, 1 in armpits principally, 1 formerly).

This is distinct from the very rare cases in which profuse sweating occurs as the precursor of an attack, or is paroxysmal (case of Emminghaus), or finally where it attends or follows an ordinary attack (3 cases of present series). A peculiar case of hemidrosis most marked at attacks, has been published by Brady (*Virg. Med. Monthly*, June, 1891).

(*c*) The frequent relationship of dermal affections to nervous troubles has long been noticed, though still but little understood. Polotebnoff has recently (1891) mentioned epileptic convulsions amongst various severe neuroses observed in psoriasis cases.

The casual observations in the present series include—pruritus universalis with lichen planus, pigment-nævus of face, Duyputren's contracture of palmar fascia, strumous eruptions on face and hands acne cachecticorium (2); intercurrent pruritus (2), gouty eczema, old psoriasis, acne (3 in young men, not from bromide), leucoderma about eyes and temples (case mitral regurgitant); slow felon on thumb, blepharitis ciliaris, labial herpes (2), and chronic dactylitis.

Féré, in one of his papers on respiratory phenomena, mentions a case of unilateral lentigo (freckles) in an epileptic. Romberg, in his once favorite treatise, says:

[2] Bricon (1882), has even employed pilocarpin in epilepsy. And Boccolari and Borsari (*v. Centrlb. f. Med. Wissc*, 1892), found the galvanic resistance increased after the seizures.

"It appears that the susceptibility for epidemic and contagious diseases is diminished in epileptic patients." Urticaria, as an after-symptom however, has been observed by Zacher and by Pick.

Johnston Smith (*l. c.*) remarks on the rapidity with which the wounds of epileptics heal, their oily skin and their peculiar odor (musty according to some). On the other hand, Dayton (*N. Y. Med. Jrnl.*, 1891, I.), says: "The skin exhibits vascular change, want of complete nutritive support, the color being sallow, patchy or dark, and suggestive of a sluggish circulation."

The conjunctional and cutaneous ecchymoses occasionally seen are post-convulsive residua. According to Sandras (quoted by Hare), when an epileptic is exposed to the sun the skin of the face, and even elsewhere on the body, becomes covered with numerous *taches rosée* without any elevation, and which disappear rapidly when they go into the shade.

(8).—Sleep.

Exclusive of twelve in which the seizures were largely or exclusively nocturnal, some note regarding sleep was made in 96 of the 150 cases. There were twenty-four who were good, quiet sleepers and fairly free from dreams. Hence, typical normal sleep is the good fortune in fully one-fourth of all cases of epilepsy. As a majority of the series were young patients and children, and normally better sleepers than adults, the small proportion here is the more striking. Most of the peculiarities to be mentioned are such as often enough occur in persons of average health, though statistical criteria in this respect are lacking. And yet they become in many cases of value as control-symptoms.

A.—Wakefulness of various types.

This is not very common, although some loss of sleep —from "being a poor sleeper," or not getting to sleep easily, or remaining awake if aroused, all the way to

troublesome insomnia—is mentioned in eighteen cases. Loss of sleep, on the other hand, may make the epilepsy worse.

Under the head of "Insomnia in Children," Simons (*vide N. Y. Med. Jrnl.*, 1890), has given a description that tallies more nearly with night-terrors or even nocturnal epilepsy. "The insomnia of epilepsy is peculiar to itself, and is sometimes the only symptom for a considerable period. The child goes to bed well, wakes with a cry from profound slumber, sits up suddenly in bed, but soon falls back again either to sleep after a short interval or to lie awake, weak and prostrated. These attacks are always accompanied by incontinence of urine."

B.—OVERSLEEPINESS—SOMNOLENCE.

When present this is usually of the morning type, and in patients that are weak or exhausted, or at least have been dreaming, and so have not rested properly. The possible effect of drugs taken (bromides) must be remembered.

Quite different from this are the sleepy states that represent an epileptic equivalent (cases of Westphal, Fischer, Putzel, and at least one in present series; also G. W. Jacoby "Periodical Sleep Seizures of an Epileptic Nature." *N. Y. Med. Jrnl.* May 20, 1893).

C.—RESTLESSNESS IN SLEEP.

This is closely associated with dreams and insomnia. Further, it is apt to occur in those presenting choreic symptoms. Specially noted in fourteen cases. Snoring was troublesome in three, of which two were children of fourteen years. The "Sleep-Movements of Epilepsy" considered by Putnam, of Buffalo (*Jrnl. Ment. and Nerv. Dis.*, 1892, p. 599), were more or less limited and perhaps of some localizing value.

D.—DREAMS.

To these epileptics seem somewhat more disposed than do other individuals. In part they may represent equivalents, although there was no further evidence to

show it. No particular kind of dream predominates, though often disagreeable. Probably their occurrence is not always remembered, and such other evidence as talking in sleep and night-walking might then be accepted. However, there was a distinct recollection of great or frequent dreaming in thirty-five, besides some further cases in which it less often occurred.

This is distinct from the observation of Hammond, that, "An aura may be entirely manifested by dreams and delusions."

Not very rarely these patients are subject to day dreams, evidently a kind of *petit mal*.

E.—SOMNAMBULISM, NIGHT TERRORS, ETC.

In seven cases—only two of which are included in the dreamers or talkers—there was a history of night-terrors or somnambulism. The oldest was twenty-five years, the others fifteen or under (2 m., 5 f.).

Again, in eight cases (5 of these not included in the dreamers), talking or moaning or laughing out in sleep was common.

As a symptom simply it is interesting to note that these morbid manifestations are also common in other members of epileptics' families.

(Compare, also, C. H. Hughes, "The Relationship of Somnambulism to Epileptoid and Epilepsy." *Phila. Ti. and Regstr.*, 1890, xxi, 8).

Night-sweats, cold feet at night, a habit of sleeping on the back or with the mouth open, are worth noting when as not rarely one or more is present.

Where the child persists in sleeping on the back, some rough or angular object can easily be tied against the spine at night.

F.—ENEURESIS NOCTURNA.

Of eneuresis we should remember that it may be a symptom of a seizure. Where, however, this occurs more or less habitually, and especially if observation of

the sleeping child has failed to detect any evidence of corresponding seizures, it may be considered as habitual or symptomatic rather than paroxysmal. It was specially noted in but six cases, although this certainly does not represent all. Some few epileptics have been subject to this in youth, but, as alleged, before the development of seizures.

For comparison, Comby, of Paris, may be quoted (*v. Neurolg. Centbl.*, 1891, p. 445), who observed five cases of nocturnal enuresis amongst ninety choreics.

Sometimes this habit is associated with mouth-breathing (due to nasal obstruction,[3] nasopharyngeal growths, or enlarged tonsils), in which case the relief of such other trouble exerts a favorable influence.

Various colleagues of my acquaintance, following the advice of Sir H. Thomson, have employed syrup of iodide of iron advantageously for this habit in general cases.

G.—POSITION OF THE HEAD IN SLEEP.

Some epileptics are inclined to sleep with the head overhigh, others with the head very low, or analogous thereto they lie on the belly or with the head covered. This is somewhat of a relative matter. An ordinary pillow and bolster may be called medium; a single thin pillow *or* a bolster may be considered low; whilst a thick pillow *and* bolster or the latter and more than one pillow is certainly high.

Of forty-six consecutive cases, eight are noted as high, twelve as low (including two with head under covers, and one sleeping on belly), five as medium, and twenty-one undesignated, probably also for the most part medium. This indicates that a majority, certainly half, present nothing unusual in this respect.

[3] Mackenzie in this country, Yoal of France, and others have claimed that nasal trouble (congestion, epistaxis) is frequently due to genital irritation. Conversely, Major in Canada, Ziem, and Koerner, in Germany, find that enuresis may be due to mouth-breathing (nasal obstruction); and personal observation in a couple of cases has seemed to corroborate this.

The preferred position of the head during sleep is all the more important, if during treatment—as has repeatedly happened—the patient's habit in this regard undergoes a change. As with the other peculiarities in sleep, the value of this is largely relative, depending on the patient's general condition, the action of the heart, etc. But taken in connection with other occurrences, it may give a valuable hint as to the condition of the brain-circulation (or brain-nutrition if the expression be preferred). Where this latter is poor (anæmia), where severe bromidism is impending or too strong depressants are being used, and in most cases of nocturnal seizures occurring late at night, the person will sleep with the head low. Such patients are often oversleepy, exhausted and hard to arose mornings, and commonly have a poor appetite for breakfast. To the clinical importance of this group of symptoms in other troubles, I have elsewhere called attention ("The Morning Headache of Continuous Tire and Exhaustion," *Brooklyn Med. Jrnl.*, January, 1891).

These patients can often wear a night-cap advantageously, as also sleep on soft (warm) pillows.

H.—THE EMPLOYMENT OF STRYCHNINE IN EPILEPSY.

The habit of sleeping with the head low makes another interparoxysmal indication for the use of strychnine[1] in epilepsy. The correlated ones are: Seguin's ingenious plan where there is weakness of the ocular muscles; Vance's method based on the condition of the retinal circulation; the above pointed out condition of hyperidrosis and bromhydrosis; Brugnoli's suggestion (1889) in irritative conditions of the vagus—possibly equal to the now well-recognized value of this drug in conditions of cardiac and circulatory weakness corresponding to those so frequent in epileptics; as an agent to relieve severe bromidism.

[1] Or its equivalent; strychnine brucia or their salts, the preparations of nux vomica or of ignatia amara, the compound syrup of the hypophosphites.

Hammond says: "In the nocturnal form of epilepsy strychnine is sometimes remarkably efficacious." And digitalis has also been specially recommended in this form.

All the indications for strychnine in epilepsy are, however, only for its temporary and carefully controlled use. At times it may be kept up for longer periods, but is never a continuous routine drug like the bromides.

Where, on the contrary, the patient sleeps with head high, an overactive brain-circulation is probable,—unless explained by some heart lesion. Consequently, remedies casually depressing are then in place, such drugs as strychnine being strongly contraindicated.

(9).—Enlargement and Induration of the Deep Cervical Lymphatic Glands (especially Post-Cervical Adenoplasia).

This condition is very common in children and young persons generally. Tuberculosis, syphilis, rachitis, and the acute exanthemata are the most notable general causes. Throat, scalp, and intracranial troubles act more exclusively local. Though children with almost any ailment easily develop adenoid hyperplasia, a perfectly healthy child free from all residua of disease ought not to have glandular enlargements. They are an indicator of past or present ailment, however slight.

Where these local glands were found to be small, they often seemed harder, suggesting a past process that had subsided, leaving an intractable induration.

These gland-changes appear to be more frequent in epilepties than in others, though we know of no proper data for comparison. The statistics of Van Arsdale (Discussion, N. Y. Academy, January 15, 1891), as he has personally informed me, refer to adenitis and are not applicable here.

Notes regarding these glands were made in 53 of 95 consecutive cases; the other 42 would, it is believed,

average about the same. In 7 of these 53 there was no or but slight and doubtful enlargement. In the remaining 46 there was some, though frequently limited, increase in size,—"limited" referring to the proportion affected as well as to the degree of increase. This certainly represents over one-half of all cases. Of the 53 cases, 15 were over twenty-one years of age; and of the 7 negative cases, 6 were included in these 15 adults. This shows that it is predominently the younger patients that present this feature, and that it is all but universally present in those under age. In but a few of these cases has the condition of the lymphatic glands, in general, been examined. The submaxillaries and the axillaries are often but by no means so generally likewise affected. So far the actual facts.

1. Are these gland-enlargements in epileptics but part of a general enlargement of the lymphatic gland-system, and hence merely symptomatic of some constitutional disturbance? So far as observed it is the cervical glands that are more often and more markedly enlarged. Moreover, in but few cases is there other ground to suspect a systemic taint. Undoubtedly, however, this explanation holds for a certain small proportion.

2. Are they the result of altered brain-lymph, either from some trouble that is also causing the convulsions, or as a direct effect of the congestion attending them? This might be contended, in as much as in a few cases these enlargements have developed or increased whilst under observation.

3. Conversely, can such gland-alterations, whatever their origin, play any part in the causation of the epilepsy? Two ways suggest themselves in which such action might occur.

(*a*) By pressure of these bodies on neighboring nerves especially the sympathetic (trunk, ganglia, outgoing filaments) and the vagus, or on adjacent vessels. Hare says: "A form of peripheral lesion producing epilepsy, probably not by reflex action, is that recorded by Schultz (1855), where prolonged compression of the jugu-

lar vein caused the disease, or in those cases where enlarged cervical glands bring about a similar result." This evidently refers to large pacquets of glands, and even then it is exceedingly doubtful whether compression of a jugular could be an important factor.

The observations of Pröbsting (1882), and of Merklen (1887) have shown that habitual tachycardia may result from pressure on and implication of the vagus by affections of the tracheal and bronchial lymph-glands. Hence in some cases the rapid pulse of epileptics may be attributable to the pressure of enlarged bronchial, and even cervical glands on the vagus. This possibility is, however, hardly a warrant for the surgical removal of such cervical glands.

(*b*) By intraglandular interference with the lymph-discharge from the brain. This effect might be produced by the swelling of the glands or by the subsequent contraction where they subside. Various attempts have been made to establish a connection between brain troubles and the lymph discharge, though with limited success as yet. Little is known regarding impediments to the passage of lymph through glands, although the subject has recently been exploited by Chaffey. Moreever, there are collateral paths from the brain, and any tendency to cerebral œdema in epileptics is not recognized.

THE USE OF IODIDE OF IRON.

The indications for this are:

1. Eneuresis nocturna—already mentioned.

2. Congenital syphilis. In the few cases where there has been occasion to suspect the existence of this etiological factor, more good has followed the use of this than of the iodide of potassium.

3. The glandular enlargements, just described.

4. Anæmic or other conditions demanding iron. In these latter the iodide should be considered before deciding on any other ferruginous preparation.

As to the methods of dispensing, the individual pre-

ferences of the prescriber may vary. If the syrup of the iodide be given separately or not, the usual precautions must be taken. Dilute well and give after meals to avoid irritation of the stomach, and, of course, it should always be taken through a tube.

A fundamental rule in prescribing for epileptics is to limit the number and variety of doses; else, from the necessarily long continuance of medication, carelessness will creep in and ruin any chance of success.

The syrup of the iodide is fairly compatible with glycerine or simple syrup, and also with the bromide of potassium or sodium, but not with the alkaline iodides.[5] With the tincture of digitalis it certainly is not, and a rather dirty looking mixture is the result; yet so far as therapeutic effects are concerned, the result is still satisfactory, perhaps because only a portion of the iodide is broken up or the small quantity of free iodine may be all the more efficacious. Of course such a mixture must be properly shaken before each dose is measured out. The steady action of the digitalis is then not perceptibly interfered with. A combination of bromide of sodium, syrup of iodide of iron, and tinct. digitalis can thus be continuously administered for months without other change than a readjustment of dose or the occasional substitution for a few days of some stomachic in place of the iodide. Some patients, of course, do not bear the syrup well, no matter in what manner given. The dosage has never amounted to over three or four drachms a week, and often less, besides a gradual reduction of the drug when the progress of the case admits it.

As a substitute, a pill combination of iodoform and reduced iron has repeatedly done good service, but there is some question as to the safety of its long continued use.

(*To be concluded.*)

[5] For various experiments with regard to this matter, I am indebted to Dr. Chas. H. Byrne.

SPINAL SURGERY, OR OPERATIVE PROCEDURES ON THE SPINAL COLUMN FOR LESION OF THE CORD.[1]

By A. M. PHELPS, M.D.,

Professor of Orthopædic Surgery in the University of the City of NewYork; Professor of Orthopædic Surgery in the New York Post-Graduate School and Hospital; Professor of Surgery in the University of Vermont; Surgeon to the City Hospital.

FROM the time of Heister (1745), who first suggested operations upon the laminæ, to Louis, 1762, who first removed depressed fragments of a fractured laminæ, (caused by a gun shot wound), down to the time of Kahler of Vienna, (1882), covering a period of almost a century and a half, during which period some of the most distinguished surgeons the world has ever produced, lived and practiced; but little seems to have been accomplished in this department of surgery. We find records of a large number of operations performed principally for injury. Heina and others had operated for disease, but it was not until after 1882 that the field seemed to broaden, that new lines were drawn, and the question of when, where, how and why, became studied in earnest.

The profession owes much to such men as McEwen of Glasgow, Horsley, Lane, Bowlby and Treaves of London, Schede-Schmaus, Kraska and Hoffa of Germany, and many others in Europe. In our own country, valuable work, from which interesting conclusions can be formed, has been done by Morris, Abbe, Wyeth, McBurney, McCosh, Briddon, Gerster, Fowler, Powell, Lloyd, Keen and many others.

I think I can safely say, however, without fear of

[1] Read before the Neurological Section of the Academy of Medicine, April 14, 1893.

successful contradiction, that more has been accomplished in the study of spinal surgery during the past ten years than in all the years of its previous history. While the results to the patient, may not have been materially better than in the century past, much valuable information has been added to our store.

The effort of Maydyl, in 1882, to unite the severed ends of the spinal cord, and in 1885 the same attempt by Morris; the attempt of Abbe to unite nerves above the point of injury, to those below and thus establish nerve connection between the paralyzed parts of the brain—first suggested by Dana—the division of nerve trunks within the canal for the relief of incurable brachial neuralgia, by the same operator; the opening of the meninges of the cord in spinal meningitis to relieve pressure, and the frequent operations now performed for Pott's disease, and other lesions of the cord, and its membranes, are amongst the present suggestions in spinal surgery. To the neurologist the surgeon looks for help, and I have no doubt that, with the aid of the accurate knowledge of the neurologist, a most brilliant future will be opened for the field of spinal surgery.

I have performed laminectomy in five cases, and with your kind indulgence I will report them briefly in the abstract.

CASE I.—Spinal meningitis with pressure symptoms. Child a female, eight years old, was taken with spinal meningitis July 20, 1888, with no apparent cause for the disease. There had been other cases in the neighborhood, some proving fatal; I do not think it was epidemic cerebro-spinal meningitis. When I saw the case again on July 29, I found her in convulsions. The pupils did not, or but feebly, respond to light and were dilated. When the convulsive action ceased she was in a position of opisthotonos. She was partly conscious, and complained of pain only in the back. At times she complained that she could not see. In the afternoon she was seized with another convulsion, from which I thought she would never recover. After an hour, with the moderate use of chloroform, the convulsive action ceased. I

suggested an operation, which was consented too. As she had from the first complained of intense pain in the lumbar and dorsal region, I determined to operate at the easiest point to open into the spinal canal. The fifth and sixth dorsal spines were selected. I made the following incision, which is the same as that made in all the following cases.

An incision extending from the third dorsal spine to the seventh, was made in the median line and carried down to the tips of the spines. The tissues were now separated with a periosteotome and scissors, from the spinous processes and laminæ on both sides of the spines. The third spine was cut away at its junction with the laminæ, with a pair of bone forceps and the rouguer. The laminæ were then cut through and the canal freely opened. The meninges were inflamed and bulged freely into the wound. I quickly opened them, when about two ounces of sero-purulent fluid escaped; with a douch of boracic acid solution I carefully injected and washed out the canal. The meninges were left open and the wound packed with iodoform gauze, a few turns of the plaster of Paris bandage completed the dressing. The wound was dressed every six hours, and at each dressing, the dressings were found saturated with the same sero-purulent spinal fluid.

Immediately after the operation all the symptoms ameliorated in severity. There were no more convulsions, and the brain symptoms almost entirely disappeared the day following. The case went on to a favorable recovery. The wound healed in four weeks. The child had partial paralysis of the left limb, from which she never recovered, due to the severity of the disease.

I believed at the time, and so recorded it, that the case was one of pressure from fluid producing the symptoms, or possibly aggravating the symptoms frequently seen in spinal meningitis with cerebral complications.

Case II.—Female, age four years, admitted to Babies' ward at the Post-Graduate Hospital, March 9, 1892, with Pott's disease, upper dorsal region, with great kyphosis. She had been in the Hospital for Ruptured and Crippled for a long time. She had almost total paraplegia, which had existed for two years. Had measles and scarlatina when one year old. Soon after this illness she developed

Pott's suddenly; unable to walk since. She was emaciated and small, but in other respects seemed in good health. She had on a brace used in that institution.

On March 11, under ether, I made an incision over the point of greatest kyphos, over the spine of the fifth or sixth vertebra, and operated as in the preceding case. The canal for a space of two inches was filled with a hard tubercular caseous mass. This was scraped out with a Valkman's spoon. Puss was now seen to come freely from the vertebræ into the canal. I cut away the bone and found a large cavity, beyond which it was so extensively diseased, that I did not deem it good practice to attempt to excise. A large drainage tube was inserted and the cavity washed out with bi-chloride solution, and finally injected with iodoform and glycerine, ½ oz. to 4 ozs. The wound was partially closed by suturing, and dressed as in the preceding case. There was no shock following the operation, and on the day following the operation, she had almost perfectly regained the power of her lower extremities. She rapidly improved, and it was expected that in a short time she would be running around. She died suddenly of pneumonia on April 17, 37 days after the operation. I have the specimen here. This, I think was a case in which earlier operation might have been successful.

Dr. Collins made the microscopic examination of the cord, which he will report upon.

HOSPITAL NOTES.

CASE III.—Male, aged 24, single; admitted to Post Graduate Hospital, June 17, 1892.

Diagnosis.—Paraplegia from fractured vertebræ. Family history good. Was brought in on a stretcher; had been in bed since his injury, nineteen months before. Previous history good until on September 1, 1890, he was knocked down by a runaway horse and paralyzed below the waist. Anæsthesia of legs and feet. Pain in the bladder and retention of urine. Later incontinence. For one week after the injury had complete retention of fæces. Six months following had incontinence of fæces. This gradually improved until now he can hold fæces long enough to get upon a bed pan. If he tries to urinate however, his bowels will move also. Following in-

jury there was complete loss of motion in both limbs, anæsthesia in right leg up to the pelvis, and in the left leg to the line of the perineum; head of penis and scrotum also anæsthetic. Had sharp pains in the legs, which seemed to start in the feet or ankles and running up, occasionally stopping at the knee, but usually going higher, frequently to the testicles. Present condition: can feebly flex right leg on the thigh, no control below the ankle. Can flex left thigh very little, no control below knee. Sensation to touch in right thigh as low as knee; in left leg to half an inch below great trochanter. Still has pains in leg.

Operation under ether. Incision over seat of fracture. Laminæ and spines of two vertebræ excised. I found there had been a partial dislocation and fracture; the canal was tortuous, and a growth of new bone was found over the cord, this was removed and the vertebra cut away so as to straighten the canal. Pulsation appeared now as strong below the fracture as above. Drainage inserted, and dressed with plaster of Paris corset jacket. Wound healed without suppuration. Tenotomy of Tendo-Achilles of both feet was performed for contraction; he is able to walk quite well with the aid of crutches.

Discharged September 28, 1892, very much improved and still continues to improve. Dr. Franklin, of Greenwich, Conn., informs me by letter that the case is improving daily.

Case IV.—City Hospital, Blackwell's Island.

Pott's disease; Italian; male, age about 30 years; family history gives nothing; patient denied any history of tuberculosis or traumatism. At time of admission to surgical ward of the hospital, one year before, there was a marked anteflexion of the spine, the column bending forward at about the last dorsal vertebra making a marked kyphos. He complained of pain at the affected part of spine, but could walk with crutches, and still preserved some sense of feeling in both lower extremities. In ward five he stayed two months, gradually losing power in his lower extremities, until they were completely powerless, with complete anæsthesia and loss of reflexes. Both legs were œdematous, the left more so.

Laminectomy was performed on the last two dorsal, and first lumbar vertebræ.

An abscess and mass of cheesy material pressing on the cord was found within the vertebral canal, between the membranes of the cord and the periosteum which

communicated with extensive disease of the vertebra. The membranes of the cord themselves were much adherent to the bony parts, but showed no signs of fresh inflammatory action. The meninges of the cord being laid open, no change could be detected in it. A large drainage tube was inserted into the bone abscess, after first washing it out. The membranes of the cord were now sutured with catgut and the wound closed with the same. Iodoform and bi-chloride dressings applied, and a plaster jacket put over all.

Patient did well, and on tenth day jacket was removed and wound inspected and found aseptic. Dressing and plaster jacket replaced, with fenestrum for inspection of wound. Some feeling returned to the extremities; tickling the sole would cause toes to jerk some, and patient could move foot slightly. He still complained of pain at the seat of operation, and gradually sank, dying from exhaustion on November 27, 1892, one month after the operation.

Dr. Fisher tried to examine the cord microscopically, but owing to rapid post mortem changes found it impossible.

The bodies of two vertebræ and inter-vertebral cartilages were destroyed, and a piece of bone protruded into the canal and was adherent to the meninges. This fragment of bone had completely severed the cord. An earlier operation might have saved the cord by removing the bone.

CASE V.—Harry Magill, age 18, single; admitted to Post Graduate Hospital, December 22, 1892.

Diagnosis.—Fracture cervical vertebra. Family history good, Previous history: healthy up to present illness. August 28, 1888. Patient was accustomed to diving from a barge, which on the above date moved from its former position to shallow water, depth of water being about three and a half feet. Patient dived, striking head forcibly against sand. Immediately paralysis of body ensued. Was brought to shore in a boat, unconscious, unable to walk. At first had anæsthesia, later hyperæsthesia of body. Paralysis below lesion in cervical vertebræ, difficulty in breathing; moved neck slightly.

Strychnine, atropia, massage, electricity, and plaster corsets applied with no benefit.

Present condition.—Slight motion of arms; unable to extend fingers, which remain flexed. Biceps and triceps

strong. Arms atrophied. Fair use of neck and chest muscles. Knee reflex exaggerated—legs atrophied, markedly. Anæsthesia of legs—unable to distinguish heat from cold, when applied to legs—more sensitive in arms and hands, balances with crutches, dragging feet along. Knee bent far back.

Immediately following injury, had incontinence of fæces, and retention of urine requiring catheterization. At time of admission bowels slightly under control. Urine voided by pressure over pubes with catheter.

Operation.—December 24, 1892, under ether. Incision over cervical vertebræ, spines and laminæ of third, fourth and fifth cervical vertebræ excised; membranes of cord were thickened and adherent, resembling the fibrous mass of an old spinal hæmorrhage, which had made pressure on the cord. This was dissected off, and the wound closed with drainage tubes down to the cord. Drainage tube removed the following day, and wound packed with gauze; allowed to granulate. Wound healed without suppuration. Faradic electricity applied by Dr. Hammond during last month in hospital with success. Dr. Hammond will make a more elaborate report upon the case as he examined him before operation. Discharged very much improved February 14, 1893. Could extend and flex limbs, empty bladder and retain and expel fæces at will, and all his muscles were stronger. I will keep the patient under control and report upon him one year hence.

COLLECTED FROM THE WORKS OF NUMEROUS OPERATORS.

From the statistics which I have consulted, I find the mortality from operations for Pott's disease to be about forty per cent.

Schede operated on 8 cases, average age 10½ years, and 7 died.

Horsely on 7, average age 25½, 1 died.

Lain on 11, average age 12 years, 1 died.

McEwen, 5 cases and 2 deaths.

In Schede's eighth case there was no improvement.

Horsley had 2 recoveries, 3 improved, 1 no improvement, and 1 death in 7 cases.

Lain 6 cases cured, 2 improved, 2 unimproved after second operation, in 11 cases.

Both of my cases from Pott's died; 1 fracture recovered and could walk; 1 old hæmorrhage much improved; 1 spinal meningitis cured.

I have compiled all the cases published since Lloyd's paper, about 40 in number, and find the percentage varies but little from published reports.

In fractures and dislocations the mortality must be of necessity very great. A very large per cent. die whether operated upon or not. A fracture produced by bending the spine forward crushes the body of the vertebræ and the cord at the same time. In such cases an operation could be of doubtful efficacy, still after shock has passed and a certain time has elapsed, an operation should be attempted. It is often found impossible to restore the dislocated and fractured vertebra. In gunshot wounds of the spine an immediate operation should be performed. The same is true of tumors impinging upon the cord. I would operate upon spinal or cerebral spinal meningitis (non-epidemic), as soon as dangerous symptoms of compression, which did not improve by treatment, appeared. The same rule should be followed in hæmorrhages into or around the cord. My fifth case proved that much might have been hoped for from an immediate or early operation. Invasion of the canal from burrowing of pus along great nerve trunks, producing purulent meningitis, and also abscess from diseased vertebra producing same condition, should be operated on as soon as diagnosed. Some forms of meningitis, localized, and certain forms of tubercular meningitis, I believe, should be drained.

Dr. Abbe writes me that he has recently operated successfully on a case of syringo myelia.

The most serious subject for surgical study is parlysis following Pott's disease. We know that nearly all cases of Pott's paralysis recover through proper treatment. Myer places it at 55 per cent.; Gibney, 50 per cent.; Taylor and Lovett at about 90 per cent. So far as my own observations go, I would say that at least 90 or 95 per cent. under proper treatment recover; in fact I seldom see a case that does not, in the many scores that we treat

annually at the Post Graduate and the University. We have, then, of this class of paralyzed patients, only ten or less, in every hundred, incurable without operation. Then arises the question: what per cent. of these ten are suitable for operation with a reasonable hope of improvement?

General statistics show a mortality of 40 per cent. In 36 cases by Schede, Horsley, Lane and McEwen there were eleven cures or about 30 per cent.; 11 deaths directly traceable to the operation, or 30 per cent.; leaving 40 per cent. uncured, or slightly improved, or died after many months. This is encouraging when we understand that all were hopeless cases.

When shall we operate? How shall we determine the cases which can be benefitted by operation?

The neurologist can be of great service to the surgeon in diagnosis.

Paralysis is produced, I believe, from pressure, first, by bending of the spinal column from destruction of bone (photograph of such a case shown).

Second: invasion of the canal by the tubercular process producing a large deposit of caseous matter and a meningitis, from invasion with deposit of inflammatory material. Sudden paralysis in Pott's is usually produced by bone pressure. (Photograph and specimens presented.) Whereas, slow progressive paralysis is produced by tubercular abscesses invading the cord, or a pachy-meningitis, and growth of granulations with inflammatory deposit. The cases of sudden paralysis are more likely to give away under mechanical treatment; whereas, the cases of long continued progressive paralysis are most likely to be intractable. I think a safe rule to follow in any case would be: treat the case mechanically for a time,—say two months—and if the paralysis continued to increase, or if it had become total, operate.

Cases with total paralysis, with incontinence either of urine or fæces of several months, or even weeks, duration, should be operated on if they do not immediately improve under treatment. Cases with well defined abscesses

burrowing through the canal, with gradually increasing paralysis, should be operated on, the abscess scraped out, and good drainage established, and the spinal column examined. Operate in cases of pressure threatening the destruction of the cord.

OPERATION.

I prefer the median incision, cutting off the tips of each vertebra leaving them attached to the muscles, and removing the spines. It gives the operator more room, and the spine seems to be as strong after healing as before. The spinous processes prevent the fracturing of the spine by anterior flexion. When the wound has healed, the spines above and below are bound firmly together by the ligament, and spinous tips, and cicatrical tissue. A rougeur and bone cutter are the best instruments to use.

In septic conditions the wound should be treated open.

A plaster corset should be applied over the dressing at each time. Electricity seemed to improve the power of the muscles in three of my cases.

IN CONCLUSION.

The outlook for the success of spinal surgery is not so gloomy as it has been painted.

Only incurable cases by other methods should be operated on; then if one in fifty can be saved it means much.

Operations in recent fractures, and dislocations, and gunshot wounds show a larger mortality, because of the large number that would die even if an operation was not done. This should not deter the surgeon from operating. Cases that would certainly die, or recover hopelessly paralyzed, may be saved or cured by operation.

Finally, it would be an advantage if the study of spinal surgery could be conducted jointly by the surgeon and the neurologist.

REPORT OF CASES OF TRAUMATIC INJURY TO SPINAL CORD.

By GRAEME M. HAMMOND, M.D.

New York.

THE following cases, one of which is reported in conjunction with Dr. J. W. Wright, have a direct bearing upon the subject of traumatic injuries of the spinal cord and their relief by surgical operations.

The first I case saw through the courtesy of Dr. S. D. Powell. The patient was a man, thirty-four years old, who, two weeks previous to the time I first saw him, had been knocked down and injured in the back by a heavy weight of merchandise which fell over upon him. Examination showed that there was a well marked protrusion at the junction of the dorsal and lumbar vertebræ. There was paralysis of the sphincter of the bladder and anus, but no other muscular paralysis. The knee-jerk was present in both legs, but was very sluggish. The gait was slightly ataxic, and slight swaying was observed when he attempted to stand with his feet together and his eyes closed.

All forms of sensibility were nearly normal in the feet, legs and thighs. He was not always accurate in locating a touch on the buttocks and thighs, and the muscular sense below the knees was slightly diminished. There was an area of absolute loss for all forms of sensibility, circular in extent, with the anus as a centre, and a diameter of about three inches.

I advised an immediate operation, which Dr. Powell performed. He found a fracture of the eleventh dorsal vertebra. A piece of the bone, with serated edges, was pressing against the posterior columns of the cord. This was, of course, removed. With the relief of the pressure on the cord the symptoms gradually subsided, until at the expiration of two months he seemed to be perfectly well. The remarkable feature of this case is the exceedingly limited area of complete anæsthesia. In a number of similar cases collected and reported by Starr, there was not one in which the area of anæsthesia was so circumscribed.

The second case I saw at the request of Dr. Phelps.

The patient was injured on September 1, 1890. The manner of his injury has already been described by Dr. Phelps. Following the injury he was immediately paralyzed in both legs. The paralysis was absolute for nine months. At the expiration of that time motion began to return in the right thigh. There was also, at first, complete loss of all kind of sensation from the level of the pubes downwards, including the penis and scrotum. A distended bladder caused pain, but the urine could not be voluntarily evacuated. It had to be drawn for five months. Then paralysis of the sphincter developed and he was unable to hold the urine. This continued for six or seven months. After that he again became continent.

For the first three months he could not voluntarily evacuate the bowels, then for three months he could not retain the contents of the rectum. After that he regained power over the sphincter. Three days after the accident a bed sore formed on the sacrum. It was still present when I first saw him. When I examined him I found he was unable to stand. He was able to flex the right knee only with great effort. The left limb was almost completely paralyzed. On great effort slight contractions could be observed in the left quadriceps, but not of sufficient power to stir the limb. Below the knees both legs were paralyzed. The gastrocnemii were contracted, giving rise to double talipes equinus.

The plantar reflexes on both sides were lost, both knee-jerks were absent, cremaster reflex was present on the right side, but lost on the left side; both abdominal reflexes were present.

On the front of the body sensibility of all kinds was lost in the right leg from the knee downwards; in the left leg from a level of the pubes downwards. All sensibility was also lost in the glans penis, the scrotum and perineum. Touch, pain and temperature were plainly perceptible on the penis, from the glans to the pubes. Sensation was normal from the pubes upwards. On the back of the body, from a point on a level with the twelfth dorsal vertebra, the area of the loss of all kinds of sensibility extended downwards and outwards. In the right leg the outward limiting line of the anæsthesia did not extend quite to the median line until the knee was reached. Here it swept around the leg and joined the upper line of anæsthesia on the front of the limb. On the left side the anæsthetic area involved all of the back of the thigh and more than half of the gluteal region.

Above the twelfth dorsal vertebra and on each side of the anæsthetic area, there was for a limited space slight hyperæsthesia. On the accompanying chart the area of anæsthesia is indicated by lines; the hyperæsthesia by dots.

As one cremasteric reflex was present and one was absent, and as both abdominal reflexes were perfect, there was no hesitation in locating the injury to the spinal cord at the level of the twelfth dorsal vertebra.

The operation proved the correctness of the diagnosis. The twelfth vertebra was found to have been fractured and the cord was greatly compassed. A certain amount of improvement was observed the day after the operation. Tactile sense was restored on the front of the thighs. He could feel and locate a touch accurately, but all other forms of sensibility were still absent. Gradually slight motion returned in the left thigh, and the right thigh became stronger than it had been. Finally, after two months, he was able to walk around with the aid of crutches.

The clinical history of the third case you have already heard from Dr. Wright. The pathological history is as follows:

The specimen of the cord which I received from Dr. Wright, consisted of a piece three and a quarter inches long, beginning at the level of the second cervical nerves and ending at about the level of the second dorsal nerves. At the point of the injury the cord was greatly compressed, and measured only one-eighth of an inch in thickness. Both above and below this point the cord gradually increased in size until about half an inch either way the full size of the cord was reached. The specimen had been hardened in alcohol. I removed it to Müller's fluid, where it was kept for three months. Sections were stained in Weigert's hæmatoxylon, in soda-carmine and in a double stain of both of these agents.

The meninges were thickened and adherent to each other, and the pia was firmly attached to the cord. At the point of greatest injury the cord measured one-eighth of an inch antero-posteriorly and three-eighths of an inch transversely. The central canal is obliterated, but a cavity, which is evidently the result of traumatism, extends transversely across the cord. There is no evidence of epithelial lining anywhere on the periphery of the cavity. It extends nearly the entire transverse distance of the cord where the compression was greatest, and

gradually diminishes both upwards and downwards from this point for about three-eighths of an inch, when it becomes imperceptible.

In the substance of the cord no gray matter can be recognized. Dense connective tissue seems to have taken the place of nearly all the normal elements of the cord. Where the anterior horns ought to be a few motor cells can be seen, without processes and in advanced stages of pigmentary and granular degeneration. In two or three places the remains of fibre tracts may be observed, but the few fibres which remain are surrounded by dense connective tissue and are mainly degenerated.

At a higher level, where the different tracts can be discerned, Burdach's columns are degenerated, while Goll's columns are but slightly affected. The crossed and direct pyramidal tracts, Gower's tracts and the direct cerebellar tracts are all degenerated. The motor cells are numerous and well preserved, but the motor roots are greatly degenerated, probably in consequence of pressure from the sclerosed tissue through which they pass. The posterior horns and posterior nerve roots are pushed laterad and are degenerated. At a still higher level, beyond the point where the degenerated posterior roots have merged into Goll's columns, the latter are in a high state of degeneration, while Burdach's columns, with the exception of the periphery, are apparently normal. The pyramidal tracts are but slightly affected. The anterior and posterior horns are normal, and the motor cells are numerous and perfect in every particular. The motor roots and Gowers' columns and the direct cerebular tracts are still degenerated.

Below the lesion the posterior columns are nearly normal. The pyramidal tracts are completely degenerated. The motor cells seem to be nearly as numerous as they should be and in an excellent state of preservation. The motor roots are slightly degenerated near the periphery of the cord.

This case is of particular interest as it corresponds, from a clinical aspect, very closely with the fifth case, described by Dr. Phelps.

In both cases there was a similar accident. Both individuals fell from a height and struck directly upon the vertex of the skull; both were immediately paralyzed from the neck downwards for both motion and sensation, and both partially recovered. In Dr. Wright's case the fifth and sixth vertebral were telescoped, the resulting

deformity causing severe compression of the cord. In Dr. Phelps' case bony compression of the cord was not in evidence, but there was a fibrinous deposit which surrounded the cord and which Dr. Phelps removed. This was probably the remains of an old hæmorrhage.

These three cases, and those reported by Dr. Phelps, show that operative surgery, to be efficacious, must be resorted to soon after the injury has been received. Pressure prolonged for any length of time invariably causes degeneration, both ascending and descending, of the different tracts in the cord. Relief of the pressure is not followed by any diminution of the degeneration. But relief of the pressure prevents the process of degeneration from beginning. Hence, the surgeon should operate as soon as possible after injury to the cord has been received, and by removing the pressure, whether it be from displaced bone, a hæmorrhage, or a foreign body, prevent the degeneration of the cord, which he will be powerless to alleviate if he waits until it becomes well established. The case reported by Dr. Wright, and the fifth case reported by Dr. Phelps, could, in my opinion, both have been benefitted, and perhaps entirely cured, by an immediate operation.

A Case of Paralysis, due to Acute Inflammation of the Medulla (Vanderveldc, Journal de Med. de Bruxelles, April 2, 1892).

The patient, 24 years old, no particular preceding family or personal history, had been suffering for twenty-one days when brought to the hospital. He had at first a sore throat, then twelve days afterward began to have fever, at the same time inability to swallow, and later, difficulty in walking. On examination, he was found to have, besides vertigo and headache, inequality of pupils with preservation of light reflex, convergent strabismus, trouble in deglutition, hemiparesis of the entire right side, ulteriorly, convulsive crises. Cheyne-Stokes respiration, coma at death. At the autopsy there was found to be diffuse alteration of the medulla, involving both the gray and white substance. In the cord the lateral columns showed the degenerative lesion. The author thinks that the disease first showed itself in the anterior gray cornua, then in the posterior gray substance. The lesions in the white substance he considers secondary. J. C.

CASE OF SPINAL INJURY.

By J. W. WRIGHT, M.D.

Bridgeport, Conn.

On January 19, 1880, a youth, 19 years old, while swinging from a horizontal bar in a gymnasium, fell, striking the floor upon the back of his head and shoulders, rendering him helpless but not unconscious. He was conveyed to his home in a carriage, and a physician summoned, who found him in the following condition: Perfectly conscious and without pain; he was paralyzed from his neck downward. There were no external marks of injury, and no fracture or dislocation of the spinal vertebra was discovered, though suspected. No special treatment was adopted as it was not supposed recovery would follow.

He was able to swallow some liquid nourishment, and within a day or two could feebly move the arms, but not the hands.

The bladder was paralyzed, necessitating the use of a catheter until urethritis ensued, and finally he became incontinent and always remained so. The sphincter of the anus feebly acted preventing incontinence ordinarily.

For weeks he lay in this condition, so feebly nourished that bed sores formed on his back and hips, and from pressure against the foot of the bed, gangrenous sores on the bottom of the heels.

Strychnia internally and faradism externally was the only treatment used.

After some time a gradual improvement was noticed in muscular movements of the upper extremities, especially of the flexor muscles of the arms. The flexors of the forearm acting more powerfully than the extensors caused a state of constant partial flexion of the hand and fingers. Constant practice finally enabled the patient to feed himself, and by holding a pen between the forefinger and middle finger to write. He was never able to use his fingers with sufficient facility to button his garments or tie a cravat.

The muscles of the body were almost useless. He could never raise himself from a prone to sitting posture, but he could partially turn himself towards either side

[1] Read before the Neurological Section of the Academy of Medicine, April 14, 1893.

but not roll over. The muscles of the lower extremities were of still less use. The movements of these parts were of a spasmodic kind and involuntary. There was a peculiar rigidity of all the muscular structures in this portion of the body, with occasional reflex movements, produced either with or without external irritation.

For instance, the passage of a catheter would cause the limbs to contract violently.

After considerable practice he was enabled to stand, supported by a frame about the hips and the assistance of his arms.

Mechanical and passive motion, with massage and electricity, together with long practice, enabled him to acquire more dexterity in the use of muscles not completely paralyzed.

Commencing in December, 1881, he was treated for some months at Dr. Taylor's establishment in New York. Two years later he was similarly treated, together with hydropathic measures, at Geneva for some months.

From that time until his death, on March 23d, 1892, he had no special treatment.

He finally succumbed to a chronic cystitis, and an autopsy discovered two phosphatic stones in a thickened, contracted bladder.

A resection of the first six cervical vertebræ was made and these I show you to-night.

An inspection of them will show that by a crushing vertical blow the fifth and sixth cervical vertebræ had been forced together, pushing the body of the sixth outward, and occluding about one-half the spinal canal, compressing the spinal cord to at least one-half the normal size in the antero-posterior diameter. These bones are now ankylosed, bony union having taken place between the bodies and the right transverse processes.

The spinous processes are separated more widely than normal, due to the downward and backward displacement of the sixth.

The compression of the spinal cord has, therefore, occurred opposite the sixth vertebra; and, therefore, below this point the functions of the spinal nerves have been seriously impaired.

The spinal cord was hardened in Müeller's fluid, and sent to Dr. G. M. Hammond, of New York, for microscopical examination.

A FEW CLINICAL NOTES ON THE USUAL SITUATION OF SPINAL HÆMORRHAGE, WHICH RESULTS FROM TRAUMATIC INFLUENCE; WITH REPORT OF FOUR TYPICAL CASES.

By THOMAS H. MANLEY, M.D.,
New York.

WITH a personal experience in more than seventy cases of serious spinal injuries; with fifteen autopsies, in eleven of which I have full notes; most of which cases, treated in hospital, I am in a position to support theoretical reasoning with practical demonstration; particularly in connection with the question of the usual and more common situation of hæmorrhagic leakage in traumatisms, which involve the anatomical structures of the spinal canal or cord.

In the main, these observations have led me to the conclusion that in no case of injury to the back, resulting from physical violence, are we able to declare with certainty, immediately after the application of force, that the spinal cord or its serous envelopes have sustained serious damage, unless some phase of paralysis distinctly supervene.

When this phenomenon immediately, or within twenty-four hours after injury follows, it invariably indicates either tension, pressure or disorganization of the meninges, or the medullary substance of the cord.

As the element of pressure, alone, in the vast majority of cases preponderates, a few comments on it only with the report of four cases, will be considered at present.

Medullary pressure may be exclusively vertebral, as in fracture or dislocation. It will be wholly intervertebral when the lesion is limited to that net-work of plexuses which ramify through, and arch across, the loose

cellular tissues, in the osseo-thecal space, from the atlas to the sacro-coccygeal articulation.

I have never met with a single case, on autopsy, which gave conclusive demonstration of a free hæmorrhage, which was exclusively limited to the spinal marrow, or sub-dural space, in which the leakage was of sufficient volume to seriously threaten the integrity of the cord by immediate pressure, or to excite consecutive inflammation. On the contrary, in all my cases of spinal hæmorrhage, in which *post-mortem* examinations were permitted, the blood escape was external to the theca; extra-dural.

We can seldom have extra-vertebral hæmorrhagic pressure as an independent factor in spinal injuries. When such does exist, it is always in association with either fracture or dislocation.

Hæmorrhage into the spinal canal—extra-dural—as a source of meningeal inflammation, or medullary compression, in traumatisms of every description in point of frequency, vastly preponderates.

The physical quality of this pressure is hydrostatic; anatomically consisting in most cases of arterial blood, in a fluid or coagulable state.

The ultimate fate of one, the subject of traumatic spinal-hæmorrhage, will depend on various factors, the most important of which will have reference:

1. With respect to situation and extent.

2. The suddenness of its onset, or its insiduous development.

3. The general condition and complications.

The most favorable termination in any given case will be by prompt resorption, which is the rule when the leakage is limited in quantity. When this fails a compression meningitis, or meningo-myelitis, is certain to follow, with a succeeding paralysis of a varying duration, according to the extent of hæmorrhage and the segment of the cord involved. This has an invariably mortal termination.

These latter sequalæ of extra-dural hæmorrhage, by a

rapidly ascending spread of inflammatory changes, soon involve all of the respiratory reflexes, ending life by a neural inhibition.

With the preceding preparatory notes on a few of the grosser lesions, peculiar to one phase, chiefly of intra-vertebral pressure, I herewith subjoin in epitome the histories of four cases of very serious injuries which came under my care during the past summer ('92) at the Harlem Hospital.

CASE I.—P. G., admitted to hospital July 4th, age 43 years.

Diagnosis.—Hæmorrhage into the lower cervical, upper and dorsal regions of the spinal canal.

History.—On the night of July 3d, patient retired at about 9 o'clock. An hour later, while in a somnambulistic state, patient arose from bed, and, while groping about his room, fell from the window to the ground, a distance of about 12 feet.

He was found later, where he fell, in an unconscious state. The following day he was sent to the hospital.

At this time he had regained consciousness. But he had complete paraplegia with incontinence of fæces and urine. Great pain in the back. His urine was strongly ammoniacal, and that withdrawn was tinged with blood.

His temperature was $100\frac{1}{3}$ and pulse 102; weak.

In spite of treatment, which was but palliative, he went on from bad to worse, until July 13th, when temperature went up to $103\frac{1}{2}$. Central symptoms were now well marked, and as the respiratory muscles became involved, he gradually became weaker and sank early that evening.

Autopsy.—Twenty-four hours after death (contusion of the spinal-column) our diagnosis, was confirmed. The spinal-canal, external to the meninges, was stuffed from end to end by a large sanguineous effusion.

On division of the dura-mater, its inner surface was seen coated by a thin sanguino-serous exudate, nearly throughout its entire extent. The medullary substance of the cord in places was found compressed and softened. The pia-mater was on its anterior surface, dotted by particles of pus; and in places was thickened and congested. Cranium not opened.

CASE II.—W. D.; age 43 years; admitted to hospital July 25th.

Diagnosis.—Fracture of spinous apophysis of ninth dorsal vertebra with spinal hæmorrhage.

History.—Patient, while at work in a lumber yard, was violently struck in the back by the end of a heavy falling piece of timber, which came from a considerable height. He was felled by the blow, and, on attempting to rise, discovered that he was powerless in the lower limbs. He immediately commenced to vomit freely, and manifested other well-pronounced symptoms of severe shock.

He was admitted to hospital the same day, when he had complete motor paralysis of the lower extremities, though sensation was not altogether abolished. He had marked gastric disturbance, with very severe pain in the back and incontinence of the bladder and rectum. For the pain morphine had to be given in large and repeated doses.

July 26. In great pain, but general condition improved. Now able to move his feet.

On the afternoon of this day, patient was etherized, when, without any difficulty, both posterior lateral arches of the fifth dorsal vertebra, which were found fractured, were lifted out. Although these fragments were completely broken off at the transverse processes, there was no displacement of them, or pressure on the cord. With the scissors and forceps they were easily detached and lifted out.

When these broad osseous plaques of bone were removed, the bare, white, unbroken surface of the dura-mater came into view, so that it could be distinctly seen, and easily felt with the finger, through the hiatus occasioned by their removal.

The dura-mater showed no traces of injury.

Now, the wound was partly closed, drained and buried under a mass of fluffy dressings, when the patient was returned to bed.

July 27. Although his paralytic symptoms had, on this date, presented evidence of improvement, his general condition was much worse. At 12 M. temperature $103\frac{3}{4}$, pulse 122.

July 28. Temperature at 8 A. M. $104\frac{1}{4}$, pulse 150.

Died two hours later; persistent and ungovernable vomiting continuing with unabated severity to the last. Death was by a general exhaustion and sudden breaking up of the vital powers, rather than to any condition dependent on paralysis.

Autopsy.—Twenty-six hours after death, the spinal-canal was opened by myself, when it was found that there had been a large hæmorrhage,—extra-dural—which had been caused by a laceration of the meningo-rachidian vessels on both sides of the cord at the seat of fracture. The blood was firmly coagulated and filled the greater part of the canal, above and below the seat of fracture. There was no hæmorrhage into the medullary substance. The evidence of incipient meningeal inflammation was seen, as in the preceding case, though not so well accentuated.

CASE III.—J. W. J., age 33 years, August 1, 1892.

Diagnosis.—Hæmorrhage into spinal cord, lower cervical region.

History.—On August 1st, while under the influence of liquor, on descending stairs, lost his footing and fell heavily on his neck and shoulders.

On admission to hospital it was found that he had complete paralysis from the cervico-dorsal junction downward, with very little power in the arms, the right particularly. As in the preceding cases, motor paralysis predominated from the beginning. For eight days there was little change in his condition, although at no time did the temperature mount beyond 100, or his pulse above 92.

August 9th, commenced to show signs of recovery from paralysis, with improvement in his general condition.

By the use of Sayre's gallows and Meig's case's spinal-carriage, other general measures and good diet, he so much recovered himself as to be able, after a time, to walk unassisted, dress and undress himself. He left the hospital for home September 28th. He has since perfectly recovered.

CASE IV.—E. W., age 25 years. American.

Diagnosis.—Hæmorrhage into spinal canal.

History.—Admitted on September 8, 1892. On September 6th patient was thrown from a vendor's wagon, while his horse, which was running away, was turning the corner of a street.

On examination, it was found that he had complete motor-paralysis of the lower extremities, with marked diminution in sensation. He was able to use his arms only to a slight extent.

September 8. Total loss of sensation, as far up as the second rib. The power of motion now was entirely lost in the upper and lower extremities. Temperature 99.2. Pulse 52.

September 9. Patient's general condition much more serious.

September 10. The morning temperature suddenly rose to 102½, and symptoms of rapidly developing pulmonary-œdema were present.

September 13. Becoming steadily worse, and died on evening of this date, asphyxiated.

Autopsy.—Twenty-four hours after death spinal-canal was opened, and a large extra-dural hæmorrhage was discovered, occupying the greater part of the entire canal. Such extensive pathological changes were seen in the meninges and substance of the cord as indisputably demonstrated that inflammatory changes had become well established. We were not permitted to examine the brain in this or in the two preceding autopsies.

COMMENTS.

In the above short narrative, but a very incomplete report of the varied clinical manifestations and pathological changes encountered in intra-vertebral-hæmorrhage has purposely been submitted, as on a later occasion I intend to fully and methodically exhaust the subject; for, in the present instance, my aim has been to offer but a few elementary outlines.

Nevertheless, while on this subject, I may say that this whole question of spinal-hæmorrhage of a traumatic origin, is a veritable *terra incognito*; for it is apparent, from the most superficial examination of most of the average text-books on general surgery, that almost nothing can be found on intraverter-vertebral-hæmorrhage. In works on surgical pathology, too, and even those exclusively devoted to neurology, there is a dearth of information on sanguineous effusions of the description under consideration.

At a late meeting of the Neurological Section of the Academy, the position was taken that hæmorrhage into the parenchymia of the cord was a most prolific source of acute myelitis in pathological conditions; and it was alleged that this condition, in many instances, was attributable to injury.

For the first time in my life I learned that the medul-

lary substance of the cord was permeated by more than two hundred arteries. Now, I most emphatically repudiate the allegation that the medullary substance of the cord can, in any sense, be regarded as a highly vascular structure, as nearly its chief blood supply is from above, through very small recurrent branches of the vertebral arteries, which split up as they descend, and are as freely distributed at the commissures and cornua in the meshes of the pia-mater, as in the white and gray substance of the cord.

Reasoning from analogy and from knowledge of the various vascular diseases incident to certain constitutional derangements or degenerative changes, it is easy to understand how we may, in certain pathological conditions of the cord, have a hæmorrhage of a very limited extent from the venous-radicles, the arterioles or capilliaries. But that we can ever have a primary hæmorrhage of any tangible proportion, as a consequence of physical violence, into the medullary substance, without extensive destruction of the overlying soft parts and the bony canal, has not yet been demonstrated.

In six hundred and forty-two cases of serious spinal injuries recorded in the surgical history of the war of the late rebellion, not a single instance is cited of a primary, uncomplicated hæmorrhage into the medullary substance, though there is a considerable number recorded of extra-thecal extravasation of blood within the vertebral walls.

The precise knowledge of the extent and situation of rachidian hæmorrhage is a matter of considerable importance, both from a forensic and therapeutical standpoint.

Although the study of the lesions consecutive to localized intra-vertebral hæmorrhagic pressure is both an attractive and fruitful one, the limit of this contribution permits me only to make a most cursory and superficial survey of the subject.

(1. Part 1st, page 443).

NOTE.

After submitting the above contribution, Dr. Manley said that in order to justify and support his position with reference to the non-vascularity of the medullary substance of the spinal cord, he would ask permission to present two specimens.

The first, he said, was a segment of the vertebral

column, the soft parts spinal cord, roots and membranes *en bloc*, which included the sixth, seventh, eighth and ninth vertebræ.

The subject from whom this specimen was removed, first had the arterial system charged under high pressure with a solution of carmine. The following day the specimen was removed. This, he said, had been prepared for the purpose of demonstrating that the vessels in the medullary substance, on cross-section, were so few and infinitesimal in size that they could not be seen with the naked eye.

The second specimen was a similiar block of the rachidian structures removed from a dog.

He said that in this experiment the objective point in view was to determine the vascularity of the medullary substance in the living animal. The animal having been etherized, the posterior arches of the fourth, fifth and sixth dorsal vertebræ were cut away and the theca exposed. Now, a long, fine needle was first sent in, in a horizontal direction ; then partly withdrawn and sent in in a vertical direction, upward and downward, directly into the centre of the gray and white matter. The wound was then closed. Four days later, the animal was killed, after which this specimen was removed. He said that he wished to call attention to the fact, which, in his judgment, this experiment conclusively demonstrated, viz., that, notwithstanding this direct puncturing and laceration of the spinal-marrow, there was no hæmorrhage whatever into its substance; from which, he alleged, it must be assumed that direct primary hæmorrhage into the medullary substance, *per se*, must be a very rare sequence of spinal traumatism of any description whatever.

Asylum Notes.

By FRANK P. NORBURY, M.D.,
Jacksonville, Ill.

James Murray's Royal Asylum, Perth. Sixty-fifth Annual Report.

The home treatment of insanity gains favor year by year. Not of the ancient type—the unintelligent imprisonment of a lunatic in the least desirable room of the house; but the rational adoption of means that have been approved in the best hospital experience.

Efforts to differentiate the wards should be the aim; sink the institution in the home, in so far as is practicable.

Experience shows the house principle of management is of benefit. The houses are complemental to the main asylum, and for a considerable period have been successful financially and beneficial to patients and staff.

There can be no doubt that the margin of cure and contentment is thus enlarged.

Nurses and Attendants.—It is possible that in architecture and in every routine of asylum management the high water mark has been reached. It is now in the domain of scientific research and educated nursing that further progress must be made. It is not the part of the superintendent to decry the faithful services of the many hundreds of attendants and nurses doing worthy and unobtrusive work in the asylums of the world, but the difficulty of obtaining the best kind seems to be perennial. This is a difficult problem.

Sheppard Asylum, Baltimore. First Annual Report. *E. F. Brush, M.D., Superintendent.*

Voluntary Admissions.—Dr. Brush says he firmly believes that voluntary commitments should be encouraged. Such a course is one of the methods by which that particular dread and horror of an asylum, which seems to have taken such deep root in the popular mind, can be eradicated. To name places for commitment of the insane, "hospitals" will not accomplish this desirable end. They are still receptacles for the insane, call them what you will, but when, as in a general hospital, people seek their care and treatment, then in name and function will they be "hospitals" in the broadest sense of the term.

Training School for Nurses.—No matter how well

equipped in the matter of buildings and all the appurtenances which go to make up a well appointed asylum, no matter how competent and enthusiastic in their work the medical staff may be, no institution of this character exists which does not, after all, depend very much for the comfort of its inmates, and the success with which they are managed, upon its nursing staff.

Long Island Home, Amityville, N. Y. *O. F. Wilcsey, Superintendent.*

Under the new management some improvements have been added in the way of increased accommodations and classification. Bearing in mind that many insane need enforced quiet and rest, still there is a tendency in hospital life to listless monotony which must be overcome; and, with this object in view, the patients are assembled for evening entertainments, taken for a drive, and furnished other recreations, including a regular course in calisthenics.

First Hospital, Saint Peter, Minnesota. Seventh Biennial Report, 1892. *C. K. Bartlett, Superintendent.*

Partial Report of Autopsies.—S. E., No. 5866. Female. Born in Sweden and, but recently came to this country. Age, twenty-seven years. Married, and six months pregnant with her first child. No family history obtainable. Mental disturbance first manifested six weeks before admission by self depreciation and attempts at suicide. When admitted could not speak above a whisper on account of destructive disease of the larynx caused by taking lye with suicidal intent. She was depressed and deluded, believing her husband no longer loved her, and on this account attempted suicide. Later, she heard voices commanding her to take her life, and she insisted on doing so. She was noted to have some elevation of temperature with hurried respiration, about two weeks after admission. Examination disclosed the end of a darning needle protruding in the sixth interspace of the left side, two inches outside of the nipple line. The needle advanced and receded at each impulse of the heart. The needle was four inches long and had been in this position two days. Temperature 102.3, pulse 130, respiration 35. The next day she miscarried. In the morning her temperature, was 103, pulse 140; but after the miscarriage her temperature fell to normal and she appeared much better. Her respiration did not improve; the next day her heart's action became labored and violent, and respiration "Cheyne-Stokes" in character. Temperature rose

to 104. She died during the next day, having become comatose during the night.

Autopsy.—(Notes from). Purpuric spots on arms, chest and legs.

There was a punctured wound, made by the darning needle in the chest; the needle had passed through the chest wall into the abdominal cavity, along the anterior surface of the greater curvature of the stomach, making two abrasions of its peritoneal coat on its way inward and upward, finally piercing the diaphragm, transfixing the apex of the heart, and just entering the cavity of the left ventricle. The process of repair had commenced in the heart muscle; organized clots were found in right auricle extending into the pulmonary artery and in left ventricle.

E. M. E., No. 86. Female.—Admitted 1867. Native of Germany; age, 45 years; married; six children, four living. Had chronic delusional insanity for five years before admission. One sister insane.

Before admission, developed delusions regarding her identity; believed she was a man; habits, etc., were in conformity with this belief. During excitement killed two of her children. On admission was careless, filthy in habits, masculine in appearance and ways. Became quiet and orderly, excepting at intervals was excited. At times complained of rheumatism, and would remain in bed for several days at a time. In 1891, a hard growth under the skin in left pectoral region developed, also a tumor over the trachea below the larynx, and apparently involving the thyroid isthmus. The former growth was removed and proved to be a calcareous tumor, oval in shape, three inches in long diameter and one and one-half inches thick. She recovered nicely from operation, but later began to grow weaker, developed pulmonary œdema from which she died.

Notes from Autopsy.—A thrombosis was found at the bifurcation of the middle temporal artery on the left side. The whole of the superior and middle temporal convolutions were softened, the softening being most marked in the white matter involving principally the superior temporal convolution and insula. Also the first, second and third occipital convolutions. The pia on both sides of the brain was distended with fluid over the temporal and parietal lobes. No lesion nor disease was found on the right side of the brain. The woman was left-handed, and she was able to articulate distinctly and answer questions put to her until within a few hours of death.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

PATHOLOGICAL.

The Pathological Anatomy of Paralysis Agitans and of the Nervous System in Senility. —In three typical cases of paralysis agitans, the central and peripheral nervous system, and also the muscles, were carefully examined by Ketscher at Prof. Chiari's Institute in Prague. Pathological changes were found in every case. Atrophy of all the tissue elements was present in varying degrees, and the ganglion cells in the brain were markedly pigmented and had undergone disintegration. The nerve fibres in the cord were almost completely degenerated, this being especially marked in the posterior columns and also in the peripheral nerves. Muscular fibres partly atrophic and undergoing hyalin degeneration. Increase of connective tissue in the cord, peripheral nerves and muscles. There is neuroglia sclerosis in the cord affecting mostly the cortical layer

and the blood vessels. This is more marked, however, in the posterior and lateral columns. There are also pronounced changes in the blood vessels, their walls being thickened and the adventitial sheath distended and infiltrated with round cells. Miliary aneurisms and hæmorrhages are found scattered throughout the cord, particularly in the lumbar portion.

As a control experiment, he examined the nervous system of ten old people who had never suffered from paralysis agitans. The changes revealed differed only slightly from those found in paralysis agitans, in which the same lesions were more pronounced. He agrees with those who claim that p. agitans is nothing more than an expression of an abnormally high degree or form of premature senility of the nervous system. He is of the opinion that the primary changes occur in the vascular system, and that the nerve changes are secondary. (*Neurolog. Centbl.*, No. 5, 1893). W. M. L.

CLINICAL.

A Case of Hemianæsthesia without Hemiplegia, following Injury.—Some time since, Reymond showed to the Anatomical Society of Paris the brain of a man 26 years of age, illustrative of the above condition. The patient shot himself in the right parietal region, with the ball of a revolver, about 7 cm. behind the orbital apophysis. There was no loss of consciousness, sensibility or mobility. Three days afterward the wound was explored, and a small bit of bone was removed, but the bullet remained within the cranium. Then developed left hemianæsthesia, slight anælgesia, muscular incoördination of the left side, delerium, coma and death about ten days afterward. The autopsy showed the dura mater adherent to the skull at the opening where the bullet entered. The orifice of the bullet corresponded to the fissure of Sylvius. On horizontal section of the brain it was seen that the trajection of the ball was obliquely on the right hemisphere, from the fissure of Sylvius to the occipital fissure on the internal face of the hemisphere. This pathway was dilated in front, and the middle part was situated on the posterior part of the optic tract, the corpus stratum and internal capsule. The white substance situated immediately in front of the internal capsule, and corresponding to the sensory crossway, was destroyed. On vertical section the pathway

could be seen passing by the ascending parietal, that is to say, immediately in front of the entering surface of the ball. The lesion just barely grazed the lenticular nucleus, which however remained intact. On a section passing by the posterior part of the optic tract and the sensory crossway, the superior pediculo-parietal and the inferior pediculo-parietal fascia are destroyed, in spite of the fact that the tempero-sphenoidal fascia is intact. Section passing immediately in front of the corpus callosum, shows the lesion, although small, somewhat elevated and tending toward the internal face of the hemisphere. All of the right lobe presented evidence of diffuse encephalitis. The left hemianæsthesia was not accompanied by any motor paralysis, and the traumatic lesion concerned alone the posterior portion of the internal capsule, *i. e.*, the crossway of the sensory fibres. J. C.

On a Peculiar Form of Paræsthesia of the Extremities,—Acroparæsthesia.—Laquer (*Neurolg. Centbl.*, No. 6, 1893), describes this condition as attacks of numbness and rigidity in the hands and forearms up to the elbows. There is burning and darting pain, accompanied by a sensation of tension and swelling, which does not limit itself to the course of any individual nerve, but is diffused over the entire surface of the skin of the fingers, hands and arms. It is rarely unilateral, almost always bilateral, and as a rule is worse at night. The patient is frequently aroused from her sleep, and the sensations at times increase to acute agonizing pain. The attacks occasionally occur spontaneously during the day. They may, also, be produced by manual labor or keeping the hands in hot or cold water. At times the severity and duration of the sensations are diminished by rubbing or swinging the arm. Neither objective sensory symptoms nor disturbance of motility. No pain on pressure over the brachial flexus or the nerve trunks.

He had observed twelve cases. All were women from thirty-five to fifty years of age. A comparatively large number of these had experienced excessive hæmorrhages during parturition, and had complained of these symptoms for years. None suffered from hysteria or hypochondriasis. The attacks bore no relation to menstrual disturbances or gastro-intestinal affections. Although he had watched certain cases for many years, no symptoms of central nervous disease ever developed. He characterizes this condition as a neurosis of sensi-

bility, an occupation neurosis or a neurasthenic state generally due to over exertion in housekeeping, such as find handwork or coarser housework, polishing, cooking, washing, etc. He excludes all traumatic causes, such as pressure in the axilla from tight clothing, etc. Many were improved and several permanently relieved by galvanism, ether spray to the spine, friction, massage, Swedish movements, bromide, arsenic, hand salt-baths, general tonic measures, and protection of the hands by wearing gloves. W. M. L.

Cerebral Hemiplegia following Diphtheria.—In the Neurologisches Centrbl., No. 4, 1893, Seifert reports the following cases:

1. Girl, 10 years of age. Diphtheria affecting both tonsils, palate and uvula. On the tenth day paralysis of palate, and irregularity in heart's action, which soon became feeble and intermittent. Increase of cardiac dullness to the right. Urine normal. The next day, increased weakness and signs of collapse, followed by complete right hemiplegia and motor aphasia. Neither unconsciousness nor convulsion. Right facial paralysis involving only the lower branches. No sensory disturbance. No eye symptoms. Pharyngeal paralysis developed in the course of a week. Recovery from the aphasia, palatal and pharyngeal paralysis at the end of two months. Examination, six months after the attack, showed right face paretic; speech normal, beginning contracture in paralyzed arm and leg.

2. Girl, 9 years of age. Severe diphtheria affecting tonsils, uvula, palate and nasal mucous membrane. The exudation gradually disappeared. On the seventh day, paralysis of palate. Acute nephritis on the fourteenth day. A few days later severe headache, vomiting and pronounced apathy, followed by sudden and complete right hemiplegia. Coma lasting nearly twenty-four hours. No convulsion. No sensory disturbance. No eye symptoms. Complete motor aphasia. Improvement in nephritis; then return of speech and first sign of motility in leg and arm. Extremely slow improvement. At the end of five months she was unable to stand without support. Condition three years after the attack—slight right facial paresis; speech normal; contracture affecting hand and fingers; rigidity in lower extremity with hemiplegic gait.

The first case he ascribes to embolic occlusion of the middle cerebral artery, owing to the concomitant cardiac

lesion. While the other he considers due to cerebral hæmorrhage on account of the co-existence of renal disease. W. M. L.

Muscular Atrophy following Syphilitic Infection.—At a meeting of the Hospital Society of Paris, February, 3, 1893, Raymond presented some clinical and anatomical observations which he had made in reference to muscular atrophy, occurring in syphilitic subjects. One of his patients, a man 41 years old, of neurotic inheritancy from both parents, had an attack of hæmorrhagic variola in 1870, and in 1874 was a very hard drinker and contracted syphilis. The disease made its appearance in 1885, by slight and transient pains in the right shoulder, which were supposed to be due to a kind of writer's cramp. In 1889 he had diplopia for two months, and afterward lancinating pains in the neck, shoulders and right arm; also, progressive dyspnœa. In a short time the fingers of the right hand, commencing with the fifth, began to be paralyzed successively. Then the muscles of the hand atrophied, and this was succeeded by atrophy of the muscles of the forearm, the shoulder of the same side and at last the neck. In February, 1890, the patient presented most intense dyspnœa whenever he attempted to speak, the vocal cords being nearly paralyzed. The head was flexed on the trunk and turned somewhat to the left; the shoulders are much atrophied, especially the right; the posterior part of the forearms are atrophied, especially on the right. Tendon reflexes normal. The atrophied muscles prevent fibrillary contractions and reaction of degeneration. Sensibility is preserved and the sphincters are intact.

As the development of the case proceeded, the atrophy involved completely the two upper extremities, the neck and thorax. With the exception of exaggerated reflexes the lower extremities were normal. Dysphagia was troublesome, and the right hand showed evidences of trophic troubles, such as redness and œdema. Before the patient's death, it was not decided whether the disease was a poliomyelitis and polyneuritis, but it was more likely a case of what was called by Duchenne's diffuse subacute general spinal paralysis. The autopsy revealed that the disease was a diffuse vascular meningomyelitis of the medulla, but especially of the upper cervical region. In this location the atrophy of the ganglionic cells was extremely marked. In the lower part of this region the pyramidal columns, and in the upper part

the columns of Goll showed marked evidence of myelitis.

Another case, a man of about the same age, similar antecedents and accidents, began to show, eight years after the chancre, a paresis which involved successively the fingers of the left hand, and beginning in the little finger of the right. A few months afterward he had atrophy of the muscles of the neck and pain in this region; afterward the right hand became very much atrophied. Two years afterward, the condition of the patient is as follows: The head has fallen forward on the chest, *main en griffe*; the shoulders are beginning to atrophy. The lower extremities are intact, save an exaggeration of the reflexes; there are no sensory troubles. Treatment of no avail; at least after two years treatment there is no amelioration; the disease is apparently stationary. J. C.

Angiaphobia.—This is the name given by Huchard to a condition often seen in patients who are fearful lest they have heart disease. He cites the case of a hypochondriac who consulted him for angina. Examination demonstrated only a pseudo-angina,—that is a cardialgia. Douches were ordered; the patient was not convinced, however, that he did not have heart disease. Two years afterward he committed suicide by shooting himself through the heart. Huchard gives the following three laws for differentiating true and pseudo-angina:

1. Angina produced by effort is a true angina.
2. Angina produced spontaneously is a pseudo-angina.
3. If angina shows itself after effort and disappears, then reappears spontaneously, as it were, at night, the first law still holds, and we have to deal with a true angina. J. C.

A Case of Syringomyelia.—Lloyd (*University Medical Magazine*, March, 1893). The case reported by the above writer, was a young man with good family and personal history, who, four years before his death, was taken ill for the first time with what was considered rheumatism, resulting from exposure. On his admission to the hospital he presented the appearance of a typical case of amyotrophic lateral sclerosis. The evidences of the muscular atrophy and spastic condition were much more marked on the right than on the left side.

The dissociation symptom of syringomyelia was present to a marked degree, and in addition there were small

areas of anæsthesia on the neck, shoulders and front of the waist. In contra distinction to the distinctness of the motor symptoms on the right side, the sensory were more marked on the left. The trophic disorders, which the patient presented were an arthropathy of the right ankle, pigmentation of the skin of the lower extremities, and slow death of the nails. The patient died of pneumonia, and on autopsy the cord was found to contain a cavity, extending from the lower part of the medulla to the dorsal region. In the greater extent of the cervical region the canal was very large. Microscopical examination showed the diseased process to extend from the medulla to the lower lumbar region. In the medulla the process was diffused in various areas, and a cavity had not yet formed. In the cervical region the cavity was formed and very extensive secondary effects in the white matter; in the dorsal region the process was more limited, and the glioma tended to one side, while in the lumbar enlargement the process was in a very early stage prior to the formation of the cavity.

The author is with the majority in considering that the essential pathological change in the disease known as syringomyelia, is a proliferation of an embryonal tissue remaining in that region of the cord in which the medullary folds in the embryo close over to form the central canal. In this respect he is not in accord with Joffroy and Huchard, who incline to the non-gliomatous nature of syringomyelia. J. C.

A Case of Melancholia; Sudden Illness and Death (Elkins, *Lancet*, April 15, 1893).—A patient of severe neurotic inheritancy, while suffering from a second attack of melancholia, which was progressing very favorably, suddenly presented a picture of severe shock and collapse. On account of the fact that he had always had delusions referable to his digestive organs, the symptoms were not considered so foreboding of danger as they would ordinarily. Death took place thirty-five hours after the onset of the acute symptoms. On post mortem examination it was found that about three and one-half feet of the small intestine had become strangulated in consequence of passing through what appeared to be a congenital slit in the mesentery. Mr. Elkins remarks, that the case once more emphasizes the fact that delusions, especially those relating to the viscera, often have real bodily causes for their foundation. It is possible that the intestines had always, or, at

least, for some time, moved backwards and forwards through the congenital slit, and the discomfort and uneasy feelings thus produced, acting upon a hereditarily weak brain, had induced the mental illness. J. C.

Tachycardia of Tubercular Origin.—Bezançon presented to the Biological Society of Paris, on March 11, two cases of tachycardia; pulsations 140 to 160 per minute, dependent on pressure of the pneumogastric nerves by tubercular deposits. He contrasted these cases with examples of tachycardia occurring in tubercular subjects, in which the symptom is dependent upon a neuritis of the pneumogastric nerve, the result of a general intoxication from the absorption of ptomaines. J. C.

Tumor of the Pituitary Body (Waddell, *Lancet*, April 22, 1893).—The patient had suffered for about a year and a half from obscure digestive symptoms, progressively failing sight, partial bitemporal hemianopsia, and occasional headaches. After a few months the headaches became more severe, and after an attack of fever and its accompaniments, lasting for a few days, the patient became very absent-minded and stuporous with marked dilatation of right pupil. Later, these manifestations became more or less paroxysmal, and while having an exacerbation, he was taken with right side hemiplegia, with double strabismus and dilation of both pupils, from which he never rallied. At the autopsy a tumor, about as large as a cherry, was found in the prehypophysis. It was very vascular. There were no evidences of malignancy. It pressed upon the two optic nerves, causing them to bulge outward. J. C.

Paralysis Agitans and Hysteria.—Grandmaison speaks of a case where the phenomena of these two diseases were combined (Med. Mod., December 17, 1892). A man, who was attacked and beaten on the street, complained on the following day of considerable pain in the extremities, inability to work, insomnia, nightmare and loss of muscular strength. About three months afterwards his right hand began to tremble. The tremor has all the clinical characteristics of Parkinson's disease; continues during repose, disappears on voluntary movement. The visage is also a classical one. The other symptoms, such as the gait, exaggerated sensibility to heat, etc., are not significant. Sensibility was normal. For eighteen months hemi-anæsthesia, which, however, had been dissipated by the method of transfer, was

present. The visual fields were much contracted; the reflexes exaggerated; in fact, most of the stigmata of hysteria were present. The case is probably one of traumatic hysteria simulating paralysis agitans. J. C.

The Syndrome of Benedickt.—This is what Charcot proposes to call the symptom complex, first pointed out by Benedickt, of paralysis of the motor oculi on one side associated with trembling and some loss of strength of the upper extremity on the opposite side. A case exemplifying this condition was recently presented by Charcot at one of his clinics at the Salpetriere. The patient was a man who had always had very good health. There was a slight history of tuberculosis in his family, and one of his brothers, who had pulmonary catarrh for a long time, had died after an operation for costal caries. One morning, while going down stairs on his way to work, he was suddenly taken with a feeling as if something was the matter with his head, and stumbled. In a few moments he noticed that he saw double, and when he attempted to work he found that he could not elevate the left lid. He continued to work, however, overcoming the diplopia by covering the left eye with a handkerchief. About eleven hours afterward he was obliged to stop work on account of incoördinate movements in the right hand, which soon became a slow continual tremor. On examination next day, he was found to have a nearly complete paralysis of the third nerve on the left side. The tremor was of a mixed type. The rapidity was from about three to four vibrations per second. It was intentional in character; that is to say, it manifested itself especially on voluntary movement, and consisted essentially in alternating pronation and supination. There was no limitation in the visual fields, no disturbance of sensation, papillæ remained normal, and auscultation was negative. The seat of the lesion in Benedickt's syndrome is in the cerebral peduncle corresponding to the side on which the paralysis of the third nerve shows itself. The nature of the lesion Charcot considers to be a small hæmorrhage, or not improbably in this case deposit of tubercle. The author takes pains to point out that this condition is to be carefully differentiated from hysteria and sclerosis en plaques. J. C.

THERAPEUTICAL.

The Mechanical Treatment of Locomotor Ataxia, (Hirschberg, *Bull. Gen. de Therapeutique*, Jan.,

1893.).—The conclusions of the writer as regards the utility of Frenkel's plan of treatment of locomotor ataxia, are as follows:

1. It is possible to greatly improve the ataxic movement in tabetics by the method of Dr. Frenkel.

2. The gymnastic exercises explain the reason of augmentation and development of muscular force in the affected members.

3. The exercises in making the muscular contractions under the control of the will of the patient ameliorate the incoördination.

4. In bettering the *morale* of the patient by giving him more confidence in his extremities, the persistent ideas of pathophopia which cause so much misery in tabetics are dispersed.

5. The treatment is indicated in all stages of locomotor ataxia. Best results, however, are obtained when it is instituted before locomotion becomes completely impeded.

6. Treatment is contra-indicated when the course of the disease is very rapid; that is to say, when the clinical picture is completely developed in less than two years; also, when the general condition of the patient is particularly bad, and especially when the articulations are affected.

7. The treatment does not exercise any influence on the cardinal symptoms of tubes dorsalis, with the exception of the ataxia.

It might be said that Frenkel's treatment in principle distinguishes three categories of movements:

1. Simple muscular contractions; that is to say, of one muscle or a physiological series of muscles.

2. Simple coördinate movements; for instance, touching the end of the nose with the index finger.

3. Complex coördinate movements, such as writing.

In applying the treatment, the practice is to begin with the simpler passive movements, then gradually assume the more complex. J. C.

Book Reviews.

INTERNATIONAL CLINICS. A Quarterly of Clinical Lectures on Medicine, Neurology, Pediatrics, Surgery, Gynecology etc., etc., etc. Edited by John M. Keating, M.D. Second series, 1892. J. B. Lippincott Co., Philadelphia.

We appreciate a fact when it, especially, is a worthy truism. The question arose in the mind of the reviewer whether these International Clinics would be as good the second year as the first, and we are glad to note that not only are they as faithfully generous in the presentation of good material, but they are as fortunate in the selection of the contributors.

The first volume contains in the list of contributors to the field of Neurology, the names of Charcot, Mackenzie, Dercum, Sachs and Pritchard.

The second volume: Starr, Dercum, Lloyd, Sachs, Gibson and Porter.

The third volume: Eskridge, Charcot, Rohe, Deaver, Walton and Shaw.

The fourth volume: Gibson, Putnam, Dana, Pepper, Howard, Danforth, Gray and Hammond.

DISEASES OF THE RECTUM AND ANUS, THEIR PATHOLOGY, DIAGNOSIS, AND TREATMENT. By Chas. B. Kelsey, A.M., M.D., New York, Professor of Diseases of the Rectum at the New York Post-Graduate Medical School and Hospital; late Professor of Diseases of the Rectum, at the University of Vermont, etc. Fourth Edition, Revised and Enlarged. With two Chromo-Lithographs and one hundred and sixty-two Illustrations. Octavo, 496 pages, extra muslin, price, $4.00. William Wood & Co., New York.

This admirable book is not intended to be reviewed at any length by us. We can only commend it in every way as a suitable guide to any one interested in the special field of which it treats. The workmanship of the illustrator and printer is of the best.

LESSONS IN PHYSICAL DIAGNOSIS. By Alfred L. Loomis, M.D., LL.D., Professor of the Practice of Medicine and Pathology in the University of the City of New York. Tenth Edition, Revised and Enlarged. Octavo. Illustrations, some in color. 240 pages, extra muslin, price, $3.00. William Wood & Co., New York.

This edition seems to be revised but slightly; and enlarged but a little. It however is as clear in its emphasis and positivness as of yore, and it will be a long time to come ere it will be necessary to rewrite it.

Miscellany.

TONIC STIMULANTS.

THE COCA OF PERU.

THAT all men and women feel the weariness of life is testified by the fact that the people of all nations and climes have the universal habit of daily seeking a restorative and stimulant in one of the vegetable products which contain a substance or alkaloid capable of exercising a definite effect on the nervous and cardiac systems. Thus, the Chinese and Japanese sip their tea, and the English, following their example, brew the five o'clock cup of the fragrant herb to sustain them in the day's work. The Arab and Turk seek, like the French and Germans, restorative powers in the aromatic coffee berry, the Cingalese chew the betel nut, and the natives of Peru, on the slopes of the Andes, find in coca leaves a principle which sustains the body in fatigue and comforts the mind in hopelessness. Von Bibra says of coca: "It satisfies the hungry, lends new strength to the weary and fatigued, and makes the unhappy forget his grief." What, then, is this strange substance which seems to conceal a fairy's wand?

Coca is obtained from the leaves of a shrub-like plant called the erythroxylon coca. It is a native of Peru and Bolivia, where it has been cultivated with the greatest care from the remotest antiquity. When Peru was conquered by the Spaniards in the sixteenth century, and the ancient and interesting people of this country were discovered, it was found that their Incas, or kings, looked upon the cultivation of the coca plantations as a public and national duty, and also that the strange custom prevailed among the Peruvians of chewing the leaves of the coca plant during frequent and short periods of repose

specially set aside for this purpose. This custom prevails to this day in Peru and Bolivia.

The physical effects of coca are salutary, and in many respests more remarkable than the mental. It is universally acknowledged that coca stills hunger, overcomes drowsiness, and increases bodily activity. All travelers in the Andes bear testimony to the wonderful power shown by the Indians of enduring fatigue, cold, wet and exposure, with only the scantiest allowance of poor food, if they are supplied with coca. The life of the Indian of the Andes is one of extraordinary toil and hardship. His diet consists mainly of a small quantity of maize and frost-dried potatoes. He is constantly exposed to the intense heat of the plains, or to the horrible cold of the high plateaus of the Cordilleras. The toil exacted of him in the mines and plantations is excessive, but he is yet able to perform, not exceptionally, but constantly, and as a matter of daily life, the most astonishing feats of endurance on a diet which would be absolutely starvation to a European, or even for a time without food at all, by the aid of the power which coca gives. The most striking stories are told of the men engaged in the postal service, who half-naked, traverse the icy slopes of the Andes, carrying the heavy mail bag. These men walk from 200 to 300 miles, crossing the mountain by paths rising 13,000 and 14,000 feet above the sea level. Their scanty clothing is an ill-protection against fierce snowstorms, the intense cold, and the rarefied air of the Andes. Their food for the journey consists of from one to two pounds of dried maize and potatoes, but if supplied with sufficient coca to chew, they endure cold, hunger, fatigue and sleeplessness, not only without complaint, but without even seeming to be aware of them. In like manner the Indian laborers in the mines of the Cordilleras, whose toil is spoken of as incessant and excessive, and performed in damp, cold and darkness; the shepherds tending their flocks of alpacas on the bleak pampas, and the farmers irrigating their fields at night in midwinter on the high plateaus, standing often knee-

deep in icy water, and exposed to cutting blasts, are all said to be equally inured to a life of surprising hardship and privation by the daily use of coca. It is stated, however, that though no hermit or monk ever lived so ascetic a life as these poor Indians, yet the appetite for food is only stayed, not destroyed, by coca, and that if anyone is kind and generous enough to feed them they eat with voracity and evident enjoyment. Spaniards who go to work on the mines cannot stand the great hardships of the life and the inclemency of the Cordilleras till they take to the regular use of the coca. Von Tschudi tells us that this life of silent endurance and bitter abnegation may be much prolonged, even in one instance to 130 years.

The other remarkable effect of coca is the influence it exercises in the respiratory centres, so that the rarefied air of the higher altitudes of the Andes can be breathed without the distress usually occasioned at the height of thirteen or fourteen thousand feet above the sea. All travelers speak of the extraordinary way the Indian porters will keep up with the quick pace of the mule along the roughest mountain paths without ever showing any signs of breathlessness.

Though wonderful, but little credited, stories were told for two centuries of the staying powers of coca leaves, no attempt was made to introduce them into Europe, and scientifically to test their value either as dietetic or therapeutic agents until Mariani, of Paris, began his researches.[1]

I have had considerable experience of the value of Mariani's Wine of Coca under exceptional circumstances. Under pressure of time, for public *viva voce* medical work I found that I could work for from fourteen to sixteen hours a day for weeks together, without mental or physical fatigue or bad after results, if I took a small daily dose af Mariani wine. My modicum was a bottle a week, discontinued immediately my task was done. Recently, when making a long convalescence from influenza, in which depressing cardiac symptoms were marked, I

found again aforesaid Mariani wine a good and reliable restorative. I have no reluctance in saying that if I had to accomplish some severe work which drew exhaustingly on my full mental and physical powers, doing literary work and under pressure, or attending patients through serious illness, I would unhesitatingly, and with good conscience, seek the support and power of endurance this marvelous preparation of coca can give.

Mr. Eber Caudwell published an interesting account in the *British Medical Journal* of the effect it had on himself in enabling him to go through long hours of toil without sleep, and while preserving his full mental activity and vigor. Singers find that Coca Mariani enables them to inspire more deeply, and to hold their breath longer than they could otherwise do. Lennox Browne and Morell Mackenzie highly recommend it.

The scientific study of cocaine has led to a better comprehension of the mysterious qualities of the cocoa leaf. The first effect is sedative, rapidly followed by stimulation, in which the heart beats are quickened, the nervous system becomes more active, the intelligence more acute, and the muscles pass more easily into a state of contraction. Dr. Mantagazza says that when he was under the influence of coca he had an irresistible inclination to gymnastic exercise. The absence of the sense of hunger seems to be due not only to the anæsthetic effect of the cocaine on the nerve ends of the stomach, but also to the fact that coca is an actual economiser of food, and so modifies the vital processes in muscle as to effect its chemical activity, and render it capable of performing an equal and greater amount of work with a lesser consumption of carbohydrates (STOCKMAN). The absence of emaciation or subsequent debility or other bad results after the most exalted powers of the organism have been called forth, point to coca being more than a nerve stimulant, but also an actual economiser of the bodily expenditure. If it diminishes the consumption of carbohydrates during muscular activity; that is to say, enables

[1] See his excellent work on "Coca and its Therapeutic Applications."

the machine to work with less fuel, less oxygen will be required, and hence is explained the effect coca has in preventing breathlessness when ascending high mountains. Too much stress cannot be laid on the importance of using only a reliable preparation of the drug.—*The London Hospital.*

A CORRECTION.

To the Editor of the Journal:

SIR:—I desire to correct a statement made by me before the Neurological Society and published in the Report on page 357 of your May number. I was mistaken in stating that Keen had operated for microcephalus on a patient, aged 19. Keen's oldest case was four. Hammond operated on a patient aged 19; see *N. Y. Med. Jour.*, August, 1890, and Weir operated on a patient at the N. Y. Hospital aged 21, on February 1, 1892. Barlett, of Philadelphia, operated on a patient aged 16; see Haber MS., May, 1890. These are the only adults on whom the operation has been performed.

Very truly,

M. ALLEN STARR.

IN THE PRESS.

HERNIA; IT'S RADICAL AND TENTATIVE TREATMENT IN INFANTS, CHILDREN AND ADULTS; by Thomas H. Manley, A.M., M.D., Visiting Surgeon to Harlem Hospital, Consulting Surgeon to the Fordham Hospital, Member of American Medical Association, New York State Medical Association, New York County Medical Association, New York Academy of Medicine, Pathological Society, National Association of Railway Surgeons, etc., etc.

This work is illustrated by sixty-five engravings and drawings, with a full history of the Ancient and Modern

operations for the Hernical Infirmity of every type, in both sexes, along with a full description of the varied anatomical types of the condition and the multiplicity of technique of modern times; it also embraces an entire chapter on Cocaine Analgesia as a substitute for Pulmonary Anæsthesia, with a full and complete set of rules for its indications and technique. Price $3.00, mailed to any address. Published by Medical Press Co., Limited, 1725 Arch St., Philadelphia, to which all orders should be addressed.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.

The third annual meeting of the American Electro-Therapeutic Association will be held in Chicago, September 12, 13 and 14, at Appollo Hall, Central Music Hall Block.

Members of the medical profession interested in electro-therapeutics are cordially invited to attend.

AUGUSTIN H. GOELET, M.D.,
President.

MARGARET A. CLEAVES, M.D.,
Secretary.

VOL. XVIII. August, 1893. No. 8.

THE

Journal

OF

Nervous and Mental Disease.

Original Articles.

A CONTRIBUTION TO THE ETIOLOGY OF CHOREA.[1]

By CHARLES HENRY BROWN, M. D.

THE mechanism that prompts the peculiar, incoördinate movements which make up the objective neuro-muscular phenomena of chorea has never been explained, and is to-day as much a mystery as in the time of Sydenham.

The recorded pathological evidences serve only to prove some irritating process has been at work upon the cerebral and spinal motor tracts and coördinating adjuncts.

Though meagre, and, in the main, unsatisfactory as aids in the solution of the causes of chorea, still these pathological lesions help, with other associated factors, to adjust certain etiological sequences. It is my endeavor in this communication to bring to bear united and associated pathological and clinical experiences, in the adjustment of certain facts, to better the understanding of the nature of chorea.

The mortality from chorea seems to be greater in

[1] Read before the New York Neurological Society, December 6, 1892.

Great Britain, and the English observers seem to have given more attention to the gross lesions (which apparently are the result of complications), which chiefly are cardiac valvular troubles and emboli, pericarditis and vaso-motor changes.

The reliable accumulated data of the microscopical conditions of the brain and cord is somewhat limited. It, however, attests that some morbific irritant has been at work.

The epitomizing of these evidences has been admirably done by Dr. Dana in his summary of the consideration of thirty-nine cases, up to 1889, viz.:

"We find that in the sub-acute types of chorea there is a hyperæmia of the brain and parts of the cord.

"In the brain this is not meningeal but subcortical and basal. The arterial walls are paralyzed, dilated and badly nourished, so that exudations occur and the lymph spaces become distended and eroded. There is sometimes stasis, thromboses and spots of softening, or the walls give way; there are minute hæmorrhages. The lymph spaces around the ganglion cells are not dilated. In other cases the vascular and neuro-degenerative changes are marked. The small arteries are permanently dilated, a little thickened and degenerated. Perivascular channels may be more eroded and distended. There is now some connective tissue proliferation and signs of degeneration in the ganglioin cells. The nerve fibres show varicosity. *Hyaline bodies are seen.*[2] In fine, we have in chorea, first, vaso-motor paralysis and trophic disturbances, affecting certain areas of the brain, and, to a less extent, the cord. Then we have—this becoming chronic with connective tissue—hyperplasia and degenerative change in ganglion cells and fibres."

Debarring the grosser concomitant pathological features, such as emboli, extended softenings, etc., this *résumé* tells the story as accurately as it is possible to be told.

It begins in hyperæmia, results in exudations, is complicated with hyperplasia of connective tissue elements, and the action takes place throughout the motor areas, and the end is resolution.

[2] Italics are mine.

The degree of hyperæmia and the amount of exudation of lymph, and its products, are relative. The overgrowth of the connective tissue in mild cases is hypothetical. The morbific stimuli, which incites the nutrient distribution to the motor-areas to rebellion and disease, must in some way, by natural selection, choose this location. There is as well-defined predilection shown through the nutrients for this widely-distributed area as is shown in rheumatism of adults in the selection of the joints of the extremities.

What is this morbific factor with its special predilections?

We perforce are obliged to seek our information from clinical study, and from experience make up our deductions from logical inferences and analogies solely.

The following case I shall use as a text for the consideration of some of the more prominent reputed causes of chorea:

H. H. S. (eleven years of age).—Came under my care at the Presbyterian Dispensary early last June. He had been in the hospital about two weeks, and was transferred to my department for treatment.

Family History.—Careful questioning of the mother developed very little of interest in this direction, except rheumatism was in the family on both sides, and the mother was neuropathic.

Past History.—The boy was always delicate, nervous, and of an irascible temperament, and very difficult to govern; attacks of indigestion were frequent, and sore throat. Two years ago he fell from the top of the stairs of an elevated road station outside of the railing to the street. The fall was prompted by fright. The porter suddenly appearing, and threatening the boy, his presence of mind fled, and he fell. He was stunned and carried home half unconscious. No especial injury was noted except the breaking of the two front upper teeth. Six months after this first appeared choreic movements of face and upper extremities, with sallow complexion, and some complaints of pain in back and limbs. Chorea grew more pronounced and became general. The attack lasted about ten weeks. Another attack came on in a year, slight and of shorter duration. He wet the bed

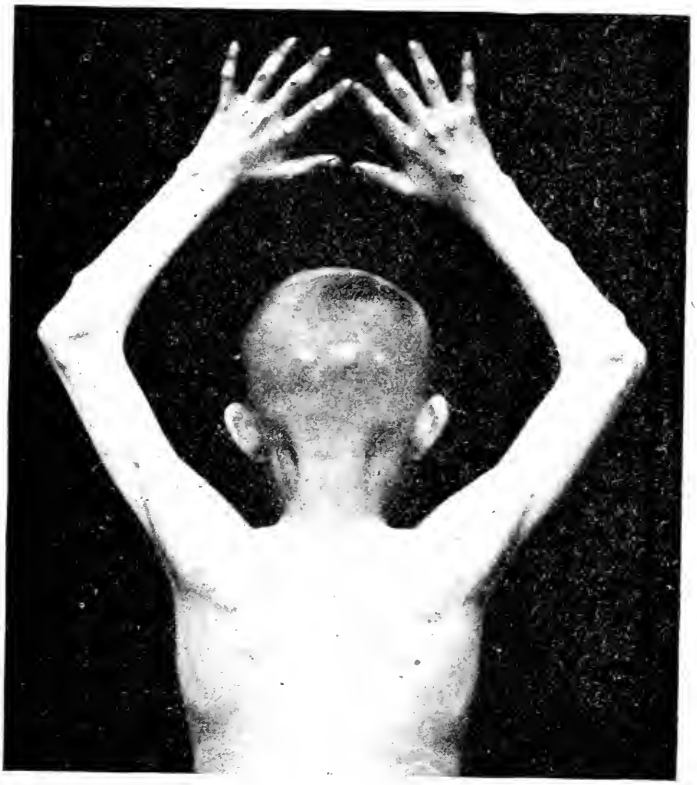
nights, and, when finding himself damp, he would jump up, take off his night clothing, and return to bed, and would be found cold, shaking, and teeth chattering, etc.

Present History.—About eight weeks prior to the boy's entering the hospital, he complained of erratic pains throughout the body, back, thighs, knees, arms and head; worse at night, and severe enough to keep him awake and cry. No rise of temperature noted, or swelling of any joints. Very soon small tumors made their appearance on the smaller joints of the extremities —little soft lumps, capable of being rolled under the skin. Rapidly, day by day, increasing in number and extending up the extremities, along the muscles to the knee and elbow joints—most entirely confined to the extensor surface. Then, in about six weeks (two weeks prior to entering the hospital), he commenced to have another attack of chorea, which in a few days was very pronounced, and in conjunction with the attack he complained more bitterly of pains, and locomotion was difficult, and swelling of ankles and wrists noted. Pains were worse on movement. He suffered on going upstairs; tired easily; was very pale; listless; water less free, and skin harsh and dry; no fever noted; the tumors increased in number.

Examination.—Anæmic, richitic chested, undersized, thin, dry, harsh skin, enlarged smaller joints, marked puffiness of ankles, wrists and knees, all tender on movement, choreic movements general, but not extremely severe, speech affected slightly, hoarseness of voice, potbellied, diffused heart impulses, exaggerated action plainly visible, mitral regurgitant murmur, heart enlarged, irregular in rhythm and force.

The boy was plentifully covered with about one hundred and fifty (actual count) little tumors from occiput to the extreme smaller joints of the toes. They varied in size from the head of an ordinary pin to a good-sized almond. There was only one of this size, however, situated near the r. olecranon process. They were more frequently about the size of a small pea. They varied somewhat in consistency: None, however, were very hard; some were firm, yet most of them were soft; the smaller ones gave the impression of being the hardest. There were a number which felt as though they were semi-solid, and the large one felt somewhat like a ganglion so often seen on the tendons of the extensors of the hand, in a day growing to full

size, and growing smaller in a week, hardening down in some cases, and others remaining soft as they grew smaller. At first many of these were double the size than when first seen by me. The house physician informed me he had excised a part of one and microscopically it revealed young granulating connective tissue, very soft in texture, and lacey.



Their anatomical position varied; some were immediately associated with the skin; others were below it in the connective tissue, rolling freely on manipulation; others seemed attached to the sheaths of the tendons of the muscles; some seemed to be next to the periosteum. One on the occiput was not movable, quite dense in structure and was apparently attached or connected to the periosteum.

In my endeavor to extricate a small superficial soft one on the right forearm, it broke and entirely disappeared. The mother refused to allow another being extracted.

The photograph gives a fair representation of the body distribution and size of these little nodules. The further discussion of these nodules I will leave to its place in my paper. These nodules varied in their permanency, some lasted only a week or two, others a month; others two and three months.

The boy's urine was 1023 specific gravity and acid in reaction. The blood showed a diminution of the normal number of red corpuscles.

There has been no treatment. The heart has improved, both in diminution of murmurs of irregular rhythm and force. The chorea has not ceased; nutrition has improved. The rheumatic symptoms are not yet silenced. The boy still has nocturnal enuresis, and the specific gravity of the urine is 1021. The blood microscopically appears normal.

It will, no doubt, be agreed that we have here an interesting case.

If I should read a hundred histories, there could not be selected one which could be more instructive, nor would the combined statistical information or the clinical composite photograph vary in the general outlines.

One interesting factor must be noted, no matter what the chief reputed etiological disturbing factor in chorea may be,—heredity shock (emotion or nervous tension), rheumatism, reflex causes, infection or pregnancy,—the phenomena of the disorder remains the same. The picture is, except in degrees of severity, always positive.

There is a uniformity in the objective neuro-muscular phenomena which never necessitates long chapters on differential diagnosis; but conjoined with this there are physical addenda too often slighted. Many of these are combined in the case related; a badly nourished child, anæmic, rachectic; subacute rheumatism; unsound heart. A general *abortive* picture from the health line.

What is directly to blame for this very often observed complex symptom designated subacute chorea?

Let us consider briefly some prominent reputed etiological factors.

Among the chief predisposing ones is *heredity*. It bears, no doubt, equal importance and relationship to all systemic affections and diatheses.

A relationship in the sense that a disposition is sown by diseased parentage, which results in some deviation to normal resistance to any severe systemic disturbance. A vice of constitution, direct or indirect.

Permit me here to quote a rather unique conceit in reference to this point, from the pen of Dr. Collins :

"For instance, we may see running through whole families, certain peculiarities, which, at first sight, might not show any inter-relationship, but which, on close study, are shown to be but pollen from the same anthars, that has disseminated itself by marriage and propagation through many members of related families."

Heredity is freakish. Heredity is such a broad subject, and surrounded by so much speculative and uncertain mysticism, that no direct information is attainable in half the cases we study. Positive information is rarely obtained. There is no more advance in this line of study than was known a century ago.

Age—Is an important positive and relative factor.

As a rule, chorea is confined to the pre-developing period of man—and womanhood. The exceptions serve to prove the rule. They are few and irregular, often in the picturings. Thus, anomalies are often hysterical. One, in observing senile chorea, feels bound to believe in revision of type in the picture of this second childhood.

Age bears an importance to chorea when it is compared to correlative and associated diseases.

Rheumatism, heart diseases and the subcutaneous nodules.

Age bears to these exactly the same relation.

Logically, in this relationship, chorea bears some association and a common etiology with them.

Sex and Pregnancy.—These may be considered together. The preponderance of the female of three to one, is quite uniformly observed. Its being also associated in certain cases of pregnancy naturally raises the question, Why this sexual affectability?

Laycock, Denis and LeCarne, all lay stress upon the especial condition which determines sex influences to the vascular system.

Concisely, this is a condition of more water and less crassementum, a so-called looser crases of the blood. It is universally considered that the female's nervous system generally sooner responds to all morbid stimuli.

The term affectability, applied by Morell to the constitution of woman, is expressive. She is more apt to be afflicted with certain affections.

This predisposition or affectability is shown as well for rheumatism, endocarditis and subcutaneous nodules. As man grows older, past the age of puberty, he grows less predisposed to chorea and allied troubles—especially to chorea and the subcutaneous nodules. This is not so with woman. The vasomotor element and her affectability continues on for a longer period, and way past the menstrual line. There is apt to be an maxiosed affectability in deranged menstruation—unfortunate pregnancies and prolonged nervous tensions.

This applies equally as well to rheumatism—cardiac troubles, subcutaneous nodules as to chorea.

Anæmia and mal-nutrition are causes which directly apply and equally to all correlative affections of chorea. These need not be dwelt upon further here.

Shock.—All children in their history of development are subject to mental excitement.

Sudden frights are common. The effects, immediately apparent, are vasomotor disturbances, especially upon the heart. Pallor is seen and more or less reflex emotional disturbance, and more or less facial muscular excitation. The direct effect, however, is upon the heart, and unless this be in some way unhealthy is not of long duration. Slight effects upon higher nervous centres

and through vasomotor disturbances upon nutrition is granted; but why it should affect the motor ureas so extensively as to produce chorea I do not understand.

Chorea, as far as I have investigated, is rarely immediately induced by sudden shock.

My experience relates only to two cases. The shock occurring one day and followed by choreic movements the next. The one was a primary attack followed in a year by another attack, accompanying rheumatic phenomena. The other case was not followed up for any length of time.

I do not believe in sudden shock as such a prevalent exciting factor as is credited to it by so many writers and the laity.

Statistics upon this point, to my mind, are not reliable. I consider it a very rare exciting cause, and I cannot accept the theory that it, and it alone, can cause chorea.

If we do, we must accept the fact, that all children are fortunate in not being daily frightened into choreic attacks.

I can understand how a child, with choreic dyscrasia ready to bud and blossom, may be incited to an attack by any reflex cause. If we accept fright, why not difficult dentition, phymosis and motor-ocular irregularities? They all certainly bear an equal relationship.

There is hardly a case of chorea in boys in which we do not obtain some degree of phymosis and a history of shock. It is a clinical fact, motor-ocular irregularities are common, also, and may be conjoined with the others.

A constant neuro-vascular excitement, extending over a period of time, would tend to develop an attack more surely than sudden severe impressions.

After we have chorea developed, slight irregular variations from any normal sensory motor or vaso-motor excitement may intensify or light it up again. This is logical, I think.

What complicates the adjustment of shock to chorea, is the refusal to recognize a pre-existing defect—a pre-existing morbid element at work.

How much easier to understand if faith is reinforced?

How pretty is this lesson in the case I have related? There was a most intense shock, but chorea was not developed till over six weeks afterward.

If possible, let us all admit this fact: that chorea is an expression of something else than a mere rampant neuro-motor mechanism due to shock or any other reflex cause.

Arguments are advanced that because we remove our irritating lesion chorea ceases. This is old, and only true in a very small minority of cases. I have seen chorea cease abruptly of its own accord. I have seen it cease from shock.

This to the clinician far from proves that chorea is only a symptom. The rarity of the abrupt termination of the neuro-motor phenomena is in itself a proof of a constant stimuli, acting by its ever being present till its impress or thralldom is at an end.

I would like here to state, that in the last three years I have not been able to satisfy my mind that I have seen one case which I could designate as a true reflex chorea. That is, one that depends upon a local peripheral irritation.

I can understand how, perhaps, a chorea might cause certain peripheral motor incoördinations, but I am not satisfied that oculo-motor troubles could be a prominent cause.

I, therefore, can not relegate a large percentage of choreas to a purely functional class, largely reflex and fostered by circumstances and tending to produce general functional disturbances.

To do so would, to me, be either admitted ignorance or biasness. A biasness which is discreditable to specialism in medicine and surgery.

Dispense with such a theory, and our little patients will receive a more needed rest.

Further experimentation in the field of reflex surgery ought to be abandoned.

Christian A. Herter has drawn attention to the fact that excessive excretion of uric acid was a highly con-

stant feature in pronounced chorea. In many cases of chorea, the urine had a reddish hue. There was a diminution of the chlorides in relation to urea. Almost all were of a high specific gravity (1024–1030) and of small volume in the twenty-four hours.

Work along this line of investigation will in future be of great importance. Cases in which I have been able to study the urine in reference to spinal gravity, they were all above normal. None, however, exceeded 1025, and all acid in reaction.

The most common nervous affection of rheumatism is chorea.

In our case reported we have rheumatism, not only well marked, but in conjunction with other correlative complications, observed the most frequently in childhood—growing pains, articular troubles, anæmia, cardiac lesions and the subcutaneous nodules.

The rheumatic diathesis in children is not to be expressed in the same way as in the adult. The latter shows a more frequent manifestation in muscles and joints, tenderness and swelling, fever, sweating, etc. In childhood it may only be expressed in the so-called growing pains, erythema nodosa, slight stiffness, etc.

Rheumatism is essentially a disease of the motor apparatus. Chorea is a disease of the motor centres. The analogy is interesting. While we recognize that rheumatism often immediately precedes an attack of chorea, there are but few cases observed where the onset of the chorea is immediately followed by an attack of rheumatism.

In the Guy Hospital Reports for 1890, an analysis is given of 262 cases of chorea from 1879 to 1889.

In not a single case was rheumatism seen in less than a week of the commencement of the chorea attack.

Thirty-four cases the rheumatic phenomena occurred between a week to a month; in sixteen cases it preceded the attack of other rheumatic phenomena by months or years.

I have noticed many cases in which rheumatic phe-

nomena, such as articulars wellings, exudations and cardiac complications, did not make their appearance till months and even years after the chorea.

Not one case can I remember where it immediately supervened on the initial choreic phenomena.

Is it not logical to suppose many choreics, which are classified statistically, as non-rheumatic, which, if followed up, would be of this predicatory class? Statistics of chorea should be based upon cases observed for a long time.

As we often see other rheumatic phenomena alone in children, so can chorea be the only objective symptom emphasized. As we have seen in the predicatory cases, chorea seems to hold control of the other complications. It monopolizes, as it were, the attention of the rheumatic irritant for a more or less length of time.

A most instructive and interesting case appears in the Guy's Hospital reports, quoted above. A chorea of three years standing in a case, thirty-seven years of age, which had run the gamut of all the London hospitals with no apparent indicative complicating symptoms or previous history as a clue. He was only eleven days in Guys, when a severe acute attack of rheumatism appeared with accompanying cardiac troubles.

Two relapses occurred. He eventually left the hospital with improved heart and chorea. I have had under my observation, the past eighteen months, a similar case —a man of thirty-eight—with endocarditis. Apical murmur and heard under the scapulas; muscular and articular pains in extremities with just a noticeable chorea face, tongue and extremities, and a history of a slight chorea at eleven years of age.

Of all the cases studied at Guys, there were seven only beyond the age of puberty. Those which were not associated with rheumatism, either received injuries or it occurred in young women at childbirth.

Pathology of Rheumatism in Children.—The articular manifestations are rather a vascular than a parenchymatous process, with little serous exudation. Tissue

elements are unaltered, and solid products or pus are rare; reabsorption is complete, and no traces are left.

Visceral complications suggest similar reflections. As Fernet says, touching without profoundly modifying, rarely leading to organic changes.

An intermediate between congestion and a true inflammation.

There appears often a more or less overgrowth of the fibrous tissue elements of an affected region.

Rise of temperature is little marked.

Chorea is rarely associated with rheumatism in the adult, and rarer yet the subcutaneous nodules.

It is an admitted fact by English observers, that the subcutaneous nodule is *always* accompanied with rheumatism, and no other disease. If it is present it is *absolutely* associated with other rheumatic phenomena, either in articular swellings, cardiac lesions or chorea. In the majority of cases on record there is associated all three correlative phenomena.

They were first noted by Hillier in a case of chorea, in 1846. Meynert, Barlow and Warner, Rehn, Hirschsprung and Cheadle all emphasize their rheumatic origin and common association with chorea.

Cheadle reports the fact of cases in which chorea and the subcutaneous nodules were associated alone. G. Wallace Anderson, *Glasgow Medical*, 1891, reports a case of nodules in a woman of fifty. Angel Money, *Lancet*, 1891, reports a case where they were found under the pericardium on the heart in a case of pericarditis.

Pathologically the subcutaneous nodule is an exudate and connective tissue hyperplasia with abundant vascular supply. The connective tissue is made up of loosely woven, wavy bands. They break down easily and by resolution disappear more or less quickly.

In the subcutaneous nodule we have the key to a homologous exudate and connective tissue hyperplasia that composes the little fibrinous nodules on the valves, and also the little colloid and hyalin bodies found in the choreic brain.

These hyalin exudates have been noted by Meynert, Dickinson, Berkely, Jakewenko and Dana.

The problems relative to the nature of humoral pathology are still unsolved. Whether there is a microbic factor as a starting point is not certain.

Until we can solve the nature of rheumatism, that of chorea will be mysterious.

Blake writes of a supræmic origin of rheumatism.

Distemper causes chorea in dogs. Distemper is allied to scarlet fever, the chorea is a late complication.

Sturges says: Chorea and rheumatism are, it is probable, members of a pathological group, having arthritis for a common factor, and of whose underlying source we are yet in search.

Chorea has also lately been transmitted by inoculation from one dog to another.

While I do not claim that the rheumatic poison is always the cause of chorea any more, as Cheadle says, than it is the cause of all joint inflammations.

Yet, as it is the most common cause of joint affections and is always the cause of the subcutaneous nodules and as chorea is so intimately associated with these nodules a relation much more commonly exists than is generally accorded to rheumatism.

Lastly, the motor centres stand in anatomical relation with rheumatism, as all other motor apparatus and fibrous tissue generally.

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THE EPILEPTIC INTERVAL—ITS PHENOMENA AND THEIR IMPORTANCE AS A GUIDE TO TREATMENT.

By WILLIAM BROWNING, M.D.,

Brooklyn, N.Y.

(*Concluded.*)

(10).—Nose and Ears.

The frequent close connection between nasal and aural affections is especially important in these cases.

(*a*) Nasal troubles (obstruction, mouth-breathing, so-called "snuffles," fœtor, naso-pharyngeal catarrh), apparently having some causative relation to the epilepsy, are not very rare, though scarcely more common than in average children. They are nearly all related to hypertrophied tonsils, and perhaps even to the enlarged lymphatic glands already considered. The relation of eneuresis has been mentioned, and the condition termed aprosexia might be added. A case of "nasal epilepsy," with some historical notes, was recently published by Roe (Transactions N. Y. State Medical Society, 1890).

(*b*) Ear troubles. Many of these are connected with the naso-pharyngeal affections. Boucheron (1885) described an auricular epilepsy occurring in childhood and youth, and other observers have recorded cases originating from ear disorders (either directly from irritation of the adjacent dura, or as a reflex). The favorable local conditions here for retention and pressure, as well as the consequent exquisite painfulness of inflammatory and exudative processes may explain the readiness with which convulsions are produced.

Although little attention was paid to aural symptoms, some note of them was made in twenty cases. Tinnitus (ringing, hammering, buzzing in the ears) occurred in twelve. In three it was only on one side; in one an aura;

in few, if any, was it continuous; in a few it came at particular times, as on going to sleep or on waking. Tinnitus aurium, apart from distinct dizziness or adequate ear trouble, is then not rare in one or both ears—probably oftener where the cardio-vascular system presents marked weakness, or there are great and sudden extremes of blood-pressure. In these cases the tinnitus can, of course, only be considered as symptomatic, and, in the absence of distinct local disease, not causative.

In five cases there was a chronic otorrhœa or some trouble with the middle ear, and in one there was a mastoid sinus. In most of these six there was good reason to believe that the ear-trouble was, on the contrary, largely to blame for the epilepsy—as indicated by the order of development, and especially by increase of convulsions on increase or retention of secretions. In three of these (others not specified) the convulsions regularly began on one side or were wholly unilateral—and in at least one of these on the same side as the ear-trouble.

Treatment of such epileptics with ordinary remedies as the bromides has not been encouraging. As they were then usually referred to other departments for relief of the local trouble, the eventual outcome cannot be given. It is, however, certain that inflammatory processes in the ear are an important immediate cause in a small proportion. Of further cases, in one there were hallucinations of hearing, in one intercurrent otalgia, in one sudden deafness, and in one there was unilateral deafness.

(11).—Motor Disturbances.

It is well known that epileptics are often very strong so far as their gross muscular power is concerned,[6] the spasmodic movements possibly acting as a kind of auto-gymnastics. This, however, applies rather to any transient exhibition of their strength than to sustained effort. Certain it is that weakening indulgences and excesses tend to increase the seizures. Many are chronically languid, tired. Some patients only suffer when exposed to such special cause, *e. g.*, after over-use of alcoholics, or

when exhausted by manual labor (evidently the Ermüdungs-epilepsie of Solomon).

The first three of the following forms were collectively termed by Reynolds, "Involuntary Muscular Contractions."

(*a*) Tremor. There are two somewhat distinct forms of tremor in epileptics: one a paroxysmal manifestation, the other an interval symptom. The latter is of importance, as in some cases it is thought to be dependent on degeneration in the pyramidal tracts. When strictly unilateral, or as in one case affecting a single extremity, such a degeneration is a fair supposition—but it is not as easy to assume this for the cases of equal general tremor, and certainly not for the paroxysmal form. It is also common in the Jacksonian type of seizures. Its frequent occurrence as a purely interval symptom, and the pupillary hippus above described, suggest also a comparison with multiple sclerosis.

In twelve of the last eighty-five cases there was some form of tremor, usually very pronounced. It was increased on excitement, and belongs to the intention type (best shown by attempted steady extension, *i. e.*, fixation of muscles). It seems to have no relation to age, sex (6 m., 6 f.), or previous duration of the epilepsy. It is commonly a fine rapid tremor, but otherwise varies much. It six it was more or less unilateral (exclusively so only in three Jacksonians, but in another distinct Jacksonian the tremor was bilateral); in one it was more an unsteadiness of the hands than a distinct tremor. In other cases, not here included, it occurred only as a premonitory sign of seizure. Its bearing on prognosis does not seem to have been studied, although apparently bad yet such cases have proven about as amenable to treatment as the average.

This sign was noted by Reynolds in fifty per cent. of his cases,—constant or occasional, variable in extent and intensity from tremulousness to well marked vigors.

[6] Féré, it is true, found a reduction of the general strength, but this may have been due to his class of cases.

Féré (1889) has made a careful study with tracings of the muscular weakness and tremor in various epilepties, —principally, however, about the period of the attack, or else in hemiplegic and hemichoreic cases. From his observations it appears that the tremor is greatly increased by, if not largely dependent on general excitement or local stimulation. More recently (*Rev. de Med.*, 1891, pp. 513–522), he has reported two peculiar cases of attacks of trembling in epilepties, and says that these may differ widely in character. Epilepties subject to habitual trembling do not appear, according to him, more liable to this form of crisis than do others. The tremor of the hand in one of his cases showed seven to ten oscillations a second, that of the foot being always a little slower. In the other case (tremor in triceps of right thigh) there were six to seven vibrations per second.

(*b*) Various slight spasmodic contractions—especially so-called "starts"—are very common. Of course, these verge closely on the choreic. They may not be sufficient to move a whole extremity, may not be noticeable unless an exposed area be closely watched or the person be under continuous observation, and are often not known to the patient until attention is directed thereto. Again, they involve the whole body—the form common to many persons at night. Occasionally they are most troublesome just on awakening. An increase in the number of these starts, particularly if diurnal, is a strong indication of an impending seizure, and thus a therapeutic warning.

Reynolds noted some clonic spasms in fifty-seven per cent. of his cases.

(*c*) Epilepsy and chorea. That there is some connection between these two disorders has been variously recognized. Only a few of the facts bearing thereon will here be mentioned. Each is a motor neurosis, and either may be the antecedent of the other.

1. The choreiform movements of epilepties present a considerable variety of type, ranging from the just mentioned clonic spasms to typical chorea minor (fourteen

cases of the present series). Reynolds says: "In several children I have noticed a more or less constant condition of choreic movements, these being much exaggerated some days prior to an attack."

It is a question whether in these cases the motor condition shall be considered as ordinary chorea. Rarely it seems to be the common form of childhood; but as it is usually a typical, less severe, and indefinite in duration, it is probably, in most cases, a parallel to hemichorea from brain disease—only that in the epileptic it is more general. Different parts of the body may be unequally affected. Sometimes the twitching is about the head and shoulders; again mostly in the extremities. In one it was only on the nonparetic side, in another on the side primarily convulsed, and in a third it was more on one side than the other.

2. In rare cases (two) there was an alternation, a period of chorea, then one of epileptic seizures; presently the chorea again, and so on. This may even lead to amusing blunders and confusion in diagnosis. Trowbridge also refers to such cases. Another patient had been a choreic in younger years.

3. Family chorea, choreic heredity. In four cases, at least, a sister or brother had suffered from chorea, doubtless chorea minor.

Putzel (1880, p. 62) gives chorea as one of the antecedents of epilepsy, and also mentions chorea and epilepsy, respectively, in two brothers, with a history of insanity in a great grand-aunt.

Recently, Remak (*Neurolg. Centbl.*, June, 1891), has published a case of hereditary chorea in a man who had suffered from epilepsy some years previously; and also refers to Hoffmann's earlier cases combining both troubles. Jolly (*ibid*) also mentions a girl of eleven years in the same family as Remak's case, showing both chorea and epilepsy; and Bernhardt adds a case of chronic chorea, where father and grandfather were epileptics. Comby, of Paris, has also (1891) noticed epilepsy in the antecedents of choreics.

For comparison, Goodall (*Guy's Hosp. Rpts.*, v. *Bkln. Med. Jrnl.*, September, 1891) may be quoted. He found that in 28 of 262 cases of chorea, "the family history showed chorea in mother, brother or sister."

G. R. Trowbridge, of Danville (*Alien. and Nrlgst*, January, 1892, pp. 45–63), has collected and added sixteen cases on this subject. His conclusions are:

"1. There is an intimate relation between epilepsy and chorea, both diseases being due to disturbances of the motor and intellectual centers of the brain, which differ only in the degree of intensity.

"2. Chorea predisposes towards epilepsy, and epilepsy towards chorea—the former being the most frequent condition.

"3. Chorea in one generation may be transmitted as epilepsy in the next or succeeding generations, or the epilepsy may appear first and the chorea in the following generations.

"4. That a neurotic taint in the parent or parents may make one child choreic and another epileptic.

"5. The diseases may exist simultaneously, but in these cases they are in inverse ratio, *i. e.*, the more violent the chorea the less frequent and severe the epileptic convulsions; and *vice versa*, the more violent the epilepsy the less marked are the choreic movements.

"6. That in cases of chorea and epilepsy there is more or less mental impairment."

However, such writers, to some extent, overlook the different course of ordinary chorea minor from that of epileptic chorea, the latter more comparable to "hereditary chorea."

The direct therapeutic demands of the choreic manifestations are essentially those of the main trouble. If it be a true chorea attack in an epileptic, the indications are the same as in uncomplicated chorea. Otherwise, where, as is usually the case, the irregular choreiform movements occur, they are as controllable by the bromides as is the epilepsy itself. In some cases arsenic seems to be of value. It is, of course, one of the recog-

nized antepileptics, and, by some, is specially praised as a preventive of bromidism. It is in this latter sense that Agostini recommends it in skin-troubles in epileptics. These indications are almost as much for its general employment as for its value in particular cases.

(*d*) General uneasiness (a habit of never sitting still, of moving about, of picking at things) is frequent, though this is so common among children in general as to make it of less significance. The allied conditions of ocular and possibly pupillary unrest have already been considered.

"Unstable" characterizes the epileptic in all respects.

Occasionally, a patient is recognized to have periods of "pig-headed obstinacy," not maliciousness, but an imperative tendency to follow any unaccountable whim. This may either be more or less continuous, or oftener bears some relation to an attack, either as a premonition or as a *petit mal*. In some it approaches the type called procursive epilepsy.

(*e*). Paralyses, pareses and contractures. Those observed in epileptics are usually either manifestations of organic brain disease, or after-effects of the convulsions. Still, in fact, they represent a mixed lot of peripheral and central cases.

Exclusive of the form limited to an eye-muscle and already described, there were fourteen cases of this class (not to mention a slight facial hemiatrophy, general weakness, or for completeness a wooden leg). Hemiparesis occurred in four, arm-paresis in two, facial in two, peronei-paresis, incipient tabes,[1] para-paresis, deviated uvula, retracted toe, and lordosis, each one. In several of these the local trouble developed at some convulsion, and has persisted since, or more rarely is temporarily aggravated by the seizures.

One peculiar feature appears on adding my four hemiplegic (respectively hemiparetic) cases to five seen at the

[1] As epileptiform attacks are not rare in progressive dementia, it is not surprising that they occasionally appear in the related tabes. And several cases in ataxics have been published.

asylum. This shows that eight (7 m., 1 f.) were affected on the left to only one (woman of sixty) on the right. This may well be accidental, yet the number is large enough to suggest that it represents some actual fact—perhaps the greater vulnerability of the weaker right side of the brain.

Partial and transient motor loss as a direct sequence of the convulsions, may also be mentioned here.

Bourneville (1873) noticed that hemiplegia of the cerebral type may occur in *status epilepticus*. Ssikorski (reported in *Neurolg. Centbl.*, April, 1891), asserts "that he has observed on a large number of epilepties (sixty to seventy per cent.) a phenomenon that permits with some probability the establishment of the diagnosis independent of the attacks. This is a diminution of motility in one-half of the body, especially paresis of the mimetic movements in one-half of the face. On the paretic side the palpebral fissure appears dilated, the nostrils narrower. The weakness usually affects the side on which during the attacks the convulsions begin."

So far as the grip (dynamometer) is concerned, this was not found to hold in the cases where the attacks at times began in a hand or arm. Slight ptosis in a couple of cases served rather to narrow than dilate the palpebral fissure.

Contractures, instead of pareses, as post-paroxysmal occurrences, have been reported by Lemoine.

(*f*) Speech impediment or defect. In all there were twelve cases of this; the trouble in three of these being worse for a time after each seizure. Aphonia following a fit, and even lasting until the next one, is mentioned by Romberg. No single special type predominated in the above. In three the main feature was a lisp; in two partial aphasia; in two unintelligible pronunciation, then stammering, inability to combine certain sounds, etc. Of the twelve, there were ten under eighteen years of age, showing an overproportion amongst youthful epileptics. Of course, a few of these showed other evidence of brain defect or weak-mindedness. In one the trouble developed under observation.

(12).—Sensory Disturbances.

1. Considerable headache, *independent of the seizures*, is a frequent complaint. It is, of course, also common just after an attack, and sometimes occurs as a prodromal. But as a more or less continuous or frequent symptom in the free interval, it was noted in thirty-three cases, fourteen of these being males. Still others suffered occasionally. Where the location was specified, it was nearly always frontal (eighteen frontal, a couple of others partially so, two more or less temporal and unilateral, two vertical, eleven indefinite). The predominance of the frontal site is so great as almost to constitute this the typical form of the epileptic interval. Indigestion, nicotine poisoning, eye strain, acute sexual exhaustion, and epilepsy cause, preferably frontal headache,—evidently having cerebral exhaustion as a common element.

In twenty-one other cases it is specifically stated that there was no or but very rare headache (11 m., 10 f.). A comparison shows that this is proportionately less frequent in the older epilepties, but three of the thirty-three sufferers being over thirty years of age, as against forty in the whole series of one hundred and fifty. Evidently this headache cannot be figured as a chronic after-effect of the convulsions,—firstly, because care was taken in enquiring, to distinguish the cases where the headache was either post-convulsive or sharper at that time; secondly, because a comparison of the cases shows that those with long intervals had suffered quite as much and continuously as the rapid fire cases. This, also, negatives the general applicability of the view approved by Putzel, that blows on the head in falling are one important factor. Happily, it can be said, that these headaches of epilepties are very responsive to treatment. This, however, has simply to follow the general lines for the case as one of epilepsy. Sometimes the relief is immediate and continuous, again it is gradual.

Recently, Kreuser (reported in *Neurolg. Centbl.*, 1891, p. 740), has investigated the "pressure-sensitiveness of

the cranial sutures" in health and disease. For epileptics he found such tenderness absolutely more frequent than in healthy persons, decreasing as the age the duration of the sickness and the mental deterioration increased. It was not regularly increased after single or frequent attacks. More often than in other investigated cases there was in epileptics an asymmetrical state and radiation of the sensation to a greater distance. The sagittal suture and the sites of the former fontanelles were commonly most sensitive.

2. Pain and paræsthesiæ,—other than headache. Patients frequently tell of peculiar sensations, of near objects appearing transiently distant, of pains and indefinite feelings that can best be classed as paræsthesiæ (not of the Jacksonian type, but occurring irregularly, first in one part, then in another). These sensory phenomena seem at times to bear some relation to a full seizure (pre- or post-signs); or when associated with confusion of thought, they doubtless represent a minor attack. Dizziness is very common, and usually, though often falsely attributed to *petit mal*. Pain about the cardiac region Tinnitus aurium have already been considered. A lump in the throat or a feeling of something rising is suggestive of an aura or of hysteria, but may be more or less continuously troublesome in epileptics presenting no other manifestation of hysteria.

3. Sensory loss. Visual limitation has already been considered. Féré finds that about sixty of every hundred epileptics examined showed diminished appreciation of odors and flavors.

Gottardi (1881) concluded that tactile sensibility, as determined by Weber's compass immediately after an epileptic attack, is of no value as a means of diagnosis. But Thomsen and Oppenheim have found sensation to be greatly reduced in old epileptics. The sensory impairment of epileptics is evidently on a par with the degree of their intellectual weakness. In two of the present cases it was stated that the patient never heeded pain, as from cuts or burns. One of these was a weak-

minded girl, long epileptic; the other was a boy who, although less weak mentally, was so clumsy as to be unable to button his clothes. Neither was at all ataxic, and each seemed to feel pinching and pricking about as sharply as other children,—but any thorough examination was impracticable.

Roncoroni (1892) finds that disturbances of sensation are most frequent in the epileptic insane, then in the melancholic, and least in the maniacs.

As an amusing sensori-motor item, it might be mentioned that one boy's mother expressed her joy at the success of treatment, by explaining that now she could "lick him" to her heart's content without the access of a fit—something long previously impossible. She evidently made such use of the reclaimed possibility that—although he certainly deserved well at her hands—I almost regretted his improvement.

(13).—Reflexes.

Ziehen (1889) says that in adults the presence of ankle-clonus, without other marked objective symptoms, should always suggest epilepsy or neurasthenia. Ankle-clonus and exaggerated knee-jerk occurred in sixty per cent. of his cases of epilepsy, while the plantar reflex was often weak. However, in a considerable number of my cases examined therefor, not one showed any suggestion of ankle-clonus. And as regards the patellar reflex, this was oftener (six times) found unequal than either increased or decreased. My observations on the plantar reflex are not sufficient to warrant any suggestion other than that on this point Ziehen may be right.

Beevor's observations on the reflexes in epilepsy (*Brain*, 1882), had reference to the convulsive period.

Drayton's statement (*l. c.*): "A relaxed state of the muscles, yet the responses of the reflexes to local irritation are abnormal or exaggerated;" is too general. And Agostini's paper ("Sulle variazioni della sensibilita generale a sensoriale e reflessa negli epilettici; nel periodo interparossistico e dopo la convulsione," 1890), is not at hand.

Bechterew, from studies with his "Reflexograph" (*Neurolg. Centbl.*, 1892, pp. 39–40), treats as follows of the tendon-reflexes in epileptics: "The patellar reflexes are changed in various ways and to a most striking degree. In many cases the reflexes were increased and at the same time usually unequal; but during the attacks of *grand mal* there was complete abeyance of the tendon-reflexes. In many cases they remained absent for some time immediately after the attack. In another series of cases a temporary increase of the reflexes or change in character of the curve (*i. e.*, of the reflexogramme) was found." But most of his article, so far as it relates to epileptics, is also devoted to the post-convulsive phenomena.

The pupillary reflex has already been considered and loss of the pharyngeal reflex as a symptom of severe bromidism is, of course, well known.

(14).—Mental Peculiarities.

These deserve a far more careful study and recapitulation than will here be attempted; indeed, extensive papers have been devoted to this phase of the subject. The present question in their interpretation is to determine, in any given case, whether they are simply results of the convulsions, or are coördinate symptoms (*i. e.*, practically convulsive phenomena), or finally are like the convulsions, but manifestations of a primary degenerative condition of the brain. The time of their original development, relative to that of the seizures, is important in determining this. If they antedate the latter some degenerative type is probable and the prognosis decidedly the worse. Again, the nature and severity of the mental disturbances usually give us evidence on this point. Impairment of memory is a common sequence of epilepsy; hypochondria and hysteria have been noticed as interval symptoms (Griesinger); whilst idiocy, alienation, dementia, coprolalia, echolalia, a habit of lying, etc., are of deeper significance and give the worst prognosis. Still, there is hardly one of these symptoms or

conditions but may improve, and all but the worst are occasionally curable. Imbecility may be a result of long-standing epilepsy and then be more amenable to treatment. In the present series there were no real imbeciles, and but, perhaps, three who might fairly be classed as weak-minded.

Next come children that are termed "peculiar," that withdraw from playing or associating with their fellows, perhaps have somnambulistic tendencies, are inveterate masturbators, etc. The latter habit does not seem specially provocative of epilepsy, despite certain claims, but is rather an ominous sign of the mental condition. Certain forms of chorea, already alluded to, sometimes alternating with epileptic periods, presaging a seizure, or representing an irregular tic, darken the prognosis, though not absolutely. Obstinacy, moroseness, ugliness, uncontrollable temper, excessive irritability, restlessness, loquaciousness,[9] forgetfulness, and such other mental deviations may be transient and remediable; but when decided and settled conditions point to degenerative states (not necessarily dementia or imbecility at first).

Children that are simply weak or feeble-minded or backward have, of course, a less favorable outlook according as this represents a real mental defect. Such cases, however, should only be passed upon after due consider-

[8] Epileptic and so-called post-epileptic insanity belong rather to the period of the attack (*i. e.*, are either substitutive or post-paroxysmal). This is the transitory insanity of certain epilepties (Wildermuth) as distinguished from the common chronic psychic degeneration. This latter is observed to follow more certainly and rapidly the mild paroxysms unattended by convulsions (Hammond).

[9] Relative to age and surrounding circumstances. It is not very frequent, but may be observed in either sex, and, although on a par with restlessness, is distinct from such forms of imperative utterance as coprolalia. Nor is it the "Epilepsy Loquax," described by Cheadle (1875, *v.* Hare,) as it is not an epileptic equivalent, but a more or less continuous manner of the patient in the free intervals. Hare (p. 21), in speaking of "Precursory symptoms other than auræ," says: "Still other cases are recorded in which an extraordinary loquacity asserted itself in men of a commonly morose or taciturn nature." Choking, spitting or talking in the attacks marked two of the present cases; *per contra* silence was a premonitor in one.

ation of the person's general condition and intellect in view of surroundings and privileges.

Here the advantage of mental treatment might be mentioned; *i. e.*, training of the patient's self-control. Moderate mental discipline assists in this respect, and helps, also, to weaken the attacks by drawing force from the explosions.

Seguin at one point (*l. c.*, p. 203), speaks of "the moral perversion which characterizes it (so few epileptics can be good, true or kind)." Heedless cruelty is sometimes shown; one boy killed a kitten without any purpose; another smashed a slate over a comrade's head on a slight provocation; and other like incidents might be added. It is this characteristic, combined with a bad temper, that makes some epileptics feared, even in their own home.

There is another trait that is more frequent in the brighter epileptics than in other children, though often enough noticeable in the latter also. It is oftenest discovered by chance, yet on gaining the patient's confidence and inviting a recital of their every-day life, the peculiarity may gradually appear. Practically, it is an inclination to do all manner of unhygienic acts, an inability to learn and follow the every-day rules of healthy living. In some this may be only a childish recklessness or wantonness, but more often these acts are done slyly. A child sits up in bed all night reading some book; one youth of puritanical training, when away at school, drank regularly a couple of bowlfuls of coffee at dinner and three or four cups at supper; girls will indulge in smoking, or stay late at balls; one young woman, "just to try it," indulged in paregoric that had been given to a child for sleep; girls are prone to eat immeasurable quantities of sweets or sours,—this not from any bulimic impulse; one girl would, at times, manage to go all day without eating, yet without reason and without attracting notice; another girl would get her feet wet and go about thus for hours; to attend exciting performances is another not rare hobby; in fact, indulgence in injurious "tricks"

of any kind or degree. Of course, all children, and especially girls, are more or less given to these eccentricities; but in the same grade as these dispensary epileptics it can hardly be as common or as variedly and persistently practiced. In some other class or country this tendency might exhibit itself in other ways. Boys and adults need to be watched quite as closely as girls,—are even more difficult to detect, or at least to recognize as precocious and abnormal. When once told that it is injurious, the particular prescription is rarely transgressed (this, of course, should be verified by companion or parent who has been put on the watch). It is not the "showing off" of childhood, nor yet hysteria, since there is no effort to be seen by nor to appeal to others. It is not quite mischief, pure and simple, as it injures principally the patient's self and does not include selfishness. It is, perhaps, a fancy for excitement, or to appear bizarre to ones self, or more likely an easy yielding to any sudden fancy—vagary, caprice, whim—a lack of the mental inhibition that should follow from reason and logic even in persons of this age—possibly here again "unstable."

Whether this be a result of the disorder, or a part cause, or but the folly of youth, it is often a serious impediment to success in treatment. Not infrequently relapse, retrogression, or intractibility to remedies, has clearly been due to these follies. As even those constantly about the patient are usually unable to give the needed information, it becomes one of the most difficult phases to work out, and yet should be continuously borne in mind. How general this characteristic is in epileptics it would be difficult to say, but it is at least common.

(15).—SUMMARY.

In his "System of Medicine" (Am. Edt., 1880, I., p. 775), Reynolds reaches the "conclusion, that in a certain number (twelve per cent.) there is nothing, absolutely nothing, abnormal to be discovered during the intervals

of the attack." In the present series, all the more carefully examined cases before middle life have shown some one or more, and usually several, deviations from normal types. Thus, owing to the more recently noted variations, and perhaps to improved plans of observation, even this remaining twelve per cent. of Reynolds is wiped out, and it may fairly be stated that all younger epileptics, on careful and repeated examination, show distinct deviations from the healthy norm. To a considerable extent these deviations are only such as may be discovered in many non-epileptics of like age. To record the observance of new manifestations in epileptics is not to say that they are diagnostically very characteristic. In glancing over the conclusions of various observers—as they from time to time appear in the journals—one cannot but note how often there has been an error in the belief that some pathognomonic interparoxysmal sign had been found. Certain pertinent questions arise here: 1. Are any of these, simply or collectively, in any sense characteristic of epilepsy? 2. Are they coördinate symptoms of the epileptic disorder, or are they causative of the same, or are they merely consequences?

It is not the special purpose of this paper to answer these questions. But so much may be said, viz., that as yet positive and general answers cannot be given. To some extent, as regards single symptoms or conditions, the queries have already been considered. None, either alone or combined, are strictly characteristic (pathognomonic), though several are relatively so, *i. e.*, they are much more common and pronounced in epileptics than in other apparently equally healthy individuals of the same age. They hardly suffice in any case to justify a positive diagnosis of epilepsy—in the absence of any knowledge of the convulsions, or of previous history—though in many cases they might constitute strong presumptive evidence.

As to their relation to the main trouble, it is clear that they are in varying degrees causative, coördinate, and sequential,—all three.

It is their status as causative or coördinate conditions that furnishes the basis on which to determine the continuance of treatment. The type and symptoms of the seizures are of but the slightest therapeutic interest,—except as to the general question of surgical versus medical means. That, on the contrary, the interval symptoms and conditions individually furnish many indications for treatment, has been above pointed out in connection with the study of each. But it is rather to their importance, taken in any case collectively, or so far as present, in giving us a warrant for the gradual cessation of medicinal treatment, that it is desired here to call attention. Commonly, the progress of a case is simply estimated by the varying number of seizures. The prime object in these observations has been to work out a plan whereby this can be followed and known without depending on the occurrence of attacks. These latter are universally recognized as strongly tending to perpetuate the convulsive habit. Hence, whenever our therapeutics can control such manifestations, if there is to be any chance of cure, it is that such control be continuous. It is in just such more hopeful cases that we soon find ourselves at sea for want of indications. Moreover, where anything like a cure is to be hoped for, treatment must, it is well known, be kept up for a long period after all such manifestations have been checked. It is in this free period that these interparoxysmal matters acquire their main value as guides. By them we can, in such cases as are controllable, keep a pretty good insight as to the underlying epileptic condition, and just as fast as this is found to improve we can reduce any one or all the drugs that are being administered, respectively, if necessary, increase them.

Of course, the present essay is but an attempt in the direction specified. If it be even an entire failure, the desideratum here outlined remains, and in any case there is much to be verified, and an ample field for further work.

SOME AFFECTIONS OF THE THIRD AND FIFTH CRANIAL NERVES.

I. Bilateral Oculo-Motor Paralysis.—II. Oculo-Motor Paralysis and Anæsthesia in the Distribution of the Frontal and Lachrymal Branches of the Trigeminal Nerve.—III. Trigeminal Paralysis and Spasm.—IV. Clonic Masseter Spasm or Jaw Chattering in the Aged.[1]

Cases Observed in the Department for Diseases of the Mind and Nervous System of the Philadelphia Polyclinic.

Service of Dr. CHARLES K. MILLS.

Reported by J. W. McCONNELL, M.D.,

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I. Bilateral Oculo-Motor Paralysis.

Case I.—W. H. O., aged 52 years; colored; married; laborer; native of Virginia; with an unknown family history; presented himself at the Clinic, April 9, 1893. He had a chancre in 1876, followed by a skin eruption. A few years later he contracted a second chancre, and subsequently had buboes and skin eruption, with falling out of the hair. He had no other illness until two years ago, when he began to suffer with pains in his legs, as though he had cramps. These pains continued for two weeks, during which time he was unable to walk. A short time after this he had a paræsthesia of the trunk which he described as feeling like a cord drawn tightly around his body. Since Christmas (1892) this sensation had been growing less in degree, although still present.

[1] Read before the Philadelphia Neurological Society, April 24, 1893.

The present trouble commenced last Christmas with sharp pains starting in the frontal region, and shooting over the head to the occipital region and the back of the neck. Soon the upper lid of the right eye drooped, causing ptosis of that side, which lasted two weeks. This improved, but he noticed a similar involvement of the left eyelid, and at the same time found that he was unable to see objects in certain positions.

On examination, April 9th, he had complete ptosis of the left eye and partial ptosis of the right. Movements of the eye internally, upward, and downward, are completely lost. Both eyes are drawn into the external

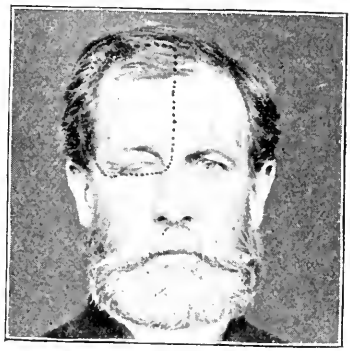
canthi and are immovable in any direction. Sensation is not impaired in the slightest degree, conjunctival reflex being present in both eyes. He does not complain of pain in the head or eyes, but still has to a certain extent the girdle sensation of some time ago. Examination of the knee jerks show that the left is present and easily reinforced, and the right is absent, but reinforcement will cause its appearance to a slight degree. He has no paralysis of any other part of the body, but constantly complains of vague pains throughout his body, and an annoying numbness of the hands.

The treatment has been anti-syphilitic and electrical. A mild galvanic current has been used for over a month

with marked improvement of the right ocular muscle and some on the left. The question of a possible tabetic condition of this case is "sub-judice;" more probably he has suffered from a form of syphilitic myelo-neuritis.[2]

II.—Oculo-Motor Paralysis, and Anæsthesia in the Distribution of the Frontal and Lachrymal Branches of the Trigeminal Nerve.

Case II.—W. B. T., 60 years of age; white; male; without occupation; a native of Connecticut; came to the Clinic, March 29, 1893. Thirty years ago he contracted



a chancre, but has no positive history of further specific disease, although eight years ago he had suffered with a small sore on the right upper arm which did not tend to heal until after he commenced treatment with iodides and mercurials.

In January, 1893, he sold tickets in a small room heated by a gas stove. The cold air came through the small ticket window and was constantly striking him in the right side of the face. Within a week he was seized with sharp pain in the eyeball and right frontal region, which was followed in a short time by the appearance of an

[2] Gowers: (W. R.) Disease of the Nervous System. Am. Ed., Philadelphia, 1888, p. 614.

herpetic eruption extending from the median line over the right frontal and temporo-parietal regions, and the face immediately under the orbit, and probably involving the conjunctival surface of the eyelids. Two weeks later, the eruption continuing, sensation of burning became noticeable, commencing in the side of the nose and extending over the location of the eruption. They were abrupt and transient in character, not more than two or three in a day, but at times so severe as to cause a feeling as though the part was being scalded. At this time the patient noticed that the right upper eye-lid was paralyzed. He does not know, however, when the ptosis became complete. The right eye seemed to be somewhat sore at first, and later became very much so.

His condition March 29th was noted as follows: The remains of an herpetic eruption is still seen scattered over the right forehead and temporo-parietal regions as far back as in a line with the posterior border of the ear; it extends all over the eyelids, but does not involve the ear or cheek at all. Over this area there is complete anæsthesia; the cornea is also insensible to touch. There is complete ptosis of the right eyelid, and much inflammation of the eye, both conjunctival and tarsal. The cornea is cloudy, but there is no ulceration. The movements of the eyeball performed by the internal rectus, superior and inferior recti, and inferior oblique muscles are completely lost. Both cycloplegia and iridoplegia are present.

The chief interest in this case is the simultaneous involvement of two cranial nerves and the consequent question as to the pathological process underlying it. The complete paralysis of the oculo-motor nerve, and the incomplete loss of power of the first division of the trigeminus suggest the possibility of a double lesion. That the affection of the fifth nerve is peripheral is proved by its peculiar distribution. Ranney[3] says that "peripheral

[3] Ranney: [A. L.] Lectures on Nervous Diseases. Philadelphia 1888, p. 83.

lesions of the fifth nerve cause anæsthesia of special parts supplied by small branches or single filaments of the nerve." In this case the trouble seems to be confined solely to the frontal and lachrymal branches of the ophthalmic division of the fifth nerve.

The pathology of the condition is more difficult to determine. Erb[4] regards anæsthesia of the trigeminus as frequently of inflammatory origin. In the present instance the history of syphilitic infection, of exposure to cold, the presence of pain and trophic disturbances, and the absence of symptoms of intracranial trouble, all point to an inflammation, syphilitis or rheumatic in character, preferably the latter, affecting the nerve.

The oculo-motor nerve became affected while the trouble with the trigeminus still existed. The probability of the same local lesion causing both the oculo-motor and trigeminus paralysis has to be considered. Owing to the anatomical relations of these two nerves, the question of extension by contiguity of structure cannot be accepted, hence we look further. The history of the case shows that the patient has had syphilis, but years ago. Gowers[5] recounts a case of oculo-motor palsy, where thirty years had elapsed since the infection. He claims that the nerves may be the seat of syphilitic inflammation, or of a gumma, or may be involved in a syphilitic meningitis.

De Schweinitz[6] regards syphilis as the most frequent cause of third nerve palsy, the resulting paralysis being due to a peripheral inflammatory or gummatous change affecting the nerves at the base of the brain. Cycloplegia, the same authority says, is due to lesion of the trunk of the oculo-motor nerve or the anterior part of its nucleus.

Iodide of potassium was prescribed in large and increasing doses and galvanic electricity was used three

[4] Erb: Ziemssen's Cyclopedia of the Pract. of Med. Am., Ed., Vol. XI., p. 224.

[5] Gowers: Op. cit., p. 614.

times weekly. At present, nearly two months after coming to the service, he is able to separate the lids almost fully, the external movements of the eye are nearly perfect, the internal movements are improved, but not to so great a degree as the others. The anæsthesia is better and the eruption fast disappearing.

III.—Trigeminal Paralysis and Spasm.

Case III.—J. T. W., aged 46 years; male; married; a carpenter; native of Maryland; family history good; came to the service for Nervous Diseases of the Philadelphia Polyclinic, March 22, 1893. December 1, 1892,

he was affected with an acute cold,—coryza, cough, etc. About the first week in January, 1893, he noticed for the first time that he could not chew as well as formerly. He was especially weak when trying to bite. This weakness of the muscles of mastication increased, and in the course of two or three weeks the muscles became powerless to such an extent that the lower jaw was not held in position against the upper. Ability to crack the jaws together was variable. In the latter part of February the jaw became affected with a tremor, causing chattering or clonic spasm, and occasionally the jaws would come

[1] de Schweinitz: (G. E.) Diseases of the Eye, Philadelphia, 1893, p. 528.

together involuntarily. About the beginning of March, he became unable to close the mouth except with external assistance. There was no loss of sensation.

He is a fairly well-nourished man, without any paralysis of the limbs or trunk, but with a peculiar appearance of the face. The chin is dropped, causing a separation of the teeth of about one-quarter to one-half inch, with the lower lip somewhat everted and pendulous. Attempts to bring the jaws together cause the tremor. Movements of the lips and other portions of the face supplied by the seventh nerve are preserved. Sensation is preserved. The movements of the temporal, masseter, buccinator and pterygoid muscles are all impaired.

The patient is unable to swallow food that is wholly masticated, and at the same time hold in his mouth the part that is not masticated. In order to swallow fluids he must push his mouth shut after the drink is taken, and drop his head towards his chest, else what is taken in will regurgitate through his nose. Once in a while fluids get into his trachea. Warm drinks are especially irritating. The act of swallowing is very peculiar: during it a part of the fluid seems to go down by gravity, then a spasmodic action of the muscles of the front of the neck takes place, and some goes down and some regurgitates through the nose. Apparently the movements performed by the digastric, mylo-hyoid and stylo-hyoid muscles are affected, and those of the tongue seem also to be impaired. Electrical examination of the affected muscles showed contractility to both currents without any change in the normal formula, but an unusual slowness of response, most marked when the faradic current was used.

The palatal muscles contracted to irritants somewhat imperfectly. The constrictors of the pharynx contracted perhaps a little less actively than usual; the vocal cords and arytenoids moved perfectly. In drinking he was unable to get the water far enough back for the constrictors to act. Laughing gave the upper part of his face a peculiar appearance, somewhat like the risus sardonicus.

The fields for form and color showed moderate concentric contraction.

There were no changes in the electrical reaction except as noted, which practically barred out a peripheral affection. The case seemed to be either nuclear or hysterical. The patient was put upon general building remedies with the supposition that the disease might be hysterical, or, at least, functional. Iron, quinine, and strychnine in good doses were administered internally, and were combined with local treatment, with massage and faradic electricity. After four weeks' treatment, improvement was very noticeable. He was better able to swallow liquids and the regurgitation through the nose was less marked,—in fact, often absent. Two weeks without any local treatment did not result in retrogression.

IV.—Clonic Masseter Spasm or Jaw Chattering in the Aged.

Case IV.—M. K., aged past 70 years; white; widow; native of Ireland; can tell nothing of the family history, and little of her personal history. She was well six months ago when she first noticed a "peculiar quivering sensation in the region of the stomach," which was followed by a desire to vomit, and sometimes by the complete act of vomiting. Immediately after these symptoms a movement of the lower jaw would occur, lasting less than a minute, but frequently repeated. This state of things has continued to the present time and her condition is as follows:

The woman is of worrisome disposition and can think and talk of nothing but her troubles. Her general health is poor. Her face is intermittently involved in bilateral spasm or twitching of the masseter muscles. The spasm is clonic in character and not attended with pain. The intervals of stoppage vary from a few seconds to almost a minute, and if her attention is diverted the period will be even longer. So far as is known the movements cease during sleep, but do not entirely stop when

mastication is attempted. The spasm is not very regular and an attempt to count the number of oscillations was fruitless.

This class of cases is spoken of by Gowers[1] as rare and occurring principally in old women. Romberg[2] cites a case in a woman, aged sixty-five years, in whom there was marked clonic spasm of the masseter muscles, principally the right, which always became worse towards evening and ceased during sleep.

"Spells" or Periodicity in Insanity.—R. M. Phelps, M.D. (*Hospital Bulletin*, November, 1892). From a study of periodicity occurring in various classes of cases, Dr. Phelps formulates the following:

First, the class of cases that have menstruation as exciting cause, seems to be the most obstrusive and prominent.

Second, the class of cases with somewhat regular exacerbations is the largest, but in a large proportion of cases ill-defined.

Third, the class of "recurrent" cases, which have exhibited a cyclical tendency is rather small.

Fourth, "Circular Insanity" is only the most perfect form of the some cyclical tendency, and is very rare if confined to typical cases.

Fifth, in all the four classes, there is reproduced almost invariably, the same character of behavior at each cycle, while in contradistinction no two separate cases at all closely resemble each other.

Sixth, almost all cases begin in the early period of life. This is as significant an element as any to be mentioned. It fits into the statement that periodicity, and essentially degenerative tendency, go with pubescent cases.

Seventh, the cycles are so irregular as to time as to strongly tend to preclude their coincidence with any healthy physiological cycles.

Eighth, though these cycles are almost sure to return, one cannot predict the exact time in any case I have met. I always have to say about "such a time." F. P. N.

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[1] Op. cit., p. 639.

[2] Romberg: Diseases of the Nervous System, Syd. Soc. Trans., 1853, Vol. I., p. 301.

A CONTRIBUTION TO THE STUDY OF INSANITY AND NEPHRITIS.

By AMELIA GILMORE, M.D.
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JUST now medical science is making its advance by giant strides in pathology. It is a seductive path, and no persuasion is necessary to send the flower of the medical profession into its shadiest nooks. "If nature has secrets she must give them up," they say, and to know the cause of disease is the first step toward curing it.

So etiology is deservedly at the front, and all research or observation which can throw any light on the causes of disease is welcomed. And every little helps; as some one said, "There are mites in science as well as in charity."

We are so much accustomed to following our standards, accepting without question what a recognized teacher has promulgated, that in departing from the rule we instinctively turn back to our classics, to see how our opinions have been formed, and through what paths we were led into error, if error there be.

More than a generation has passed since an authority on mental disease wrote:[1] "Insanity may originate from purely physical causes."

"Diseases of the kidneys and the anomalies with which we are as yet acquainted of the urinary secretion, do not appear to be of great importance in the etiology of mental disease. Some cases may be mentioned in which insanity probably had some connection with an affection of the kidneys, but these must be very rare, and it is impossible to give any particulars regarding them."

We agree that forty years has marked progress in the recognition of disease, its causes and effects.

As early as 1858, the best statisticians of mental disease,[2] make a carefully prepared statement that the greater proportion of insanities are due to physical

[1] Griesinger on Mental Disease, edition of 1867.
[2] Bucknill and Luke; Causes of Insanity.

rather than moral causes; but as this was a reversal of former belief, they cautiously added that "more extended statistical data are required before we can certainly conclude whether these figures are exceptional."

Further, the same authorities find that diseases of the heart, lungs, stomach may produce mental alienation, but that the kidneys are remarkably free from disease in all forms of insanity, and in their practice not one case of Bright's disease had ever been met with among the insane.

Ten years later there was little change from the earlier expressed opinions, and again another decade in which old theories held sway. Nearly every organ in the body, except the kidney was thought to act injuriously on the brain cells under some circumstances, each producing different types of insanity; and intestinal, vesical and hepatic insanity were recognized.

Mania, as a symptom of Bright's disease, was observed by Samuel Willes in Guys Hospital[3] in a number of cases, but he hesitated to assert that uraemia was the cause, on account of other pathological conditions which might have produced it, and also because other observers had not described similar effects following lesion of the kidneys.

Sankey[4] recognizes that diseases of the kidney exist in insanity, yet makes them secondary to impurities in the circulatory medium. This vitiated blood he considers is sufficient to alter the minute structure of the kidney, which in turn acts upon the heart, causing hypertrophy of the chief chamber from overaction. His vicious circle begins with the changed condition of the blood, "due to an error of assimilation."

Clonston[5] regards nephritis as an etiological factor in producing insanity, and has had several such cases under his care, and adds that they usually occur in chronic cases of Bright's disease.

More recently, Spitzka,[6] in the chapter on Somatic

[3] See Journal of Medical Science, July, 1874.
[4] Lectures on Mental Disease.
[5] Mental Diseases, 1884.
[6] Manual of Insanity, 1890.

Etiology of Insanity, enumerates diseases and injuries of the brain and its coverings, chorea, post-febrile insanity, rheumatic and phthisical insanity, valvular heart disease, the puerperal state, as causes; and says that the view has been expressed that when albumenuria coexists with the maniacal and frenzy-like explosiveness of the puerperal state, the uræmia is a collateral etiological factor and adds, that no substantial grounds exist for endorsing this view.

Bevan Lewis,[7] recognizes premature senility as a local manifestation of chronic Bright's disease, and that there is an imperfect renal function in these cases associated with chronic brain atrophy, due to extensive vascular change and fatty deterioration in the brain cells. Further than this he makes no reference to kidney disease as associated with insanity.

Now, let us consult recent and accepted writers on general medicine, to learn what is the opinion of other than alienists regarding mental symptoms following defective urinary secretion, also for the causes of nephritis.

Fagge,[8] states that albumenuria appears in certain affections of the nervous centres. There is also a brief note of delirium which may occur in uræmia. Further than this we find no reference to the involvement of the higher centres in this affection.

Strumpel,[9] "Disturbances of circulation make themselves felt in the kidneys." A general arteria-sclerosis may be the first step in producing Bright's disease. Cardiac hypertrophy the second, especially of the left ventricle. He writes that albumenuria occurs after emotional disturbances, and after epileptic attacks, or in other severe nervous conditions. In certain cases of Bright's disease, urea is retained in the blood in sufficient quantity to cause disturbance of intellection, emotional crises, incoherence, or the various symptoms of mania though the convulsions and coma of uræmia may be wanting.

Osler,[10] recognizes that there may be a sudden onset of mania in uræmia with rapidly fatal results; also that

[7] Text-book on Mental Diseases, 1890.
[8] Principles and Practices of Medicine, 1886.
[9] Pext-book of Medicine, 1887.
[10] Principles and Practices of Medicine, 1892.

delusional forms of insanity are often developed following such a pathological condition. In considering the etiology of chronic parenchymatous nephritis he mentions habitual over-eating as a frequent excitant of the disease, also degeneration of the vascular tunics, and he states that beer and alcohol are believed to lead to this form. He observes the prevalence of Bright's disease in this country, and considers that it may be accounted for by the anxieties of business and worry.

It is noteworthy that the two groups last mentioned give us precisely the conditions which are believed to give rise to a large proportion of the insanities; so that we may not assert in a given case that the nephritis was a potent factor in the production of insanity, or conversely, that the mental derangement having been induced by certain moral causes was followed by a physical disability, one organic disease causing non-resistance in other and remote organs, but we have reason to believe that in some cases the two may be produced simultaneously, though the manifestations of one may be more pronounced or more readily recognized than the other.

Again, it is so common that every physician will remember some cases where he has treated Bright's disease in its many phases and with no knowledge of tendency to insanity in the patient, he has yet come slowly and unexpectedly to recognize a positive mental decrepitude without making a logical deduction of cause and effect.

All the elements for disease lie within the human body. It is not necessary that some foreign substance or structure be introduced into it in order to disturb the harmony of its members, as is the case in all specific disease. In health chemical action changes the substances which we call food into forms of matter suitable to be taken up by the different tissues as they have need, and this power is regulated by a selective capacity inherent in each form of matter. In the constant interchange and breaking up of substance which living entails, some portion becomes useless—it is effete and no longer subserves any use in the animal economy. It must be cast off.

Again, in certain conditions other substances harmless under normal production are largely in excess of the demand and some channel is crowded with the surplus, or one organ is given an undue share of the labor of disposing of the useless material, and as a result it is exhausted while the other is disabled for lack of use, and a third suffers because of the lack of coöperation with one or both of the preceding. In the end there is disaster surely, for, though all the different parts of the organism do not suffer equally, either in kind or degree, yet the relation is so intimate—they are like children nourished under one roof, of whom one cannot feel an injury without exciting the sympathy of all.

I sometimes feel as if the adage, "All roads lead to Rome," finds its parallel in the ailments of the human body, and that all conditions of the body—all diseases, organic or specific,—may lead to insanity.

Insanity and phthisis have long been known to bear a relation.

Ovarian insanity was recognized by all the older writers and has some adherents still.

Insanity of puerperal origin is frequently observed.

Delerium of fevers is mental aberration of transient type.

Insanity of syphilitic origin is undoubted; also, that there is a true alcoholic type.

It is undisputed that the nerve lesion of general paresis is the mode of onset of that dread disease.

It was Schroeder Von der Kolk who described insanity of the colon, while disease of the liver was believed to seriously affect the mental state.

They wrote of rheumatic, choreic and gouty insanity, and still the list grew, but without including renal insanity, though two such cases were made mention of in 1871.[11]

In current literature the most notable article which has appeared is the address of Dr. Alice Bennett, State Hospital for the Insane, Norristown. Title, Insanity as

[11] Reports Royal Edinburgh Asylum.

a Symptom of Bright's Disease,[12] with a record of sixty cases. Her conclusions briefly are:

1. That affections of the kidney are very common among the insane.

2. That uræmic poisoning is one of the most frequent causes of insanity.

3. That the most prominent and constant symptom is some form of mental pain.

4. That the motor centers are specially liable to affection.

Another article was read before the New England Psychological Society, December, 1891, entitled, Kidney Disease and Insanity,[13] with conclusions:

1. Chronic nephritis is sometimes the cause of mental aberration which may be called insanity.

2. Long continued anxiety may cause albumenuria, hyalin, granular, epithelial and blood casts with accompanying œdema in some cases.

3. This kidney disease may be temporary, disappearing when the cause is removed, or the cause persisting too long may become chronic renal disease.

4. Contrary to the opinion of many observers, disease of the kidney is quite common among the insane.

In my experience insanity is more frequently associated with nephritis than with any other disease. Out of one hundred and fifty consecutive admissions to the Female Department for the Insane, Philadelphia Hospital, in 1892, 25% give evidence of kidney disease on entrance by the presence of albumen or casts, one or both in the urine. In the admissions for the present year the percentage is a little higher—27.5%[14]—and this, although the number received includes many cases of chronic insanity.

As you observe, the number is much too large to

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[12] Read before the Medical Society of the State of Pennsylvania. June 12, 1890.

[13] George T. Tuttle, M.D., McLean Asylum, Somerville, Mass., *American Journal of Insanity.*

[14] Of the same admissions, 12% had some form of cardiac compliaction, mitral lesion being the more frequent. Other physical ailments give but very small proportion.

quote severally, and a suggestive case can only be here and there cited.

In many of them the kidney was the only organ beside the brain which showed disease, though accentuated heart sounds were frequently found, while valvular lesions and atheromatous arteries were not uncommon.

In my list, all ages are represented from seventeen years for the youngest, to a case of mania at eighty years, the majority being below forty years.

The age is important, as the Bright's disease which follows a general endarteritis, occurs as a rule late in life.

As may be expected, a large proportion of these cases are quickly fatal, the complication of disease being difficult to combat, and ground is lost in the beginning by delay in bringing the person to treatment, or the insanity appears only as a late symptom of an incurable disease and the patient is brought to the hospital to die. So that of the fatal cases, one-third were under hospital care for one month or less.

The brief account of two such cases is appended:

Entry, No. 1150, P. H. Hospital record; female; aged 46 years; married.

Insanity was thought to have had a gradual onset, though it did not necessitate special treatment until some months had passed. She had labored under depression of spirits, the cause of which was unknown to her family. The melancholia took now a more definite form and she declared that she had caused the death of her son by poisoning him and she tried to poison herself.

On admission the flabby skin and muscles indicated lack of tone. The heart gave evidence of hypertrophy with accentuation of the second aortic sound. Atheroma was beginning to be felt in the radials.

Urinalysis—Sp. grav., 1024, acid—albumen in large amount; no casts observed.

There was obstinate refusal of food, and mechanical feeding was necessary. Her condition did not improve.

Uræmic coma supervened and death occurred thirty days after entrance. No autopsy.

Entry, No. 1772, P. H. record; female; single; housekeeper; age 40 years.

Previous to admission, had been for three weeks

under great mental strain, having been suddenly deprived of her home by the death of an aged relative. She lost her appetite and could not sleep. Was taken to a hospital of the city for rest treatment, and while there jumped from the second story window, causing no serious injury. Could not tell why she did it.

On admission she was in great agitation. The heart's action was strained. She could not be kept quiet, but was moving about moaning and wringing her hands constantly, presenting typical agitated melancholia.

Urinalysis—Sp. grav. 1010, acid—albumen. No casts observed.

During the second week she was actively suicidal, trying to strangle herself. There was no improvement. On the thirteenth day she died in coma. No autopsy.

But the fatal cases are only one-third of the whole. Of the remainder fully one-third recover, while the others drop into the line of the stationary cases or the chronic cases with exacerbations of mania or melancholia. Knowing the complication, a guarded prognosis is advisable, for, though the record of recoveries is good, relapses are liable to occur, a like condition producing a like result and relief may be transient.

Entry, No. 1530, P. H. Record, is a case with recovery; female; age 27 years; child's nurse; single.

Friends had noticed some slight mental change five months before she was brought to the hospital, by the exhibition of hysterical symptoms. After that she began to visit hospitals and dispensaries, receiving treatment for her stomach. But she did not improve. Slept little, and became altogether unfitted for useful living.

When admitted her physical condition was fair with accentuation of the aortics, second sound. The kidneys showed faulty secretion. Urinalysis—acid, sp. grav. 1034. No albumen or sugar, but hyaline casts.

Mentally there was well marked hypochondriasis.

The case was plain. She quickly began to mend, and convalescence was established at the end of two months. In ten weeks she was paroled, recovered. It is more than two years now with no relapse.

Entry No. 1712; female; age 38 years; widow; housekeeper.

The previous history of the case was meagre. It was said that she had been taken to St. A.'s Hospital with dysentery, and that while there the insanity had developed. There was also information that she had indulged too freely in alcoholic stimulants.

On admission she exhibited marked incoherence, with loss of memory and sense of time, while fleeting hallucinations of sight and sound were observed, and motor excitement was extreme. The first sound of the heart was booming. Respiratory murmur feeble. Urinalysis —acid, sp. grav. 1021—albumen. Epithelial casts.

After one month's treatment the mental gain was considerable. Urine examination showed no albumen or casts, sp. grav. 1012. In six weeks she was entirely reasonable, and her parole followed at the end of the second month from admission.

Nothing has been heard from her since, now eight months later.

The following case shows the tendency to relapse:

Entry No. 1764; female; age 26 years; married.

Symptoms of insanity noticed only one week before entrance by unusual conduct. Her husband being temporarily absent from home, she believed that he had forsaken her. She accused her neighbors with trying to poison her, and took the bread from her children for fear that they would be poisoned.

On admission she presented the signs of delerium grave. Took no nourishment voluntarily, was stuporous —recognized no one.

The bowel was constipated and there was urinary retention, the quantity being much diminished.

Urinalysis—sp. grav. 1030, acid. Albumen in large quantity and many broad hyaline and light granular casts.

After being two weeks under treatment, improvement was marked. She talked reasonably and took nourishment without urging. The urine showed only faint trace of albumen and no casts.

She continued to improve, showing herself gentle and affectionate. At the end of three months she became again maniacal, shouting, singing, and dancing, destructive and filthy.

At this writing, after five months' residence in hospital, she is in active mania. The urine still contains albumen in small quantity.

These cases are not exceptional. Out of the many which are suitable for illustration, they are taken almost at random.

Again, some of the cases do not exhibit nephritis as the sole physical disability, but there is found organic change in the heart or lungs, neuritis, paresis, or, specific disease, which may have its influence in producing mental aberration.

Complicated cases are not easily controlled, and the prognosis is unfavorable as regards relief from insanity. Such patients, if attacked by any intercurrent disease as influenza, dysentery, erysipelas, fevers, have little chance of recovery, and in case of epidemic disease they are very liable to be affected by it as the general systemic tone is so low.

The death register of the female department of the year 1891, shows that 14% were due to some form of nephritis, and in 1892, with a largely increased mortality, 24.1% resulted from like cause.

The records of forty-eight autopsies, for the same period, give evidence of diseased kidneys in every case save one.

Mental depression, spoken of elsewhere as belonging to these cases as a class, while it is common, does not appear in all; and, again, in some isolated cases, where the distress of mind is positive and clinical observation of the heart and local œdemas point directly to a derangement of the kidneys, the urine is searched in vain for positive evidence of the disease.

A recent writer[15] speaks of painful mental depression as the expression of "the hunger of the brain cells," without considering that the cause of the trouble may be the urea-freighted blood which cannot nourish and must destroy.

Urine of low specific gravity is very frequent among the insane, even when no albumen is present. Oxaluria is not rare and uric acid crystals are common.

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[15] Bevan Lewis (1890).

As a physical symptom, we find accentuation of the aortic second sound the usual accompaniment of parenchymatous nephritis, a common feature in all classes of the insane.

Cases of general paresis often exhibit disabled kidneys in an early stage of the disease.

Among paranoias there is no rule, but nephritis affects a large proportion. It is not prominent among puerperal cases.

Pregnant women under hospital care, having chronic interstitial nephritis, are found to come to a normal delivery as a rule, no uræmic symptoms appearing and interference is not indicated.

But besides those in whom the nephritis is demonstrated on entrance, we have still a large proportion with a like complication which is not developed until months or years of hospital residence have passed. It may be that the early symptoms were not observed, but that it is frequent among the chronic insane is positive, and the causes are patent—as have been mentioned. Frequent emotional avalanches as disturbers of circulation, which must in turn affect the chief chamber of the heart-boulmia—advancing age—general sclerosis.

I have said that it is possible that the early symptoms of this organic disease may be unobserved. All physical disease is masked in the insane, but especially is this true of nephritis, and one must be alert to catch even a single feature. Then there are pit-falls in the examination of the urinary secretion. It is a general rule in hospital work that an examination of the urine of the patient be made as soon as may be after entrance. If this analysis furnishes no pathological interest it is rarely repeated, though to judge the case by this one test is unwise. It may be only after numerous careful analyses that the existence of disease can be shown. But the labor attending these examinations is considerable. The time spent over a few specimens daily can be reckoned by hours, and the number of the patients is so large it becomes a physical impossibility for the hospital physician to make as frequent examinations as would be desirable.

Supposing the early analysis of the urine has been made with normal result, yet if the positive demonstration of diseased renal tissue is made after a few weeks or months of residence in the hospital, it would seem to be conclusive evidence that the condition had been the same or nearly so, at the earlier date, but the proof was wanting.

Careless methods of work give poor results. Examinations that promised much may yield nothing in the hands of one who takes little interest in the subject.

A recent medical assistant in the insane wards, getting his first practical knowledge of insanity, said to me: "You have many cases of nephritis; how is it that I find nothing about it in the books on mental disease." This may be explained as the influence of the former teachers which is to-day still felt by the older alienists, who are now in a position to direct the work of others. It is not they who come in direct contact with the patient. They are slow to see new facts brought out by chemical and microscopical tests which they had neglected. They were instructed that the kidney was an unimportant organ in the etiology of insanity, instead of serving as chief health officer over the whole body—and that "all forms of injurious matter, which circulate in the blood, must be eliminated from the body in great part of the kidneys." (Strümpell).

In conclusion, we assert that it is not unwarranted to search for physical causes of mental aberration, but that it is clearly indicated by the premises. The mind is the superstructure of the body. That insanity should be produced by the disease of an organ which is known to carry off substances injurious to the body if retained seems reasonable. If the kidney fail in its office the blood becomes charged with urea. Not all brains possess a like sensitiveness to adverse influences, or to changes in pabulum. Not all stomachs are dyspeptic.

A belief that there is some physical cause for mental alienation is supported by reason and precedent. Our logic demands for the effect a cause, and though we deal with the highest type of matter—the trained cerebral cell

—it is certain that it will follow the inevitable law when its function is interfered with. Like sweet bells out of tune, the harmony is turned to discord. A variation in the normal elements of sustenance may be sufficient for this. Urea retained, the watery elements of the blood increased —the nerve tension lost, and disaster follows, the foundation being insecure, something less than an earthquake may shatter the tower.

Organic change was observed in the brain of a person dying in uræmic coma.[1]

There was found to be a destructive process going on in the nerve cells of the cortex, and especially in the nerve fibers nearest the white matter. The latter had entirely disappeared in some places, while phagocytic action was plain, the debris taking the shape of black granules with which the leucocytes were loaded.

That insanity should be a symptom, even though no destruction of tissue is found, needs no comment.

Again, whether tissue change, which may accompany mental derangement is seen as well in the walls of minute vessels as in the brain cells and may manifest itself in the changed secretion of the urine is a point yet to be determined; but it is consistent, with present theory, to say that the nephritis may directly follow the insanity—the excessive emotional storm giving extra work to the arterial system with the consequent hypertrophy of the great chamber of the heart.

That nephritis is associated with insanity in a large number of cases cannot be doubted, and the fact deserves serious consideration.

The corollary follows:

1. That insanity and nephritis may be concomitant, both resulting from the same causal condition.

2. That nephritis should be expected as a tolerably certain sequence to the perturbed forms of insanity.

3. That among the nervous symptoms of Bright's disease, must be reckoned mania and melancholia.

[1] The examination was made by Dr. A. B. Macallum, University of Toronto, vide article in *Canadian Practitioner*, April, 1889, "What is Uræmia?"

A CASE OF PARANOIA.

BY EDWARD N. FLINT, M.D.,

Late of St. Peter.

THE following case of paranoia is an interesting one; first, because it displays some of the more unusual manifestations of that form of mental aberration; and, secondly, because it affords us an opportunity of tracing the growth and development of delusion in an individual possessing a transmitted neuro-degenerative taint, who was mentally peculiar and eccentric from his earliest childhood, and studying the relations between the mental eccentricities observed during his early life and the delusions which subsequently became established.

CASE X.—Male; aged 55 years. Born in Massachusetts, of American parentage and of a family founded in this country eight generations ago. In the family history, which has fortunately been preserved with great fidelity, there is no record of any nervous disease prior to the third generation, preceding the one to which our patient belongs. His paternal grandfather married a woman from the Y—— family, a family known to "have peculiarities or a strain of insanity." This woman "died at a ripe age in a trance which had lasted ten or twelve days." She was the mother of several children. Two of these were females, who "died at advanced ages of nervous disease." One of the sons married the granddaughter of one of Massachusetts' lieutenant-governors, and raised a numerous family of children, and among this number was X——. The mother died at the age of eighty-five from natural causes. The father died at the age of sixty-five. "For a year or two before he died he was much depressed." Besides X—— there were nine other children in the family. Of these, the first born died of scarlet fever, at the age of nine years; two died in infancy of croup. Except these three all attained maturity, and all save X—— were married and raised families. All are living at present save one, who died of pleurisy, at the age of fifty-five. One sister has suffered a great deal from neuralgia.

For between one and two years before X—— was born, his father resided in the West Indies where he contracted "liver complaint." He was an invalid for some time after his return home, and his wife also declined into very poor physical condition, being "run down" by care of her husband, anxiety, grief over the death of one of her babies and certain financial troubles, incident to the panic of 1837. It was at this time and of this stock that X—— was born. His condition at birth placed him in the class of defectives. The left upper extremity was short, incompletely developed; and the hand, instead of having fingers, displayed only little shriveled buttons of flesh in their stead. Both mentally and physically X—— resembles his father. As a child he was considered apt and bright, showing a taste for books, and learning readily. "He was always of a rather diffident or timid disposition, and much preferred seclusion to the society of others."

This disposition was dominant throughout his entire subsequent career, and out of it, as a basis, grew the delusions which now control his mental life.

His literary education was a classical one. He graduated from a prominent institution of learning in the East, and afterwards from one of the oldest schools of theology in this country, entering the ministry and following it as a profession for many years. He finally gave it up, however, on account of a morbid fear of ridicule, which he fancied that people directed against his deformed hand, and his aversion to the constant association with other people which its continued pursuits entailed. X—— himself says that he left the pulpit because "his voice failed him, and because he felt that his character was too one-sided and not sufficiently rounded out."

After leaving the pulpit his career became somewhat checkered. He undertook to teach, but finally gave that up for similar reasons to those assigned for abandoning the pulpit. He next acted for some time as agent, canvassing for a picture frame concern, and made a tour of the western states. During this trip he avoided towns and settlements, and made long excursions up into the mountains, and limited his transactions largely to the "simple folk living in solitary places." He subsequently invented and patented a cultivator and squandered considerable money with patent lawyers. At the same time he was trying to construct a new kind of elevator. Con-

cerning himself at this time, he says in a letter written in 1884: "It is no trouble at all for me to think up new things."

In the meantime he had drifted down to Kansas and became a canvassing agent for spring beds.

He finally quit the canvassing business, because, as he says: "It compelled him to intrude too much upon the society of others."

Morally, his character has always been above reproach. He was "sincere, childlike and innocent." He was imaginative and poetical. In a letter written to his mother, in 1883, he says: "This is May day, and the children are out gathering flowers on the wayside and the prairie. I believe you were always very fond of flowers. They are among God's good gifts to man." The following stanzas are taken from his poem, "Decoration Day," written in the same year:

"Strew freely flowers o'er the grave,
They softly breathe our love to thee,
Who, when the night hung heavy, gave
To sacred land thy life blood free.

"Touch soft their graves ye airs of spring;
Rest, heroes, in the sun's sweet ray,
For out of gloom they helped to bring
The Stars and Stripes to break of day."

Sometime during the following year he had a platonic love affair, concerning which he wrote the following in a letter, dated February, 1884: "For the last seven or eight months, I have been filled with surprise at the frequent attention paid me, far and near, in pulpit, press and public song, especially as there seems to be nothing to call it forth. It appears to have its origin in a love affair, some eight months ago, in which people became interested. Two sisters became attached to me and I to them. My preference being for the one called Z——. There appears to be trouble owing to the complication. I am ready to forego preference to meet it, if need be: of course, am not willing to see any lasting mischief done. I stand ready to meet the situation in any way, and have so expressed myself on the sly to a friend of the parties. I have felt a strange disinclination to pry into the matter, and have respected the feeling. My conjectures of the present status are drawn from the papers, remote references in them, and from songs that are sung, and hints that are thrown out by people in my presence. You may think, perhaps, that this is all fancy, but I know what I

know, and impressions gained in one way have afterwards been confirmed in another. It is truly remarkable, day after day, poetry in the daily papers—and you know poetry in a daily paper is uncommon—all bearing the same drift."

In a letter, dated March, 1884, he says: "A good deal of attention has been directed to me of late. It is barely possible that some one might undertake to blackmail me East, thinking to make some money out of it. Now, if you ever hear anything of me that ought not to be true, put it down at once as a lie. I have reason to think that Minnesota is involved. I have three warm friends there, A——, B—— and C——. I once went so far as to propose to the latter when she was a member of my flock, but the mother opposed. I get the affection of women without intending it, and why so readily is more than I can tell, for I am the most awkward of our whole family. Still I am so constituted that I can place my affection where needed."

In these letters there can be seen the budding signs of fixed ideas and delusion, all of which can be traced to a perverted sense of conception of the relations between himself and other persons. Suspicion of collusion, inuendo, and even of persecution by blackmail began to take root in his mind. His platonic attachments show how the emotional sphere is influenced by the conceptional, and how the influences and abberant mental processes that led him on the one hand to regard society with suspicion were, on the other hand, active in determining his attachments.

Later, about seven years ago, he began to take a great interest in animal magnetism, and the influence that the personality of some men had over that of others, and the mysterious manner in which some minds influence others. Later, he believed that large bodies of men exerted this influence to a greater degree than individuals, so that community in thought of a large number of people would act as a powerful agent in controlling other minds. From this he began to consider that the Odd Fellows and Free Masons were societies which existed for the purpose of centralizing and concentrating this mysterious force, which he denominated as magnetism or phenomenal power. Later still, he made the discovery that people were able to communicate thoughts in a strange and unusual way, and one day he heard an engineer sound certain words with his steam whistle.

The ability of certain people to sound words in this and other unusual ways has remained a fixed belief with him since that time. He heard words sounded in church bells, whistles, escaping steam, foot falls and other strange and unusual ways. During the next five years he devoted himself to teaching and other employments with varying success, and during the last year of which he began to have more decided delusions of persecution. He believed that the world had turned against him, and that the secret societies and other bodies of men were plotting against him. He claimed that it was necessary to get away from the mysterious power that these bodies of men were exerting, and that no place was secure against their machinations unless far away in some uninhabited wilderness where no one could reach him with magnetic influences.

On March 24, 1891, he was admitted to this hospital. He was then fifty-three years old, five feet and seven inches in height, weighed 146½ lbs.; brown hair slightly tinged with gray; blue eyes; forehead high and narrow and somewhat furrowed, but not deeply. The facial wrinkles were those produced by the predominant action of the depressor muscles over those of the levator muscles. His address was courteous and manner self-possessed, though he seemed absent-minded when not conversing, and would start nervously when addressed.

On physical examination his heart and lungs were found to be normal; digestion and assimilation good; muscular development fair; pupil reflexes normal to light and accommodation; knee jerk normal.

The only peculiarity noticeable to the eye in the shape of the head was that the right half of the cranium appeared to be the more voluminous. Looked at from behind the outline on that side appeared fuller and more regular, and the top of the right ear sat on a higher level than that of the left. This apparent one-sided development was demonstrated by the cranial measurements. The measurements were made from the usual points and at the usual levels. The circumference was found to be twenty-two inches, the right side being eleven and one-quarter inches, while the left measured only ten and three-quarter inches. The anterior portion of this circumference was eleven and one-half inches, the posterior ten and one-half. The coronal measurement was thirteen inches, the right division of this line being seven inches, and the left six inches in length. The distance

from the point of the chin to the highest altitude of the cranium was eleven and one-quarter inches.

The most marked evidence of congenital defect, however, was found in the deformity of the left upper extremity.

The following are the comparative measurements of the two upper limbs:

Shoulder to elbow,	12	inches	12	inches
Elbow to wrist,	$9\frac{1}{2}$	"	$8\frac{3}{4}$	"
Wrist to tip of little finger,	7	"	2	"
Circumference of arm, biceps relaxed,	$10\frac{1}{2}$	"	9	"
Circumference of forearm, upper third,	$9\frac{1}{2}$	"	$8\frac{1}{2}$	"
Circumference of wrist,	$6\frac{1}{2}$	"	$5\frac{3}{4}$	"

From these measurements, then, it will be seen that the deformity of the left upper limb was originally wholly below the elbow joint, though now the muscles of the arm are atrophied from disuse, thus lessening the circumference. The forearm is smaller and shorter than its fellow and the hand is only a stump. The wrist joint has all the motions, and there is no difficulty in placing it in any position of flexion, extension, supination, or pronation that can be assumed by the opposite hand. There is considerable power in the flexion of this deformed hand, so that the patient can carry a pail of water with it. The metacarpal bones are amalgamated, and form a single plate of bone about three-quarters of an inch in length and one and three-quarters inches in breadth, covered with a considerable amount of loosely attached fascia, fat connective tissue and skin. There are no phalanges, but in place of fingers there are five little buttons of flesh, showing depressions for a matrix, but no growth of nail. I have devoted considerable space to the description of this hand, because it shows conclusively that it is a fœtal defect, and cannot possibly be a case of arrested development nor a deformity due to traumatism; that it is one of those somatic stigmata which sometimes liable a person who has inherited a tendency to nerve degeneration and insanity with a sign which is easily read.

The mental manifestations of X——, since his admission, have all been in accord with the original peculiarities of his character and the delusions which first asserted themselves. They have all been delusions of unseen agencies. There has also been some progressive mental reduction in this case. The details of his delusions have

varied slightly, being influenced somewhat by his environment. They have extended in new directions, involved new forces; displayed less prominence in some directions, while they have taken on new characteristics in others. It will be observed, however, that the basis is the same throughout. The child was timid; the youth sought seclusion; the man avoided society; the paranoiac believes that association with his fellow-beings is a menace to his mental and physical well-being. This is the development of a peculiarity or an eccentricity into insanity, and through all his writings, which largely compose the balance of this paper, this quirk in his mental make-up can be traced.

ST. PETER HOSPITAL FOR INSANE, NOV. 18, 1891.

To the Governor of Minnesota:

In accordance with the right given us by the state law to appeal to your Excellency, I present my case in a few words that very poorly present the situation. To adequately represent would require a personal interview.

My difficulty is an outgo of my silent thought. It goes as it comes. I may think whatever I please, but whatever I do think goes as it comes. I suppose the constant irritation and annoyance they have kept up around me has affected the tension of nerve, so that unlike others who have the same phenomenal power, it goes as rapidly as my mind thinks. I have but to think a thought and it reaches other minds in sound without an effort on my part, and is sounded for a distance, I suppose, of two or three miles. If it goes farther it is renewed by some other man. How do I know? In the first place, men of sound judgment have told me that my views are correct. In the second place, I hear my silent thought sounded in steam, and wherever there is a noise it is liable to be echoed. A visitor gives me his name, and I sound it a mile away in the steam of some engine, done time and again. I stand at my window of a night and watch the lights of St. Peter or Kasota, and when I indicate my purpose some of the people of one or other of the towns will raise or lower their lights apparently to test my power of sending silent thought. They will remove the light, and then make it appear again, and will continue to do so, sometimes bobbing it up and down quickly. I have made the experiment several nights, every time with success. More than once I have sounded the words "sweet toned bells" on the bell in St. Peter, and a work-

man from there told me that he heard it. Now I consider it a gross outrage that I should be shut up in the asylum, my silent thoughts going out all through the day, and the crowd hanging upon my thought and making sport and flinging at me their own thoughts, often of an abusive kind, in a covert way, that are liable to go out upon the ears of men as though they were mine. For the most part the patients are friendly, but men with phenomenal power play their thought upon the feet of the patients, causing the footfalls to sound words of a slanderous kind. My difficulty has been upon me some fifteen months, and during all that time not a single evil thought has proceeded out of my mind, for I have had no evil thought. There has been a multitude of witnesses, and if any one will bring any thought that they attribute to me of such a nature I will acknowledge it. I am constantly made the object of abusive language. Of course my silent thought is sometimes indignant, and that reaching other minds keeps the ball rolling. Now it is not for my or the public good that I should be confined here in a populous portion of the country. Agitation underlies the phenomenal difficulty among men. It broke out in Topeka years before it came upon me. It was a singular town. Men hung together there as though they were one man ; they got excited over some subject or other and dwelt upon it unduly, and out of it sprang phenomenon. That phenomenal communication of human thought existed years before it came upon me I know from the fact that I heard words sounded in steam then, and supposed the engineer did, it and so did the proprietor of the hotel where I boarded, who remarked one day that the engineers could sound any word. I wrote back east some of the words that were sounded some six years ago. Subsequently sent a communication to the new president of the Santa Fe R. R., at Chicago, appealing to him to put a stop to the noise and confusion prevailing on the railroad at Topeka. The Sunday after sending the letter to Chicago the chairs at the Y. M. C. A. room were differently arranged, carrying the hint that there were two different classes of men, and the general superintendent of telegraphy, I think it was, who repeated with unusual emphasis this: "He spoke as one having authority and not as the Scribes and Pharisees."

I have studied the phenomenal difficulty. A great multitude of excited minds have waked up the latent natural forces of the air so as to make it in connection

with the aroused mind a carrier of thought. The air is magnetized in the region of population. No one should be out of an atmosphere so charged, or, if in it, at a sufficient distance from other human minds to avoid connection with their thought. Where there is no agitation on the part of the many there is no phenomenal communication of thought. Nor would one in an unmagnetized air, having the difficulty here, be troubled there. Wherever words are not sounded the difficulty does not exist. They are not sounded in Mexico, South America, China or Japan, because there is no general agitation existing. It takes a multitude to give the power.

My case, your Excellency, is an urgent one, requiring immediate attention, and it would gratify me speedily to hear from you.

Yours respectfully,

X——.

The following letter, written some months later, shows the increasing tenacity and elaboration of his delusions:

Dr. Flint:

DEAR SIR:—Yesterday I noticed a man point to his temple, making a sign to some of the crowd, and since then I have an uneasiness in that region. They display their magnetism there. There has been an insurrection of evil doers against me and they are constantly flinging their magnetism at me. It is a dangerous place for me to be in and nowhere could I be safe in it. This morning the whistle sounded, "X—— fell down stairs." They have an expression in respect to the attic: "Falling down stairs, set him on a pinnacle of the temple." These last expressions were given out about six weeks ago. When I go out walking days, there is always a portion of the crowd that arrange their movements in regard to me so that conveniently they can throw their magnetism at me, and if I fall behind the crowd so that I can get out of the way, there is often another ward behind me. So that I am between two fires. Men in front can throw back and men behind, forward. Now, it is manifestly unjust that I should be confined in the asylum. You see it does not agree with my health. My beard and whiskers are turning gray and my head is getting taut from an excess of imparted magnetism.

P. S.—I was well when I came here, and in possession

of my reason, just as much as you would be even though an equal quantity of Hebrew magnetism had been thrown upon you. It is not magnetism that cures magnetism, but the invisible electricity of the atmosphere that unites with it of its own accord pure air such as I cannot get here—where the air of late has been laden with the stench of privies. Proper surroundings and the free use of Turkish baths. It will ill become the State to allow a person that was healthy when he came here, to be put to death upon the cruel cross, when a change of residence to the far off prairies will cure my trouble and save the State the name of murdering a patient. There are three classes of persons who are using me. A bigoted portion of the Hebrews who seek my death; another class who wish to make money by it; and another class who wish to cover up their sins by hiding behind me, which could never be done, as it would lead to a murder trial, in which all the facts of the situation would come out. By a leading physician of Topeka, who made a thorough examination of different portions of my body, examining my urine, I was pronounced sound. I never had a gravel pain in my life. Men have set out to murder me in a magnetic way, and I should have the prompt protection of the State. Living alone upon the prairie, I would be entirely safe from violence.

X——.

In the following letter it will be seen that he no longer dwells so insistently upon the effects of magnetism upon his own person, but has gone into a complicated train of reasoning upon magnetism and electricity. The only link that connects these letters with his inborn aversion to society is the belief, which is not expressed in the text, but which he has often told me that Edison has captured all the personal magnetism and concentrated it in the electric light.

M. B——.

DEAR SIR:—The expansive and magnetic force at an electric light are equal. It is as much as the magnetic can do to hold the expansive, and when its magnetic force is touched by the extraneous force, and the atmosphere is such, the expansive speeds with an impetus proportioned to the power that held it, dispersing far and wide the magnetism that held it, while their place at the light is instantly supplied from the plant. Electric lights

are like so many little suns and act on the same principle as the sun. The sun sends out, by means of its expansive power, magnetic strings. In the distance the magnetic may be lost, leaving the expansive to itself. It is so with the earth, its internal fires send out its magnetic powers on expansive wings, and that magnetism sent out, acts on bodies external to the earth as well as within, drawing them toward the centre. The sun's expansive touches the earth's expansive, and adds to the earth's magnetic outgo; the excess above earth's constant magnetic, acts locally on cloud, tree, atmosphere and ocean. Vertical sunbeams concentrate expansive power, and make intense heat at the expense of remote depletion, while beams that fall aslant diffuse the expansive power more. It would be absurd to suppose that the sun is all fire, a body a million times bigger than the earth. Its surface is in a frictional condition of intense heat, and as a stove fire has an ingoing draft and an outgoing current of heat, so the sun draws on its own interior magnetism, and flings it out in the direction of its own family of planets. The magnetic strings carried may bring back any excess of material thrown. Nature takes care of herself when let alone, but when tampered with by artificial means of an extensive kind, it thwarts her beneficent purposes. X——.

X——'s mental condition has, of late, been one of progressive deterioration. His mind is entirely taken up now with fanciful and extravagant theories which he elaborates with more or less intricacy and confusion. There is at last nothing in the universe that is not comprehended in his magnetic scheme. This last letter, written two months later after the above, shows the growing irrelevancy and incoherency of his ideas.

Mr. K——.

DEAR SIR:—The sun's expansive power conjoined with earth's, touch the magnetic condition of a seed to carry out its magnetic threads, to catch nutriment, to add to its image of the future tree, stamped there by an almighty skill. The sun's slant or vertical beams act on the medium between sun and earth, but do not add to the sum total material of earth. It simply changes the locality of its substance united with earth's expansive and magnetic, puts a tree here and a flower there. If the outgoing force of the sun is materialistic at all, it is of such

firm nature that it does not amalgamate with earth, but has a sympathetic bearing on the material between the two bodies, to the farthest confines of the universe.

X——.

These three examples are chosen from a mass of correspondence, and were written at sufficient intervals to show the progressive symptoms of mental disease, and we have in this series of remarkable letters internal evidences of advancing dementia. The evidences of this deterioration, presented by the conduct and conversation of X——, are even more pronounced. His intense egotism is shown in his inability to think or converse on any subject that does not relate to himself or his delusions. If no one talks to him, and there is no external stimulus to excite mental activity, he continues talking to himself, constantly elaborating his vague and inflated theories. The absence of any profound moral disturbance in his case may be attributed to the excellence of his early environment and training, this fact going to show to what an extent education and early influences may be made to counteract the evil tendencies natural to a defective mental development. The dementia in this case is not so much a terminal condition of the form of insanity, which manifested itself at first, as it is the inevitable ending of a mind of so ill starred an origin, and in the downfall of which the appearance of monomania was simply an incident, the character and coloring of the delusions being dependent upon and traceable to an inherent mental peculiarity. The monomania is but an event in his life; dementia is his destiny.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

PATHOLOGICAL.

The Spinal Lesions of Syphilitic Paraplegia.—Dr. J. Sottas (*The Medical Week*, Paris, April 21, 1893). The disease begins in the vessels and leads to anæmia of the cord, a condition which is associated with the appearance of such prodromal symptoms as stiffness of the legs and slight disturbance of the functions of the sphincters. The lesions occur in the arteries and veins and are marked by inflammatory changes, starting either in external or internal coat. The specific character is noticed at this stage. Obliteration of the vessels followed by softening more or less extensive, is then noticed and the parts of the cord thus cut off from circulation undergo degeneration *in situ*.

The stage of inflammation succeeds, and the obliterated vessels become rapidly replaced by the dilated vasa-vasorum; proliferation of connective tissue and neuroglia

replaces spinal substance and sclerosis is established. Specific treatment is only available in the earliest stage. No hope for cure follows softening. Softening is not followed by marked loss of substance as in the brain for the reason that extensive softening of the cord produces death. The circulation in the cord differs from that in the brain, in that the cord has no terminal arteries. The softened parts do, after a time, seem to regain their circulation, but this is due to the newly formed and dilated capillaries around the obliterated vessels. (Sottas was the first to describe this compensation). Other diseases than syphilis, notably tuberculosis, may produce similar spinal lesions. Many cases described as acute diffuse central myelitis, are undoubtedly cases of spinal softening. The symptoms are those of persistent chronic spastic paraplegia. F. P. N.

The Cerebellar Cortex of the Dog.—Henry J. Berkley (John Hopkins' Hospital Reports, Nos. 4, 5, 6, 1893).

The object of the investigation was to determine if the careful use of the ordinary methods of hardening and staining would not give a clearer insight into the structure of this most complex organ, than has been previously obtained, and though just published, the work antedates most of the results obtained by the silver method of Golgi.

The agents used for fixation purposes were chiefly Flemming's solution, Müller's fluid, and absolute alcohol; with safranin, carbolic fuchsin, Nissl's magenta, and various modifications of the Weigert hematoxylin methods for staining agents. Medullated fibres—in the central core of the leaflets, three varieties of medullated fibres are distinguished: (1) a series of apparently unbranched, non-varicose, straight medullated tubes, passing directly from the sides and apex of the core into the innermost pole of the Purkinje cell bodies; (2) a series of fibres passing from the core to the nighborhood of the eosin-cells of Dennissenko, which branch indefinitely between the groups of granule cells of the middle layer, forming an open network of anastomosing fibres with a complicated arrangement; (3) a class of fibres that after passing from the core through the entire granule zone, terminate upon the nerve cells situated in the inner third of the barren zone.

Around the capsule of the Purkinje cells is wrapt a network of fine medullated fibres, that are partly derived

from the association bundle which runs just without the "limitans interna," and as high as the middle third of the molecular layer, and partly from fibres that descend from that layer. Circular fibres are also found at the outer limit of the molecular layer, but in inconsiderable numbers. Scattered nerve cells, some equally large as the Purkinje, are found among the white fibres of the central core.

Granule zone. Within the limits of this zone six varieties of cellular bodies, exclusive of those appertaining to the blood vessels, are to be distinguished. The round or granule cells are most numerous, and occupy one-half of the layer. Then come four varieties of neuroglia cells, differentiated by their forms and reaction to staining agents. Neuroglia elements are comparatively infrequent, except along the outer margin of the layer, where they assume the importance of a double or triple row of pear-shaped cells, with their apices directed toward the barren layer.

An elaborate study is given to the so-called eosin-cells of Dennessenko which are described accurately for the first time. They consist of angular cells, very difficult to stain, and with peculiar relations of the plexus of anastomosing nerve fibres. These fibres always runs in close approximation to the granular body, but do not directly enter it, and thus a cell may be surrounded on all three sides by the medullated tubes so as to present the appearance of a blue-black triangle inclosing a brown centre (copper precipitate preparation). The fibres after passing beyond the body again join the network and proceed to branch indefinitely. Nowhere can any connection between the axis-cylinder and the granular cell be demonstrated, nor does the medullated sheath lose its contour (contra Beevor). Very fine grained processes extend from the poles of these cells in sharp contrast by their brown color with the medullated fibres. Considerable numbers of multipolar, bipolar and pyramidal shaped cells, as well as some much larger than the Purkinje, are found within the limits of the zone. Purkinje cells and molecular layer.—The Purkinje cells are found to be surrounded by numerous glia cells whose fibrils form an enveloping capsule of the finest feltwork. This capsule extends beyond the extreme limit of the inferior pole, and high up upon the protoplasmic arms of the cells. The encapsuling of the Purkinje bodies forms a lymph space which, for the barren layer taken as a whole, is of

stupenduous extent. Other description of the great cells does not differ materially from that already given by other writers (Obersteiner).

Beyond the Purkinje cell layer, extending as high as the limit of the inferior third of the molecular layer, lie considerable numbers of small, rounded and angular multipolar cells, with distinct protoplasm, large nuclei containing coarse grains, and well developed prolongations. The largest of these are 18x12 and are undoubtedly nerve cells. In their neighborhood, but peripherally, are numbers of still smaller cells with a relatively large nucleus, and ill-defined though present protoplasm. These do not belong to any of the glia types, and are almost certainly, like their larger neighbors, nerve cells. The fibres of the third variety of medullated tubes of the central core pass to these nerve cells, and are lost upon reaching them.

Neuroglia nuclei are sparingly distributed through the barren layer, the place of their supporting extensions being taken by the fibrillæ that extend from the "limitans externa" and its pial connections. A distinct arrangement of glia cells with fine tentacles is found along the outer margin of the barren zone, that are only to be seen in Nissl sections. Beyond this margin lies a sub-pial lymph space of considerable extent, and from the inner layers of the vascular pia, connective tissue threads extend into and through the molecular layer to the "limitans interna."

The article concludes with the statement, that the nerve elements of the cerebellum viewed as a unit bespeak a sensory and not a motor organ, and elaborates the likeness of the cellular bodies to certain other already ascertained sensory elements. Seven drawings accompany the paper. J. C.

An Investigation of the Structure of Spinal Ganglia.—Erik Müller (*Nordisk Medicinsk Archiv*, 1891, No. 26). The author has, by means of the isolation method and serial cuts, investigated the structure of the spinal ganglia in newly born and growing rabbits. He considers first the form and arrangement of the cells and shows in opposition to most authors that the cells, in young animals are not always isolated. Very often there were to be seen accumulation of cells, cell colonies which stood in close communication one with another, but which varied very much in their form and gross relationship. These colonies are in part regular, made up

of three or four cells having a circular running capsule about them, and in part irregular with cells of different forms and sizes. The development of the cells is very slow and reaches its eventual stage in quite a late period of life. Concerning the protoplasmic ramifications of the cells, the author says he cannot speak positively. He takes it for granted, however, that they pass into formed apolar ganglion cells. The second part of this article is concerned with the structure of the spinal ganglion cells. So far as the protoplasm is concerned the author is in entire accord with Flemming. The cells possess, as a rule, one or two nucleoli and occasionally four or five. Some cells, both in young and old animals, have nuclei which stain much more deeply with the coloring matter than does the ordinary cells. Such cells are neither oval nor round in shape, but frequently are spindle or irregular shaped. The peculiarity of the protoplasm, described by Fritsch and Lahousse, in which the protoplasmic shreds passed out through the capsule into the ground substance, the author was not able to corroborate. On the other hand, he found that the cells do not lay naked in their capsule, but have a very fine membrane arising from the cell protoplasm delicately surrounding them.

The third part of the paper is taken up with a consideration of the basis and structural substance of the cells. The author's investigations convince him that the capsule of the ganglion cells blends with the membranes of the other cells in intimate relationship, so that the ganglion cells really lay in one mesh of network. Where the cells are separated by a considerable space, there can be made out a very fine membraneous formation which passes in different directions through the space and makes up a fine delicate network. In all probability the capsule of the cells passes to and blend with Henle's sheath of the nerves, while the previously spoken of ectoplasmatic cell membrane passes to blend with the sheath of Schwann.

The author considers briefly the embryonic relations and histogenesis of the ganglion cells, and gives in detail the methods of investigation and stainings employed. (*Centbl. f. Nervenheilk u. Psych. Rep.*, March, 1893).

J. C.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held at the New York Academy of Medicine, Tuesday evening, June 6th, 1893.

Dr. M. Allen Starr, President, in the Chair.

PRESENTATION OF A CASE OF CONVULSIVE TIC.

By Dr. J. F. Terriberry. The patient was a male, aged 39 years, married, a gravel-roofer by occupation. His father died of senile gangrene; his mother of hemiplegia. He is one of a family of fourteen children. Three brothers died from the effects of the excessive use of alcoholic stimulents; the other members of his family are living and well. The patient's previous health has always been good; previous to the past nine years he used alcoholic stimulents excessively; he denies venereal disease; there is no history of rheumatism.

Between eight and nine years ago he noticed slight twitching of the muscles about the left eye; this gradually became more marked, extending to the muscles of the cheek, and in a short time all the muscles of the left side of the face were involved in the spasm. There were intervals of an hour or two between the jerks; his wife stated that they were present during sleep. The trouble was aggravated by talking and emotional excitement. A careful examination failed to reveal any organic trouble, either central or peripheral, in the course of the seventh nerve, that could act as a cause. There was, however, decided nasal obstruction on the left side, which was removed by Dr. C. H. Knight. Some errors of vision were also discovered, which were corrected by Dr. Adams. The spasm of the facial muscles, however, was in no way affected by the correction of these defects. The operation of stretching the facial nerve was advised, and was performed on January 5, 1893. The patient was etherized and the nerve stretched after the method described by Baum, in which the nerve is exposed by in-

cision behind the ear. A *weak* faradic current greatly facilitates finding the nerve. When located, it is picked up with a blunt hook and stretched, the force employed being variously estimated from four to seven pounds. The immediate result of the operation was, as had been expected, complete paralysis of the muscles on the left side of the face. There was no effect upon the hearing, taste or the palate muscles, showing that the effects of the traction are not felt centrally. In the latter part of March a gradual return of voluntary control of the facial muscles was noted, and this has steadily increased. The last electrical examination was made on June 6th, when the muscular reactions were found to be good. With the exception of the occipito-frontalis, which is a trifle less active than its fellow on the right side, the face movements are perfect. There has been no return of the spasm since the operation.

The operation of stretching the facial nerve was introduced by Billroth and Nussbaum in 1872. Thus far (including the present one) twenty-three cases have been reported. Temporary facial paralysis has in all cases followed the operation.

Dr. A. E. ADAMS said he examined the patient's eyes a number of times. There was slight muscular insufficiency and hypermetropia of the right eye. The correction of these ocular defects by means of glasses only produced a temporary improvement in the spasm of the facial muscles.

The PRESIDENT referred to the fact that in some of these cases a cessation of the muscular spasm can be produced by pressure upon one of the three branches of the fifth nerve.

A CONSIDERATION OF THE PARÆSTHESIC NEUROSIS.

By Dr. JOSEPH COLLINS. The author stated that his paper was based on an analysis of forty-three cases of this affection. He had endeavored to exclude, from these statistics, cases of acro-neuroses which, while they present some of the symptoms of paræsthesic neurosis, have other individual and more pronounced symptoms of their own.

The clinical picture of the paræsthesic neurosis is as follows: The sufferers from the affection are in fairly good health; that is, were it not for the paræsthesiæ they would not have occasion to consult a physician. The

paræsthesiæ which they complain of are made up of gnawing, boring, "pins and needles" sensations in the extremities, particularly the upper, involving the fingers, hands and forearms often of both sides, but not infrequently of only one. These sensations are not limited to the distribution of any one particular nerve in the extremity, but spread over the entire member with equal intensity. There is rarely any pain in the sense in which that word is ordinarily used. There are no fairly constant objective phenomena. Occasionally, the circulation of the extremities is evidently somewhat sluggish. There is absolutely no tenderness on pressure over any of the nerves of the part, and no perceptible changes of a trophic, motional or degenerative nature. The affection shows itself intermittently in paroxysms, and the period of the twenty-four hours when the attack is most likely to occur is from four to six in the morning, the perverted sensations at this time sometimes becoming so severe as to awaken the patient and put an end to further rest. Another favorite time is a corresponding hour in the afternoon. The work that the patient is doing seems to have a very close relationship to the onset of the attack. In some patients it can always be precipitated by sewing, washing or scrubbing. There is no loss of sensibility; no loss of muscular strength; the patients complain, however, that the strength of their arms is more easily exhausted than formerly. The average age of these patients is just above thirty-nine years. It is much more common in females than in males. The most striking factor in the etiology of the disease is the occupation; of the females, about 75 per cent. did either washing or scrubbing, sewing or needle work of some kind. Neither heredity nor neurosis (such as hysteria, neurasthenia, etc.) seem to be associated with this form of hyperæsthesia. No particular disturbance of the digestive functions was noticed. When alcohol is apparently the causative factor of the paræsthesiæ, Dr. Collins thought it should be classified under the toxic variety. What relationship this form of paræsthesia bears to autotoxæmia and the lithæmic constitution is not easily decided. The author said he doubted if there be any closer relationship between it and the lithæmic diathesis than there is between lithæmia and the development of neurasthenia or some of the vaso-motor neuroses. Gout and rheumatism do not seem to have any causative relationship. Bodily fatigue, over-exertion, poor nourishment and ventilation; in fact, anything that lowers the

vigor and health of the body are powerful predisposing factors.

Dr. Collins suggested the following classification of the paræsthesic neurosis, and illustrated each class by giving the history of a typical case coming under his observation. The classification is founded principally on an etiological basis: (1). The emotional type; (2) the mental; (3) the neurasthenic; (4) the toxic; (5) waking numbness (?); (6) the type under consideration which may be called an occupation paræsthesiæ, as it is so often associated with a certain class of occupations. Regarding the treatment of this latter form of paræsthesiæ, to a consideration of which the paper was mainly confined, there is no specific remedy. Prolonged rest appears to be the most beneficial agent, particularly when restorative treatment is added. The administration of neurotics and depressants, such as antipyrine, phenacetin and the like, Dr. Collins said he considered positively harmful. The use of the faradic current in the shape of the faradic local bath has proven beneficial in some cases. Spring waters and mineral acids he has not found to be of value. The plan of treatment which is most beneficial is regulation of the diet, particularly by limiting the nitrogenous food stuffs; a quiet, outdoor life, change of occupation and habits and the administration of restoratives.

Dr. J. A. BOOTH said that the cases of paræsthesic neurosis coming under his observation, he has been accustomed to group under the headings of neurasthenic, anæmic, lithæmic and those occurring at the menopause. Among the lithæmic cases he has noticed, contrary to the experience of Dr. Collins, that the condition was often associated with marked digestive disturbances. These were improved and quite a number of them cured by correcting the diet, the use of mineral acids and the application of the faradic current by means of the faradic brush. The cases embraced under the various other headings were treated symptomatically.

Dr. MARY PUTNAM-JACOBI said that in the cases cited by Dr. Collins the symptoms pointed to a depression of the nervous system, and seemed to justify the remark of Gowers that the fundamental cause of all paræsthesiæ is a diminished resistance of the ganglionic cells. The depressing influences which Dr. Collins mentioned act primarily upon the nerve centers and the cortex, and only as a consequence of this will they lower the blood pressure and cause these vaso-motor disturbances, which

are always secondary. The speaker referred to a case of paræsthesia of the abdomen coming under her observation. The patient was a woman who had suffered from dyspepsia for about eight years. She was very thin and weighed seventy-eight pounds. She suffered from flatulence, nausea and constipation, but the symptom that particularly depressed her and kept her in a state of misery was what she called "horrible sensations" of burning and tingling all over the abdomen, as though worms were running about under the skin. The abdominal walls were so thin that you could almost see the intestines through them. It seemed as though the intestines were not sufficiently protected and supported by the abdominal walls. An elastic bandage was ordered with which to support the abdomen. The wearing of this was followed by an immediate cessation of the disagreeable sensations; the woman was also enabled to take more nourishment and rapidly gained in strength and weight.

Dr. E. C. SEGUIN said he felt rather inclined to attribute the condition of paræsthesia to an imperfect nutrition of the cerebral or spinal nervous system. The abnominal sensations are usually distributed over a considerable area; it is very seldom that we find them confined to the space supplied by a single nerve. His experience with cases of paræsthesia of the hands or arms is rather against the theory advanced by various writers that the condition is apt to follow the more or less constant immersion of these extremities in water. In one case coming under his observation, a clergyman suffering with paræsthesia of both arms and forearms, the symptoms disappeared after a period of complete mental rest and the use of alkalies internally. There was no history of gout or a gouty diathesis in this case. Rest, particularly mental rest, he has often found to be an important element in the treatment of these cases.

Dr. COLLINS then closed the discussion. He stated that out of 173 cases of occupation paræsthesiæ collected by him, about one-half in washerwomen and needlewomen, and in a number of these cases the symptoms could be brought on by immersion of the hands in water. The fundamental cause of these abnormal sensations is probably a vaso-motor one, and when they occur in lithæmic patients, the lithæmia is possibly a coincident manifestation of the blood perversion which gives rise to the paræsthesia itself.

RECENT HYPNOTICS.

Dr. WILLIAM D. GRANGER read a paper on this subject. The author stated that an ideal sedative would give sleep at regularly recurring periods, and for a definite period of time; this sleep would be natural, strengthening and restorative; it would not be harmful to life nor injurious to health, nor would it produce a habit, but would restore the patient to a condition of getting sleep without the use of drugs. Such a drug is unknown, nor is there any that closely approaches this definition.

In considering new sedative remedies, little need be said of the bromide group, which are valued mostly for their usefulness in the treatment of epilepsy. It is in the group of remedies best represented by chloral and called the alcohol and chloroform group that the great crop of new remedies is found. In their hypnotic effect the part of the brain representing the higher cerebral processes is first involved: first the cortex; lastly, the respiratory and cardiac centres. Those are the best hypnotics that act first and strongest upon the cortex, dull the sensibilities, both from within and without, lessen voluntary muscular activity and influence but little the vascular system and blood pressure. Among this group of hypnotics may be mentioned bromal-hydrate, which is said to be more dangerous than chloral and has but little value; chloralamide, which is less depressing than chloral, although serious collapse has followed its use. It produces quiet and refreshing sleep, with no unfavorable after-effects. It is not so certain in its action as chloral, nor does it act as promptly. The dose is from 30 to 45 grains; it is useful as an alternative to the other hypnotics. Chloral-ammonium, in doses of from 15 to 30 grains, is said to be non-depressive and is a good hypnotic. Hypnol has the reputation of uniting the analgesic effects of antipyrine with the hypnotic effects of chloral. It is useful when sleeplessness and pain are combined, and the employment of opium is contraindicated. The dose of the drug is from 15 to 30 grains. Urethane belongs to the ethyl group; it is useful in milder cases of insomnia and for purposes of change; the dose is from 20 to 30 grains. Somnol is an alcoholic solution of chloral and urethane and is of little value. The dose is half a dram. Paraldehyde cannot be classed among the newer drugs; with chloralamide it is the only drug comparable with

chloral in hypnotic power. They will win their way in the most difficult cases and are valuable in all cases of insomnia. Sulphate of duboisine is being used as a substitute for hyoscine. It is claimed that it gives more natural sleep and is less depressing. Sulphonal, tetronal and trional are so closely related as to be considered together. Almost everyone has a place for the first. It has marked hypnotic power. In ordinary doses it seems to be safe. Its long continuance is to be avoided, not so much that it quickly loses its power, for it does not, but because it is dangerous to health. Its action is often slow, for even if taken in the hottest water it sometimes seems to be precipitated in the stomach unless quickly absorbed. Its effects are frequently long-continued, and the second dose often acts better than the first. It is a pure hypnotic, but it is less powerful than chloral. It is of little value where sleeplessness is associated with pain. Trional and tetronal are akin in many respects to sulphonal. They are all true hypnotics and are at present attracting some attention.

The new hypnotics, Dr. Granger said, have as yet failed to give us a perfect agent. By study and comparison we must adapt the agent to the individual case. Experience alone will bring order out of confusion. In conclusion, he stated we must remember that sedatives are not to be found only in the pharmacopœia, and he who relies upon drugs alone for the production of sleep is in advance doomed to failure. The treatment of sleeplessness goes far beyoned the giving of drugs, and all hypnotic remedies—new and old—are made doubly valuable by studying the individual, and using such adjuncts in the treatment of the condition as are indicated.

Dr. LYON said, that among the insane, sleeplessness may depend on various cases, and we should not expect any one hypnotic to meet all the indications. In the institution for the insane with which he is connected, a variety of hypnotics are employed. In some cases, where there is much excitement, hyoscine in small doses exerts a very good effect. Where the patients are considerably exhausted, chloralamide is given dissolved in whiskey. Somnol is efficacious where there is a disposition to sleep, but inability to do so.

Dr. J. W. BRANNAN said he could only discuss this question from the standpoint of the general practitioner. Sulphonal, codeine and hyoscine are the only hypnotics with which he has had much experience. In a case of

delirium tremens he has seen very good effects follow the use of hyoscine, in doses of $\frac{1}{100}$th of a grain, the patient becoming quiet and much more comfortable. It seems to relieve the nervous systems. Two or three years ago he began to experiment with chloralamide, but the first patient to whom he administered it complained so severely of an intense headache after a thirty grains dose that he has never felt inclined to use it since. Smaller doses than this do not appear to have much effect.

Dr. E. C. SEGUIN said that his experience with hypnotics, like Dr. Brannan's, is limited to patients outside of the asylum. He has always made it a rule to defer the use of narcotics as long as possible. He has found that many cases of insomnia are amenable to general treatment and encouragement, and the assurance that a little sleep without the aid of drugs is better than a long sleep with them. Hyoscine or hyoscyamine is indicated where there is great muscular excitability, associated with insomnia, as in paresis or delirium tremens. Given hypodermically or in water this drug certainly does procure sleep sometimes in the most magical way. In one case he has seen $\frac{1}{50}$th of a grain completely relax a paretic and produce sleep in half-an-hour. The effect of the drug seems to be a paralytic one. Sulphonal should be administered four or five hours before bedtime. The bromides should never be employed for the purpose of producing sleep.

Dr. GEORGE W. JACOBY said he has seen several patients who are in the habit of taking half a dram of paraldehyde nightly without any particularly bad effects following. One woman continued this for over a year before she was able to break up the habit.

Dr. J. F. TERRIBERRY said that in one case of melancholia coming under his observation the usual dose of paraldehyde administered was 45 grains. On two occasions the patient doubled the dose and on one occasion he tripled it; this was followed by very decided symptoms. As regards the time for giving sulphonal, one of his patients sleeps five or ten minutes after taking the drug.

Dr. BRANNAN said he thought the theory has been generally accepted that sulphonal is not absorbed until it reaches the intestines, and that it takes three or four hours to get the effects of the drug.

Dr. L. STIEGLITZ said he has employed trional in

about thirty cases in dispensary practice with very good results. The usual dose given was fifteen grains. He considered it more reliable than sulphonal.

The PRESIDENT said he is in the habit of ordering the sulphonal to be taken one hour before bedtime, and always in connection with some article of food. When it is given on an empty stomach its effects are much delayed. He agreed with Dr. Seguin that hyoscine should only be used where there is great motor excitement; it acts as a poison to the entire system, paralyzing all the functions. He has employed trional, but was very much disappointed with the results obtained from it.

Dr. COLLINS said he has given trional a thorough trial, in doses of from twenty to forty grains, and obtained no results from it whatever. It is a very expensive drug and does not compare in any way with chloralamide or sulphonal.

Dr. GRANGER then closed the discussion. He stated that he usually administers the sulphonal from two to five hours before bedtime. In order to get its effects quickly it should be administered in very hot water, with the hope that it will be absorbed in the stomach before precipitation occurs.

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Original Articles.

DUPLEX PERSONALITY.

BY R. OSGOOD MASON, A.M., M.D.,

New York.

IN A SERIES of cases treated by hypnotism, reported by me before the Neurological Section of the New York Academy of Medicine, the case of M. M. was presented, in which a lapse of the primary personality occurred, and a secondary or subliminal personality was present sixteen days on one occasion and five on another. As no special peculiarities marked the different personalities in this case, it is simply referred to as a preface to the one which I now present:

Alma Z. has been under my observation during the past ten years. In childhood she was remarkable for her intelligence and unusual endowments, both of body and mind. Up to her eighteenth year she was in robust health, excelling all her companions, not only in intellectual attainments, but also in physical culture, being expert in gymnastic exercises, skating and athletic sports generally. At that time, owing to overwork in school, there was a remarkable failure in health, which was characterized by great debility, neurasthenia and attacks of syncope, apparently not of a hysterical character. From this condition she recovered to a considerable degree though not entirely, and her health was considered

good during the six following years, at the end of which time, owing to overwork in caring for an invalid relative, and from other causes, her health gave way altogether. The chief symptoms were great debility, insomnia, headache, spinal, and especially lumbar pain. An attack of pneumonia of a typhoid character followed, which so reduced her remaining strength that her life was for a long time despaired of.

Unfortunately, at this time she was subjected to an old school course of medicine of the most rigid and barbarous sort, in which opium and calomel played a conspicuous part, and the result was a long continued ptyalism of a most severe and destructive character. It was during this horrible condition of health, and just before I saw her, that the peculiar psychical conditions about to be noted, made their appearance. In her extreme debility and suffering, attacks of syncope occasionally occurred, and on her return to consciousness, after one of these attacks, an entirely new, strange and apparently foreign personality suddenly made its appearance. Instead of the educated, thoughtful, dignified, womanly personality, which was usual, worn out with long-continued illness and pain, there appeared a bright, sprightly, child personality, with a limited vocabulary, ungrammatical and peculiar dialect, decidedly Indian in character, but as used by her most fascinating and amusing. The intellect was bright and shrewd, her manner lively and good natured, and her intuitions were remarkably correct and quick, but strangest of all she was free from pain, could take food and had comparatively a good degree of strength. She called herself "Twoey," and the normal or usual personality she always referred to as "No. 1." In her peculiar dialect she gave most amusing and appropriate names to her attendants and every member of the household, some of which, after the lapse of ten years, are still retained in the family.

She possessed none of the acquired knowledge of the primary personality, but was bright and greatly interested in matters going on about her—in family affairs, and everything which pertained to the comfort and well-being of No. 1.

The new personality would usually remain only a few hours, but occasionally her stay was prolonged to several days; and then the normal self—the No. 1 of "Twoey" returned with all her intelligence, patience and womanly qualities, but also with the weakness and suffering which characterized her illness.

No. 1 and No. 2 were apparently in every respect separate and distinct personalities. Each had her own distinct consciousness and distinct train of thought and memories.

When No. 1 was absent and "Twoey" took her place, on resuming her consciousness, she commenced at the place where her own personality had been interrupted and resumed her ordinary life exactly at that point. To No. 1 the existence of any second personality was entirely unknown by any conscious experience, and the time which "Twoey" occupied was to her a blank.

If "Twoey" appeared at noon on Tuesday and remained until Thursday night, when she disappeared and No. 1 resumed her own consciousness and life, she would commence at Tuesday noon where that consciousness was interrupted. The intervening time to her was a blank. No. 2, however, while having her own distinct life, knew also the life of No. 1, but only as a distinct personality entirely separate from herself; No 1 also came to know "Twoey" by the description given by others and by the changes in her own personal belongings and affairs which she saw had been effected during her absence. The two personalities became great friends; No. 2 admired No. 1 for her superior knowledge, her patience in suffering and the lovely qualities which she recognized; and she willingly took her place in order to give her rest and as it seemed the possibility of living at all. No. 1 also became fond of "Twoey" on account of the loving care which she bestowed upon her and her affairs, and for the witty sayings and sprightly and pertinent conversations which were reported to her and which she greatly enjoyed.

"Twoey" seemed to have the power of coming and going at will. She often left communications to No. 1, mostly written (for she became able to write in her peculiar dialect—very difficult to decipher), telling her what had been said or done in her absence, where she would find certain things, or advising her when she deemed it necessary; and her advice was always sound and to the point.

Under an entire change in medical treatment—change of scene and air, and the use of animal magnetism and hypnotism, health and normal conditions were restored, and "Twoey's" visits became only occasional, under circumstances of extreme fatigue or mental excitement, when they were welcome to the patient and enjoyed by her friends.

Two years later the patient married, and became a most admirable wife and intelligent and efficient mistress of her household.

Later still, owing to circumstances which it is unnecessary here to recount, the No. 2 condition or personality began to return with greater frequency, but at length one night "Twoey" announced that she would soon take her departure; but that another visitor would come to take her place. Presently an alarming attack of syncope occurred lasting several hours; and when consciousness did at last return it was represented by a third personality entirely new and entirely distinct, both from the primary self and also from the "Twoey" with whom we were so well acquainted. The new personality at once announced itself as "The Boy," and that it had come in the place of "Twoey" for the special aid of No. 1—and for several weeks, whenever this third personality was present, all its behavior was entirely consistent with that announcement.

Gradually, however, she became accustomed and reconciled to her new *role* and new surroundings, and adapted herself with most astonishing grace to the duties of wife, mother and mistress of the house, though always when closely questioned she persisted seriously in her original declaration that she was "The Boy."

Her personality was of a much more broad and serious type than that of the frolicsome "Twoey," and while entirely separate in consciousness and personality from No. 1, she was much nearer to her in general outline of character. The acquired book knowledge of No. 1—the Latin, mathematics and philosophy acquired at school were entirely wanting in the new personality;—the extensive knowledge of general literature, the whole poems of Tennyson, Browning and Scott which No. 1 could repeat by heart; also, her perfect familiarity with the most beautiful and poetic portions of the Bible, all these were entirely lacking in this personality. In a general knowledge of affairs, however, in the news of the day from all over the world and in current literature, she at once became thoroughly interested and thoroughly intelligent, and her judgment was keen and sound. She took the greatest delight in every kind of amusement—the theatre and literary and musical entertainments—and her criticisms of performances and of books were independent, acute and reliable. At the same time her knowledge and judgment concerning her household affairs and her in-

terest in them and all subjects pertaining to the family, were conspicuous.

Of the preceding personalities she was fully cognizant, and had great admiration and affection for them both. She would listen to no disparaging remarks concerning "Twoey," and her admiration for No. 1 was unbounded. Neither "Twoey" nor personality No. 3 ever seemed anxious to continue and prolong their visits, but on the contrary were always desirous that No. 1 should regain her health sufficiently to get on without them; and they referred with much feeling to the causes which prevented it.

The peculiar and interesting incidents which diversified these different states of consciousness would fill a volume. No. 1, when in her condition of greatest weakness, would occasionally astonish her listeners by announcing to them some event which they had kept profoundly secret from her; for instance—"You need not be so quiet about it, I have seen it all; Mrs. C—— died day before yesterday. She is to be buried to-morrow"—or, "There has been a death over in such and such a street—who is it that died?" "Twoey's" sagacity, amounting almost to prevision, was often noticed, and many a time the neglect to be guided by her premonitions was deeply regretted. "The Boy," or No. 3, frequently exhibited peculiar perceptive powers. At times the sense of hearing would be entirely lost, so that the most violent noises, close to her ears and when perfectly unexpected, failed to startle or disturb her in the slightest degree, although usually she was easily startled by even a slight, sudden or unexpected noise. Under these circumstances she had a peculiar faculty of perceiving what was said by watching the lips of the speaker, though ordinarily neither she nor the primary self had any such faculty.

In this condition she has often carried on conversations with entire strangers, and entertained guests at table without having it once suspected that all the while she could not hear a sound of any sort. I have myself seen her sit and attend to the reading of a new book simply by watching the lips of the reader, taking in every word and sentiment, and laughing heartily at the funny passages, when I am perfectly sure she could not have heard a pistol shot a foot from her head.

When the No. 3 personality has persisted for a considerable period—weeks, for instance, at a time, as it has sometimes done, the temporary return of No. 1, under

the influence of some soothing condition or pleasing sentiment or emotion has been beautiful to witness.

I saw this transformation once while sitting with her in a box at the Metropolitan Opera House. Beethoven's Concerto in C Major was on the programme; in the midst of its performance I saw the expression of her countenance change;—a clear, calm, softened look came into the face as she leaned back in her chair and listened to the music with the most intense enjoyment. I spoke a few words to her at the close of the number and she replied in the soft and musical tones peculiar to her own normal condition, and I recognized without the slightest doubt the presence of No. 1. A few minutes later her eyes closed—presently she drew two or three short, quick respirations—again her countenance changed and No. 3 was back again. She turned to me and said, "So No. 1 came to hear her favorite concerto?" I replied, "Yes—how did you know it?" "Oh! I was here and listened to it too." "Where were you?" I asked. "I sat on the front of the box. I saw you speaking to her. How greatly she enjoyed the music!" and then she went on listening to the music and commenting upon the programme in the usual discriminating manner of No. 3.

In regard to the persistence of her personality when No. 1 was present, I have on other occasions questioned her closely. She is fully acquainted with the theories of different writers—has discussed with me Dr. Azam's case of Félida X—— and others, but would finish by saying, "Well, this theory of split up personalities may be scientific and all that; however, I can assure you of this—that I had a conscious personality and a distinct life before I ever came to No. 1, and I shall continue to have one when I cease to come to her; but of that previous condition and life I must not tell you even what I know; I should not be believed, and it would greatly hinder my return to my former life."

Such is a brief outline of a case of duplex or rather multiplex personality of unusual persistence, having been observed by me during a period of ten years. Each separate personality, and especially the *third*, having the same conscious feeling of identity and continuance as any ordinary, or as we with our present knowledge or lack of knowledge of the subject, would say, *normal* personality with whom we might chance to discuss the subject.

DETENTION HOSPITALS FOR THE INSANE.[1]

By MATTHEW D. FIELD, M.D.,

New York.

IT WAS my privilege, in the summer of 1892, to read a paper before the American Social Science Association on the "Examination and Commitment of the Public Insane in New York City." The discussion and comment called forth by this paper, showed the almost total absence in this country of Reception Hospitals for the insane while under observation and examination to determine their mental condition and the propriety of commitment to some institution for treatment. It was related by members from various sections of the Union, how the unfortunate individuals of both sexes, who were apprehended by the authorities as insane, were sent to prisons and county jails, there to remain in contact with vagrants, tramps and criminals, the appointment of physicians to make examinations regarding their sanity.

During this detention they received little or no medical treatment for the relief of their condition; but on the contrary, their surroundings and companions were about the worst possible for persons in their state, omitting to say anything of the moral effect on very many, and the great wrong perpetrated upon sick persons by associating them with criminals and allowing them only the same quarters, food and care that the liberality of county officials bestow on tramps and vagabonds.

The evolution of the reception pavilion for the insane at Bellevue Hospital, and the present system of care and the examination and commitment of the public insane, is of some interest; they grew out of the lunacy legislation of 1874.

Acts of 1874, chapter 446:

Section 1. No person shall be committed to or con-

[1] Read before the American Neurological Association, July, 1893.

fined as a patient in any asylum, public or private, or in any institution, home, or retreat for the care and treatment of the insane, except upon the certificate of two physicians, under oath, setting forth the insanity of such person. But no person shall be held in confinement in any such asylum for more than five days, unless within that time such certificate be approved by a judge or justice of a court of record of the county or district in which the alleged lunatic resides; and said judge or justice may institute inquiry and take proofs as to any alleged lunacy before approving or disapproving of such certificate, and said judge or justice may, in his discretion, call a jury in each case to determine the question of lunacy.

Sec. 2. It shall not be lawful for any physician to certify to the insanity of any person for the purpose of securing his commitment to an asylum, unless said physician be of reputable character, a graduate of some incorporated medical college, a permanent resident of the State, and shall have been in the actual practice of his profession for at least three years. And such qualifications shall be certified to by a judge of any court of record. No certificate of insanity shall be made except after a personal examination of the party alleged to be insane, and according to forms prescribed by the State Commissioner in Lunacy (with the State Commissioner in Lunacy); and every such certificate shall bear date of not more than ten days prior to such commitment.

Sec. 3. It shall not be lawful for any physician to certify to the insanity of any person for the purpose of committing him to an asylum of which the said physician is either the superintendent, proprietor, an officer, or a regular professional attendant therein.

The Commissioners of Public Charities and Correction of New York City, under this law, appointed special examiners in lunacy, whose duty it should be to examine all cases that should come under the care of the department, and in proper cases make certificates of lunacy, and present the same for approval before a judge of a court of record, as required by the law; after which the adjudged lunatic was sent with such certificates to the insane asylums of the department. Such method has continued till the present day, except that formerly the chief examiner held the position of city physician, and

had charge, likewise, of the city prison. Such was the condition of affairs when I was appointed Examiner in Lunacy for the Department of Public Charities and Correction in November, 1882; my senior being Dr. William I. Hardy, the prison physician. Within the year Dr. Hardy was relieved of all duties in the department save those of Examiner in Lunacy, and our joint functions became and have continued independent. Upon the death of Dr. Hardy, in April, 1886, my present associate, Dr. Allen Fitch, was appointed.

In the earlier days there was no special place for the reception of the alleged lunatic; and he was examined where he might be, in prison or hospital. Then all the suspected insane were sent to Bellevue Hospital, and placed in the "cells." There were two wards in the basement of the building, one for males and the other for females. In these wards were received, not only the supposed lunatics, but all alcoholic, violently delirious, and refractory patients of the hospital; and frequently criminal patients were sent there, too, for safe keeping. I remember very well visiting the "cells" in an interne of the hospital, where all these classes were received. I was called as a surgeon to see a wretched woman, who had received a fracture of the arm in a drunken brawl, and who had been committed there as an alcoholic. It was at night, and the light was dim; and a little child, scarcely more than three years of age, was clinging to the skirts of its mother, who was sodden with liquor. As I examined the arm of the drunken mother, the beautiful, innocent, pleading face looked up to me for mercy for her mother; and I could not but be gentle with her for the child's sake. I thought if the mother could only look upon the child with but a tenth part of that humanity and sympathy with which the child looked up to me, what a vast difference the case would assume. While this was taking place, I could hear the shrieks of fear on all sides from those in delirium of alcohol by which the disturbed lunatic was continually excited.

The Commissioners of Public Charities and Correc-

tion had recognized the necessity of separating the insane from the alcoholic; and their persistent application had obtained an appropriation for the erection of a separate pavilion for the reception of the supposed insane. The year 1879 saw the completion of the present reception pavilion for the insane at Bellevue Hospital. It was erected in the grounds of the hospital, and is a one-story brick building, divided by iron doors into two wards, one for males and one for females. Each side has a corridor, lighted and ventilated from above, containing eight rooms for patients, besides an examination room (which contains record and history books, and a medicine and instrument chest), a kitchen, where not only food is received for the ward from the general kitchen of the hospital, but special diet is prepared as the resident physician may direct; the carving is also done, and all dangerous knives are kept there. One room is set apart as a linen closet, where the bedding and necessary clothing are kept for patients. There is also a lavatory, bathroom, and closets, removed from the ward by a passage ventilated and lighted by windows on either side, as well as by windows on either side of the closets. The cells were and still are under the care of the house staff, the medical staff dividing the service in looking after the cells. When the pavilion was first established, it was placed under the same care, the house physician having the supervision of the cells; also had the care of the insane admitted to the pavilion. The examiners then only passed on the mental condition and the propriety of commitment or discharge, the treatment of the patient while in the pavilion resting with the house physician, who had no special training in the care of the insane, and who had already sufficient work to care for his patients in his regular service, where his interest and heart really were. The oversight of the alcoholic and insane patients was an extra and entirely secondary duty of a busy physician. Soon after my appointment in November, 1882, Dr. Henry V. Wildman, who had had several years' experience as assistant physician at the asylum on Ward's

Island, was appointed Resident Physician at Bellevue Hospital, in charge of the pavilion for the insane. He resigned in October, 1887, and was succeeded by Dr. Stuart Douglas, who had been assistant physician at the City Asylum for over six years, and who is still resident physician. In 1885 the general oversight of the pavilion was placed under Dr. A. E. MacDonald, the General Superintendent of the New York City Asylum.

You may now ask: Whence come the patients? The majority received at the pavilion are committed by the police justices to the care of the Commissioners of Public Charities and Correction for examination as to sanity. The usual term of commitment is five days. Why *five days* nobody seems to know, except that such has been the custom and that length of time is usually sufficient for the purpose. The police justices commit for examination regarding sanity such persons as manifest evidence of insanity, in these classes:

1. Those persons who are arrested for petty offences, the nature and manner of the occurrence indicating an unbalanced mind.

2. Those who interrupt public meetings or divine service, who preach or orate in public places, their conduct appearing to be irrational.

3. Persons making complaint before police justices, at police stations, in other courts, to the district attorney, or other public officials, of wrongs and persecutions or of claims that appear to be imaginary.

4. Where complaint is made by citizens of persons who annoy them upon pretence that seems irrational.

5. Persons who may be found by the police wandering about the streets in an aimless or purposeless manner, or acting in a strange manner, or who are unable to give a rational account of themselves.

6. Those who have attempted suicide.

7. Those who are brought before a public magistrate, where the charge of testimony would warrant the suggestion that the individual might be insane and irresponsible.

It is not infrequent for police justices to commit persons for examination, and to indorse across such commitment, "To be returned to court if found not insane." In fact, police justices endeavor to be just, and to commit no person for lesser crimes, when evidence is produced to indicate insanity and irresponsibility, until the quest on of sanity has been passed upon by the city examiners. In cases of grave crime, they commit for trial, leaving the court of higher jurisdiction to determine the question of sanity and responsibility.

The Superintendent of the Poor, acting for the commissioners in cases that are made public charges, where evidence is furnished that such person is insane and requires care and treatment as an insane person, gives permits for admission to the pavilion for examination.

The examining physician for the department, where admission is sought to some hospital and his examination leads him to suspect insanity, gives permits for admission to the pavilion for special examination regarding the applicant's sanity and fitness for admission to the city asylums or other institutions of the department.

A certain number of patients are brought by ambulance from residence, where the statement of friends or the conduct of the patient leads the ambulance surgeon to conclude that the patient is insane. Some are sent directly from police stations, without a commitment from a police justice. These are usually excited, violent, or sick cases, in which the police feel they are not justified in retaining the individual at the police station for the time required to obtain the formal commitment. A few cases are admitted by the resident physician, where patients are brought by friends, with letters from a family physician, or come voluntarily, or consent to temporary restraint. Where the patient is violent, dangerous, or very sick, the resident physician feels justified in admitting to the pavilion without the formality of a commitment by a magistrate. In other cases, it is his habit to recommend an application to some police justice for formal commitment.

Patients are transferred from the regular wards of Bellevue Hospital and from the alcoholic wards, but only after the examination and approval of the resident physician of the pavilion (he indorsing the card with his signature) before the transfer is made. Patients are received from other hospitals and institutions when brought to Bellevue by ambulance. (I have thus far gone into this subject of admission to show the precautions that are taken to prevent the temporary detention even of any improper case in the examining pavilion.)

Where cases of insanity develop at other hospitals or institutions in the care of the Department of Charities and Correction, by order of the general superintendent, it is the duty of the resident physician of such institution or hospital to report to the examiners in lunacy, in writing, the existence of such patient and a history of the case, and to state that, in his opinion, the patient is in such physical condition as to justify his transfer to the asylum. The examiners are directed to visit such patients at the various institutions where they may be, and pass judgment on the question of sanity and propriety of commitment to some of the city asylums. The examiners prefer to make their visits separately and to arrive at independent conclusions, though they have subsequently to unite in a dual certificate.

Under the present dual certificate required by law, we are in the habit of dividing the work; and, while one examiner makes out the certificates for the males, the other does so for the females. We alternate each month. The first examiner, after the completion of his examination, makes out (if he considers the patient insane) a certificate, and makes oath to it before a notary public, leaving the certificate in the notary's charge. The second examiner, if of the same opinion, signs the certificate prepared by the first examiner, with such additions as his examination may lead him to make; then makes oath, as did the first examiner, before the same notary, who acknowledged the certificate, and in this form it is presented to the judge for approval. Should the two ex-

aminers disagree in any case, as sometimes occurs, the case is referred to the resident physician, whose opinion decides the disposition of the case.

Discretion is exercised by the examiners and by the resident physician in regard to the discharge of patients to the care of friends and relatives. If the friends show a disposition and ability to care for the patients, they are usually discharged to their care, if they sign a contract agreeing properly to provide for them. If the patient be decidedly dangerous to himself and others, we usually insist that arrangements be made with some institution for proper care and treatment. All that is required is a reasonable assurance that both the patient and the community are properly guarded. When once a patient is lodged in some institution, the examiners consider their responsibility ended. Of course, improper commitment or discharge would be still chargeable to them. Beyond that, they could hardly be held responsible. The examiners stand between the patient and the community. They must guard the welfare of the patient, consider his right to enjoy liberty and the pursuit of happiness; and at the same time they must guard and protect the community.

The following table will show the number of patients received during the past four years and their disposition:

	Sex.	Admission.	Transferred to City Asylum.	Transferred to other Asylums.	Transferred to other institutions.	Discharged.	Died.
1888	Male . . .	997	650	87	135	109	8
	Female. . .	854	616	36	104	87	11
1889	Male . . .	1075	641	139	87	198	16
	Female. . .	843	625	46	63	93	12
1890	Male . . .	1066	658	71	193	135	12
	Female. . .	830	601	37	70	103	14
1891	Male . . .	1138	724	56	187	144	16
	Female . .	866	671	23	54	100	17
Total		7669	5186	495	893	969	106

Total Commitments,			74.09 per cent.
"	"	to City Asylums,	67.62 " "
"	"	other Asylums,	6.47 " "
"	"	transferred to other	
"	"	institutions,	11.64 " "
"	"	discharged,	12 63 " "
"	"	died,	1.36 " "

The percentage of discharges, when I was first made examiner, was over thirty-three per cent. The percentage has gradually diminished, from the great care exercised in the exclusion of admission of improper cases to the pavilion. The number of admissions has decreased but slightly, but the number of improper admissions has lessened very much. This is due very largely to the oversight of a competent resident physician with increased power.

The reception pavilion is in every respect a hospital, with a resident physician and competent and trained attendants. Unnecessary detention at police stations and prisons, and the mingling of the insane with the criminal class, is avoided. All patients transferred from the pavilion to the asylum are accompanied by attendants of their own sex, who remain with them until they are turned over to the care of the asylum authorities. Opportunity is afforded, in very many cases, to obtain a history of the patient, and to consult with friends and allow them the privilege of providing for the patients in other institutions, if they have the means and disposition to do so.

I have brought this subject, with the description of the workings of the reception pavilion at Bellevue, to your attention in the hope that your interest might be secured in the starting of a movement for the establishing of similar institutions in every large city in the United States. This plain and inexpensive building with but sixteen sleeping rooms, has received, at least, twenty-five thousand suspects since its opening in 1879. It has served its purpose well, though at times hasty examinations have been required to prevent overcrowding.

An ideal institution for this purpose would be an hospital constructed upon the pavilion plan, for the recep-

tion of the insane, inebriate and neurotic, with a small amphitheatre and sufficient wards for proper classification and detention for a reasonable time.

A competent visiting, examining and resident staff of medical officers should be chosen and clinical instruction regularly given.

I would insist on full records being kept of all cases admitted, and would make the past history of each patient an important matter to be patiently and persistently sought after and carefully recorded.

Such an hospital would secure prompt, humane and scientific treatment. The opportunity afforded for longer observation and securing histories and examinations would result in more complete and accurate certification.

There being no need for hasty transfer to other institutions, the feeble, sick and certain selected cases could be detained for treatment; and clinical instruction would be easily accessible to the entire medical profession.

The Visual Field of a Hysterical Person in the Wakeful State and in the Hypnotic Sleep.

By Dr. Moravesik (Neurologisches Centralblatt). Examining the eye in these conditions, the writer notes that in the wakeful state the visual field enlarged on the application of an external stimulus (salt on the tongue, warm substance to the skin, tuning fork in vibration to the ear, etc.,) the maximum of extent corresponding to the result obtained by the inhalation of ether. During hypnotic sleep the same stimuli produced the same results. He also noticed that cheerful suggestions enlarged the field, while sad ones diminished it.

On another patient similar experiments produced the same results during hypnotic sleep, but inverse results during wakefulness.

The only conclusion to be drawn was that the variation of the visual field was dependent on many factors.

A NEW METHOD OF REDUCING DISLOCATION OF CERVICAL VERTEBRÆ.[1]

By G. L. WALTON, M.D.,

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PERSONAL experience has led me to believe that dislocation of cervical vertebræ, without fatal results, is by no means of rare occurrence. Besides the eight cases which I published in 1889[2] and 1890,[3] I had seen seven more, and had been communicated with regarding an eighth, making a total of sixteen, up to the publication of an article on the subject in 1892.[4] In that publication a method of reduction was suggested which was theoretically correct, as shown by the manipulation of the vertebræ and by experiments upon the cadaver, made by Dr. Richardson and myself.

A case has recently occurred in the Massachusetts General Hospital, in which the practical success of the method was demonstrated upon a patient by Dr. Beach. This case will be reported by him later, so that I refrain from going into the details, but its success justifies me in recalling the subject here.

The commonest form of dislocation, without fatal results, is the unilateral form, in which an articular process slips over the one below, causing the head to cant to one side and to twist so as to produce a similar position to that assumed in torticollis, the diagnostic feature being the immobility of the head in its new position, combined

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[1] Read before the American Neurological Association, July, 1893.

[2] Dislocation of Cervical Vertebræ; Five Cases; Recovery without Operation.—*Journal of Nervous and Mental Disease*, 1889; also *Boston Medical and Surgical Journal*, March 21, 1889.

[3] Dislocation of Cervical Vertebræ without Fatal Results.—*Boston Medical and Surgical Journal*, May 8, 1890.

[4] Dislocation of Cervical Vertebræ.—*International Clinics*, 1892, Second Series, II., p. 207.

with laxity of the muscles, the contraction of which would have produced the deformity, while those on the opposite side are put upon the stretch.

The method, the success of which has been established as far as one case can do so, is as follows:

Suppose the left articular process of one vertebræ has slipped forward over the corresponding articular process of the vertebræ below and fallen into the depression anterior to that process. This turns the face to the right and bends the head over toward the left, as in spasm of the left sterno-cleido-mastoid. No amount of extension will remove the vertebræ from its new position in the the slightest degree, as has been often shown; nor will rotation be available until the depressed articular process is *raised*. The proper method is simply, therefore, to first raise this process, then rotate. This can be accomplished only by extending the head obliquely backward toward the right, using the transverse process on the right as a fulcrum. The ligaments,[5] which have held the vertebræ firmly in its faulty position, make no opposition to this movement, so that no force is required to first elevate in this way, and then to rotate to the proper position.

In bilateral dislocation it is quite probable that this maneuvre, carried out first on one side, then on the other, will meet with success. Indeed, this is probably the movement made involuntarily by the patient himself in a case of bilateral dislocation forward, occurring at the Massachusetts General Hospital several years ago, in the service of Dr. Warren. In this case attempts at reduction by extension were unsuccessful, but spontaneous recovery occurred through muscular movement, produced while cold water was being poured upon the patient's back, the patient meantime sitting in a warm bath. In this case the existing paralysis of all extremities disappeared with great rapidity, and perfect recov-

[5] The muscles of the neck may be disregarded, the ligaments alone holding the vertebræ firmly, as shown by the experiments upon the cadaver, in which all muscles were removed.

ery followed. This case shows that direction—not force—is the key to reduction, as does also the case occurring in the practice of Dr. D. W. Hodgkins, of East Brookfield, who wrote me that reduction, already attempted without success, occurred accidentally, while the patient was being carried to the house, through the inharmonious movement of Dr. Hodgkins, who carried the head, and those who carried the trunk and limbs.

Again, in a former case, upon which Dr. Beach was about to attempt reduction, involuntary movements of the patient under ether brought about the desired result without outside interference.

These facts led me to the study, of which this method is the outcome, a method which seems certainly worthy of reiteration, as the practitioner is liable to meet these cases at any time, they being certainly much more common than has been hitherto supposed, the diagnosis probably being not infrequently overlooked, either through lack of acquaintance on the part of the practitioner with the characteristic features, or through hesitation in making a diagnosis of so serious import in cases where no paralysis exists, such paralysis often failing to appear through the ample lumen left for the passage of the cord in the unilateral form of dislocation.

Epilepsy and Comitial Ambulatory Automatism in a Negro.—(Dr. Raucon, Archives de Medecine Navale, f. 59, 1893). A negro, twenty-five years old, a native of Soudan, has four or five epileptic fits a day, which are frequently followed by an excursion of several days duration from his village, of the details of which, on his return, he has not preserved the slightest memory. At these moments, he goes straight ahead, and when consciousness returns, believes he has just come from home or has slept away the time, recalling neither where he has been nor what he has seen. E. N. B.

CLINICAL OBSERVATIONS AS TO THE FUNCTION OF THE RIGHT TEMPORO SPHENOIDAL LOBE.[1]

By Wm. J. HERDMAN, Ph.B., M.D.,

Ann Arbor, Mich.

IN an authoritative work on diseases of the nervous system, recently published, the temporal lobe of the brain on the right side in man is spoken of as one of the "latent regions of the brain, destruction of which and irritation of which produce no special or distinctive phenomena." Clinical and pathological evidence bearing upon the functions of the temporal lobes is acknowledged to be scanty at present by no less a specialist on this subject than David Ferrier, and the discrepancies in the results of the many experimental researches upon animals conducted by him, Victor Horsley, and other observers of undoubted merit, cause us to welcome any additional light, however meagre, that aids in clearing up the darkness that still surrounds this region of the human brain.

A most novel and interesting case recently came under my observation in consultation, which terminated fatally within five weeks from the beginning, and in which I had the good fortune to obtain an autopsy that may, in some small degree, add to existing knowledge as to the part taken in cerebral action by the right tempero sphenoidal lobe.

Mrs. G. F., a native of Michigan, 45 years of age, spent the greater part of her life on a farm and was always a hard worker. Her constitution and general health had always been good, although she was not robust. She had given birth to two children, the younger

[1] Read at the Milwaukee Meeting of the American Medical Association.

now being 15 years of age. A few years prior to her last illness she consulted an oculist for a slight impairment of vision in the left eye, but it never gave her much trouble. She never had rheumatism, gout, syphilis, cancer, or any other serious disease or injury, but she had been a sufferer from headaches for many years. Her father died suddenly, presumably of heart disease in some form. Two of her uncles have died of brain trouble, and a sister has epilepsy-gravior; two sisters are subject to severe headaches. Her habits and modes of life were always exceptionably good and regular, and her hygienic surroundings were always of the best. She was of a lively and sociable disposition, active and efficient in her circle of acquaintance, and much employed with church and Sunday-school work. About five years ago she changed farm life for village life, and for four years successfully managed the finances of a moderate estate, which devolved upon her at the death of her husband.

On April 3, 1893, while about her household duties, she felt dizzy and sick at the stomach, and she stated to her son, who came into the house soon after and found her lying on a couch, that she had fainted in the kitchen, and after regaining consciousness, which could have been absent but for a few moments, she had, without assistance, walked into an adjoining room and laid down on the couch. While talking with him she had what seems to have been a spasmodic seizure; again became unconscious. Her physician was summoned, who, on arriving within half an hour, found her with all muscles relaxed, except the inferior recti, which seemed to be contracted; the heart's action extremely feeble. Ammonia carbonate was injected hypodermically, and nitrate of amyl applied to the nostrils. In about twenty minutes some signs of improvement were noticed in the circulation, and at the end of three hours the pupils returned to normal condition. She then would swallow liquids placed in her mouth if requested to do so by speaking loudly close to her ear (right).

There was no motor paralysis attending or following this condition, for she freely moved both arms and legs, and there was no disturbance of the facial expression, but the intellect was profoundly clouded.

April 4th. Spent a restless night; respiration, moaning and sighing, with an occasional exclamation of "Oh, dear!" but no satisfactory response could be obtained to

the inquiries as to the cause of her distress; temperature, 101; pulse, 100.

April 5th. Slight improvement in the intellect, but still unable to recognize those about her; kept carrying her hands to her head and exclaiming, "Oh, my head!" at frequent intervals. The distress in the head seemed to be constant and mainly over the left frontal region. She took nourishment when it was given to her, but gave no sign of recognizing the need of it; very restless, tossing herself about in the bed. Temperature and pulse the same as the day before.

April 6th. Some improvement; answers when spoken to, but often irrelevantly; complains of severe pain in frontal region; temperature, 100; pulse, 94.

April 7th. Further return to consciousness; calls friends by name, but with some hesitancy; seemed to have no memory of what had happened, and expressed surprise when told she had been sick; said if it were not for her headache she would be quite herself again; headache constant and frontal; other symptoms remained unchanged.

April 8th. No change; still restless and severe headache.

April 9th. Headache less severe; mental conditions still further improved; more mental activity, but attacked by hallucinations; able to recognize friends; temperature and pulse normal. She was given a dose of castor oil, which ordinarily was extremely disagreeable to her, and she swallowed it without remark. In health the taking of castor oil was a thing she declared she could not do. Afterwards, when reference was made to it, she remarked that she must have been very sick if she took castor oil and did not complain of the taste.

April 10th and 11th. Headache less acute and constant; mind clearer; she called to mind events that had occurred, and began to take interest in the household duties, but still troubled with hallucinations; but they were of a pleasant type, and she laughed when relating them.

At this time it was noticed that, although her mind had regained its activity, hearing on the left side was dull and confused—as she expressed it, she "heard double."

April 12. Began to sit up a little; headache not constant; hallucinations of being away from home, out in company, and having a good time.

April 13th, 14th, 15th. Very little change, except gradual improvement; less aberration of the mind; sat up a good portion of the day.

April 16th. All pain in the head gone, mind clear, and she felt quite like herself; got up and dressed, and was about the house all of the day; much pleased at the visits of her friends; laughed and joked with them, and they could not see but that she was quite well. She took her meals at the table with the family. With the exception that her hearing was imperfect, especially upon the left side, and the taste remained blunted, there was at this time no evidence of sensory, of motor, or mental disorder.

This marked improvement continued until April 22d. She planned to resume her household duties, and discharged all attendants, and appeared quite like her natural self. No abnormality in mental action or in movements was observed by anybody about her.

On April 22d the attending physician was again summoned; found her complaining of much frontal headache. The temporal arteries were distended, but there was no abnormal action in the pupillary reflexes; nor was there any confusion of the mind. He was again summoned on the night of the 23d, and found her unconscious, respiration slow, pulse feeble, pupils normally dilated; no marked spasm of any muscles; cardiac and respiratory action soon improved, and after a few hours she could be so far aroused as to be induced to take liquids and swallow them.

April 24th. Still comatose, but could be aroused somewhat by loud talking; temperature, 101; pulse, 96; respiration, 24.

April 25th. Conditions unchanged, except the coma was not so pronounced. She would often carry her hand to her head exclaiming, "Oh, my head!"

April 26th. Condition much the same, except for brief intervals she recognized members of the family about her.

April 27th, 28th, 29th. Gradual improvement in the mental conditions; intellect sluggish, and unable to fix her mind for any length of time upon any subject. Eyesight normal with the right eye, but with the left unable to count fingers at a distance of twelve inches. Complained of much headache and some pain in the base of the brain; took abundant nourishment.

In the afternoon of April 30th the nurse discovered

that the left side was paralyzed throughout, the facial muscles and the tongue being involved; she was unable to turn the left eye outward; involuntary action of the bowels and bladder.

May 1st and 2d. Remained the same; speech and swallowing imperfect. The patient was left-handed.

May 3d and 4th. Improvement in speech and swallowing, and began to get voluntary control of the left arm and leg.

May 5th. Respiration normal; some voluntary control over the action of bowels and bladder regained. Still some disturbance of speech and deglutition, and the face remained slightly drawn to the right. The tongue when protruded turned to the right, was red and clean; vision much improved in left eye, and right eye normal. Left eye cannot be turned outward; mental action dull, but able to recognize friends; thoughts disconnected and disjointed. She was able to sit up in bed for a few moments and to move from one side of the bed to the other.

May 6th. Continued to improve; took nourishment readily; strength in right arm and hand increased. She was able to grasp the hand of the nurse quite firmly. Eyes normal in appearance, but the left still impaired in action of external rectus; vision unchanged. The temperature on this and other days after April 30th did not exceed 99½; speech was not quite distinct; mind clear but inactive. Headache, which had been light, returned with great violence towards evening.

May 7th. Passed a restless night, manifesting more than her usual timidity; clung closely to the nurse; had several general convulsions in the morning from 8.30 to 9.30, during which the left eyelids were open and the pupil contracted. The pupil of the right eye was widely dilated, the lids closed. The headache seemed very severe, as evidenced by her moaning and carrying her hands to her head after the convulsions ceased. Stupor followed the convulsive seizures and gradually deepened into coma, though consciousness was retained long after she was able to utter a sound; hearing was not abolished up to within an hour or two of death, for she would squeeze the nurse's hand in response to inquiries uttered in a loud tone; but she lay upon the bed in such manner that she could not be approached only upon the right side, and hearing upon the left side was not tested during the last weeks of her illness.

AUTOPSY.

Eighteen hours after death; skull unusually thick; duramater congested and apparently thickened; superior longitudinal sinus empty; veinous congestion of the pia mater; the arteries moderately full. No naked-eye appearance of special abnormality about the frontal lobes, although the anterior cerebral arteries seemed somewhat more anæmic than others. A clot of dark, semi-coagulated blood about two inches in diameter occupied the right middle cornu, and the walls of this cornu were extensively disintegrated and readily gave way. The disintegrated tissue involved the anterior half of the hippocampus, the anterior extremity of the superior temporal and the anterior third of the middle and inferior temporal gyri. The gyrus hippocampus was largely undermined, although its surface remained intact. The island of Reil was softened; blood coagula, more or less firm and recent in formation, filled the lateral ventricles, the third ventricle, the infundibulum, and extended through the aqueduct of Sylvius into the fourth ventricle. No softening or disintegration had taken place, except in the right tempero-sphenoidal lobe. The time being limited, other cavities of the body were not explored.

I need scarcely say to you who have been able to follow me in this hurried recount of bedside observations that the revelations of the autopsy were something of a surprise to me. In the light of the discoveries then made I was compelled to admit to myself that I had, in constructing a theory of causation of the clinical phenomena observed, placed too much stress upon certain prominent symptoms. I saw the patient twice for about half an hour each time. On the first occasion the suddenness of the onset of the symptoms, the mental confusion, the severity of the headache, which was frontal and left-sided, the impairment of vision of the left eye, the entire lack of motor and sensory abnormalities (for this was at a time when she was beginning to recover from the first attack), impressed me quite forcibly, and I was confident there was an arterial embolus obstructing the left anterior cerebral artery. The subsequent com-

plete clearing up of the mental cloudiness and the subsidence of all other symptoms, only confirmed me in this opinion. The only thing that was suggested to my mind that threw doubt upon this conclusion was how to account for the dullness in hearing in the left ear; but, in the apparent harmony of the more prominent symptoms in accord with my theory, this did not seriously attract my attention. The perverted or impaired taste was not an observation of my own, but was a fact learned from inquiry of the attendants subsequent to the autopsy. The theory of embolism seeming to account for the symptoms following the first attack, the phenomena attending the second attack, which occurred after twenty days and when many of the disturbances resulting from the first attack had subsided, presumably because of some degree of collateral circulation being established, were accounted for on the assumption that a thrombus had formed posterior to the embolus, and in its backward growth had, in all probability, crossed the anterior communicating artery and suddenly plugged the other anterior cerebral, as at this time, you will observe, there were no spasms, no paralysis, simply an obscuring of mental faculties, which again largely cleared up within a few days.

The autopsy revealed that the original attack had been due to a hemorrhage, not very extensive, interior to and at the lower extremity of the right lateral cornu. Softening followed, involving the hippocampus major at its lower extremity, the anterior extremities of the superior middle and inferior temporal convolutions. The hemorrhage, from its location, might have caused pressure on the optic commissure, especially its left side, together with interruption in the circulation through the anterior part of the circle of will, in rendering the anterior cerebral arteries anæmic. At the second attack the hemorrhage, still more extensive and far-reaching, had extended into the lateral ventricles; and the third, even passing into the infundibulum and distending it, caused pressure on the pituitary gland. The third at-

tack, from which she never rallied, was attended by an escape of blood from the same source; but, in addition to flooding the lateral and third ventricles, it had passed through the aqueduct of Sylvius into the fourth ventricle.

I think we are justified in the assumption that, as far as any symptoms observed in this case can be justly referred to the lesion in the right temporal lobe, they tend to show that its function is of the same nature for the left side of the body that Ferrier has found the left temporal lobe to be for the right—a cortex center for hearing and taste.

My experience in this case has impressed upon me more strongly than ever the necessity of a systematic and thorough examination in detail of all the sensory and motor tracts in every case of central lesion, and that according to a definite plan, should, wherever circumstances permit it, be rigidly carried out, even though certain symptoms may seem to show that such extended investigation is superfluous.

Two Cases of Cerebral Surgery (*Mercredi Medical*). —M. Poirier presented to the Paris Academy of Medicine, July 5, 1892, the results of two cases of cerebral surgery. The first was a tumor of the cortex. The patient, a male 34 years of age, had suffered for eight years from epilepsy, having had his first attack in 1884; since then the attacks recurred about every fifteen days and were accompanied with intolerable headache. Trephining and gouging out with a mallet was followed by the extraction of a vascular tumor about the size of an almond. For the succeeding forty-eight hours there was hemiplegia, then complete recovery.

The second case was an attempted suicide, the ball entering at the temporal region, ventricular effusion, vacuolation, extraction, recovery. The patient was a young man 17 years of age, who entered the hospital with symptoms of cerebral compression, and a ventricular hæmorrhage, general contracture with convulsive attacks, stertor, coma, and a very menacing condition.

The ball was found and seized on the cornu ammonis and the patient recovered rapidly. J. C.

AN OUTLINE OF THE PROGRESS IN THE CARE AND HANDLING OF THE INSANE IN THE LAST TWENTY YEARS.[1]

By C. EUGENE RIGGS, A.M., M.D.

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TO try to tell you in a brief twenty minutes of all the advances that have been made in the last twenty years in the care and handling of the insane seems to be very like one of those impossible tasks, such as emptying the river with a thimble, which the wicked fairies used to set for the heroes of the tales we read when we were children.

So much has been accomplished along this line in these last twenty crowded years, during which the pulse of the world has perhaps beat to a quicker time than ever before in human history, that to give you even the dryest, barest outline of the most important achievements would take more than the allotted time. So I shall not try so much to recount a list of accomplished facts as to outline the principles upon whose acceptance the facts of our progress have been based.

As I conceive these changes, amounting to a revolution in our way of looking at and handling the insane, they have all been dependent upon the slowly-growing recognition of two principles: The first is that the insane man is still a man, and therefore entitled, *as far as his condition will permit*, not only to life, but to "liberty and the pursuit of happiness"; he is an individual, and his individuality is entitled to respect. The less he is treated as something exceptional, and the more his condition and environment are approximated to

[1] Read before the Twentieth Annual Session of the National Conference of Corrections and Charities.

the conditions and surroundings of ordinary life, the better it will be for him. This view of the matter is, of course, limited by the recognition that he is a sick man, and that in so far as such treatment may be of avail, his condition demands hospital care. The second principle is that it is the duty of the State to see that the insane—all of them, perhaps, but certainly the indigent,—have this opportunity to be made whole, if possible; and, if not, to lead a life as much like a normal life as their state will permit.

The actual outcome of this second principle has been the establishment of State care or State supervision for the insane. Twenty years ago there was practically in each State two methods of caring for the insane: First, a State system, managed by State officers and responsible to the State. Second, a county system, managed by county officers and responsible to no one. The State institutions were designed for the acute insane. The cases pronounced incurable were discharged and removed from the asylums to the poor-houses of the counties from which they came, to make room for fresh cases in the asylums, which would otherwise have become choked with the accumulation of chronic cases. At that time there were about sixty State institutions for the insane in the United States, and of this number three only were designed for the care of the chronic insane, namely: the Insane Department of the State Almshouse at Tewksbury, Mass., Willard Asylum in New York, and the Rhode Island Asylum on the State Farm at Cranston. These institutions were regarded as being still in the experimental stage, the question of the advisability and the possibility of State care for all of the insane being still an open one. With the exception of the inmates of these three institutions, and such of the incurable class as might chance to be retained in the asylums—these were chiefly paying patients, whose friends were able to prevent their return to the counties,—the rest of the chronic insane in the United States were in county care. What that care was it is

painful to rehearse. Everywhere, as the earlier reports of the State boards faithfully show, ignorance and parsimony had brought about a wretched and deplorable condition of things. Said the General Agent of the State Board of Pennsylvania in 1873, reporting on the condition of the insane in almshouses:

"They are totally neglected—morally, physically and mentally. Less attention is given to them than would be given to the lowest animals."

It is needless to repeat the details—cells, chains, foul air, filth, nakedness—all the sickening sequelæ of insufficient accommodation and neglect. It is a state of things, we may thank heaven, now belonging almost entirely to the past.

Chiefly through the ventilation of these abuses by the State boards, most of which were organized from twenty to twenty-five years ago, and through the efforts made to correct them, the idea of State care made a steady growth. It was not, and is not, believed that county care for the insane can be made what humanity demands it to be. As the result of continued agitation on the subject, we can record to-day a totally different condition of affairs.

October of this year will see the army of indigent insane in the great State of New York all housed at last in the State hospitals. In Pennsylvania, while complete State care is not yet an accomplished fact, a large reduction has been brought about in the number of county institutions caring for the insane, and the standard of care in those retaining them has been so raised that the Committee on Lunacy, while still faithfully maintaining the principle of State care, finds no reasonable ground of objection to the retention of chronic insane in these institutions until other provision can be made.

There are some six or eight States in which the principle of State Care for the indigent insane is fully established, although for lack of accommodations its practice is not yet entire. There are perhaps eight other States in which the principle of State Care for all

of the insane, both indigent and well to do, is the established one; but I believe the State of Minnesota is the only one of these which has as yet succeeded in absolutely doing away with all country or town care of the insane, the doors of the State Hospitals being open to all, and up to this present the accommodations having sufficed. Several other States, however, notably Massachusetts and Wisconsin, have succeeded in solving the problem of caring for the insane in a creditable manner, pending the complete establishment of State care, which is regarded everywhere as the objective point toward which to work, steps looking in any other direction being regarded as a distinct retrogression.

This much for the advance that has been made in the principle of State care. Now for the advances achieved in the idea of what the State ought to do for its insane wards. The average asylum of twenty years ago was a structure whose chief feature was a central corridor, with sleeping rooms opening from it upon both sides, the whole asylum being an arrangement of such corridors, either linear, square or H-shaped. Here and there the dividing wall between room and corridor was done away with, making a recess of the former, whose windows, together with the end windows, served to light the corridor. The ventilation was usually artificial. The corridors were used for sitting, reading, working, taking exercise and eating, as well as being passageways from one part of the house to another. Their furniture was chiefly chairs and tables, these in many institutions being fastened to the floor. Few attempts were made at decoration. Anything more unattractive, gloomy and unhomelike than life upon these corridors can hardly be conceived. They answered to nothing in the life of a human home, such as the patient had been accustomed to in the world outside. The wards were always locked, thus adding the oppression of the feeling of close confinement to those whose condition was such as to permit them to be conscious of it. As eating was done on the

wards or in ward dining-rooms, the arrival of the hour for meals created no sense of change or diversion. Exercise, when taken, was usually in airing-courts, and, in order to reduce the number of attendants required, the walls of these were frequently so high that the patients could not see over them, thus making their excursions into the outer air merely the substitution of an unroofed prison for a covered one. Discipline was enforced upon the wards, but employment was not encouraged. The idea prevailed that the insane were all alike and should all lead the same life. There resulted from this a deadly monotony of existence, such as might well drive a sane man mad. The disciplined idleness tended to make of the able-bodied patients a set of loafers; it "hospitalized" them, as the term is now used. The amount of mechanical restraint used would seem excessive to-day. This was partly due to insufficient attendance and a false conception of the attendants' duties, and partly to a belief that there was no other way of handling disturbed cases. The attendants were "keepers." Amusements were furnished, it is true, but the patient often took but a languid interest in them, and there were long, vacant, unfilled hours. The whole atmosphere of the asylum was, in brief, prison-like, for the idea of the institution as a prison or place of detention for those dangerous to society still held its own against the more modern idea of the asylum as a hospital for the sick.

While drawing this picture of the average asylum life of twenty years ago, I wish to call attention to the fact that there were men in charge of the insane at that time, and for years before, who upheld strongly what we are accustomed to think the modern ideas; men who advocated and carried out faithfully in the institutions under their charge the principles of hygienic employment, non-restraint, hospital care, and the like. But these men were, after all, the conspicuous and brilliant exceptions—the voices of those crying in the wilderness, "Prepare ye the way!"

In the longer report which I have prepared for the proceedings of this body, I have endeavored to enter into detail regarding the growth of the modern ideas, and the way in which they have been carried out in different States. Here it must suffice to explain what they are, and to sketch the modern hospital as compared with the old asylum. One fundamental idea in the treatment of the insane to-day is the hospital idea—the view of the insane man which recognizes that he is a sick man, and entitled to the best of treatment for his disease while there is any probability of cure. The overcrowded condition of many of our institutions for the insane to-day frequently prevents the satisfactory carrying out of such strict hospital treatment as the alienists in charge of our asylums would be glad to give. One direction of advance in the future must necessarily be along this line.

Next is the idea that the insane man is entitled to a more normal life than he was permitted to lead formerly. To the jail-like structure of twenty years ago has succeeded the cottage hospital, as illustrated at Kankakee, Toledo, Ogdensburg, and elsewhere, where the many comparatively small, separate buildings permit of a far closer classification of the insane than could be made formerly; of the complete separation of such classes as the epileptics, the dements, the uncleanly, the violently suicidal and homicidal; of a quiet retreat, with homelike surroundings, for the convalescents; of the subdivision of the mild and inoffensive into groups of cases which shall work no injury mentally to one another. These hospitals are more elastic, more flexible; they permit, to a greater extent, of the individualization which our ideas demand.

The number of the insane sheltered in such institutions has increased in the last twelve years from a few hundreds to over six thousand; and, as new asylums are required, they will undoubtedly be built upon this plan, or some still more flexible modification of it.

With the advance in classification and the change in

the style of buildings erected have gone other advances. Chief among them is the recognition of the importance of furnishing employment as well as amusement to the insane; of the fact that idleness is as unwholesome for the able-bodied insane man as for the sane one. In the institutions which have made a specialty of their industrial system—such as Kankakee and the Alabama Insane Hospital—from seventy to eighty per cent. of the inmates are now given employment, and in almost all asylums from thirty to fifty per cent. are occupied, greatly to their own physical and mental advantage, and also the financial advantage of the State, as they thus become, in some measure, self-supporting. Outdoor occupation is more easily provided than formerly, owing to the increased amount of land for agricultural as well as pleasure grounds, now habitually attached to new asylums. Greater efforts for winter amusements are made, and for outdoor summer excursions. Some asylums have cottages at the seashore or in the mountains, to which parties of convalescents are sent to their great advantage.

Many improvements have taken place in asylum service. The increase in wages, and the establishment of training schools in a large number of our best asylums, in which a feature is made of mental nursing, and the attendants are taught to take an intelligent interest in those under their care, is attracting a different class of persons to this occupation, and the idea of a keeper of a mad person is giving way to that of nurse and companion of the sick. This is one of the most notable of the minor advances achieved, as it is impossible for a physician to carry out his best plans for his insane patients without skilled and tactful attendants.

The advance in the amount of liberty which, it has been found, may safely be permitted many classes of the insane, is great. Almost all asylums now have one or two open wards, in which the patients are free to come and go as they choose during the day, and this has been found not to result in an increase but in a diminution of

attempted escapes. This also is true of the paroling of patients upon the grounds, a practice which has grown greatly. Mechanical restraint has fallen into practical disuse in perhaps half of our asylums, and in the remainder its use is very greatly diminished. This, of course, has required an increase in the amount of attendance needed. The introduction in very many of our hospitals of a woman physician upon the staff has been an advance, of whose advisability there can be no question.

The building of congregate dining-rooms or refectories, where the patients assemble for meals, and the doing away with the gloomy airing-courts, permitting the patients to take their exercise, under sufficient supervision, in the open air, have been found to be beneficial not only to health, but to discipline.

Thus it will be seen that, with hospital care for the acute insane, with the greatly increased degree of liberty permitted, with the larger opportunities for employment and amusement, with the stricter classification prevailing, the daily life of the patient in our hospitals has become quite a different thing in the last twenty years.

The growth of the spirit of classification has shown itself not only in the sorting out of the groups best fitted to be together inside the asylum, but also in the separation of certain classes as totally unfitted to remain in the same institutions with the ordinary insane. It is now universally conceded that separate provision should be made for the criminal insane and for epileptics. Four States are already caring for their criminal insane in separate institutions, and Ohio and California have made provision for epileptics. New York seemed about to do so, but the bill was unfortunately vetoed.

Apart from those changes, bearing directly upon the daily life of the insane, there have been other advances affecting their welfare.

Changes have been made in the commitment laws of many States, which generally, though not always, have looked in the direction of recognizing the primary neces-

sity of a physician's verdict, and of assuring that that verdict shall be a competent one. The commitment laws have, in some instances, been made stricter, making admission to an asylum a more difficult matter. This has been offset in several States by the enactment of statutes permitting persons in the incipient stages of insanity, who could not be legally committed, to commit themselves voluntarily for a length of time, terminable at will, for treatment in insane hospitals. Another, of similar intent, has been the establishment of "Out-Patient" departments in certain hospitals, designed for the gratuitous treatment of mental disease in its earlier stages.

Provision has been made in certain States for emergency commitment. Detention hospitals have been erected in large cities, avoiding the injurious and degrading necessity of detaining the insane in jails pending commitment, but these last advances are not yet as general as they should become.

Before closing, I wish to allude to the brilliant work done by students of science and medicine in acquiring and disseminating among the profession a better knowledge of the nervous system, and to mention the work, whose goal is yet unattained, of those pathologists who are hoping to throw more light upon the brain states in the insane, and to bring to pass the day when our knowledge of these physical conditions, associated with mental alienation, will make our treatment more effective and more sure.

In this hasty enumeration of the details, in which our ideas of and our care for the insane have been revolutionized in twenty years, I have necessarily passed over many of the small things which give an added comfort to the existence of these unfortunates.

At best we cannot hope, where cure is impossible, to do more than to make them as little miserable as possible. I am far from claiming that all has been done in this direction that humanity demands; but, I trust, I have shown how fairly we are started on the road.

Critical Digest.

ANATOMICAL, PHYSIOLOGICAL AND PATHOLOGICAL NOTES.

By HENRY H. DONALDSON, Ph.D.,
University of Chicago.

"On the Changes in the Spinal Cord after Amputation."

Dr. Emil Redlich (Centralblatt für Nervenheilkunde und Psychiatrie, January, 1893, N. F. III., Band. XVI., Jahrgang).

It is a question of very considerable interest to determine in how far the facts agree with the dogmatic statement, that in the nervous system, section of a nerve fibre leads to changes of that portion only which is separated from its nutritive centre.

There are, of course, two processes which may be fairly distinguished, viz., active degeneration and the atrophy following long-continued disuse. A good deal of evidence tends to show that in the case of persons living a long time after amputation of an arm or a leg, there is a diminution in size and a change in the structure of the nerve trunks and the nerve centres, thus mechanically thrown out of function. Bearing on the nature of this change, whether it is an atrophy from disuse or an active degeneration, we have the above mentioned observations of our author.

Amputation at the thigh was effected in six young Guinea-pigs; they made a perfect recovery and were then killed from seventeen to seventy-six days after the operation; and the nerves concerned, together with the associated portion of the spinal cords, were examined by means of Marchi's Osmic Method.

The usual signs of degeneration were found both in the nerve trunks and in the cord.

The changes were most noticeable in the ventral roots and cells of the ventral horn; here, it was the lateral group of cells on the same side, which was most affected, while in the horn on the side opposite to the lesion there was also indication of degenerative change, though in a far less degree.

In the animals which had lived from thirty-six to seventy-six days after operation, the dorsal roots, at their entrance into the cord, showed, on the same side, slight degeneration, which, however, could not be followed further into the dorsal horn.

On comparison, it was found that these appearances were confined to that region in the cord which was directly associated with the lost limb. Comparing, now, the conditions in man, the author examined eight spinal cords in individuals who had suffered amputation from three weeks to three years before their death.

In this material, the signs of degeneration so evident in the Guinea-pigs, were not present.

In comparing the two sets of results, it must be remembered that the Guinea-pigs were all of them young, and that these degenerative changes occur most easily in very young animals; that in the human material, the youngest individual was a boy of sixteen years, who had been amputated a year before, and whose case was complicated. Of course, the evidence would be more satisfactory if some of the Guinea-pigs had been allowed to live for a longer time, in order to determine the final outcome of the changes following the amputation; and, also, if the possible initial disturbance occurring in man could have been tested on more cords at periods from three to six weeks after amputation. If we may infer from these data the changes in the spinal cord in old amputations are probably due to an atrophy following disuse, it remains for the pathologists to determine whether or no this is a slow form of the same process which is designated as degeneration in Guinea-pigs.

"Studies on the Structure of the Chromatin in the Sympathetic Ganglion Cell."

Dr. F. Vas (Archiv. fur Mikroscopisches Anatomie, B. 40, H. 3, October 18, 1892).

When pathological changes are to be studied in a group of cells, their normal condition must be taken as the point of departure, and it naturally is to be asked whether this normal condition is a constant one.

Pathologists in general would be the first to admit that this question had not been answered with all the care that its importance demands. It is perfectly plain, that in the nervous system of man, the condition of the cells designated as normal depends upon the age of the individual, and the degree to which the cells had been

stimulated just before death, and on the cause of death; and it is a safe prediction, also, that in the future modifications, due to sex and race, will be recognized. Although, therefore, the normal condition of nerve cells is variable, the detailed study of their variations has heretofore been but superficially considered.

As a sign of awakening attention to this matter, our author's study is important. The sympathetic nerve cells of the rabbit, dog and man, are studied by him according to the method of Nissl. This method consists in first hardening the specimen in absolute alcohol, imbedding in Colloidin and staining with Magenta.

It is valuable, from the fact that the cell undergoes comparatively little distortion, and that the chromatic substance in the cytoplasm is especially colored. For the study of the nucleus there are better methods. The results are shown in eight very good figures. In the first place, we see very clearly the differences in arrangement of the chromatic substance in the cells from the several animals examined; particularly noticeable is the wide variation in the relative development of the nucleus. The next five figures represent sympathetic cells from man at the following ages: the seventh month of fœtal life; at birth; at twelve years; at twenty-eight years, and at seventy years.

In the first mentioned, the cytoplasm is scanty and chromatin does not appear in it, while it does appear in the nucleus. As age advances up to twenty-eight years, three things happen: both cytoplasm and nuclei grow larger, the former growing more rapidly; the cytoplasm becomes more and more filled with chromatic substance, and from birth on, pigment appears and continues to increase in quantity.

The chromatin gradually disappears from the nuclei. In the individual at seventy years, evident changes of a regressive nature have taken place, both cytoplasm and nuclei have shrunken, and the former has lost considerable proportion of its chromatic substance.

These facts, so far as they relate to growth of sympathetic cells, are used by the author to controvert the views of Hale White, who, several years ago, on the basis of the study of sympathetic cells in animals and man, concluded that in monkeys and in man, and especially in man, cells of the sympathetic system were in a state of pigmentary degeneration. That the pigment increases, there can be no doubt, but that these cells are therefore

to be considered degenerate, is not, however, a valid inference. Finally, the author has studied the effects of stimulation of these cells by applying the faradic current to the sympathetic cord, at some distance from the ganglion, and thus stimulating it continuously for fifteen minutes.

The experiments, six in number, were made on rabbits. During the process the ganglion was seen to become turgid; on examination by Nissl's method, the cells were found swollen, both nucleus and cytoplasm being enlarged.

The chromatin was displaced towards the periphery of the cell, the central portion of which was occupied by a homogeneous substance, free from chromatin. The nuclei also were displaced towards the periphery and partially extruded. Enlargement of the nuclei has been observed in the motor-cells of the spinal cord by Korybutt-Daskievits, as the result of stimulating the mixed nerve in a frog.

Hodge, on the contrary, found in his study of the spinal ganglion, a general shrinkage of the cells, and their nuclei. It is plain, therefore, that these gentlemen agree in finding a change as the result of stimulation, but they differ decidedly as to the character of the change described; and the difference can only be cleared up by the use of identical methods of stimulation and histological investigation on the various groups of cells involved. It should be pointed out, however, that in the case of the work of Hodge, the artificial stimuli were passed in the physiological direction; while in the case of Korybutt-Daskievits they were reverse to the physiological direction, and in the experiments of Vas, the direction in which they passed is, perhaps, doubtful. Further, that the changes which Hodge observed as the result of artificial stimulation, were similar to those observed in animals fatigued by their natural activity. The matter should certainly be further investigated.

PSYCHOLOGICAL NOTES.

BY WILLIAM O. KROHN, PH.D.

Concerning some Peculiarities of the Sense of Touch.

By G. Sergi, Rome, Italy (Zeitschrift f. Psy. und Phys. des Sinnesorgane). The author first refers to the experiments by Bloch to determine the duration of the sensations of touch; first in 1875, later in 1877. Sergi desired to ascertain the acuteness of the skin's power for discriminating successive stimulations. In other words, how much of an interval must there be between successive touch stimulations to prevent their being fused into one continuous sensation. As apparatus, he used a series of six of König's tuning forks, set into vibration electrically, capable of 30, 100, 250, 435, 500 and 1,000 vibrations respectively. These forks were applied directly to various portions of the dermal area. After a large number of careful tests, Sergi reaches some interesting conclusions:

1. The different portions of the dermal surface are by no means *equally* capable of perceiving touch stimulations of weak intensity. The most sensitive portions of the skin are the tips of the fingers on the volar side, where the weakest stimulations are distinctly perceived.

2. The minimum of energy of the stimulus (or threshold) varies with different portions of the skin and with successive isochronous stimuli, as those of the tuning fork, the continuous sensation which proceeds is not the result of fusion of the impressions, but the result of the imperceivability of weak sense impressions.

3. The mucuous membrane of the glands experiences no sensations of a purely *tactile* character.

4. Two conditions must ever be borne in mind—conditions which really complement each other: (*a*) The intensity of the stimulus; (*b*) The special sensibility of the stimulated organ. Helmholtz demonstrates the truth of these with reference to sensations of light.

The experiments of Sergi, in a general way, substantiate the earlier ones of Weber, Rumpf and Schwaner.

Influence of Horizontal and Vertical Positions on the Cerebral Functions.

By Sicard de Plauzoles (Annales de Psych., 1893). This writer lays stress on the function of the blood in

maintaining the activity of the brain. A continuous circulation of the blood is a necessary condition, he says, for the regular action of the cerebral cells. Suspend momentarily the circulation in the encephalon and the phenomena of nervous activity is interrupted. The circulation of the blood is affected by the different positions of the body, the horizontal position accelerating and the upright inhibiting it. The carotid and vertebral arteries at the base of the brain anastomose in the hexagon of Willis, and in an erect position this latter rests on them, pressing them down upon the base of the skull, thus diminishing the flow of blood over the cortex. The brain-mass, being smaller than its bony covering, is capable of slight changes of position, according to the posture of the individual. Where stretched out horizontally, the cerebral substance loses its contact with the frontal wall, and, in standing, the upper portions rest on the lower part of the brain.

When, after lying down for some time, one suddenly rises, the brain passes from a congested to a relatively anæmic state and vertigo results. The modifications of the brain circulation, which cause vertigo, can be produced in two opposite ways—by congestion and by anæmia.

Delirium may be due to these opposed conditions, and, indeed, all phenomena of cerebral origin—as convulsions, insomnia, etc.,—may be caused by two contrary circulatory conditions.

Congestive vertigo increases in a declined position of the head; anæmical vertigo in the erect position. Furthermore, vertigo is often caused by sudden changes of attitude.

Normally, man passes a certain number of hours in the vertical position and in the horizontal position, and in the case of a healthy man it is difficult to perceive any very appreciable modifications of the play of thought following these changes of the cerebral position; but, in the case of persons mentally diseased, S. has found marked modifications, corresponding to these two periods.

One patient suffered for several weeks with insomnia. Before rising he was delirious, had continual feelings of faintness, and thought he was about to die, the violence of his sensations being lightened relatively to the amount of sleep he had obtained during the night. The temple pulse was more violent than when erect, the two

not acting simultaneously, and the left more feeble than the right. During the day the patient improved, but in the afternoon, on extending himself in a hammock, the delirious symptoms returned.

Other cases are also cited. He sums up his statements thus:

Mental disturbance is greatest (1) after a long horizontal condition—in the morning for example; (2) after a long vertical condition, in the evening, the intermediate hours being the least disturbed.

Insanity Communicated from Man to Animals.

By Ch. Fêré (Soc. de Biologie, 1893). This article speaks of cases in which dogs living in intimate relations with neuropaths, especially among low classes of humanity, have contracted their morbid activities. This is only a peculiar form of what has been noted by others, in the communication of insanity from one individual to another.

Mental Alienation Resulting from Surgical Operations.

(April number, *Journal of Mental Science.*) The first case cited was that of a woman who had had two dangerous operations performed within two weeks. Her convalescence was marked by attacks of hysteria, one occurring two months after the completion of the operations, being accompanied by inability to control her actions, alteration of her affections, complaints for the slightest causes. These symptoms disappeared as the patient improved.

The second case was that of a child of twelve years, on whose knee an operation was performed, ether being used as an anæsthetic. Eight days later a mild form of insanity appeared. During the day he slept lightly; at night he was restless and the temperature higher, though the wound had remained the same. The hair became dry and hard, the child was sullen, and the natural affections altered. He grew better gradually, and recovered entirely from the trouble.

The third case, observed by Dr. Dent, was a woman of sixty, whose leg was amputated, ether being administered. Eleven days later melancholia manifested itself, followed by a gradual failing, culminating in senile insanity.

Another case was that of a woman of forty, upon whom ovariotomy was performed. Six days later, her general condition having thus far been satisfactory, her face changed, she became restless and uneasy, and, after two days, acute insanity developed, to which she succumbed, dying on the eleventh day. At the autopsy no trace of peritonitis was found.

We think it is, however, a question whether the insanity was necessarily a *result* of the surgical operation in any of these cases, or merely a concomitant circumstance.

Modifications Observed in the Mental Condition of some Insane, Affected with Cholera.

The following observations were made at the Bonneval Asylum during a cholera epidemic, which attacked sixty inmates of the asylum, mostly women.

For convenience in noting the effects of cholera, the patients were divided into five groups—maniacs, melancholiacs, the partially delirious, the organically insane, and idiots.

In the case of maniacs it is shown that, during its severe periods, cholera causes to disappear all maniacal conditions of whatever character and of however long standing; but, on recovery, the mental derangement returns by degrees.

That cholera usually modifies the melancholic conditions for the better was noticed, but too few cases were examined to draw any final conclusions.

Those slightly insane or melancholy, regained to a greater or less degree, the mental soundness during the attack.

Those organically insane were not affected mentally by the disease. In whatever case there was maniacal excitement accompanying the delirium, this disappeared entirey during the cholera attack. When delirium accompanied a melancholy state, the latter was more or less modified, but the delirium remained.

One case was that of a paralytic, whose insanity was of long standing, and whose mind was not perceivably affected by the disease; but this single case proves nothing.

The idiots attacked were too feeble-minded to afford basis for determing results.

In every case, however, except the last, the patients understood the danger of their condition, and faced death calmly.

Suggestive Therapeutics, and its Application to Nervous and Mental Maladies, to Surgery, Obstetrics, and Pedagogy.

By M. le Dr. A. Cullerre. This work, one of a series by the same author, is of special interest to physicians. It is not a mere statement of observations and opinions of physicians who have used this method of treatment. The first part is a brief outline of all questions bearing on suggestive therapeutics, and is an endeavor to reconcile contradictory statements and opinions on hypnotism. The remainder of the book is practical, treating of the indications and effects of suggestive medicine, the chapter on mental maladies being worked out in the most complete form. The book is a marked improvement on that of Schmidkunz, as well as that of Ringier's interesting treatise, and is an excellent addition to the works of Moll, Wetterstrand and Forel.

On the Discrimination of Groups of Rapid Clicks.

By Thaddeus L. Bolton (Am. Jour. of Psych., Vol. V. No. 3).

This interesting series of experiments was performed by Mr. Bolton in his endeavor to answer the question, can the presence of one more or one less click be recognized when successive groups of different numbers of clicks are given, and under what condition as to rate and number.

The apparatus is sufficiently simple, consisting of a time marker, the armature of which produces the clicks at the closing of the circuit. The sound at the break was avoided by making the armature react against a piece of soft India rubber. A heavy pendulum, drawing across a series of equal brass plates, two platinum points attached to it at suitable distances apart—one behind the other—produced the regular succession of uniform clicks. These brass plates were separated by pieces of hard rubber of uniform thickness, each plate connected by a separate wire with a switch board, which made it possible to add or subtract one or more clicks by throwing one or more plates out of connection with the time-marker. The platinum points were attached to brass wire springs to avoid retarding the movement of the pendulum, while the switchboard was so arranged as to prevent the pendulum from touching on the return swing. The apparatus was timed by the writing of the time-marker on a drum

in connection with a Duprez signal driven by a tuning fork of one hundred vibrations a second.

At first ten clicks were used for the experiments, the clicks being separated by an interval of .011 of a second, the groups by an interval of .25 of a second. All numbers from four to ten were used as standards, and compared with numbers greater or less by one. As a result of experiments on three subjects, it was found possible to recognize a difference of one click in any number below ten, with the interval above mentioned, the percentage of errors being greater, the greater the number of clicks, and less difficulty being experienced when the standard was compared with a less number of clicks.

In answer to the principal question to be settled by these experiments, it may be said that number has no influence in the mere perception of discreetness; that a difference of one in ten is less difficult to recognize than a difference of one in five, a conclusion agreeing with the psycho-physic law.

Two other points have some light thrown on them by these experiments. One click more or less in successive groups can be recognized when the number of clicks is not too large or the rate too rapid. It is extremely improbable that any clicks are lost in the perception of a rapid group up to 153 a second.

Experiments on Physiological Memory by Means of the Interference of Associations.

By J. A. Bergstrom (Am. Jour. of Psych., Vol. V., No. 3).

It is a well known fact that old habits are difficult to be overcome, and that fatigue or carelessness will lead us unconsciously to forsake a new for an established method of action. But it is only by experiment that we can determine whether the old habit interferes with the forming of the new one. To decide this problem was the object of the series of experiments undertaken by Mr. B.

Unprinted cards were made into packs of eighty, each pack containing ten kinds of cards, and each kind having the same abstract word printed at the top, such as "Vitalism," "Homophone," etc.

The experiment consisted in sorting two packs in quick succession, placing cards containing the same word in the same pile, the arrangement of the words to be different for the second pack. The length of time required for sorting the second pack was longer in nearly all cases,

differing with different individuals from three to seventeen seconds. In thirty experiments, directed by Mr. B., the reviewer of this article sorted the second pack, when different from the first, in less time by 3.1 seconds than he could the first.

Later, to simplify the experiment, pictures of common objects took the place of words, and the ten objects were selected to be as unlike as possible. The cards were thrown on a rough white table cover, to prevent slipping.

The first object of the experiment was to determine the rate of decrease of interference with increasing intervals of time between the two sortings, seven or eight different intervals ranging from 3 to 960 seconds being used, and two minutes rest allowed between experiments on different intervals. Altogether, the experiments required an hour a day, and records of five persons were taken for periods varying from twelve to twenty-one days.

The results gained by Mr. B. are quite in harmony with those of previous investigators. He found that memory was closely related to habit, and that habits are chiefly physiological in their basis. He also gained new material, setting forth the marked influences of vigor and fatigue which bear out the general belief in a daily rhythm. His results also show that men are influenced in their activities by the state of the weather, by food, by the frequency and amount of rest, and by whatever would tend toward changing the regularity of mental life, such as grief, anger, anxiety, and melancholia. Taken together with the classical work of Ebbinghaus, and the more recent experiments of Müller and Schumann, as well as the painstaking researches of Münsterberg, these interesting investigations which Mr. Bergstrom gives us are the most fruitful and wide-reaching of any up to date.

On Psychoses after Influenza.

By Julius Althaus, M.D. (Jour. of Mental Science, Vol. XXXIX., No. 165).

This subject has been scarcely treated in the standard works of Clouston, Savage, and others, and, indeed, there is little in the periodicals previous to 1890. This article, given in the form of a lecture, is really an epitome of all the literature, good and bad, that has appeared within the last two years.

He traces this psychoses in its relation to other post-

febrile insanities as are consequent on typhus, rheumatic, and intermittent fevers. The investigations of Dr. Althaus take the form of those of Kraeplin, and the following points were kept prominent:

1. The number of well-observed cases which have been utilized.

2. The influence of sex, age and general and special predisposition.

3. The duration of these affections.

4. The eventual result, whether cured, uncured, or fatal.

An attempted answer is made to each of the following questions:

1. Are psychoses after influenza more frequent than those which occur after other fevers?

2. What is the influence of sex and age in the causation of these affections?

3. What is the influence of predisposition?

4. What is the relative influence of the fever and the grippo-toxine in the production of these psychoses?

5. What is the duration of post-influenzal psychoses?

6. What is the proportion of cured, uncured, and fatal cases?

7. Is there any relationship between the severity of the feverish attack and the subsequent occurrence of psychoses?

8. What length of time may elapse between the feverish attack and the outbreak of the insanity?

9. Is there any special form of insanity induced by influenza which does not occur after other fevers?

10. How does influenza affect those previously insane?

11. What treatment should be resorted to in the different forms of post-influenza psychoses?

The work is valuable to the physician in that its conclusions are drawn from so many sources. A list of all these articles (which were written by leading investigators in different countries) is given, and is worthy of the closest inspection.

Contribution to Affections of the Temporal Lobes.

By G. Seppili, (Riv. sp. di. freu., III-IV., 1892).

Two cases of affection of the temporal lobes are noted by the writer:

1. In an autopsy on a deaf mute, a wound of long standing was observed in both temporal lobes.

2. In the case of a left-handed person, whose left

temporal lobe showed an old wound, no difficulty either in hearing or speaking had been experienced.

From this and analogous cases, the author concludes that in a left-handed person the auditive centre of language is seated in the right hemisphere. His results form an interesting contribution with reference to the well established principle that right-handed people are left brained (and vice versa) even with reference to such functions as speech and hearing, of which right and left-handedness cannot be predicated.

The Dream State and the Facts which Accompany it.

By Henry Smith-William (Am. Jour. of Insanity, 1892).

A summary of the conclusions of the writer of this article is as follows:

The condition of consciousness in which dreams occur is an intermediate state between wakefulness and sound sleep, in which the vibrations of the brain are of unequal strength. In this weakness of certain vibrations the writer finds the cause of dreams, and one form of difference between the wakeful and the dream state. The mind does not fail of unity, but, owing to the irregularity of the vibrations, the connecting ideas of which we are conscious when awake are lost during the dream. As an example, he cites a dream in which a man became in turn a horse and a bird. By a natural association of ideas we pass from the idea of a man to that of a horse and then to that of a bird, but because in dreams some intervening vibrations fail to be as strong as others, we attribute to the man the character first of the horse and then of the bird.

Another difference between the two states is that ideas of personality, of time, space, etc., which are present to us in a fully conscious state, are so enfeebled during sleep that they fail to impress themselves on the mind.

Briefly, the condition of the mind in dreams does not differ from that in wakefulness only in that certain vibrations, and their corresponding ideas are weakened during a semi-conscious state in consequence of the diminished flow of blood to those parts of the brain.

Certain forms of insanity, as melancholia and mania, are nothing more than dreams prolonged into a state of wakefulness, due to injury to some parts of the brain which has caused instability of equilibrium.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

PATHOLOGICAL.

On the Efficacy and Innocuousness of Large Doses of the Bromides in Epilepsy.—Fresh evidence has been brought to light by Dr. Ch. Féré, Physician to the Bicêtre Asylum, in support of the disputed opinion that cases of epilepsy which have resisted the effect of moderate doses (one or two drachms) of bromide of potassium, are still capable of improvement under the influence of larger doses of the remedy, and that this method of treatment is attended with no risk whatever, provided certain precautions be taken. There are at present under treatment in Dr. Féré's wards, twenty epileptics who receive from sixteen to twenty-one grammes (four to five drachms) of bromide of potassium or strontium daily.

In only one of these cases has the treatment been attended with considerable loss of weight; in nine the loss of weight is insignificant; in four the weight of the body

has remained the same, and in the other six cases it has actually increased. As regards the therapeutical results obtained, in eleven of the patients a permanent improvement has taken place, but in others the treatment gave only temporary relief. No change has, up to the present time, been noticed in the condition of the remaining two cases.

During a course of treatment by large doses of bromide the patients should be stripped, weighed and examined at frequent intervals.

The presence of cutaneous manifestations and marked loss of weight are indications that the condition of the alimentary system must be carefully watched, especially in cases where there are signs of mental or physical depression with a subnormal temperature.

Under these circumstances the effects of large doses of bromides may rapidly prove fatal and the administration must, therefore, be immediately suspended and the elimination of the remedy promoted by means of purgatives and subcutaneous injections of pilocarpine. (*The Medical Week*, Paris, April 14, 1893). F. P. N.

CLINICAL.

An Analysis of One Thousand Cases of Primary Sciatica: Treatment of One Hundred Cases by Acupuncture (Gibson, *Lancet*, April 15, 1893).

The proportion of males to females in this series was nearly eight to one. In 44 per cent. the right side was affected, in 48 per cent. the left, in 7 per cent. both sides. As regards age, 31 per cent. was between 31 and 40; 25 per cent. between 41 and 50; 18 per cent. between 51 and 60; 16 per cent. between 21 and 30; while before the age of 20 and after 70 the per cent. was one.

The results of one hundred cases treated by acupuncture, are given as follows: 56 per cent. cured, 32 per cent. much improved, 10 per cent. improved, 2 per cent. were not benefitted. In addition to the treatment by acupuncture the patients all used the Buxton thermal water. The essential point in the treatment is that acupuncture should be deep. A single spear-pointed needle two and one-half inches long, is carried into the substance of the nerve in no less than five different places with one cutaneous puncture. The puncture should be made at the point where the pain is most severe. The patient can always tell where the nerve has been pierced by pain shooting down the leg. The needles should be withdrawn immediately after having pierced the nerve.

J. C.

Society Reports.

AMERICAN NEUROLOGICAL ASSOCIATION.

Nineteenth Annual Meeting, held at the West End Hotel, Long Branch, N. J., July 25, 26 and 27, 1893.

President, Dr. HENRY M. LYMAN, of Chicago.

The PRESIDENT's address was delivered by Dr. Henry M. Lyman, of Chicago. After some reminiscent remarks relating to the study of nervous diseases, he called attention to their predisposing causes, and said that we must not be content with the simple recognition of disease, but we must be able to classify it etiologically as well.

RHEUMATISM AFFECTING THE NERVOUS SYSTEM.

Such is the fact with regard to this condition. The masked forms chiefly affecting sensation are not so commonly recognized and are frequently ascribed to other causes. They are usually observed in elderly people of a nervous temperament and an arthritic diathesis, and differ from many other similar disorders of sensation in being transient, vagrant, and of brief duration. Among these ailments is a universal prickling over the surface of the skin; sometimes it is limited to certain points where the patient experiences a sudden sharp prick, like a flea bite. This may interfere with or delay sleep. Another disorder of cutaneous sensation often affects the scalp, and is occasioned by irritation of the superficial nerves of that region. The duration of the attack exceeds a single day. Closely associated with these disorders are the various transient perversions of sensation that may be felt in the Eustachian tubes, the pharynx, and about the fauces. Another of the symptoms of masked rheumatism is a peculiar and disagreeable feeling in the tongue. This sometimes assumes the severity

of a genuine neuralgia, and manifests a greater degree of persistence when associated with obesity, diabetes or gout than when connected with rheumatism alone. The œsophagus and fauces, and sometimes the muscles of the eyeballs, are similarly affected. These patients are sometimes attacked by a paroxysmal cough associated with headache. The most distressing of all these forms of pain is gastralgia. The previous history and the concurrence of other rheumatic symptoms of a more stable character will, of course, add greatly to the certainty of the diagnosis.

Dr. MATTHEW D. FIELD read a paper on

DETENTION HOSPITALS FOR THE INSANE.

DISCUSSION.

Dr. KNAPP, of Boston, said that there are no Detention Hospitals in Boston, and they have felt no urgent need for them under existing Massachusetts laws. A few emergency cases requiring immediate restraint are admitted to the general hospitals. Otherwise they can be taken at once to the nearest asylum on emergency certificates. These consist of two separate certificates. A bond must be given by the superintendent or one of the physicians to the effect that the patient is to be formally committed or relesaed within five days. This system has proved eminently satisfactory and has rarely been abused.

Dr. MILLS, of Philadelphia, stated that a method similar to that described by Dr. Field was in vogue at the Philadelphia Hospital, where there was a detention ward for isolating cases of alleged insanity. Two physicians are assigned to examine these patients before commitment. This ward has also been used for several years for clinical instruction.

Dr. PRESTON, of Baltimore, remarked that their lunacy laws were inadequate. They are endeavoring to establish a detention ward. At present insane patients are kept at police stations until committed, as no general hospital is prepared to receive them. This method of dealing with such cases is entirely unsatisfactory.

Dr. PARSONS agreed with Dr. Field, and believed that such a ward would serve to diminish the number of improper cases sent to asylums.

Dr. BAKER thought that a detention ward would prove extremely valuable for suspected cases of insanity as found in private practice.

The PRESIDENT said that in Chicago they have such a ward in the City Hospital where these cases are detained until transferred. Their commitment laws are now quite an improvement upon the old law.

Dr. G. L. WALTON read a paper on

A NEW METHOD OF REDUCING DISLOCATION OF CERVICAL VERTEBRÆ.

DISCUSSION.

Dr. PUTNAM said that cases are more numerous than supposed, and cited the instance of a man injured by a fall, who accidentally died through carelessness in his removal to a hospital after a diagnosis of no serious injury had been made. Every physician ought to understand the character and treatment of such cases.

Dr. SACHS asked if this method would be practicable in other than recent cases.

Dr. WALTON replied that the operation was performed in one case of about ten days' standing. A case in which bilateral dislocation was produced spontaneously, with perfect recovery, would lead him to recommend the attempt at reduction, even after a number of months, should there be any doubt as to the diagnosis.

Dr. SEGUIN suggested that the ocular symptoms were not due so much to lesion of the angular gyrus as to involvement of the fibres of the fasciculus opiticus which lie immediately under it. The lesion being rather deeply placed must necessarily involve the white fasciculi.

Dr. WALTON agreed with Dr. Seguin that the hemianopsia was due to affection of the optic radiations on their way to the occipital lobe. The early appearance of mind blindness, together with red spots in the field of vision, suggested early cortical irritation in the region of the angular gyrus.

If the symptom mind-blindness is considered due to affection of association fibres, we are justified in assuming the association fibres implicated to be those running to the angular gyrus.

Dr. G. L. WALTON read a paper on

TUMOR INVOLVING ANGULAR GYRUS, OCCIPITAL AND TEMPORAL LOBES.

ABSTRACT.

The case (seen in consultation with Dr. Hooker, of Springfield), was that of a man of forty, who suffered from gradually increasing attacks of headache, at first of brief duration, later continuous, together with difficulty in speech (ataxic aphasia). Red spots in the field of vision were also complained of, word deafness, word blindness, and right hemianopsia. Double optic neuritis was present. There was paralysis of the abducens on the left. Large doses of iodide were used without effect, and the patient's condition becoming rapidly worse, it was decided to operate, Dr. M. H. Richardson, of Boston, having been called in consultation in consideration of this possibility. It was considered probable that the centre of the tumor was somewhere about the angular gyrus, extending in the direction of the occipital lobe. The hemianopsia was attributed to involvement of the optic radiations, the mind blindness pointing to affection of those fibres extending into the angular gyrus. The word deafness pointed to probable invasion of the temporal lobe. The paralysis of the abducens was considered due simply to pressure downwards, not to affection of the sixth nerve itself.

Little promise was held out as the result of operation, as it was considered that the growth was very large. The operation was attempted, however, as a last resort.

At the time of operation the headache was intense, the pulse forty, the skin bathed in sweat. The pain was localized in the left occipital region; the aphasia was extremely marked, hardly a sentence being spoken without words being substituted. The vomiting was frequent and excessive. The mind was cloudy; there was subsultus tendinum.

The operation was performed by Dr. Richardson. With a three-quarter inch trephine the cranial cavity was opened behind and below the parietal eminence, about two inches behind the fissure of Rolando, the opening being enlarged forwards and upwards with Rongeur forceps. The dura mater was tense, bulging, and non-pulsating. On opening the dura there was protru-

sion and eversion of the cortex, showing extreme pressure from within, the everted brain substance being apparently granular in character. There was very considerable hæmorrhage.

No definite boundaries were found on exploration with the finger, and it was decided that the tumor was too deeply seated and too extensive to warrant further interference, especially considering the alarming condition of the patient.

The patient made a good recovery from the operation, and there was distinct alleviation of all the symptoms, with disappearance of the abducens paralysis. There was a large cerebral hernia. The patient gained in flesh, and lived for two months after the operation, at the end of which time there was rapid accession of symptoms with the appearance of right motor paralysis, and death ensued.

The autopsy showed a more or less lobulated pear-shaped mass, occupying the region of the posterior parietal and the anterior part of the occipital lobe on the left side, lying quite loosely attached, in some places, in others infiltrating the brain substance. The temporal lobe was pushed downwards, the occipital backwards by the growth. The consistency was somewhat firmer than that of the brain substance. The growth reached practically to the mesial surface. Microscopic examination showed it to be a highly vascularized, round-cell growth, with a large amount of very finely fibrillated intercellular substance. Diagnosis, glioma (Dr. W. F. Whitney).

Book Reviews.

Hypnotism, Mesmerism and the New Witchcraft. By Ernest Hart. With 20 Illustrations. D. Appleton & Co.

Mr. Hart, in this little book, has endeavored to present what he considers the strictly scientific view of hypnotism, and the physical subjects which are allied to it. It is written by a medical man, an English surgeon and the editor of one of the leading British medical periodicals. The four chapters which comprise the main portion of the book have already appeared in London—partly in the columns of the *Nineteenth Century*, and partly in the *British Medical Journal*—and the author remarks in his preface that it has not received any criticism which seems to him substantial.

The author's work is entirely of the *ex cathedra* sort; which naturally is more or less unsatisfactory to some people, who having pursued the subjects of which he treats with equal patience and honesty with himself, have arrived at conclusions essentially different from his.

In his first chapter, "Hypnotism and Humbug," he concedes the verity of the hypnotic condition; in fact he is himself a skillful operator, but he asserts that the condition is always and entirely subjective, or self-produced on the part of the subject; that the so-called operator might just as well be "a candle or a stick, or be dispensed with entirely, if only the patient's imagination can be touched or his *physical condition affected* by any one of a great number of contrivances." Exactly how the imagination is to be influenced, and especially how the physical condition is to be affected without an operator of some sort he leaves to the imagination of his reader. If he had said that some *peculiarly susceptible subjects* may be hypnotized by the most simple means, such as gazing at a bright object, or even at any designated point when the idea of sleep has once been impressed upon them; or even that some can put themselves into the hypnotic condition at will, he would have stated a truth; but when he indicates that all who can be hypnotized at all can be hypnotized by these easy methods or can hypnotize themselves, he sanctions an error, however strongly he may believe it true. The order to sleep given through a telephone might be efficacious in a very few cases when sleep was known to be easily produced, but in the vast majority of cases the order so transmitted would be perfectly inoperative.

Of course Mr. Hart does not know or does not believe that "passes" made slowly at a sufficient distance from the surface of the subject not to be discernable by means of temperature or currents of air, are nevertheless distinctly discerned by the sensitive subject, that he can give a definite description of his sensations, and that these descriptions agree when the experiment is tried on a great number of different subjects; also that the passes of different operators are felt with different degrees of distinctness by the same subject, and the passes of the same operator with different degrees of distinctness by different subjects; nevertheless this is true, and even that these passes are sufficient to produce contractures and convulsive action in some subjects, and they may produce this effect even through a closed door, and when the subject does not know that the operator is present. He probably does not know that 40 years ago, and also quite recently, subjects have been put to sleep when in another room, another house, another street a hundred yards away from the operator, at unexpected times fixed by a third person and when the subject was unwilling to be put to sleep. It would certainly seem that a personal influence of some kind was present in these cases, and *might* have been the efficient cause of the hypnotic condition, notwithstanding Mr. Hart's positive and reiterated assertion that this condition is "always subjective."

Telepathy is dismissed with a sneer and a bombastic denunciation; nevertheless a large number of excellent men in the Royal Society of Great Britain and in representative scientific bodies throughout the civilized world are by careful experiment and observation convinced of its reality; and while the author has a perfect right to his opinion, the amount of good authority on the other side renders rather questionable his modesty and good taste as well as the reliability of his statements.

In his second paper, the author shows his accord with the Paris school of hypnotism in its central idea that hypnotism is a neurosis and allied to hysteria; and that its therapeutic effect is very slight. In proof of his first position he produces numerous illustrations showing cases of real hysteria, and then similar effects produced by hypnotic suggestion.

By the same reasoning it may be proved that the chief characteristic of hypnotism is the production of a devotional attitude, and a religious frame of mind—or, equally well, that it is the production of a belligerent and pugnacious disposition, since the attitude and disposition of prayer, or that of pugilism, may be induced at will in every highly suggestable or well practiced subject. Indeed, the author seems entirely to ignore the fact that hypnotism has any existence except as associated with suggestion, as he might forget that sleep was a real condition apart from dreams and nightmares.

The mesmerists of the ante-Braid period knew very little of suggestion;—they mesmerized for one of two purposes—to cure disease or observe mental phenomena; and they left the subjects to their own devices. Neither the methods of the mesmerists nor the necessity for them or any method are here under discussion. They simply produced what we now call the hypnotic condition for the cure of disease, and they were

successful. They found very few symptoms produced which had anything in common with hysteria; catalepsy and somnambulism were occasionally produced, and mental phenomena were observed with great interest as they naturally occurred, and were faithfully recorded; their subjects were not eternally experimented upon by making them assume the rôle of cats or hobby-horses, nor by suggestions to fight or steal or murder, constantly impressed upon them; and the *Zoist* is wholesome and refreshing reading to-day compared with the reports of *La Salpêtrière* or *La Charité*. The use of suggestion at Nancy is at least usually of a more benign character.

Mr. Hart also goes to Paris to fortify his assertion "that for curative purposes hypnotism is very rarely useful, generally entirely useless, and often injurious;" an assertion to which at most only one physician in a very large number outside of Paris who knows practically anything of the subject would assent.

As regards the injurious effects of hypnotism, his assertions are of the most alarming and sensational character. It would doubtless be well to limit the practice of hypnotism to qualified physicians—though if "a candle or a stick" makes just as good an operator as a well qualified physician, legislation upon the subject would be a little complicated. Besides, of all the mischief which is even alleged against hypnotism, $\frac{99}{100}$ is accomplished by eminent physicians, and most of it in Paris. "The confirmed or trained hypnotic subject," says our author, "is a maimed individual in mind and body, and is likely at any time to be dangerous to himself or to society." Probably if a dozen people were kept in one of our large hospitals to show students, distinguished strangers and journalists, the funny effects of alcohol, laughing gas, opium or strychnia upon the human subject, after two or three years of this delectable service they would not be brilliant specimens of manhood or womanhood in any respect; and yet would alcohol, laughing-gas, opium or strychnia be to blame? Would it not rather be the inhuman use made of these substances? So hypnotism may be and sometimes is prostituted to base uses, but for the most part it is through suggestion and that alone that evil comes; and while all the severe criticism of the unwarrantable use which is made of that power by many persons is fully to be commended, it may be safely affirmed that the first case of hypnotism or animal magnetism properly applied for the relief of pain or cure of disease which has caused or even been followed by serious or deleterious effects is yet to be found or recorded.

In regard to the author's controversy with Dr. Luys on the transference of sensibility, and the effect of medicines in sealed glass tubes applied to the surface of sensitive hypnotic subjects, he rather leaves the impression that he was playing an unskillful game with the boomerang. If Mr. Hart considered it of sufficient importance to take all the trouble which he did, to upset Dr. Luys' fanciful theories, it was all very well, though nobody else seems to have considered them of any great importance; but his attempt to connect a bureau of swindling, fortune-telling and obscene literature with it by means of one of Dr. Luys' irresponsible

subordinates seems hardly generous. As regards the experiments themselves, both Dr. Luys and Mr. Hart, in different ways, seemed utterly oblivious of the power of mind-reading and of suggestion. Dr. Luys did not hesitate to tell the spectators in the presence of the hypnotized subjects exactly what was expected of them, and Mr. Hart in his experiments at his hotel with the same subjects, failed to take into account that when he strongly desired that cherry-laurel water should have the same effect upon the subjects that they had been accustomed to associate with alcohol, that effect might have been produced upon the subjects not by the medication to be sure, but by his predominating desire, and when he desired that they should cry out when the wrong doll's hair was pulled, it was quite possible that they did so by the same suggestion. Dr. Hart does not believe in transferred impressions and mind-reading, which disbelief is supposed to indicate a sturdy independence and a thoroughly scientific attitude; whereas, to those acquainted with the subject it simply indicates that he is thoroughly unqualified to detect fallacies in psychical experiments, and would be nonplussed by any good dime museum exhibition of the subject. His attitude would simply banish all efforts to redeem from the region of the supernatural many phenomena, whose reality we cannot doubt but whose explanation on the ground of generally received ideas of natural law is at present impossible.

Mr. Hart's book contains many true and useful considerations, but its style is dogmatic and aggressive upon many subjects which cannot be considered as definitely settled, and certainly not settled in accordance with the *dicta* which he has here rather loudly proclaimed.

R. Osgood Mason.

Brain Surgery. By M. Allen Starr, M.D., Ph.D., Professor of Diseases of the Mind and Nervous System, College of Physicians and Surgeons, New York, etc. With 59 Illustrations. Wm. Wood & Co. 1893.

A work on brain *surgery* by a professed neurologist seems, at first-sight, to be an anomaly; but since the questions at issue in operations upon the brain are neurological rather than surgical in character, Dr. Starr was fully justified by training and personal experience to write on this subject.

The title of Starr's book reminds one of v. Bergmann's monograph published about five years ago, but there is no closer analogy between the two; for the methods of the two authors are radically different. v. Bergmann, the surgeon, subjecting previous neurological studies to a healthful analysis, was sceptical to a fault; Starr seems to have laid aside the critical faculty which he undoubtedly possesses, and to have contented himself with an array of cases. "I have undertaken to bring together and to sift the scattered facts, to arrange them in an orderly sequence,

and to deduce such conclusions from their analysis as seem warranted by critical study." We wish the author's work would have given us satisfactory evidence of such "critical study." A mere collection of cases is not criticism; and we must, much against our own inclination, charge the author with an abuse of the statistical method. Herein lies the chief defect of the book before us.

The present writer is a believer in the use of statistics; but they must be collected with great caution and discretion, for it is only by exercising the critical faculty to the utmost that the little truth that mere figures contain can be got at. The justice of pointing out this faulty method will be evident as we review the various chapters of the book.

Chapter I, on the diagnosis of cerebral disease, is practically an introduction to the book. The main facts of localization, a subject to which Starr has ably contributed, are presented in the author's happy and lucid style. We are startled, however, by his stating to the general practitioner (for whom the book is chiefly written) that the diagnosis of the *nature* of disease in the brain is usually of no great difficulty. The mere facts of localization can be acquired in a very short time, but to make the proper diagnosis of the *nature* of cerebral disease, the physician must be well versed not only in cerebral but in general pathology. In the discussion of the methods of determining the location of the various centres upon the corresponding part of the head, the author states Reid's rules fully and clearly; it would have been well, we think, to have made some reference to Wilson's cyrtometer, by means of which the novice can map out the areas very readily, and in this connection to have explained the electrical method of determining whether or not the area exposed is the one it is intended to operate upon. The latter method we have found to be an essential safeguard in all operations involving the motor area.

Chapter II, "Trephining for epilepsy," is by far the most important of the book; in it the author has an opportunity of helping to decide the burning question, whether traumatic epilepsy can be cured or relieved by surgical interference. The author has collected 42 cases, 13 of which are his own, and the remaining 29 have been reported by other American authors.

The result of Starr's 13 cases is stated to be as follows: "Cured 3; improved 5; not improved 4; died 1." This gives the impression that of 13 cases 8 have been either cured or improved. The "improvement" in case 1 is noted after barely 4 months; but in case 2 there was "recovery" for six months, and then recurrence followed by "recovery," although he is said to have had ten attacks between January 7 and March 1893.

Case 8 is reported as a case of "traumatic epilepsy, but there was a suspicion of tumor," which should have excluded the case from consideration in this category; and the same is true of two cases which Starr quotes later on from other authors. My summing of Starr's cases would be: uncertain 3; improved 2; not improved 7; died 1. The cases which Starr quotes as "cured" are reported altogether too early after

the operation. Just here I wish to call attention to an important point regarding statistics. If a case is to be entered under the heading of not improved, that case can be reported as early after the operation as the fits return, but to prove that a case is really improved or cured, a period of at least a year should have elapsed.

Aside from the difference in the interpretation of his figures, we fail to find any discrimination between cases in which the operation was done one month, one year, or three years after the initial injury; cases of sarcoma, and one case of probable tubercular complication, are included in the list, although such cases would vitiate any statistics. We regret that with the same clinical material at hand, the author did not postpone publication a full year; in that event, the worth of his statistics and of his work would have been immeasurably increased.

We are happy to be able to turn from this part of the subject to the excellent remarks by Starr and Van Gieson on the pathological and histological features of diseased brain tissue in these cases of epilepsy. Van Gieson's report on tissue excised from cases 2 and 3 includes an excellent study of neurogliar hyperplasia, and of the degeneration of cortical ganglion cells, and shows that in one specimen at least the large cells of the fourth layer are chiefly affected. These same researches, if extended to the entire cortex, and not limited to the injured portions, as by the nature of the case they necessarily were, will help us to get at the changes in the brain responsible for the origin and continuance of epileptic discharges after traumatic injury.

Chapter III is entitled, "Trephining for imbecility due to microcephalus," but the author includes under the heading every possible cerebral condition in the child with which idiocy and epilepsy are closely or remotely associated. The reader will not, therefore, find a satisfactory discussion and solution of the question whether or not Lannelongue's operation is advisable in cases of idiocy due to microcephalus; but we will not make much of this for Bourneville's recent paper has decided the question in the negative to all intents and purposes.

Dr. Starr must have been napping (we do not blame him; such work is trying) while he made up the table on page 137. It is headed "Table I. Cases of craniotomy in *children*," but we find that the ages at the time of operation of some of the cases herein reported were 19 years, 38 years, 30 years and 18 years respectively, and the worst of it is, that in some of these cases there was neither imbecility nor microcephalus. The cases which Dr. Starr reports in this chapter from his own experience are interesting, and seem to show that he intended to include a mixed series of cases of operation upon the brain of children who presented structural or operable lesions. Case 5, page 153, is thoroughly satisfactory and well worth reading. The remark that the "increased space given to the brain by the operation (craniotomy,) appears to stimulate its growth and development," gives the author's explanation of the slight improvement that has taken place in a few cases.

Three chapters are devoted to the subjects of trephining for cerebral hemorrhages, for abscess of the brain and for tumor of the brain.

The author's personal experience stands him in good stead, and there is every reason to agree with him in the conclusions he presents. Case 19, page 174, is, by the bye, a good example of the difficulties of diagnosis, and should be read together with the remarks regarding the ease of diagnosis, quoted above.

The pages discussing the diagnosis and removal of tumors of the brain, are among the best in the book. The report of the case of sarcoma of the left frontal lobe, is a model of its kind; but we wonder whether the author would have depended so much upon the mental symptoms, if the headaches had not also pointed to the frontal region as the seat of the disease.

Coming after this excellent chapter, the section on tumors of the cerebellum is a distinct disappointment. The author states that 16 cerebellar tumors have been operated upon; in 9 cases the tumor was not found; in 2 cases it was found, but could not be removed; in 3 cases it was removed and the patient recovered (how long?) In 2 cases it was removed and the patient died. No analysis of these cases is attempted. Dr. Starr reports upon three cases of his own: two of them died; in the third one, there is stated to have been "successful removal of the tumor," but we have been informed that this case also died soon after the operation.

Rather than to have inserted this hasty report, the author should have delayed his book a month or a year if necessary. The reviewer is convinced that cerebellar operations are rarely justifiable; it is a matter of regret that the author has not said a word on this point. It is a serious matter, this; the diagnosis of cerebellar tumor is relatively easy, and the temptation to operate great enough. The warning to keep hands off, except for good reasons, should have been given all the more forcibly. We miss in this chapter the illustrations showing the field of operation, which contributed much to the clearness of description in the preceding chapters.

Trephining for hydrocephalus, and for the relief of intracranial pressure is treated of in chapter 7; Starr concludes that "trephining in hydrocephalus with drainage of lateral ventricles, is a possible and fairly safe operation," but records no cases of his own. We are glad to note that Dr. Starr does not favor surgical interference in cases of general paresis, and in cases of traumatic insanity; but we think the author somewhat hasty in condemning trephining as "a form of treatment for headache."

The book closes with a chapter on the "operation of trephining." We imagine it will elicit a smile from the surgeons to hear that the author has seen "this operation performed so many times, in such different ways, by different surgeons, that I am quite familiar with it." It would have been more satisfactory to surgeons if Dr. McBurney had not only read the chapter, but had also written it; for after all, although he has seen many surgeons operate, Starr evidently describes Dr. McBurney's surgical practice in these cases. This is equivalent to saying that the general reader may well follow the rules laid down in this section.

The book is well printed and profusely illustrated. As we lay it down after a most careful reading, we feel that the general reader will find in its pages much valuable information, but we wish that the author had held the book back for at least a year, and that he had shown greater appreciation of the statistical method. If a later edition is called for, let the author revise his statistics, and his book will be a credit to American neurology. B. S.

DICTIONARY OF PSYCHOLOGICAL MEDICINE. 2 Vols. 1476 pages. Edited by D. Hack Tuke, Philadelphia. 1892.

This work, the first of the kind which has been attempted, is designed to provide more or less systematic information with reference to the terms used in medical psychology, together with the symptoms, treatment and pathology of insanity. An account is given of methods of psycho-physical research and experimental psychology. The work also contains an abstract of the law of lunacy in Great Britain, and, still more important, a history of the insane, (by the editor himself) and the reforms undertaken to ameliorate their condition in various countries of the world. Carefully selected cases illustrating the various types of insanity are furnished, and are an interesting feature of the book. What seems to us one of the most important characteristics in an encyclopædic work of this kind, is the introduction of bibliographical references in connection with the leading articles. With few exceptions this characteristic is well sustained throughout the book, though some of the important subjects happened to fall into the hands of inferior men for treatment, and as a result no bibliography of any value is given in such cases.

The plan of the work is most excellent, and shows the mark of a master mind. It impresses one with Dr. Tuke's characteristic vigor and enthusiastic energy. No subject of any considerable importance, which at all lies within the domain of a book of this kind, has been omitted.

The list of contributors numbers one hundred and twenty-five, selected from different parts of the world, embracing many names well known in connection with mental diseases and pathological analysis. The editor insists upon the *international* character of the work, not entirely without reason, and yet in this same connection it must be remembered, of the one hundred and twenty-five contributors, over eighty are from Great Britain. France is represented by eighteen; while Germany, with all her progress in this special field, has only nine names to her credit, and the United States but five. Austria, with her Vienna and its Kraft, Ebbing and that coterie of other renowned specialists, has but two, Benedikt and Schwartzer, who are hardly representative men in the best sense. While the number of Americans is

exceedingly small, their work is of high character. Special mention ought to be made, even in this brief review, of the very worthy contribution on "Psycho-physical methods" by Prof. H. H. Donaldson, and the article on the temperature of the cerebrum, by J. S. Lombard, as well as the excellent resume by Prof. Jastrow of what has been done in reaction-time experiments among the same. Spain has no representative at all, Russia, Belgium, Holland and Denmark but one each. Italy, with all her high grade work of recent years, has but two.

As a part of the introduction, the book contains an essay on "Philosophy of Mind" by W. C. Coupland. This essay is a burden to the book and in no sense a redeeming feature. It is metaphysical in its style, and wholly at variance with the spirit of modern psychology and the laboratory methods which have thrown so much light on some of the most perplexing problems of mental pathology. It is also unfortunate that the wood-cuts are so few, and that some of these are so poorly executed. Another matter to be deeply regretted is that so long a time elapsed between the preparation of some of the articles and their appearance in print. A few already need revision in order to have a strictly up-to-date color. Though these defects of the book are at times very aggravating, yet in justice it must be said that they do not seriously mar the treatise as a whole. Take it all in all, the work is a strong one, rich in its suggestiveness, forming an elaborate and valuable contribution to the literature of medical psychology. It commends itself especially on account of its terminology which is thoroughly modern, and also because of its clear definitions. It is very reliable as a work of reference, not only to experts in mental diseases but to the student of psychology in any of its branches, and also to the profession generally. It certainly fills a want long felt by those who have been called upon to deal with neuropathic cases in the course of their ordinary practice, and it is a boon in that, in a large measure, it brings into focus the widespread literature of the subject in a manner that betokens the editor's zeal, ability and broad learning. W. O. K.

ILLUSTRATIONS OF THE NERVE TRACTS IN THE MID AND HIND BRAIN, AND THE CERVICAL NERVES ARISING THEREFROM. By Alexander Bruce, M.A., M.D., F. R. C. P. Ed., Fellow of the Royal Society, Edinburgh; Lecturer on Pathology in the School of Medicine; Assistant Physician (formerly Pathologist) Edinburgh Royal Infirmary; Pathologist to the Royal Hospital for Sick Children, Edinburgh. Edinburgh and London. Young J. Pentland. 1892.

The title does not suggest all that is contained in this brilliant work. We have before us an atlas of 27 plates, treating the anatomy of

the brain stem from the medulla up to the mid-brain. The plates are made after sections of fœtal brains, which, with the Weigert stain, give very distinct pictures of the various tracts. The execution in colors is perfect, and the drawings give an infinitely clearer idea of the microscopical aspect of the sections than photographs could possibly do. Each plate is accompanied by a very short and precise definition and description of the parts of the section. The student of brain-anatomy will use them with great profit.

Besides the didactic value the work has another important feature. In the plates, and more especially in the introductory chapters, there is a complete review of what has been obtained with Flechsig's method by the author himself, and by other investigators. The text, containing 27 explanatory diagrams, is very important and useful especially for the advanced student, and for those making original research. The literature of the development of the medullary sheaths of the various tracts is partly out of print and so scattered that we are much indebted to Dr. Bruce for his careful review.

We miss, to a certain extent, references to the recent views on the architecture of the nerve-centres, and to the discrimination between different kinds of nuclei with regard to the theory of neurons and the experiments of v. Gudden's school. A thorough discussion of this method of anatomical study has no doubt been omitted on purpose. The next edition will find the material better prepared for such treatment of the subject. This defect will not be of serious consequence, as the chief importance of the work is the reproduction of brain sections such as will enable the student to become familiar with the topography of nuclei and fibre-tracts, a secondary and equally important feature being the description of the result obtained by the study of the development of medullary sheaths in the fœtus.

The work will be of great use for the instruction in medical schools, the plates being large enough to allow demonstration to a class.

Adolf Meyer, M.D., Pathologist, Kankakee.

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THE LOCALIZING VALUE OF APHASIA.[1]

By GEORGE J. PRESTON, M.D.,
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THAT condition of speech defect, known generally as aphasia, has of late years been the subject of such careful and exhaustive study, both from the psychological and physiological points of view, has been so divided and subdivided, has been so burdened with nomenclature and unimportant variations, that it hardly commands its proper place in the domain of cerebral localization. The centres for the various language processes have shared the fate of the other centres, in that we can no longer regard them as exact geometric figures, but must look upon them as more or less irregularly shaped areas, overlapping and shading into one another.

For practical purposes, unquestionably the best division of the subject is into motor and sensory aphasia, regarding the posterior part of the third frontal convolution and the insula; together, perhaps, with the lower anterior part of the ascending frontal, as the centre for the former variety, and the region about the angular and supra-marginal gyri, and the temporal convolutions, as the centres

[1] Read before the American Neurological Association, July, 1893.

for the latter. This, of course, on the left side for right-handed individuals. It is doubtful whether we can separate the two varieties of motor aphasia by their lesions, and so for practical purposes it is best, in the present state of our knowledge, to consider both conditions as due to a lesion of the third frontal, possibly involving a part of the second frontal, and in addition the insula. Our knowledge of sensory aphasia is in some respects more, in some respects less, exact than of the motor variety. The two varieties can be separated by the lesion producing them. Thus, word blindness is almost certainly due to a lesion involving the cuneus and the supramarginal and angular gyri, while word deafness depends upon injury to the cortex in the temporal region, probably the first temporal convolution.

The somewhat rare cases of pure sensory aphasia, word blindness or word deafness, will often afford symptoms sufficiently certain to warrant surgical interference, as can be seen by referring to Starr's valuable collection of cases. On the other hand, we sometimes fail to find aphasic symptoms when the recognized centres are apparently involved. I have recently had under my care two cases of right hemianopsia from central disease, neither of which showed any trace of word blindness. One of these cases passed from my observation; the other went to autopsy, and the specimen here presented shows involvement of the whole of the cuneus and precuneus, of the left occipital lobe with more or less destruction of the angular and supramarginal gyri, particularly the former. The tumor in the fresh state seemed to have replaced all the posterior half of the occipital lobe. It would seem to be a safe rule to make a large opening in the skull when looking for lesions involving either the visual or auditory centres. Some limited experiments with a case of word blindness has led me to think that perhaps we do not lay enough stress upon the individuality of the patient. A person with word blindness will sometimes be able to pick out the printed names of objects, when he is entirely unable to grasp the meaning

of the simplest proposition. The printed or written name of an object becomes associated indissolubly with the appearance of the object, and does not have to be referred to the speech processes to be recognized, just as children are taught words by the object system. So, in like manner, a person who, like Macaulay, was accustomed to read by paragraphs, would probably be able to recognize certain simple propositions. I test such cases by writing the names of a number of objects, and then show the patient one of these objects and ask him to pick out the written name.

Our knowledge of the seat of pure motor aphasia is, as has been noted, more exact than in the case of sensory aphasia. Moreover, it sometimes happens that we have paralysis of certain groups of muscles as a guide, since the language area is so nearly contiguous to the motor area. When, however, the lesion involves the association fibres, with a consequent mixed variety of aphasia, the diagnosis becomes more uncertain. The following case, the brain from which I present, illustrates the difficulty which is sometimes met with in arriving at a satisfactory diagnosis. Pratt, aged about fifty-five; sailor; when admitted into hospital was totally unable to give any account of himself. There was absolute loss of language; he made sounds which bore very little resemblance to articulate speech, nor were there any recurrent words. Upon attempting to write his name he made one or two letters, but not enough to permit of the name being deciphered. Further than this any attempt at writing resulted merely in illegible scrawls; he was also unable to copy. He could not understand a single written or printed word as many and varied tests proved. He was not able to read aloud or repeat from dictation. He understood perfectly everything that was said to him, and his intelligence seemed nearly if not quite normal. There was no paralysis, and the eye ground showed nothing abnormal. General health was excellent and there was no evidence of syphilis. His wife was seen, and reported that he had formerly been able to read and

write with ease. In what manner the attack came on, whether suddenly or gradually, or whether there was any injury, was never known as he came from his ship to the hospital, and the vessel sailed before any information could be obtained. During the three or four years that he was under my observation, little change occurred in his condition; he learned to utter a few words, but never complete sentences, nor did he acquire a power of writing; and though he sometimes held a newspaper before his face, he never understood, as far as I could tell, a single word. A month or two before his death he had several fits, and was supposed to have died during a convulsive seizure. The autopsy showed the meninges greatly congested, with minute points of extravasation, which were quite recent and probably took place during the last fit. The lesion in the brain was confined to the insula, which was almost entirely destroyed, the posterior part of the third frontal convolution, and a slight erosion of the anterior inferior portion of the ascending frontal convolution. It looked as if there had been a cyst, the result of softening, and this view was in part confirmed by finding an old infarct in the spleen. While the brain was fresh, an incision was carried immediately beneath the cortex of the left hemisphere, and no evidence of involvement of the sub-cortical white matter could be seen. The interesting point in this case was the absolute word blindness due almost certainly to a break in the association fibres very close to the cortex. I had rather expected to find multiple lesions; or, at least, to have found either an involvement of the occipital cortex or the deeper portions of the white matter. When there is hemiplegia accompanying the aphasia, of course we know that the lesion is in the region of the capsule, and hence do not advise operation. I have just now under my care a case which is clinically the counterpart of the one related, with the addition of a right hemiplegia. In this latter case the word blindness was for more than a year absolute, but with the improvement of the paralysis the patient became able at first to recognize

the names of objects and finally to understand simple propositions.

There is one other point in regard to the localizing value of speech disturbances that I have had an opportunity recently to verify, and that is the general disturbance of speech due to wide-spread injury or disease to the left fronto-parietal region. A man was brought into the hospital suffering from the effects of alcohol, and in addition he had some slight bruises about the face and head. There was no apparent injury to the skull; nothing, I believe, but a very slight abrasion of the scalp. The patient lay in an unconscious condition for about a week, during which time he became violent, attempting to get out of the hospital. At the end of a week he had recovered from the apparent injuries, but his mental condition was extremely bad. He was inclined to be violent, and had to be forcibly restrained. During the first week he had some temperature, but this subsided. A careful examination of the case showed that while the man's mental condition was very bad, still he could recognize the use of objects, though entirely unable to pronounce their name.

He could articulate, but used words entirely at random. While the case could not be satisfactorily examined owing to the mental condition, still I determined to have the man operated on, having as the only localizing symptom the very general disturbance of the speech centre. The skull was opened by Prof. Chambers in the region of the third frontal convolution on the left side, and the dura incised. There was at once an escape of an ounce or more of serum, and upon turning the dural membrane back it was found to be covered with a thin layer of blood with here and there minute clots. The man has improved very much, but the operation was done only a few days ago and will be reported later with more detail. I simply refer to the case as an evidence of the value of speech disturbance, even when there is no distinct or recognizable variety of aphasia present.

ETIOLOGICAL SIGNIFICANCE OF HETEROGENEOUS PERSONALITY.[1]

By SMITH BAKER, M.D.,

Utica, N. Y.

AFTER the usual methods of investigation have been exhausted, it sometimes remains that the real source of disease has not been reached. The patient may yield negative results to our questionings and tests, and yet persist in declaring himself miserable, and so present a veritable challenge to further effort. In response to this, we may be led to express the opinion that the trouble is functional—that he is hypochondriacal, imaginative, pathophobic, an instinctive pervert, foolishly introspective—but this does not elucidate matters or prepare the way for relief. We may hypothetically refer his difficulty to some degree of ascertained reflex irritation; or, this failing, to some more mysterious still element of auto-intoxication or systemic poisoning; but the outcome proves only too effectually how amiss our premises or how illogical our induction has been. Or, perhaps, we may take a more general view, and affirm that too fast living or too high tension: wrong education, improper food, clothing, habitations, or industries; or indulgences, sensual and destructive, have been the real cause. In this, very likely, we may be partially right; and could we transpose the score and influence of these facts in the history of many sufferers, we would be very able to transform the chords of outraged sensibility to more or less permanent harmony and comfort. But take some individual case and try all this; probability of success does not after all turn out to be very certain. We find ourselves baffled—our patients report persisting discomfort and alarm. The final conclu-

[1] Read at the American Neurological Association, July, 1893.

sion is, something yet must be found out and acted upon, if we would obviate life-long invalidism; or, not this, permanent mental as well as physical distress.

An illustrative instance may not be without value: A little girl, about four years old, was brought to me as a sort of professional puzzle. She was one whose very bright, beautiful, winsome, affectionate nature had rapidly endeared her to all; and I found her to be unusually imaginative and inventive, rather precocious as to powers of observation and reflection—altogether an attractive child, and without physical abnormality so far as could be discovered. Yet I was informed that she irregularly presented these characteristics: For a few days she would be a normally healthful girl, and a cheerly, friendly, smooth-tempered playmate of everybody. Then would follow a season, varying in length from a few hours to a couple of days, during which she would manifest all sorts of perversions of bodily function, and of mental and moral life. Indigestion and constipation and irritable bladder; bounding heart, full vessels, flushed cheeks, with no corresponding rise of temperature, and no accounting characteristic of the urine; fidgety, sleepless, cross, vindictive, dull, but explosive in every direction—apparently another child for the time being—one who had as yet puzzled parents, nurses and physicians, both as regards diagnosis and treatment. Hysteria, hydrocephalous, worms, vaginitis, eye-strain, defective valves, Bright's disease, malarial and liver troubles, had been the suppositious sources as yet most frequently drawn upon to account for the phenomena; while panto-pathic almost had been the methods of attempted relief.

Evidently here was a challenge for the minutest sort of investigation and of generalization accurately inclusive of all the facts; and I lent myself to a few days of as close endeavor as I was capable, with the result that, so far as my knowledge of diagnostic methods, both general and special went, the problem was not immediately solvable. Local areas of irritation, reflexes

ocular, nasal, sexual, abdominal, cutaneous; the heart, liver, lungs, kidneys; the cerebro-spinal and sympathetic systems—multitudinous almost were the methods, theories and reasonings adopted, to be in turn declared barren mostly or wrong. Finally I thought back upon what I had known of the family antecedents of my will-o'-the-wisp-like patient. Her mother was the only daughter of two people, who were so unlike, not only in physique, but also in mental and moral traits, that on the ground of contrast only could their marriage be at all accounted for. Without describing them particularly, let us see how this fact of marked contrast might possibly be applied to the elucidation of the condition of my little patient. When their daughter, her mother, was about fourteen years of age, according to my own remembrance of a prolonged acquaintance with her, she presented certain functional peculiarities that were so marked that many others as well as myself observed and discussed them. Large and precocious developmentally, energetic, capable, she, like her little daughter, had experienced a series of alternations that might be taken, perhaps, as somewhat typical of those of many other lives. For a few days she would be the well-regulated, industrious school girl that pleased everybody and was at ease with herself. Then would supervene a period in which an almost complete transformation was observable—in which she was capricious, cruel, indolent, reckless, tormenting and elusive, not reliable and not comfortable. I remember trying, at the time, to account for her alternations, and also of calling in many explanations as to cause without, however, any final satisfaction. In fact, she was too healthy, professionally speaking, to yield much to the ordinary methods and extent of investigation.

Thinking of all this, however, in connection with the history of her little daughter, I eventually came upon the perfectly obvious fact, that in reality the mother, during her girlhood, had alternately presented the mental and moral—the dynamic characteristics—of the personalities of her two parents respectively: that during

one series of periods she had been in these respects the veritable child of her father, while during the alternating ones, she had been not this, but none other than her mother's own child—giving thus a truly disparate functionment—a summation, in fact, of heterogeneous personality, in which, at least, two factors were unblendable in the personal whole. Already her own introspective studies had led her not only to some such conclusion, but also to the query as to its possible bearing upon her child's "moods," as she felicitously called the alternating phases of her life. The father I had never seen, and so was obliged to reason without the entire facts; but I could not resist the conviction, that I had, at last, found in the uncoalesced condition of the child's personal elements, a plausible explanation of the alternations and the concomitant discomfort.

But the subject of heterogeneous personality, as thus suggested, is so important that conclusions, hastily or faultily founded, are in nowise justified; my little patient's history certainly suggested the fact, but what of the constituents of the fact, if such there be, and how are we to further elucidate it and practicalize it for clinical purposes? The suggested fact is, that certain personal characteristics of the two lines of ancestry do not always harmoniously blend in the personality of the individual under consideration, and that consequently the experience is that of disease and danger rather than that of ease and safety. But is the suggested fact an actual fact in the history of human nature?

The question thus put cannot be answered, it seems to me, until we have arrived at altogether more comprehensive and accurate notions of what personality really is than usually prevail. Nor can this be determined until the requisite accurate observations of human nature, extending through many series of generations, are made. It takes but a moment's thought to arrive at the conviction that these have never yet been made, and that, as a matter of fact, conclusions as to the course and significance of what is called heredity, are as yet, so far as

humanity is concerned, inadequately founded. How, then, can we discuss the fact and constituents of personality, the most subtle and complex aspect of our being, with anything like satisfaction or accuracy? We certainly do not find complete satisfaction in referring to the classical definitions, whether we search for light in the realm of metaphysics or in the realm of biology. These all hinge the fact of personality upon the consciousness of a persisting self, whether of the type of a pure cucept (Ward) or a cœnæsthesis (Ribot), or a feeling of adjustments and executions (Wundt, James, etc.). But when one has considered these and their numerous sisters in turn, one is left still with the conviction that the inclusive, conclusive definition of personality has not yet been enounced, and that the facts for a discussion which may ultimately lead to such a definition, are not yet fully described.

To the physician the need of such investigation and generalization, is becoming of increasing importance; while one thing is very certain: he should not neglect giving attention to the subject simply because of preconception, prejudice, or dogmatic belief. Reference to this is justified because of the readiness with which snap judgments and pride of opinion are everywhere liable to be substituted for continued impulse to observe and reflect.

Just how we shall prosecute the investigation remains to be seen, and can only be learned from heeding the suggestions derived from actual attempts. Thus, my little patient, her parents and grandparents afford not only an interesting problem, but likewise present a field of inquiry replete with suggestions as to needs and methods. Her moods had already led her mother to wonder at their source and meaning. Who can as yet talk very intelligently about these common aspects of the personal life? And so we might query with reference to dreams, especially the continued dream which, like a Chinese play, goes on from night to night; or somnambulism, and problem-solving during natural sleep, and the sleep-awake

condition of ordinary delirium and the like; or perversions of instinct; or the dominance of a whole series of concomitant states, such as antipathy and repulsion, love and jealousy and hate, selfishness and altruistic activities; or the play of genius, constructive imagination, the flow of thought during composition; or the differences in acuteness and obtuseness of sensibility, and the rapidity or slowness of response to stimuli; or the many alternations of personal aspects that have been more or less investigated under the name of "double" or "multiplex consciousness," "Doppel Ich" and the like, and that are to be found in simpler degrees at almost every turn. In fact, we need not go to the realm of hypnotism, or pathology, or the unique, to find just the material which, if properly studied, will throw most light on the subject. It would be interesting to know why the boy next door, who, as soon as he could walk, began a busy round of mischievous destruction, and kept it up for a few years, finally gave way to a wholly unexpected change for the better; likewise, why another boy at school, who, in the presence of one teacher, was always a troublesome unreasoning brute, became rapidly, in the presence of another teacher, no better qualified, submissive, considerate, gentlemanly and industrious. Such matters as these are just as much a subject of needed inquiry as are the grosser instances of alternating consciousness discussed so ably in the proceedings of the Society for Psychical Research, and by so many others the world over.

Recently, a bright, observing lady told me of her two successive experiences with anesthetics. During her first state of anæsthesia, she all at once saw herself becoming, as it were, separated from herself; and then, after a little, that her dissociated self proceeded to look down upon her primary self with an almost pathetic interest, eliciting a returning look of yearning amazement—the disparate derivatives of the real self holding, for the time being, a sort of transcendental love-feast of mutual interest. Upon regaining consciousness, however, no recollection of this

was ever experienced until, upon going to sleep similiarly six months later, the former dissociation and social event was reproduced and continued; which, moreover, left behind a very distinct recollection of both events upon waking.

"A number of years since I sickened of a fever. During the first two or three visits of the attending physician I remember to have discussed the diagnosis, treatment, etc., as best I could. Then a quiet delirium or dream-state, in which I was mostly a traveler in foreign lands, supervened, and for two weeks all was a blank, except as I have been since informed. Still it appears that during all that time I regularly talked with the physician, much as before the dream-state, and often gave the impression that I was quite as wide-awake and rational as ever."

Now, a thousand and one things like these come under the observation of physicians, all bearing upon the ultimate fact of the personal life, and it would be not only interesting, but assuredly profitable, could we regard them with anything like an adequate conception of their importance. I felt this as never before in connection with the following case: A man of about fifty years, well-born seemingly, well-bred evidently, and well-conducted according to every available testimony, sought advice and treatment for insomnia; at times frequently recurrent, at others persistent. He was usually well physically, and for a time eluded my attempt at etiological solution. Finally, he revealed the fact that every since a child he had been living a mixed life personally, which had kept him in a state of fearful tension as to the final outcome. Successful and honorable in every walk of life, he had always however had present in consciousness, or had felt it to be just ready to become conscious, an inclination—scarcely an impulse—to pilfer—not for what it would bring him, but for its own satisfaction. At times he had not allowed himself to assume ordinary responsibilities involving opportunities for gratifying this untoward phase of his personality,

and in many ways he felt himself to be like an armed neutrality between two ferocious and determined antagonists. And he fears now with increasing intensity, that when the period of senility overtakes him, he will not have the requisite inhibiting power. In this I am rather certain also; for I find that he was born of a parentage representing on the one hand, honor, and probity and trustworthiness; but on the other hand, just a generation back, a number of petty thieves, sexual perverts and dandified mediocres —giving a typical ground field for the Jekyl-Hyde personality.

Perhaps this introduces sufficiently the importance of personal heterogeneity as a possible etiological fact. This man had never suffered from any of the severer diseases or from overwork or abuse of strength in the ordinary sense; still he came presenting every evidence of neurasthenic decline, with psychical depression not far off. The long years of personal struggle had brought him step by step, in spite of an unusually resilient constitution, to the verge of danger. His only safety now is to look out for every shoal, and steadily conduce and enhance his truer personal force.

A professional man, influential and prosperous, has recently come with queries as to the meaning of a developing ficklessness of disposition and ability to work, which disgusts him with himself, and occasions more or less fear as to the final import. Although he has been told that he is overworked, and has been managed professionally on this assumption, he certainly does not afford special evidence of this, either as regards the work actually done, or the condition of himself. Omitting details of the personal presentation, I have finally concluded that not the war with the world, but the war within himself has been chiefly at fault—a war in which the unfused and, as yet, unfusable factors of his personality, have displayed all the details of battle-fields celestial as well as terrestrial. In this I am supported by the fact that actual insanity is not far removed in the family.

and also by confirmatory conclusions of the man's own studies of himself. It would be interesting to inquire what proportion of people are the victims of some such intra-personal belligeraney, and what proportion of the exquisite sufferings dependent upon morbid aspects of the sensibility are most likely its fateful outcome? As a matter of fact, I always look for the basal field of heterogeneous personality, especially when grosser causes do not prove to be a sufficient explanation of the appreciated effects.

Especially do I find this helpful in many cases of apparent reflex neuroses from minor degrees of peripheral disturbance. In a rightly constituted personality, the lesser refractive errors, sexual irritations, digestive disturbances, and the like, ought not to be productive of the suffering they evidently are productive of in so many instances: and they would not be, were the fundamental elements of the personal whole coalesced in the way that would seemed to be naturally necessary. A monstrous pair of ears like the father's, flanking a symmetrical smallish refined face derived from the mother, does not give exactly a homogenous face to the child—such dissimilar physiognomical characteristics do not blend, regard them as one may. And so with some monstrous personal element in one parent, soldered to symmetry even, as found in the other, need not, does not, present a coalition-whole in the progeny. And there is no good reason why the disharmnoy within should not be assumed to be as consciously distressing as the dissymmetry without.

But, perhaps, it is more especially in connection with a consideration of the sexual nature and its derangements, that the idea of unblended personality finds its most useful support and application. The intuitional revelators have everywhere recognized this—St. Paul speaking much of the different law of my members waring against the law of mind, bringing me into captivity; and ecclesiastical biography affording multitudinous examples of the struggle to make dominant the better aspects of personality. Alienists and neurologists find

evidence of some such painful contest probably in nine-tenths of those who need their services. Krafft-Ebing has given a survey of the field that makes the experiences of Inferno an almost blissful dream in comparison. Modern youth, with very few exceptions, seemingly know full well the malignancy of the struggle between the sexual "I will," and the oppositional "will not." Just now a young man from college presents a refined intellectual face that does not belie the successful prize-taking reputation he enjoys; and no one would suspect the quasi-abnormality that is revealed by an inspection of his hyper-developed sexual organs, or the sensitive response elicited by even a professional reference to them. But he tells of persistent trouble—a fearful expenditure of force really—in endeavoring to keep his intellectual self dominant, and apprehensively questions his ability to go on with his studies, and at the same time maintain the requisite force production for the unceasing warfare within. And so there are evidently many instances in which the equilibrium of the so-called "lower" and "higher" natures is maintained only at the portentous wastage of personal force—most frequently a sort of under-developed irritable organism being in contention with vivid imagination and the psychical impulse.

Perhaps this discloses sufficiently the bearing of unblended personality, not only upon the origin and continuence of disease, but upon the unrecorded and professionally unnoted discomfort of many lives. But there is another bearing which is relatively of much more importance still—that upon marriage and the function of parentage. If the ground-field of discomfort and disease is to be found more or less frequently in this suggested fact, it certainly becomes logical to say that prophylaxis should not be lost sight of, and that everything conducing to the perfectly blended whole, should be ascertained and made use of. From the neuro-psychical standpoint, the subject of the degeneration of families is coming to be of dominant significance, and it cannot be regarded much less seriously from standpoints purely social or

economic. At any rate, the demand, professionally speaking, that something other than the hap-hazard determinations of physiological erethism, or social consideration so-called, should have a prevailing influence in the consideration of those about to assume the parental relation, is not superfluous. What the something other shall be, however, like all that appertains to this complicated subject, can only be ascertained by the requisite scientific investigations extending through succeeding generations. Nor is the other demand that education shall be constructive, rather than the reverse, entirely aside from the subject under consideration. Were people prepared for marriage, and married rightly, it is altogether probable that the personal self would never split up so seriously as to produce permanent untoward results. Until, however, in the progress of civilization, this becomes practicable, it will be of incalculable worth to so educate and reinforce the better, healthier characteristics that they shall become permanently dominant in the personal life. The relations of pedagogy to the prophylaxis of disease, thus become of parallel importance with those of heterogeneous personality.

Bromide of Camphor in Vertiginous Epilepsy.—In *Progrès Médical*, May 6, 1893, Bourneville recommends bromide of camphor alone, in cases of vertiginous epilepsy; and in combination with the polybromide elixir in epilepsy where there are classic attacks, and also attacks of simple vertigo. The careful report of five cases thus treated carries conviction and establishes the marked utility of this remedy. L. F. B.

ON THE SIGNIFICANCE OF OPTIC NEURITIS, BLINDNESS, DEAFNESS AND THE KNEE-JERK IN CEREBELLAR DISEASE.[1]

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AS is well known, diseases of the cerebellum present some of the most recondite problems in physiology. Many of the symptoms are both inconstant and variable. They are difficult of explanation and frequently impossible to correllate. Among the symptoms are muscular incoordination, festination, vertigo, vomiting, headache, nystagmus, optic neuritis, difficulty of articulation, polyuria, anomalies of the knee-jerk, blindness, muscular weakness and convulsions. I desire to call attention more especially to the optic neuritis, the blindness, the deafness and the modifications of the knee-jerks.

Before entering into a detailed discussion, it may be well to relate a number of cases in which the above symptoms were present:

CASE I.—H. S., a boy, 5 years of age, was brought to the Jefferson Hospital in January, 1892; father, mother, brother and sister were perfectly healthy. When about one year old he had learned to walk as other children, and talk and play, and seemed in every respect normal. Nothing unusual was noticed in him until about four years of age. The father noticed at this time that he began to stumble while walking, and that this stumbling became more and more marked until, at last, the child could not walk alone. During this time the mental condition remained good.

On examination at the hospital it was found that the child was well nourished, though the head seemed dis-

[1] Read before the meeting of the American Neurological Association, July, 1893.

proportionately large, measuring some 20⅝ inches in circumference. On standing he swayed slightly forward and backward. When he attempted to walk, he spread his legs widely apart and was evidently excessively ataxic and staggered badly. This ataxia was not limited to the legs, but was also well marked in the hands; for, on asking the child to pick up a small object, as a penny, the movements were very irregular, so as to suggest the "hovering hand" of Freidreich's Disease. It was equally marked on both sides. There was no appreciable weakness in the limbs, and sensation was everywhere normal. The muscles, however, seemed everywhere relaxed. The knee-jerks were absolutely nil. The pupils were rather large, but reacted well to light. There was present also lateral nystagmus marked in both eyes. An examination of the eye ground revealed marked double optic neuritis. The child talked intelligently for its age. There was also a high degree of hypermetropia, but no other peculiarity of vision.

On October 21, 1892, the patient was again examined, and at this time measurement of the head revealed 21⅝ inches, a decided increase in circumference. The child was at this time totally unable to stand; not from weakness, but from excessive ataxia. The pupils were now extremely dilated and irresponsive. The *knee-jerks had now returned* and were grossly exaggerated; and there was also *total blindness*. Severe epileptiform convulsions had also occurred. A few days later the child was removed from the hospital and passed beyond observation.

CASE II.—S. S., female; white; aged 43; single. (Jefferson Hospital). Family history negative. Mental condition somewhat impaired, so that personal history was elicited with some difficulty. Patient had, however, noticed for a year and a half previously that her gait had become unsteady. Several months later had noticed difficulty with the vision. At the same time headache had set in and vomiting had also recurred repeatedly. Three months ago she became *entirely blind*. Her present condition is as follows: stands with feet widely separated and tends to sway forward and backward with the slightest push. Her equilibrium, when disturbed, is regained with difficulty. If the feet be placed close together she falls. In order to walk she takes short steps with the feet wide apart, swaying and staggering as she moves.

This gait being continued, it is noticed that she walks in a circle always to the right. Occasionally she stops as if to regain her equilibrium. The diameter of the circle is about twelve feet. There is marked incoordination of both arms, as is noticed on her attempt to pick up objects, and in attempting to dress herself. The incoordination is most marked in the left arm. *The knee-jerks are much exaggerated;* most, however, on the left side. Tendo achilles jerk present; no ankle clonus; elbow jerk plus, and much more marked on the left side. The dyamometer registers twenty with the right hand and thirty-five with the left (patient right-handed); no anæsthesia is anywhere detected. Occasionally, however, she fails to locate the impression properly, mistaking at one time the little finger for the thumb, the back of the hand for the palm, and making similar errors in the feet. Recognition of tactile impressions is somewhat delayed, due apparently to an increased cerebral reaction-time. Differentiates hot and cold correctly. Her memory is evidently impaired; thought appears somewhat slow; speech is halting and at times jerky. Articulates at times indistinctly. Complains of occipital and frontal headaches, the occipital being the most severe and most marked in the morning. No local palsies, no vomiting, no tremor, total blindness; pupils dilated and fixed; vertigo, nystagmus and dullness of hearing.

Examination of the eye ground reveals a high grade optic neuritis.

CASE III.[2]— A. M., white, aged 28, was admitted to the nervous wards of the Philadelphia Hospital, November 12, 1890. He had been in the German Hospital for some five months previous, and had there suffered from headache and pain in the back of the neck. He had also a markedly staggering gait; was subject to epileptiform attacks, during which consciousness was lost and in which rigidity predominated.

Ophthalmoscopic examination disclosed a high grade optic neuritis on either side with impairment of vision. Marked deafness was also noted. These symptoms increased in intensity, until finally total blindness and total deafness ensued. The urine was excessive in quantity, of low specific gravity, and free from both albumen and sugar.

[2] Previously published, Philadelphia Hospital Reports, Volume I., 1891.

When admitted to the Philadelphia Hospital, he was unable to stand. There was excessive general weakness, absolute loss of sight and hearing, and also, as far as we could determine, loss of smell and taste (?) Cutaneous sensibility, as far as it could be studied under these conditions, appeared to be well preserved. No paralysis of sphincters. The knee-jerks could, with difficulty, be elicited and were practically absent. Communication with patient was only possible by writing with the index finger upon the palm of his hands. Under these difficulties we learned again of his headache, that it was agonizing, and, if possible, steadily growing worse. The epileptiform attacks were also repeated. In these his arms and legs became very rigid, and to the rigidity would be added a rapid clonic movement of small extent.

An ophthalmoscopic examination by Dr. de Schweinitz, revealed marked optic neuritis, dilated, immovable pupils, and nystagmus; also slight divergent strabismus due to loss of fixation. Blindness and deafness were absolute.

Owing to the fact that the pain in the head was markedly increased by percussion of the left frontal region, it was deemed, after consultation with my colleagues, expedient to perform an exploratory operation in this region. This was done by Dr. Hearn. No noteworthy feature presented itself in the trephine opening, except that the brain bulged greatly; and further, that it fluctuated markedly upon palpation. Exploratory puncture was, after a brief consultation, decided upon, with the result that between five and six ounces of fluid escaped from the left lateral ventricle. The operation was terminated at this point. A few hours later the patient rallied, and was evidently much relieved as regards the headache. However, on the third day hernia cerebri began to make its appearance, and concomitantly there set in gradually coma, and finally death on the fifth day.

The autopsy revealed, among other changes of minor importance, a tumor of the cerebellum. On carefully separating the quadrigeminal bodies fram the cerebellum, a large jelly-like mass, the size of a pigeon's-egg, was disclosed, occupying the central lobe. The peripheral portion of the tumor was excessively soft, fairly attached to and merged with the white substance of the right cerebellar hemisphere. It appeared to have originally sprung from this region. It was simply in contact with the white substance of the left hemisphere, having hol-

lowed out a space for itself in these structures by pressure and absorption. The roof of the fourth ventricle and the superior peduncles of the cerebellum had been partially destroyed by the growth.

CASE IV.—E. M., a boy, aged 5 years and 9 months, presented himself at the Jefferson Hospital on July 5, 1893. Father and mother are living and well. Three brothers and one sister, all older, are likewise well.

When six months old he was quite ill from "teething and summer complaint." Made, however, a good recovery, and was in good health from this time on until March 20th of this year. He was then, according to his mother's account, attacked with chills, pain in the stomach, vomiting and headache. The latter appeared to be very severe. At the same time the bowels were persistently constipated. His illness continued for seven or eight weeks, and for the greater part of this time he lay moaning with his face buried in the pillow. Finally, his pain seemed to subside, but it was now noticed that he could no longer see, and as he grew stronger and attempted to walk that he staggered and fell, and that, indeed, walking without assistance had become impossible.

His present condition is as follows: When placed upon his feet, he sways badly to and fro, and, if unsupported, falls. He stands with feet widely separated and arms thrown out, as though making a vain effort at balancing. He makes the attempt to walk unwillingly. He staggers badly and tends constantly to fall forward.

An examination of the eyes by Dr. de Schweinitz revealed double optic neuritis with total blindness. Pupils dilated and immovable. No nystagmus.

Hearing and the other special senses appear to be normal. There is no affection of speech. Polyuria, however, is present, and there is general muscular weakness. The knee-jerks are absolutely lost on both sides.

The headache has apparently entirely disappeared. His mother now volunteers the opinion that his head has, of late, been increasing in size, as she has, within a short period, been obliged to purchase for him at short intervals larger hats. The head measures in circumference twenty-one inches (53.2 m.m.).

In the above histories it is to be noted: first, that a double optic neuritis of high grade existed in all four

cases; secondly, that this neuritis was associated with total blindness; and thirdly, that the knee-jerks exhibited the following peculiarities: In Case I they were absent in the early history, but reappeared and were exaggerated later on and at a time when blindness had made its appearance. In Case II blindness and exaggerated knee-jerks were again associated, but in Cases III and IV, though total blindness was present, the knee-jerks were absent.

Before studying these symptoms, let us turn our attention still further to the following group of cases.

CASE V.[3]—L. H. (Philadelphia Hospital), male; white; family history, so far as could be gathered, negative. In June, 1888, having been exposed to the sun for a long time, he suffered a severe heat-stroke. Recovery from this seems to have been very protracted and never complete. When he left his bed it was noticed that he staggered a great deal as he walked, and had at times headache. At the time of his admission to the Philadelphia Hospital it was noted that his movements were very irregular; they were jerky, and when asked to take hold of an object with his hands, betrayed decided lack of coordination. When standing his feet were well separated, the arms extended laterally and his head thrown slightly back. The whole posture suggested the effort of balancing. On attempting to walk it was noticed that he kept his feet widely separated, and that he moved them forward by little, short, jerky steps; that every now and then he stopped, swayed to and fro, balanced himself anew and then started afresh. He occasionally fell, and at one time suffered from a fractured fibula in consequence. His gait was eminently staggering, the tendency to fall forward or backward being very marked. The knee-jerks were diminished, though not absent; there was no nystagmus; his pupils reacted well. The eye-ground failed to reveal an optic neuritis. There was, however, a condition of partial optic atrophy. In addition there was some general mental impairment. Vision, as far as it could be tested, did not seem to be markedly impaired.

Three years after admission this patient died of intercurrent diarrhœa.

[3] Partially reported. International Clinics, Vol. II, 2d series.

The autopsy revealed, in addition to other changes of minor importance, excessive atrophy and softening of the cerebellum.

CASE VI.—J. K. (Philadelphia Hospital), white, aged 34, female. Family history negative, with the exception that one sister died at eight years of age of sunstroke. Personal history: has always been well until present attack. Has had two healthy children. On July 29, 1892, suffered from heat-stroke, for which she was treated at St. Mary's Hospital. She appeared to have been quite ill as her temperature rose to 112°F. (communicated by St. Mary's Hospital resident); remained unconscious for two days. Was treated repeatedly by ice-bath, and on recovering consciousness tried to speak, but she could be with difficulty understood, as her speech was halting and irregular. Eighteen days later she began to walk, but her gait was very uncertain and she fell to the ground on the slightest provocation. Admitted to the Philadelphia Hospital October 10, 1892. At this time it was noted that she walked very unsteadily; her steps very short and jerky; feet spread wide apart, and there was marked festination, especially on turning around. There were, in addition, jerky movements of the head and arms. No nystagmus; pupils rather large, but equal and respond to light readily. Examination of eye-grounds negative. No impairment of vision. Complained constantly of dull headache. Knee-jerks present, but diminished. Speech halting, jerky and drawling by turns. Replied slowly to tests by the æsthesiometer, but this seemed to be due to the increase in the cerebral reaction time rather than to any diminution of sensation. There was also general motor weakness.

CASE VII.—A. J., aged 38; male; colored (Philadelphia Hospital). Family history negative. Personal history: Had the various diseases of childhood; also variola at thirteen years of age, and at various times malaria. His present trouble began some twelve years ago. Experienced at first formication, or some other obscure sensation in the soles of the feet. Walking seemed to relieve this condition. Some two years later he began, as he thinks, to get "weak in the legs," and one day his knees gave way beneath him and he fell. From that time on he can only walk with the assistance of two canes.

Present condition: On standing with feet close together he at once falls forward. On standing with feet widely separated he sways to and fro. Festination is so great that it is now practically impossible for him to walk. An attempt to do so makes him stagger and fall. There is no muscular weakness. There is in addition marked incoordination in the movements of the arms. Knee-jerks are present and well marked. His speech is dragging and prolonged, so much so that he can with difficulty be understood.

An examination of the eyes by Dr. de Schweinitz, revealed the following: pupillary reaction sluggish but present, constant and vertical, nystagmus of slow movement. When eyes are directed to right or left rapid lateral nystagmus occurs. Upward movement increases vertical nystagmus in each eye. Central vision two-thirds in each eye. Both optic disks gray, and deeper layers slightly reddened on surface, edges clear, veins a little fuller than usual; arteries a little smaller. There is no limitation in the form fields. There is, therefore, nystagmus, imperfect reaction of the pupils to light, and probably an early stage of optic nerve degeneration.

Roughly speaking, in the above three cases blindness and marked eye-ground changes were conspicuous by their absence. The knee-jerks were diminished in Cases V and VI, but were exaggerated in Case VII.

Let us now consider briefly some of the symptoms. The writer is well aware that generalizations based upon a limited number of cases must be accepted with great caution. However, cerebellar physiology is still so obscure that any grouping of associated symptoms cannot fail to be of value.

To begin, let us observe that the optic neuritis when present appears to be of an intense character. Now, it is a matter of common experience that very high grades of neuritis may exist without marked impairment of vision. It would seem, therefore, that the added symptom of blindness gives a special significance to the optic neuritis found in these cases. It would appear that, for some reason, if we have optic neuritis at all in cerebellar disease, that it is apt to be intense in character;

and further, that it is likely to be associated, sooner or later, with total blindness. It seems strange, at first sight, that cerebellar tumors should present a specially high grade neuritis, and more strange still, perhaps, that this neuritis should be accompanied by blindness.

The proximity of the quadrigeminal bodies naturally suggests itself as in some way explaining this blindness. The ataxia and titubation present in these cases refers us, other things equal, to disease of the vermiform process. A consideration of anatomy, as well as the autopsy of Case III, will show that if a growth be situated in the vermiform process, especially anteriorly, and that if this growth continue to enlarge, it will, sooner or later, press upon the superior cerebellar peduncles, and very probably upon the quadrigeminal bodies themselves. Now when we recall the relation which the fibres of the optic tract bear to the primary optic centres, we can readily understand how, if pressure or irritation occur at this point, a neuritis should be a consequence. Further, the irritation being direct, we can, perhaps, understand why the neuritis should be of a high grade; and finally, also, why this neuritis should be associated, sooner or later, with total blindness.

With regard to the deafness which is present in some cases of cerebellar tumor, and which was absolute in Case III, it may, perhaps, be explained in a similar manner. The studies of Spitzka, Monakow, and others, have made it extremely probable that the posterior quadrigeminal bodies stand in the same relation to the auditory fibres as do the anterior to the optic fibres. It would simply be necessary, therefore, to our explanation, that the pressure involve these structures also in order that deafness should be a symptom. This condition of affairs seems to have been actually present in Case III.

Cases I to IV were doubtless all cases of tumor. In Case III this diagnosis was confirmed by autopsy. Cases V, VI and VII are interesting because the absence of blindness coincides with the absence of optic neuritis. Of these cases, at least one, Case V, was demonstrated

by autopsy to be due not to tumor, but to atrophy of the cerebellum.

When we turn our attention to the knee-jerk, we meet with a problem of peculiar difficulty. The tendon jerks stand, in all probability, in definite relation with muscle tonus. Muscle tonus, in turn, is apparently the resultant of a number of complex factors, of which the physiological action of the cerebellum is one. It has been demonstrated by Luciani that among the principal symptoms of ablation of the cerebellum is loss of muscle tonus. It would seem, therefore, that we would be justified in accounting for the loss of knee-jerk when observed in disease of the cerebellum by this loss of muscle tonus. In Case V, it will be remembered, loss of knee-jerk and atrophy of the cerebellum went hand in hand.

Further, it is extremely probable that lesions of the cerebellum act as do lesions elsewhere, in one of two ways; i. e., either by destroying tissue and thus destroying function, or by acting as irritants. It is perhaps in this way that we can account for the fact that in some cases of cerebellar disease the knee-jerk is absent and in others present and exaggerated.

The well-known fact that the knee-jerk may be present or absent at different periods in the history of the same case is illustrated by Case I; in this the knee-jerk, absent at first examination, had reappeared and was exaggerated at the second, ten months later. At the same time total blindness had also set in. Total blindness and exaggerated knee-jerks were also associated in Case II. We might be tempted here into supposing that the pressure forwards of the growth in the vermiform process not only produced the blindness, but also, by a further extension, irritated the motor tracts, and thus influenced the return of the knee-jerks. However, that this explanation is insufficient, or at any rate does not apply to all cases, is illustrated by Cases III and IV, in which total blindness was associated with absent knee-jerk.

OBSERVATIONS ON A CASE OF MYXŒDEMA.[1]

By WILLIAM C. KRAUSS, M.D.,
Buffalo, New York.

IF in the past myxœdema has been considered a rare disease, the numberless reports of cases treated by thyroidism during the past few months must certainly convince one that this malady has suddenly become very prevalent. Many cases, no doubt, have been kept in obscurity, waiting for the golden opportunity to present itself when they could be brought forward to corroborate a certain line of treatment, and help increase the number of publication results. Of late there has been a tendency to throw aside the old-time standard drugs and remedies in diseases, especially of the nervous system, and to substitute therefor a line of therapeutics which, to say the least, is unreliable and unscientific. However, among this Fin de Siècle therapeutics the treatment of myxœdema by thyroidism seems to be the most rational and the most defensible. After reading the brilliant results obtained by Murray, Fox, Mackenzie, and a host of other observers, I determined to try its efficacy in a hospital case which had been under my care for nearly three years. Perhaps I was more persuaded by the fact that the *only* remedy which seemed to exert any influence at all was the perchloride of iron, and even this was so imperceptible that at the end of three years my patient is about as far advanced as she was at the time I first saw her. After considerable diplomacy I convinced her that relief was at hand, and that the only requisite on her part was to do as directed, and ask no questions. Before reporting the treatment and results, let me detail the case briefly lest no mistake be made regarding the diagnosis.

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[1] Read before the American Neurological Association, Long Branch N. J. July, 1893.

Mrs. W.; married, age 53 years; weight, 150 pounds; height, five feet four inches; complexion, fair; eyes blue; hair formerly brown; constitution, strong, well-developed. Antecedents: her grandparents lived to old age. Her father died at the age of 79, of old age; her mother died at the age of 69 years, of heart disease. The patient further relates that her mother never perspired; her skin was always dry, the hands rough, broken and scaly, eyes swollen and puffy, and the face was clear and waxy. Some of the patient's friends have told her repeatedly that she resembles her mother very much. Early history: she passed through the diseases of infancy without any serious difficulty. She began to menstruate at 15 years, was married at 19, and is the mother of two healthy and intelligent children.

The onset of the disease, according to the patient's theory, was the result of an accident seven years ago, when she was violently thrown to the ground, striking upon her face, chest and left arm. Six weeks after the accident her face and arms began to swell, and a train of symptoms developed which still persist at the present time. The patient declares that she has never perspired, that the normal secretions have always been scanty, and that she was unable to nurse her children on account of insufficiency of the mammary secretions. Otherwise, prior to the accident she considered herself as healthy and robust as any of her companions.

A short time after the accident she noticed that some change was coming over her. The face, body and extremities began to swell, the hair suddenly disappeared from all parts of the body, and her skin was becoming dry, tough and papery. She experienced a subjective feeling of coldness, even in the warmest days of summer, and her flesh was always cold to the touch. She complained much of severe pains in various parts of the body, especially through the temples, which has perhaps given her the greatest discomfort. Of other subjective symptoms, she has noticed at times a heavy oppression about the chest, and a tired, worn-out, helpless feeling, which is always present and aggravated on the least exertion. Status Præsens.

Of medium stature, she is inclined to be stout; abdomen pendant. The gait is somewhat staggering, with incoordination. She is hardly able to walk thirty yards, and then only on a perfectly level floor.

Her mind is clear; she is cheerful and buoyant; her

memory is poor; sleep variable. Her speech is slow, scanning and monotonous.

On removing her wig, I found the scalp sparsely covered with a short undergrowth of dry, brittle hair, the scalp itself being harsh and dry. She possesses a very clear, waxy complexion; the skin is soft, delicate, downless, and covered with myriads of fine, wavy wrinkles. The tip of the nose and chin, the center of the forehead and the cheeks, have a pinkish red appearance, contrasting strongly with the pallor of the adjacent integument. The upper eyelids are puffed, swollen and overhanging. The eyebrows are elevated, arched and hairless. A few scanty eyewinkers are present. A thick, puffy, triangular region is found just below the lower eyelids. The eyes are normal. The ears are large, waxy and translucent; the nostrils dilated and broadened. The lower lip is everted, thickened, and of a reddish purple color; the tongue is pale red, somewhat thickened; pharynx normal; teeth carious. The sense of taste and smell are well preserved, but she complains of deafness in the left ear.

The supraclavicular region is not particularly swollen, and palpitation of the larynx does not indicate any marked atrophy of the thyroid gland. The muscles of the arms and legs are well developed, and the strength is fairly well preserved. Her hands are exceedingly dry and leathery, the finger tips are puffy, and the finger nails are brittle. The subcutaneous tissue about her body and legs is swollen, œdema-like, but does not pit on pressure. There exists slight anæsthesia over the whole body, with delayed sensation. The tendon reflexes, like the superficial, are normal. The pulse is soft, regular and uniform, ranging from 81 to 88 pulsations per minute. The temperature per oram varies from $95\frac{2}{5}$° F. to $97\frac{2}{5}$°F. During her stay at the hospital the temperature has never exceeded $97\frac{2}{5}$°. Her face and hands are cold to the touch even in midsummer, while in the winter she has to sit over the register to keep comfortable. The appetite is fair; bowels regular. She passes about three pints of urine daily, which is of normal specific gravity, and contains neither albumen nor sugar. On various parts of her person small hard nodules appear directly under the skin.

No one will question the diagnosis of myxœdema in this case, and in all probability her mother was affected with the same disease.

As before stated, the administration of the iron compounds alone succeeded in giving her any relief. The severe head pains have been intractable to all kinds of treatment, and it was perhaps with a hope that these could be relieved that she consented to undergo treatment. Fresh thyroid glands of sheep were sent to the hospital twice weekly, and these prepared in such way as to make them most palatable. On four days of the week, for six weeks, she took her medicine without complaining, but at the end of this time nothing could induce her to continue. The ingestion of the glands was not so disagreeable, but once in the process of digestion they nauseated her and made her uncomfortable for the remainder of the day. As to results, neither herself, her nurse, the thermometer, or myself could detect the least improvement, and at her earnest request the experiment was abandoned.

Nearly all observers, especially Mackenzie, have noticed striking changes after two or three weeks' treatment, and very few cases are on record with results similar to mine. Just how to explain the success of this treatment is difficult, but no doubt suggestion enters largely as a factor, the same as in the treatment of organic spinal and cerebral diseases, with injections of their specific (!) i-n-e mixtures.

Since making these experiments, I have been called to see another case of myxœdema treated by desiccated thyroids. The powder has been given in pill form, per rectum, and hypodermically, without seemingly any better result than in my own case. The treatment of the case is still in progress, forbidding, therefore, a detailed report.

AN INSTRUMENT FOR MEASURING THE STRENGTH OF THE LIMBS — PEDO-DYNAMOMETER.[1]

By WILLIAM C. KRAUSS, M.D.,

Buffalo, New York.

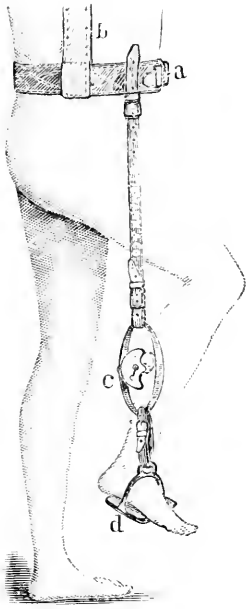
THE dynamometer of Mathieu has been of inestimable value in measuring accurately the strength of the flexors of hand and fingers, and its use has become well-nigh universal among neurologists. Of equal, if not more importance, is to ascertain the strength and power of the lower extremities, especially when they are implicated in disease, as in muscular atrophy, paralysis, etc. The usual method of estimating the strength of the leg-push is by offering resistance, and the examiner decides in an off-hand manner which is the stronger, but has no index or gauge to tell him how strong the stronger leg really is. Various instruments have been described, especially by Dana and Birdsall, in America, and Fêrê, d'Onimus, Pitres and Dignat, in France, but none of these seem to have won popular approval. All instruments of to-day must combine simplicity with cheapness and accuracy if they wish to court favor among professional men.

After much thought on this matter, I have devised an apparatus which seems to answer all the conditions. The harness consists of a wide, heavy belt (*a*), its inner surface padded so that its adjustment around the waist will not be uncomfortable. A heavy webbing (*b*) is looped through the belt, passing over the shoulders, and helps to retain the belt in proper position. A dynamometer (*c*) is connected with the belt by means of a strong, adjustable strap, permitting it to be lengthened

[1] Exhibited at the Nineteenth Annual Meeting of the American Neurological Association, Long Branch, N. J., July 25–27, 1893.

or shortened according to the stature of the patient. Connected with the dynamometer is a stirrup (*d*), the base of which is also padded for receiving the foot. Pressure exerted upon the stirrup will be registered upon the dial of the dynamometer, and the exact strength of the extensors of the leg can be ascertained.

The apparatus can be applied as shown in the illustration; viz., the patient in a standing position, or he may take the recumbent position. The leg should be



flexed, making an angle of 135° at the hip joint, and an angle of 90° at the knee joint. By lengthening the strap which connects the dynamometer (*c*) with the belt (*a*), and flexing the foot on the leg as much as possible, then directing the patient to extend the foot forcibly, the power of the calf muscles can then also be determined. By using snaps, the dynamometer can be quickly removed and used to measure the power of the hands.

As a result of many observations upon adults, I find the average power of the right leg-push (extension of the leg) to be 100 to 115 pounds; of the left, 110 to 125 pounds.

Messrs. Geo. Tiemann & Co., of New York, have made the apparatus in two sizes: one for adults and one for children. My experience with it has been very satisfactory.—*Neurologisches Centralblatt*, June 1, 1893.

Neurasthenia and Syphilis. — Kowalewsky (Centrb. f. Nervenhelk u. Psych., March, 1893).

This writer contends, in a long article filled with clinical details, that in syphilitic patients, we have neurasthenia arising under four different conditions. They are as follows: (1) Neurasthenia of hereditary syphilis; (2) neurasthenia of acquired syphilis; (3) the neurasthenia of inanition in syphilitics; this condition of neurasthenia being frequently brought about by too energetic administration of anti-syphilitics; (4) psychotraumatic neurasthenia of syphilitics, which develops from worrying about the contagion and transmisability of their disease, and from worrying about it from a moral standpoint. The writer remarks that it is very seldom that one sees neurasthenia limited solely in its causation to one of these etiological favors. Often two or more of them are at work to produce the neurasthenia; such, for instance, as where a patient suffers from syphilitic and pathologic heredity or syphilitic and moral shock or syphilis and psycho-pathologic heredity.

The author illustrates each of these types by reciting the histories of cases in detail, and points out the necessity for recognizing the particular form of neurasthenia syphilitica, as on this recognition depends the success of medication. For instance, the treatment that is curative in the second form is causative of the third.

It is very evident that the writer uses the term neurasthenia to embrace a far wider symptom complex than we are accustomed to. The symptoms in some of his cases would, to the minds of many writers, point unerringly to cerebral syphilis or to syphilitic insanity.

J. C.

POSSIBLE EFFECT OF NITROGLYCERINE ON CHOREA.

By CASPAR W. SHARPLES, M.D.,

Seattle, Washington.

C. C., aged fifteen years, had acute inflammatory rheumatism eighteen months ago, which was treated with salicytatis, and from which he made a comparatively rapid recovery without the appearance of endocarditis. On May 31, 1893, he came to the office and asked for a renewal of his old prescription, saying that his joints were aching. June 4th I was called to see him, and found him short of breath, livid and unable to lie down to rest. His heart was acting tumultuously, rapidly and irregularly, with a rough first sound which in three days developed to a soft blowing mitral, and this increased in loudness for six or seven days more, with continued poor action. There was precordial pain, and pain in the left shoulder, going down the left arm. More or less constantly, and at times, this was very severe, and much resembled that of angina pectoris. Countermittants were applied and digitalis exhibited to steady the heart's action, which it did, but the pain in the shoulder and arm continued to increase. At this time came choreic movements of the left hand and arm only.

On account of the character of the pain, the digitalis was stopped, and pills of nitroglycerine were given every eight hours, which caused a disappearance of all pain, except a numbness of the hands, but now there appeared in less than thirty-six hours a rapid increase of the chorea, which in three days had reached such a stage that he had to be held in bed or in a chair, requiring at times the strength of two people. He could not sleep, and often would strangle in the attempt to swallow. It was dangerous to protrude his tongue, and the inside of his mouth was "chewed up."

Fowler's solution was administered in rapidly increasing doses, in connection with depressants and soporifics and the nitroglycerine continued. There appeared no improvement, but an increase of the disease so long as this was administered, so it was stopped, and

in two days afterward he began to improve, and in a week there was not a choreic movement, except in the left hand and arm, and left elevator of the hip. On July 3d he was discharged, with no chorea and a very slight heart murmur, which has since disappeared.

The sequence of events seems to be this: articular pains; endocarditis; chorea minor; administration of nitroglycerine; chorea major; withdrawal of the nitroglycerine and rapid disappearance of the chorea from most of the affected parts.

What effect the nitroglycerine may have is the point of interest. The nitrites are said to be strong motor depressants, and chiefly spinal in their influence. Their supposed effect on Sechendre's center I do not know, but since other motor centers are depressed, this too may be. Dr. Wood's recent paper in the JOURNAL OF NERVOUS AND MENTAL DISEASE advances, as the cause of chorea, a depression of the motor functions, and those of spinal origin alone are less depressed than is the inhibitory function.

It seems to me improbable that an ordinary case of chorea should so soon become so generally violent without some exciting cause, and that it should so rapidly subside, unless an exciting cause had been removed. Since the symptoms were so intimately associated with the administration and withdrawal of the nitroglycerine, I have in my own mind attributed it to that. Yet I am mindful of a possible, but hardly probable, association of heart disease. I know nothing of any literature on this subject.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

CLINICAL.

Epileptiform Convulsions and Transitory Aphasia Cured by Trephination (Gazzetta *degli Ospitali*, Dec. 1, 1892.)—The diagnosis of exudative meningitis was made by Dr. Ercole Sacchi in a twenty-year-old syphilitic patient by the name of Eugenia Rebosio. The syphilis was acquired from the patient's mother, and was first noticed on the appearance of mucous patches in her mouth during her seventh year. When in her fourteenth year she was treated in the hospital of Geneva for rheumatic localization of the joints and of the anterior roots of the lumbar region of the spinal cord. At that moment there existed paraplegia, transitory difficulty in urination and defecation and bed sores of the sacral regions.

The patient was discharged from the hospital as perfectly cured, after six months' treatment. The diagnosis of rheumatism had been made, notwithstanding the per-

sonal history of the patient, owing to the curative effects of the salicylate of soda, the inefficacy of the specific treatment and the existence of the rheumatic diathesis in the family. The patient was menstruated for the first time at fifteen, and had always been regular. By occupation she was a servant, and had been, therefore, overworked. On April 3, 1892, she was suddenly taken with an epileptic fit of ten minutes duration, accompanied by chills and followed by an intense headache. There was, at the same time, an obumbration of the intelligence. A second fit occurred in the afternoon. The subsequent days were passed in comparative comfort, although the patient's mind had by no means regained its full vigor.

On the 8th of April there was an attack characterized by a loss of consciousness by tonico-clonic spasms diffused over the face and neck, and by increased temperature (39°–40°C.). This condition lasted about a minute, leaving the woman with an intense headache, aphasic, comprehending imperfectly the questions put to her, but quite incapable of replying to them.

On examination (April 18th), she was found to be profusely perspiring, with a temperature of 39°C., pulse 96, and respiration 29. The convulsions were repeated several times, with the same symptomatology during the course of the day, leaving her finally in a deep comatose state, unconscious, aphasic, with right hemiparesis, including the face, right lagophthalmia, mydriasis, involuntary micturition of non-albuminous urine.

The convulsions were repeated every quarter of an hour, and lasted generally about one minute. They commenced with clonic contractions of the right side of the face and neck, with deviation to the right of the head and conjugate deviation of the eyes. The spasms were then diffused to the right arm, and subsequently to the right leg. The soporose condition and the loss of consciousness persisted after the termination of the attack. The temperature oscillated between 39° and 39.5°C. The pulse ranged from 120–126, and the respiration from 30–36.

The diagnosis of exudative meningitis having been made by the director of the medical clinic, Dr. Maragliano, and immediate relief seeming urgent, trephination was performed by him over the well-determined Rolandic sulcus. The membranes were apparently intact and repeated punctures with the Pravaz syringe only succeeded in extracting serum. As soon as the in-

fluence of the chloroform had weakened, the convulsions recommenced with even greater violence and frequency than before the operation—reoccurring every seven minutes. Temperature, 30.7°C.; pulse, 126; respiration, 26. This condition continued throughout the night. The sopor was less profound the next morning, and the convulsions, although frequent, were less severe in their nature. Temperature, 39.5°C.; pulse, 124; respiration, 26. The condition was considerably ameliorated by the afternoon. Temperature, 37°C.; pulse, 100; respiration, 26. From this time forward there was a cessation of the convulsions, the hemiparesis disappeared, speech returned, and the intelligence became normal. The thirty-fourth day the patient was discharged from the hospital as cured, which happy condition has continued ever since (Dec. 1). E. N. B.

Generalized Hysterical Anæsthesia (*Le Mercredi Medical*, Feb. 15, 1893).—Dr. Raymond presented an hysterical man, thirty-two years old, to the Hospital Medical Society, in February, who had been found on the public highway in a fit. The patient was dull and apathetic. When he talked, it was evident that his psychical condition was considerably undertoned, although he presented no trace of delirium. His understanding was slow, his memory unfaithful, his speech difficult. Recent events escaped his memory; he believed, for instance, that he had been in the hospital for months, which is not the case. Although he was unable to recall the diverse events about which he had read in the papers, old incidents of his life were recalled from time to time, so that by persistently questioning him it had been possible to collect sufficient data by which to reconstruct his history. He was sad, and bewailed the fact that he was incapable of accomplishing anything. The diverse modes of sensibility, to contact, to pricking, to heat, to cold, are all abolished over the entire surface of his body. The mucous surfaces and the joints were included in this general anæsthesia. The patient had completely lost the muscular sense; he did not know where his limbs were or what movements it was necessary to make in order to attain a given object. Olfaction, gustation, being also completely abolished, the only senses that persisted were, vision, with a narrowing of the visual field of fifty degrees, and a diminished audition. The internal sensations were, for the most part, abolished, the patient not being conscious of hunger, of the moment

of his evacuations, etc. Tendinous and skin reflexes were intact, in despite of this anæsthesia. There was no muscular trouble, the dynamometer showing a hand grasp of twenty-one on each side. Reconstructing the pathological history of the patient, it was found that his hereditary antecedents were surcharged neurotically. He was a somnambulist in his childhood, had had lead colic, and finally, at twenty-four years of age, hysterical symptoms succeeded to a violent grief. From this moment he had always been subjected to hysterical attacks. The important relation of the senses to the voluntary movements was admirably illustrated by this patient. When his eyes were shut, he was incapable of walking, of opening or of shutting his hand. If his ears were covered, he was unable to write, being no longer able to hear the sounds of his movements. Dr. Raymond furthermore showed the relations existing between the anæsthesia, the intelligence, the will-power, and the personality. The moment the patient's eyes and ears were closed, he immediately went to sleep; showing that the excitation of his senses were necessary to the maintenance of the voluntary activity characterizing the waking condition. This sleep resembled that of the normal condition, inasmuch as the patient could be awakened by simply calling him by name, and because, when awake, he could perfectly recall his dreams. His personality was narrowed parallelly to the successive restrictions of his sensorial field, sleep being induced when the senses were completely obturated. Owing to the facility with which dreaming could be influenced, it could be proven that the elementary sensations persisted and were recorded by the memory, although unconsciously. Hysterical anæsthesia thus appears to be a disease of the personality, the latter in its turn being influenced by the morbid condition, so that in the resultant reflex action there is formation of a vicious circle which would possibly explain the desperate tenacity of hysteria, when once its manifestations have attained a certain gravity. E.N.B.

Hypochondria, Resulting from a false Diagnosis of Pseudo Angina Pectoris, and Terminating in Suicide.—Huchard reported the case of a notary, from one of the French provincial towns, to the Hospital Medical Society (*Le Mercredi Medical*, Feb. 8, 1893), who, from the moment of the sudden death of his predecessor from angina pectoris, was convinced that he had the same disease and would end in the same man-

ner. Certain doctors of the city in which he lived, confirmed him, to a certain extent, in this belief, by their diagnosis of pseudo angina pectoris. On examination, Huchard found the patient's heart and aorta normal, but on so stating, was met by incredulity on the part of the notary, who, on returning home, shot himself through the heart. A faulty diagnosis was the initial cause of this obsession of a man, who was, however, doubtless a degenerate; and it is, therefore, well to call attention again to the differential diagnosis to be made between true and pseudo angina pectoris. This differentiation depends upon three propositions:

1. Angina pectoris brought on by an effort of any description is the true kind.

2. Angina pectoris of a spontaneous origin, independent of effort, is pseudo form.

3. When the two forms of attack coincide in the same patient, they are both attributable to the true angina pectoris. E. N. B.

Hysterical Scoliosis (*Jour. de Med. et Chir. protiques*, Feb. 25, 1893). Dr. Vic describes two patients observed by him in Professor Lannelongue's hospital wards, who were both afflicted with scoliosis. The deformation in one case was consecutive to a fall, and in the other resulted from the patient having lifted too heavy a load. Similar patients have been studied by other doctors, and the trouble in all of them has had a nearly parallel history. A young girl falls upon her side, and she wakes up some morning afterwards all drawn to one side. Her movements are stiff, she walks with difficulty, but there is no appearance of any symptom which could disturb her general health. Her expression is not that of suffering; her eyes are brilliant, vivacious, even slightly malicious, and her general appearance is that of an intelligent child. Her replies are clear and exact, and even striking by reason of their decisiveness. On physical examination, there is found a lateral deviation of the back, which may be either to the right or to the left, and with corresponding convexities and concavities; a dorso-lumbar deviation with or without a compensatory dorsal one.

The young girl with hysterical scoliosis has slightly flexed legs—her body is somewhat inclined towards the deviated part, whose inclination is such that it would seem as if the ribs of the concave side touched the ileum. The shoulders have the same inclination upon their axis

as the thorax itself. The spinal apophyses are not prominent, so that to ascertain the amount of vertebral deviation, it is necessary to proceed step by step, marking each vertebra in its turn. It can thus be proven that the vertebral column, from the last dorsal vertebra to the sacrum, is laterally deviated, and has a convexity which may be indifferently turned to the right or to the left, with occasional compensatory curve of the last cervical and first dorsal vertebræ. The prognosis is that of all contractures, and the best treatment is that by hydropathy and by suggestion, the latter to be made by whosoever, in contact with the patient, is best adapted to inspire her with a salutary fear or confidence—according to the necessities of the occasion, keeping aloof from her, however, those who would weaken her will-power by an excessive solicitude and ill-advised indulgence. E. N. B.

Hereditary Paramyoclonus Multiplex.—Raffello Gucci (Rivista Sperim. di Freniatria, 1892, Vols. III and IV). This author has recently published the details of a most interesting case of paramyoclonus multiplex. The patient, a young girl, 19 years old, began to suffer from peculiar muscular spasms when sixteen years old. Associated with these was increasing mental unstability, marked depression and suicidal tendencies. On inquiry it was found that the patient's grandfather, father, aunt, and one elder sister had been afflicted in a similar manner. The movements involved similar muscles, first on one side, then on the other, and the severity of the movements was increased by attention and attempt to control them by action of the will. The muscles most severely affected were those of the buttocks and throat, the superficial muscles of the back and the diaphragm. When the latter began contracting the other muscles of inspiration would become involved. The muscles of the face were scarcely affected and the tongue was entirely free. The muscles of the extremities participated to a slight extent in the twitchings, the extensors more than the flexors. The twitchings ceased during sleep and frequently at other times for a few minutes. The bodily functions and reflexes, sensibility, motility, etc., were quite normal.

The fact that these phenomena were associated with mental aberration suggests to the author the necessity of showing that the disease is really not hereditary chorea. He considers that, although it resembles Huntington's chorea in many respects, it is not such for the fol-

lowing reasons: The small number of muscles affected, the strong contractions in the muscles of the buttocks and the involvement of the diaphragm, these, he thinks, bespeak paramyoclonus. The contractions in the muscles are intermittent, and do not occur in the muscles of both sides at the same time. Other arguments advanced are that hereditary chorea rarely shows itself at such an early age (sixteen), and that the patient has improved under treatment. The frequency of the muscular contractions change with the condition of the patient; this does not occur in hereditary chorea.

At the same time the author believes that paramyoclonus multiplex has much in common with hereditary chorea. It is probable that a good many readers of Gucci will not be convinced that the case is not really one of Huntington's chorea. J. C.

Paralysis of the Diaphragm in a Case of Tabes Dorsalis.—Gerhardt (Berlin Klin Wochenscher, No. 16, p. 369, 1893).

The author remarks that paralysis of the diaphragm has been known to occur with progressive muscular atrophy; the palsy of lead poisoning, hysteria and diphtheria; from alcoholic multiple, neuritis, and from pressure by new growths on the phrenic nerve. The case of posterior spinal sclerosis, which he describes, was that of a woman forty-five years old, who, when a young girl, had a series of unfortunate catastrophies. At sixteen she suffered from carbon monoxid poisoning; then from typhoid fever, then from rheumatism, and then at eighteen gave birth to an illegitimate child.

From this time until she was thirty-nine years old, there was nothing pertinent, except that in the years subsequent to her marriage, she had two miscarriages. The first symptoms of tabes showed themselves after a fright. There were loss of hearing in left ear, gradual diminution of vision, gradually increasing static and locomotor ataxia, fulgyrating pains, heaviness of the extremities, and finally paroxysms of dyspnœa. All the pathognomonic signs of posterior spinal sclerosis were present, and in addition there was complete analgesia of the body as high up as the nipple. Wasting of the muscles of the neck and of the left half of the tongue were also noticeable. During ordinary respiration the margin of the diaphragm reached to the level of the sixth rib in the line of the nipples. There was no respiratory move-

ment in the epigastrium. When the back was strongly arched and patient made an effort of forcible inspiration, the base of the chest and the epigastrium expanded appreciably. All the movements of the diaphragm could be prevented by gentle pressure of the hand upon the epigastrium. The application of the faradic current to the phrenic nerve gave no response. J. C.

Amyotrophic Lateral Sclerosis, or Hysterical Amyotrophy.—Charcot (Archives de Neurologie, March and April, 1893).

Charcot has recently called attention to a very interesting case, in which a positive diagnosis was impossible. The case in brief is as follows: Male, 31 years old; of marked neuropathic inheritancy. On the paternal side, his father was fiery and hot-headed; the patient, while a boy, had received a severe fright. An uncle was a habitual megalomaniac. An aunt was subject to hysterical attacks. On the maternal side, of the mother herself there was nothing noteworthy. Two first cousins are subject to tic, and one first cousin is hysterical. A sister of the patient has had hysterical attacks for two years. The patient himself, when a child, suffered from *paves nocturnus*. In one of these attacks his terror was most extreme, and it did not disappear with the recovery of consciousness. After this he had attacks of somnambulism, and about the eleventh year, an attack of chorea. He was, while serving as a soldier, suspected to be syphilitic, but there is no evidence for believing that he was ever infected. He was a very conscientious man, and in his early manhood, being unable to discharge some financial obligation which he had incurred, he suffered an attack of prolonged chagrin and melancholy. He was unaware that his bodily health and conformation were not entirely normal till one day, while taking a bath, he noticed that the left leg was much smaller than the other. That same day, in the evening, while showing his leg to his brother, he had two nervous crises (hysterical). Eighteen days later he entered the Salpetriere. On examination it was seen that the entire left lower extremity was much atrophied, the hip and thigh relatively less atrophied, however, than the lower portion of the leg. The difference in circumference between the two legs varied from four to seven centimetres. The muscles of the right shoulder, particularly the deltoid and supra-spinatus, are likewise atrophied, but to a much less degree than those of the left lower extremity. Electrical examination of the af-

fected muscles shows a simple diminution of galvanic and faradic excitability without reaction of degeneration. The affected muscles present fibrillary contractions to a marked degree. The patient has not noticed any impairment of function, or feebleness in the affected parts. The knee-jerk and the tendon reflexes of the upper extremity are exaggerated, equally on both sides. No difficulty in phonation or deglutition. The tongue, eyes and sphincters are normal. Sensibility is entirely intact. Charcot, in remarking on the case, says that it is impossible to believe that it was an original malformation, as the patient had served in the army and had been examined by many physicians, who failed to note any bodily defect.

In discussing the diagnosis of the case, he passes in review the subjects of syringomyelia, diffuse neuritis, and the possibilty that the atrophy may be dependent on cerebral lesion. These are all easily eliminated, and the diagnosis rests between progressive muscular atrophy and hysterical atrophy. In reference to the latter he states that the amyotrophy coincides frequently, but not always, with paralysis or anæsthesia of the extremities. The atrophy is often very considerable, and is not accompanied with fibrillary twitchings, but frequently with exaggeration of tendon reflexes. The muscles in these cases do not show the reaction of degeneration when examined electrically. The anæsthesia in these cases develops perfectly in a few days, and then, after lasting for a variable time, retrocedes either slowly or rapidly.

In commenting upon the possibility that the lesion is one of the amyotrophic lateral sclerosis, he points out that it is extremely singular that there is no diminution in the muscular strength of the affected parts, that the muscles do not present the reaction of degeneration, and that the course of the disease has evidently been very rapid. In concluding, he is of the opinion that it is impossible to decide upon a more definite diagnosis than the title to his paper indicates. J. C.

Syringo-myelia and Chronic Poliamyelitis in the Adult of an Ischemic Origin.—Dr. Marinesco called the attention of the members of the Paris Biological Society (*Le Mercredi Medical*, March 1, 1893), to an affection of the spinal cord, to which he has given the above name, and which differs from the gliomatous syringo-myelia by reason of its origin. While the latter

is dependent upon the ependyma epithelium, and its secondary cavities communicate with the central cavity, the newly formed cavities of the former result from the disintegration of newly formed neuroglial tissue, which has been deposited around the blood vessels of the anterior cornua, obliterating them and thus depriving the nervous substance of its due nutriment. This affection exists in the adult and in old persons, and is occasionally associated with sclerosis of the posterior cornua, explaining thus the existence of tabetic muscular atrophies. E. N. B.

Was it Leprosy?—Drs. Sevestre and Mery presented a little patient, four years and a half old, to the Hospital Medical Society (*Le Mercredi Medical*, Feb. 15, 1893), about the diagnosis of whose complaint there was considerable discussion by the different members. During the year of 1889–90, a very pronounced and generalized muscular atrophy declared itself. Towards the end of the year, there was extreme tendinous retraction, and various trophic troubles, such as swelling of the articular bony extremities, pemphigus of the fingers, etc. The muscular atrophy is symmetrical, although certain parts of the body are less affected than others, as for instance, the hands and the feet. The tendinous retractions are more marked in the flexors of the fingers (mains en griffe) and at the knees, which are always half flexed.

In despite of a very notable atrophy, the little patient is able to execute every movement with facility, in so far as not prevented mechanically by the tendinous retraction. Marked fusiform enlargements of the nerves are found, of those of the arms in particular; also of the subcutaneous nerves of the thigh and leg.

Cutaneous depressions and adherences exist. The skin looks as if drawn inwards by sclerous bands of subcutaneous tissue. On the thigh, to the inner side of the trochanter, there is a deep depression of this nature, appearing as if made by a blow of an ax. In some of the adhering points the skin is discolored. Sensibility is normal, aside from a possibly slight degree of hyperæsthesia. Reflexes normal. The moniliform condition of the nerves, the trophic disturbances (pemphigus, etc.), the peculiar nature of the muscular atrophy, would permit of the diagnosis of leprosy, of the nervous type, but anomalous by reason of the sensibility being normal. Against the acceptance of the diagnosis of leprosy can

be opposed the complete absence of anæsthesia, coincident with a so pronounced degree of muscular atrophy (Brocq.); the nodular form of the nerve hypertrophies, those of leprosy being of the fusiform type (Thiberge), and which would suggest the possibility of tuberculosis (Rendu). It is also possible that the entire trouble be due to the articular and osseous lesions (Raymond, Marc), as would be indicated by the fact that the atrophy has almost completely respected the hand while being very pronounced in the muscles of the forearms and arms, owing, probably, to the bone lesions at the wrist. The difficulty found in moving the head may be due to a cervical osteopathy. The strength of this latter theory would be invalidated by the existence of the exaggerated reflexes and of the nodosities (Marie). E. N. B.

SURGICAL.

A Case of Trephination of the Cranium for Frequent and Dangerous Epileptic Attacks of Traumatic Origin.—Dr. Brignon, of Termini, narrates in the *Gazeta degli Ospitali* (Jan. 12, 1893) the history of a case of acute epilepsy inexplicably ceasing after trephination. A man forty-three years old, well-formed but thin, with phthisical antecedents, suffering constantly from attacks of hemoptysis and gastric catarrh, on arising from his bed, after a few days' illness, fell with a cry upon a marble floor. When found, shortly afterwards, by his little daughter, his head lay in a quantity of blood which had flown from a wound in the right parietal region, four centimetres posterior to the binauricular line, and an equal distance from the sagittal suture. The position of the wound rendered it doubtful if it had been occasioned by the fall, and called in question the conduct of a neighbor with whom the injured man had had a quarrel a few hours previously. Dr. Brignon found the patient in a somnolent condition, from which the surgical maneuvres would from time to time arouse him partially. His questions at these moments, addressed either to the doctor or to his mother, indicated that he was not altogether conscious. As the cranium was not apparently injured nor depressed, the doctor attributed the symptoms present to cerebral shock, and after careful disinfection closed the wound and applied an iodoform dressing. Shortly afterwards, the patient was seized with general convulsions, repeated every ten minutes,

preceded by a sort of hoarse moan, and commencing with muscular contractions of the face, more accentuated on the right side, extended successively to the arms, legs and trunk. The movements were so rapid that, although the patient did not vary his general position by a centimetre, he became in a few seconds so exhausted as to be pulseless, breathless, black as a coal, having the appearance of an asphyxiated corpse. In the intervals between the attacks, breathing of a stertorous nature recommenced, the pulse became perceptible, and was both full and hard; a waxy hue succeeded to the cyanotic. Believing in the existence of some more important lesion than was previously ascertainable, Dr. Brignon decided to trephine. He found beneath the scalp wound a superficial cranial fissure, three centimetres long, from which venous blood continuously exuded. The cranium itself was so abnormally thin that the dura mater was slightly wounded in the operation. The last convulsion took place as the bone disk was being removed. The brain did not at first pulsate, and was so closely attached to the cranial opening as to suggest the possibility of the existence of some internal pressure. In all other aspects the appearance of the brain was normal. The pulse and the respiration became simultaneously physiological. Although agreeably disappointed in the condition found, the immediate amelioration inspired great hopes for the ultimate recovery of the patient. The convulsions were not repeated, and after twenty-four hours of delirium and violent agitation, the progress towards health was rapid. Six months later the favorable condition still continued, and the patient was free from ill effects, either from the wound or the subsequent operation. Dr. Brignon believes the trephination to have saved his life, although the *modus operandi* is decidedly inexplicable. E. N. B.

Successful Extirpation of a Cerebral Tumor (*La Riforma Medica*, March 4, 1893).—Postempski presented a patient to the meeting of the Royal Academy of Medicine of Rome (Feb. 26, 1893), who had been operated upon by him, six months previously, for cerebral tumor. This individual had had frequent convulsive attacks, which had commenced suddenly a year before one day when he was out walking. The attacks commenced always with a sudden sense of distress and loss of consciousness, to which succeeded clonic convulsions, localized at first in the right side of the face, in the right

arm, and thence extending to all parts of the body. On inspection, it was found that the patient had a tumefaction of the left frontal region, about the size of a half of an orange, hard at its periphery and soft at its centre. The diagnosis of an meningeal tumor having been made, the patient was operated upon. The tumor was easily extirpated, and on microscopical examination proved to be an endo-thelioma. The wound healed by first intention and the convulsions ceased. Agraphia and alexis existed for sometime after the operation, but little by little these symptoms of a local disturbance disappeared. The patient is actually remarkably healthy, notwithstanding the considerable excisions of his cranium through the tegumentary covering of which the rythmical movements of his brain are plainly visible.

E. N. B.

ANATOMICAL.

Multiple Lesions of the Cerebrum and of the Cerebellum, Accompanied by Epileptiform Attacks (*Le Mercredi Medical*, March 1, 1893).—Dr. Legrain reported to the Anatomical Society the history of an insane patient, who, pushed by another patient, fell and cut her scalp. Two hours later, she presented the following symptoms: conjugate deviation of the head and eyes; contracture of the left arm; epileptiform attacks of the same side; vertical hystagmus. After an intermission of twenty-seven hours, during which the multiform symptoms ceased, there was a sudden recurrence of the epileptiform attacks, the patient dying in a few hours after the ninety-third. At the autopsy, a hæmorrhage was found in the cerebellar region, above and below the dura mater. In a position corresponding to the scalp wound, there existed a veritable wound of the cerebellum, with lacerated edges and containing a clot. The point of the right frontal lobe showed similar lesions under the frontal lobe. There was a focal hæmorrhage which possessed all the characteristics of that of ordinary apoplexy. E. N. B.

THERAPEUTICAL.

A New Method for the Treatment of Epilepsy. —Paul Flechsig (Neurolg. Centrallb., April 1, 1893).

Prof. Flechsig details a method of treating epilepsy, based partly on theoretical and partly on practical grounds. It consists in giving gradually increasing doses

of extract of opium, beginning with one grain, three times a day, and gradually increasing until the patient is taking fifteen grains. This is continued for a period of about six weeks. The opium is then stopped and the patient is given bromide of potassium; about 120 grains in twenty-four hours. The sudden substitution of the bromides for the opium seems to the author to be quite essential.

The opium seems only to prepare the way for the action of the bromide, and intensify its action. While the patient takes the opium, there is usually no appreciable change in the frequency and violence of the attacks.

In some cases referred to by the author the result of the treatment was most encouraging. Particularly in two patients, who for several years had suffered from frequent epileptic attacks which had resisted all forms of treatment. J. C.

PATHOLOGICAL.

Hydrocephalus Consecutive to Cerebro-Spinal Meningitis. (*Riforma Medica*, Feb. 10, 1893.) A country boy, twenty years old, entered the hospital of Turin, and the wards of Dr. Cesare Borgionni, to be treated for vomituritions, vertigo and convulsive attacks. According to the data furnished by the doctor having had previous care of the patient, the latter had been taken, after a week of general discomfort, with a severe headache, pain in the limbs, an exceedingly high fever, and subsequently with acute, lancinating pains and rigidity of the dorsal and cervical regions, accompanied by vomituritions. The pupillary reaction was diminished; the fever high but atypical, and accompanied by delirium. These symptoms lasted about fifteen days and then disappeared. Diarrhœa, splenetic tumefaction and roseola had been constantly absent. On examination the patient was found to be normally developed although somewhat thin. The mucous surfaces were tolerably well colored. His pulse was 76, invariably regular in rhythm and amplitude. Respiration 26, and normal in tone. The apyrexy continued to his death. No deformation of the cranium existed. Slight headache existed. All the neck movements took place freely. The pupils were equal and normally dilated, their reaction was slow, axillary deviation did not exist, visual acuity was slightly diminished. Audition, olfaction and gustation were normal. The tongue was projected without

lateral deviation. Exaggerated patella reflex. Bilateral foot clonus. Greatly exaggerated skin reflexes, particularly over the abdomen and the cremaster. All modes of sensibility were normal. The movements of the limbs were free, but the gait was somewhat insecure. Nothing special was noted in the examination of the viscera. Urine normal.

After two days' residence in the hospital the vomiting and the headache ceased, and the patient was only vertiginous now and then. Without apparent cause or premonitory symptoms, Alvazzi was suddenly taken with tonic contractions of the cervico-dorsal muscles, extending subsequently to the limbs, with trismus, with accentuated opisthotonos, and frequently repeated *arcs de cercle*. During these attacks the patient did not lose consciousness, and his eyes were normal in their dilatation and reactions. Perceptible cyanosis. No urinary incontinence or other phenomena of like nature. The paroxysms were identical in nature, and usually lasted about four or five minutes; and a profuse perspiration, variably bilateral or unilateral, marked their termination. The patient could briefly reply, if spoken to, during the attack. The cycle ended with the convulsions, to which succeeded neither coma, sopor, headache nor any other evil consequence other than a slight feeling of fatigue. The patient remembered perfectly, and could describe accurately the evolution of the phases of his attack. Aside from a slight dizziness, that was not sufficiently marked to prevent the patient from being up and about, occupying himself with reading or writing, there was no apparent deviation from the normal in this condition between the attacks. The symptoms of the latter would have certainly warranted the diagnosis of hysteria, if the ophthalmoscopic examination had not revealed œdematous papillæ, more accentuated in the right eye, and hemorrhagic spots in the retina, some of which being recent. The conclusion was therefore inevitable that the hysterical symptoms had a pathological substratum in the nerve centre and more particularly in the cerebrum. The natural sequence of the previously existing illness, which latter, as far as could be deduced from the accounts given of it, was a cerebro-spinal meningitis, would be a hydrocephalus. This diagnosis was therefore made in despite of the anormal symptoms and iodide of potassium administered.

The 28th of April, after two of his usual attacks, the

patient died suddenly in a state of general contracture and of intense cyanosis. Many osteophytes were found on the inner surface of the skull at the post mortem. The dura mater was tightly distended and congested; the pia mater, somewhat œdematous, transparent in the tempero-parietal regions, and somewhat opaque at the base of the brain, around the chiasma. No granulations. The circumvolutions were much flattened. No thrombus. No notable modifications in the base of the brain. No granulations of the ependyma. Marked anæmia of the cerebral substance. Considerable dilatation of the ventricles, which were full of a limpid liquid. The spinal meninges contained, also, a certain quantity of liquid. Heart normal. Subpleural ecchymosis. Acute pulmonary emphysema. Spleen, kidneys, intestines, normal. Ecchymosis in both eyes. The antemortem diagnosis was thus confirmed. E. N. B.

Some Facts Concerning the Brains of Ataxic Patients.—(*Le Mercredi Medical*, Feb. 1, 1893). Dr. Nageotte reported to the Biological Society of Paris, in January, some facts elucidated by him in the microscopical examination of the brains of three tabetic patients, transmitted to him by Professor Déjerine for that purpose. These examinations were made in pursuance of ideas formulated by Dr. Raymond as to the possible coexistence of locomotor ataxy and general paresis, the symptoms of the latter passing unnoticed, owing either to the prevalent cachexia, or to the fact that the pathognomonic lesions of paresis were circumscribed and not generally diffused in the brain cortex. E. N. B.

Histological Alterations of the Cerebral Cortex in Several Mental Diseases. (*Le Mercredi Medical*, March 1, 1893.) Dr. R. Colella reported to the meeting of the French Academy of Sciences, Feb. 20, 1893, the result of his studies on general paresis and on the alcoholic psychoses. In progressive general paresis, accompanied by a history of syphilitic infection, the histological alterations are principally those of the blood vessels, of the neuroglial cells and of the protoplastic prolongations of the nervous elements. The cylinder axes are destroyed in but a few of the elements, and that at a late period of the disease. The alterations commence essentially in the vascular rete. In paralytic dementia, with alcoholic intoxication, a hypertrophy of the arachnoid cells takes place, as well as different degrees of degenerative trouble of the nerve fibres. Ru-

dimentary alterations take place in the protoplasmic prolongations. The blood vessels are healthy. In the alcoholic psychosis the histo-pathological examination shows the existence of an alteration of the nerve fibres or prolongations, which is chiefly parencymatous, with a barely perceptible implication of the ganglionic nodes and of the protoplasmic ramifications. The neuroglia and the blood vessels are healthy. The intimate succession in the anatomo-pathological development existing between the vascular rete, the neuroglial cells, and the protoplasmic prolongations, the analogous manner of acting of the protoplasmic arborizations and the blood vessels, the entire absence of relations of solidarity between the protoplasmic and nervous prolongations demonstrate that a very different physiological interpretation should be attributed to the one and the other. It is also shown that the protoplasmic prolongations are in intimate relation both with the neuroglial cells and with the blood vessels, from which it follows that a role should be attributed to them in the nutrition of the nervous substance. E. N. B.

Diffuse Vascular Meningo-myelitis in a Case of Progressive Muscular Atrophy (*Le Mercredi Medical*, Feb. 8, 1893).—Dr. Raymond reported the histories of several of his patients to the meeting of the Hospital Medical Society, in order to show the causal relations of syphilis to muscular atrophy, the non-curative effect of a specific treatment, and at the same time to demonstrate that the *syndrome* of Aran-Duchenne had been dispersed and superseded by other groupings indicative of the great advance in knowledge of pathological anatomy and in skill in making a differential diagnosis in similar states. Of Dr. Raymond's typical cases, the following is remarkable for the difficulty experienced in posing a diagnosis, the symptoms not being those of any typical disease, but more especially resembling those of poliomyelitis, or of polyneuritis. A police employe B., forty-one years old, descending from a nervous and arthritic family, and with the personal antecedents of hæmorrhagic small-pox in 1870, of alcoholism and syphilis in 1874, was taken with the first symptoms of the disease from which he died in 1885. At that time he had slight and transitory pains in his right shoulder, and, somewhat later on, phenomena similar to those known as writer's cramp, in his right hand.

In 1889, there was diplopia of two months' duration,

followed successively by shooting pains in the cervical region, in the shoulders and in the right arm, by increasing dyspnœa and by successive paralysis of the fingers of the right hand, commencing with the auricularius. The atrophy of the hand muscles were followed by that of the forearm, of the shoulder and of the cervical region. There was intense dyspnœa in February, 1890, increasing as soon as the patient tried to speak. Dr. Gougenheim found, at that time, the vocal chords nearly paralyzed. The head was flexed upon the thorax, and slightly deviated to the left. The seventh cervical vertebra protruded considerably, the dorsal region was scoliotic, and the lumbar curve exaggerated. Both shoulders were atrophied, particularly the right one, and were drooping and abducted. The extensor muscles of both forearms were atrophied, those of the right forearm in a more pronounced manner. The tendinous reflexes were normal. The atrophied muscles presented fibrillary contractions and the degeneration reaction.

Sensibility was absolutely intact, as were also the sphincters. The atrophy progressed constantly, completely invading the arms, the neck, the thorax. The leg muscles were not affected, but their reflexes were exaggerated. Dysphagia and trophic troubles of the right hand (redness, œdema), appeared, and finally a bronch-pneumonia brought the patient's life to a close. The post mortem showed a condition of diffuse, vascular meningo-myelitis, extending the entire length of the spinal cord and of the medulla oblongata, and particularly marked in the cervical region. The atrophy of the ganglionic cells was extremely marked in this latter region. The inferior part of the pyramidal tract and the superior extremity of the posterior median column showed more alterative changes than the adjoining parts on account of their having to pass through a greater extent of inflamed nervous substance. E. N. B.

Amok and "Sakit-hati" among the Malays. —In the *Journal of Mental Medicine*, July, 1893, an original article by W. Gilmore Ellis, M.D., the medical superintendent of the government asylum at Singapore, tells of certain abnormal conditions of mind among the Malays. Amok means a furious assault. A Malay who runs Amok —from this the English term "to run amuck,"—is always in a state of furious homicidal passion, and runs armed through the most crowded street or village, stabbing right and left at man, woman, or child, relation, friend

or stranger. Infidelity of wife, grief (especially that due to the death of a near relation), sight of blood (especially the person's own), brooding of real or imaginary wrongs, loss of hope of living (as in a foundering ship), shame and disgrace (such as being considered a coward or being imprisoned), and last, but by no means least, malarial fever, have all been noticed as exciting causes to Amok. Many Malays consider Amok a kind of suicide; a man, from some cause or other, considers life not worth living, and wishes to die—suicide being a most heinous sin according to the Mahommedan religion, he Amoks in the hope of being killed. The author considers this Amok one form of impulsive insanity, a paroxysm of acute mania allied to epilepsy. There is no remembrance whatever of any act of violence on the Amoker's part. His violent act is all a blank to him.

A peculiar condition of mind that the Malay is liable to, in greater or less degree, is called "sakit-hati." The sufferer sits down and broods over his wrongs, or supposed wrongs, with revengeful feelings, and is altogether filled with the pain of grief. "Sakit-hati" means, literally, heart-sickness. Persons thus affected have been sent to the asylum. They do not appear to be really insane, and as a rule quickly recover. They remain in the condition described for periods varying from a few hours to a few weeks, but rarely longer than four or five days. Their state is very similar to that of a bad tempered child sulking and having occasional outbreaks of wrath. At these times their activity—especially that of the brain—is low, and there is some slight impairment of memory. Malays say that the man who runs Amok always suffers from "sakit-hati" first. Were it possible to examine the Amoker shortly before his outbreak, Dr. Ellis thinks there would always be found some divergence from the man's usual habits, and in some cases marked peculiarities. L. F. B.

Contribution to the Etiology of General Paralysis.—Theador Kaes (Allgm. Zeitschr. f. Psychiatrie, Vol. LXIX., Part III., p. 614, 1893). After some introductory remarks on general statistical information, Kaes propounds for his own solution:

1. What per cent. of inmates in asylums suffer from general paralysis? In the Hamburg asylum, during the years between January 1, 1870, and December 31, 1889, there were admitted 9,148 patients (4,970 males, 4,178 females). Of this number, 1,412 suffered from general

paralysis. That is, of the entire number, 15.44 per cent. were paralytics. The percentage for males being 21.99 per cent. and for females 7.55 per cent. The percentage obtained in the patients who left the asylum during that period, was 22.74 for males and 7.39 per cent. for females. So that if a general average be taken, it will be seen that the percentage of general paralytics was for both sexes 15.485. For the males 22.365 and for the females 7.47. These statistics correspond very closely with those given by Mendel, as the collective statistics of German asylums. An important point in which the present writer differs from Mendel, is the proportion of males to females. Mendel gives the proportion as five to one, while Kaes' observation shows a proportion of 3.44 to 1.

2. Has general paralysis increased in Hamburg during the last twenty years or not? Statistics show that there has been both an absolute and relative increase. The increase varies in different years.

In a general way the most important factors that can be made out as direct causative ones, are in the order mentioned: excess in taking stimulants, inheritancy, syphilis, tabes dorsalis. Other contributable causes, such as head injuries, the acute infectious diseases, etc., can not be said to have a very intimate causative relationship. In a general way the age of the patient, when the general paralysis first appears, is younger for females than for males. This is on account of the important part prostitution and its alcoholic concomitants plays as an etiological factor in the former. J. C.

Diabetic Coma (Roque, Devic and Hugouneng, *Rev. de Med.*, December, 1892.)

The object of this investigation was to discover the cause of diabetic coma and the changes present after death. The observations were made on a man 39 years of age, who died with all the symptoms of a typical diabetic coma. On autopsy there were found in the lungs several small cavities, apparently tubercular in their nature, but containing no bacilli however, and in the kidneys, spleen and pancreas spots of coagulation necrosis.

The analysis of the urine and blood made during life showed, (1) a remarkable diminution in the alkalinity of the blood; (2) hypertoxicity of the serum of the blood, of which 4 cc. sufficed to kill a rabbit weighing one kilogramme; (3) on restoring the normal alkaline reaction of the serum by the addition of sodium bicarbonate, its

toxicity diminished one-third; (4) the urine contained acetone, but no trace of oxybutyric acid, no more than the blood.

According to the opinion of the authors, diabetic coma is the result of the retention in the system of substances, resulting from the incomplete combustion of glucose. The real product of this incomplete combustion would seem to be an acid, oxybutyric, diacetic or other similar ones not yet isolated, which diminishes the alkalinity of the blood and allows the development of toxæmia.

The practical conclusions to be drawn from the theory are concerning the treatment of diabetes by the administration of alkalies in large doses. Experience, however, has shown that the administration of bicarbonate of soda by the stomach is attended by very little, if any, improvement.

Notwithstanding Lepuie's failures with intravenous administration of bicarbonate of soda in diabetes, the authors think it is a more rational method than administration by the mouth, and is deserving of trial. J. C.

Muscular Atrophy occurring early in Cases of Hemiplegia.—Dr. Pietro Guizzetti makes a very able contribution on the two subjects in the April number of the *Rivista Sperimentale Di Freniatria edi Medicina Legale*, and concludes as follows:

1. Muscular atrophy, occurring early in cases of hemiplegia, are dependent upon alterations in the anterior gray horns of the paralyzed side.

2. In the cases which I have examined, the muscular atrophy was more of a degenerative nature.

3. In these same cases I was not able to exclude the existence of some trophic cortical influence, but this would be exerted upon the anterior gray horns and not directly upon the muscles.

4. In cases of late muscular atrophy, occurring in hemiplegia dependent upon lesions in the anterior gray horns, where the alterations of the ganglion cells are so slight as to be unnoticed, permit one to believe that the atrophy is of cerebral origin.

Upon the existence of a permanent slow pulse, the author believes that it depends upon some disturbances in the medulla, and that such disturbances are purely dynamical and probably primitive. W. C. K.

The Visual Field in Cases of Cretinism.—Dr. Ottolenghi communicates to the Royal Academy of

Medicine of Turin his results in the examination of thirty cases of cretinism. He found the visual field restricted, especially externally and superiorly. Acuteness of vision was, however, normal in the majority of cases. With the exception of three cases the fundus of the eyes was normal. Giornale della R. Accad. di Torino.

W. C. K.

A Study of Losophan.—In a thesis by Felix Descottes, presented at the Paris Faculty of Medicine on March 23, 1893, the author formulates the following conclusions: In the treatment of leg ulcers, Losophan acted quite as well as any of the medicaments customarily employed in this condition.

In primary lesions of a syphilitic character, Losophan had a very beneficial action, and determined a rapid cicatrization of chancre, though employed to the exclusion of general constitutional treatment. The curative effects of Losophan were especially manifested in simple chancre or soft chancre. Patients suffering from folliculitis and eczema, although not always completely cured under treatment by Losophan, experienced in all cases a great amelioration of the condition. In circumscribed lichen simplex, Losophan successfully cured the disagreeable and often painful pruritus, which almost always accompanies this malady. In prurigo with obstinate pruritus the same beneficent result was obtained. In the estimation of the author these results are sufficient to enable us to classify Losophan among the most efficient of our remedies for skin diseases, and fully justify the decision that he has made a useful research in a very important field of medicine. Dr. Descottes employed Losophan in much stronger mixtures than those cited by other authors, and never noted any irritation of the skin. He used eight per cent., ten per cent., and sometimes twenty per cent. ointments, and occasionally the pure powder. Saalfeld used but one to two per cent. ointments or solutions. Descottes was successful in some conditions which had not heretofore responded promptly to Losophan.

Society Reports.

AMERICAN NEUROLOGICAL ASSOCIATION.

Nineteenth Annual Meeting, held at the West End Hotel, Long Branch, N. J., July 25, 26 and 27, 1893.

Dr. SMITH BAKER read a paper entitled

ETIOLOGICAL SIGNIFICANCE OF HETEROGENEOUS PERSONALITY.

DISCUSSION.

Dr. LYON, of New York, referred to the opposite sides of character as seen among the insane. An educated woman may be agreeable and lovable in her normal condition, but vicious when in the abnormal state. He knew of such a patient, who would frequently apologize and do her utmost to resist the impulses to do wrong, even while committing acts of violence and dis order. Prof. M. J. Luys, in *L'Encephale*, in 1888, published a series of papers, taking the ground that such variations in the personality were due to an abnormal development, or activity, of the usually inactive hemisphere, due to a permanent or temporary disturbance of the relative blood supply to the two sides of the brain.

Dr. PARSONS, of Sing Sing, expressed the view that in persons with a tendency to evil thinking and acting, such might be overcome by suitable environment. After a time the absence of restraint permits of a continuance or permanency of the abnormal condition. This would probably account for many of these cases.

Dr. HINSDALE, of Philadelphia, spoke of two authenticated cases of double consciousness. He thought that the medico-legal features of such cases, as well as those of changes in personality, were of special interest, and should be reported and carefully analyzed. Such records might be of immense value to persons accused of crime or misdemeanor committed in the condition referred to.

Dr. SEGUIN, of New York, believed that atavism was the more rational explanation. Blending of the charac-

teristics of ancestors occurs normally. It was not right to confuse double consciousness of an epileptic nature, with conflicts of character and personality.

Dr. J. J. PUTNAM, of Boston, said that the treatment rested upon the systematic development of character. Hypnotism has taught us much in regard to this condition, and brings out, in a striking manner, certain phases of character. He recommended the development of the inhibitory powers.

Dr. F. X. DERCUM, of Philadelphia, thought the case reported by Dr. Baker recalled the fact that there was lowered vitality at certain epochs in women. Relationship between states of health might account for the peculiar mental variations.

Dr. BAKER, in closing the discussion, referred to the various definitions of personality as being not sufficiently inclusive of the facts to be of accurate use. He urged the importance of the study of the subject, especially in its bearing, not only upon the causation of actual disease, but in its relation to all our educational ideas and practices as found to-day in our school system. In this way means may be found of obviating detrimental traits, and also of making dominant those more desirable and healthful.

Dr. F. X. DERCUM, of Philadelphia, presented a paper entitled

ETIOLOGICAL SIGNIFICANCE OF HETEROGENEOUS PERSONALITY.

DISCUSSION.

Dr. GRAY hoped that Dr. Dercum's explanation of the symptoms would prove true, and asked if the pupillary reflexes had been observed.

Dr. DERCUM replied, that when the disease was advanced there was loss of reflex action to light.

Dr. PUTNAM spoke of a case of long-standing optic atrophy and practically no other symptoms. Although the optic neuritis persisted for two years, the autopsy showed a cyst of the posterior portion of the cerebellum.

Dr. PRESTON asked if distinct loss of muscular sense existed in Dercum's case. He had noted this symptom in two patients. In four of his cases, the knee-jerks were irregular, disappearing and occasionally returning.

Dr. KNAPP said that in all of his cases confirmed by autopsy, there was neuritis or optic atrophy. In one case, where cerebellar tumor was suspected, neuritis had not developed. Blindness had not been so constant. In one case the light reflex was lost when the pupils became dilated. Pressure on the corpora quadrigemina was most likely to produce blindness. He had never noted deafness. As to disease of the middle lobe of the cerebellum being responsible for the ataxic gait, he thought this view untenable.

Dr. LESZYNSKY, of New York, said he had observed a number of cases, two with autopsy. He thought the concomitant basal meningitis had much to do with the production of the optic neuritis, by extension of the inflammatory process along the nerve sheath. In many cases the neuritis was a late symptom. Where the neuritis or optic atrophy was accompanied by loss of light perception the pupillary reflex was always absent.

Dr. DERCUM did not believe that optic neuritis was ever due to general increase of intra-cranial pressure, but dependent on the location of the tumor. In his cases the neuritis was always of high degree. Neuritis, blindness and deafness indicated pressure on the mid-brain. He would look for cerebellar symptoms where the knee-jerk was variable.

Dr. CHARLES K. MILLS, of Philadelphia, presented a paper on

LESION OF THE THALAMUS AND INTERNAL CAPSULE.

ABSTRACT.

The patient had an apoplectic attack in 1877, and died in 1892. The symptomatology of the case summarized was hemianæsthesia, paresis with contractures not marked; inability to recognize position of the affected limbs. Hemianopsia and all affections of the special senses were absent, as were also athetoid and choreoid movements. Autopsy showed a hæmorrhagic cyst, which had destroyed about two-thirds of the substance of the thalamus, including the entire external tubercle, and a large portion of the pulvinar. The anterior extremity, and the internal and inferior surfaces of the thalamus were intact. The lesion had invaded, to a slight extent, the posterior arm of the capsule.

Dr. WHARTON SINKLER, of Philadelphia, presented a paper on

TUMOR OF THE OPTIC THALAMUS.

ABSTRACT.

He presented the specimen from a case with the following history:

The patient was an unmarried woman of 46 years of age, who was in excellent health up to January, 1893. Her first symptoms were somnolence and loss of mental vigor. Her manner was indifferent and listless. In April there was some aphasia, and later paresis of the right side of the face, unsteadiness of gait and awkwardness in the use of the right hand. When first seen by him, there was marked paralysis and partial anæsthesia of the right side of the face, but no impairment of sensation of the arm or leg. There was decided mental hebetude, but no loss of memory. She could not walk on account of unsteadiness. The knee-jerks were exaggerated. The temperature was subnormal and the pulse from 48 to 60. The pupils responded to light and accommodation. There was no nystagmus or hemianopsia and no change in the fundus oculi.

The symptoms increased in severity, the temperature rose rapidly, and the patient died May 25th. There had been no convulsions.

Post mortem showed skull and membranes healthy. Cortex normal in color and consistency. The left optic thalamus was the seat of a growth as large as a hen's egg which encroached upon the corpus striatum and posterior part of the internal capsule. The tumor has not been examined microscopically, but is probably a fibroma.

The points of interest are the hysterical symptoms which were present at the onset; the fact that the anæsthesia was confined to the face, and the question which arose as to the possibility of operation.

DISCUSSION OF DR. MILLS AND DR. SINKLER'S PAPERS.

These two papers were discussed together.

Dr. DANA had two cases, one with tumor and another with softening in that region.

Somnolence was a prominent symptom. The phe-

nomenon of somnolence is characteristic where the posterior portion of the optic thalamus and the neighborhood of the corpora quadrigemina were involved.

Dr. SEGUIN observed a patient with probable tumor in this locality; the somnolence was increased by the use of iodide of potash. He asked if such an effect of the iodide had been observed by any of the members present.

Dr. DANA was familiar with a case where the iodide acted as a hypnotic.

Dr. GRAY had noticed that the iodide had produced somnolence in a case of cerebro-spinal meningitis.

Dr. LESZYNSKY thought that the iodide only acted indirectly as a hypnotic by relieving the pains of syphilis.

Dr. SINKLER remarked that in his case the somnolence diminished after the administration of the iodide.

Drs. JAMES H. LLOYD and DAVID RIESMAN presented a paper on

INFECTIOUS ENDOCARDITIS WITH GENERAL SEPTICÆMIA, COMPLICATED WITH MULTIPLE NEURITIS.

ABSTRACT.

This paper was founded on the report of two cases.

The first case was in a man, who was admitted to hospital with a typhoid type of fever, which had continued for three months, and was complicated with multiple neuritis. The diagnosis of typhoid fever was excluded. The neuritis was irregularly distributed. The patient gradually developed an aortic regurgitant murmur, with water-hammer pulse. Later a purpuric eruption appeared. A diagnosis was made of infectious endocarditis with secondary septic neuritis. At the post-mortem immense vegetations were found on aortic valves, with infarcts in the spleen and in one kidney. Sections of the spinal cord and nerves were shown, exhibiting slight posterior sclerosis in the cord and extensive inflammation in the nerves.

The second case, also in a man, simulated typhoid fever, with the yellow-colored stools. At the post-mortem, multiple abscesses in the brain, a large embolus in the left brachial artery and an infarct in one kidney, were found, dependent upon a giant growth of vegeta-

tions as large as a pullet's egg, attached to the inner coat of the aorta, overhanging the orifices of the innominate, carotid and sub-clavicular arteries.

DISCUSSION.

Dr. DANA regarded the septic origin of neuritis of much importance. He cited the case of a young man with symptoms of rheumatism not responding to anti-rheumatic medication. Pyelitis developed in two or three weeks, followed by multiple neuritis affecting all extremities. It is well known that multiple neuritis, in this country, is most frequently due to alcohol, and not of microbic origin. Such forms of neuritis have a different clinical history. Some cases beg n with the ordinary history of multiple neuritis, and have then shown symptoms of locomotor ataxia or other spinal cord affection. There is a class of cases where the neuritis extends and ultimately involves the cord.

Dr. DERCUM agreed with Dr. Dana's views, and believed posterior sclerosis occasionally follows multiple neuritis. He asked if septic symptoms preceded the neuritis in Dr. Lloyd's case with history of alcoholism, to which Dr. Lloyd answered yes.

Dr. E. D. FISHER, of New York, presented a paper on

CONGENITAL CEREBRAL HEMIPLEGIA WITH AUTOPSY.

ABSTRACT.

He read the history of a case of infantile cerebral hemiplegia of congenital origin. The symptoms were a complete right hemiplegia with marked atrophy and exaggerated reflexes, epilepsy and imbecility. The cranial measurements showed morbid deficiency in the binauricular diameter and facial length. At the autopsy the left hemisphere was found much atrophied. The right cerebellar hemisphere was also atrophied. The microscopical specimens showed a decrease in the number of cortex cells, but those present were not much diminished in size. There was some loss of acuteness of the angles of the cells, but little pigmentary or granular changes. The cord was but slightly affected. He believed that this would seem to show that in some cases we may have

a fair amount of normal cerebral structure even when there is such pronounced cerebral disease.

DISCUSSION.

Dr. SACHS said that in the cases in which motor areas present developmental defect, degeneration does not necessarily occur.

Dr. B. SACHS, of New York, presented a paper on

TABES AND SYPHILIS.

ABSTRACT.

He assumed that recent statistics of Erb and others proved the close relationship between syphilis and tabes. This was established furthermore by:

1. The frequent occurrence of general paresis with tabes, and of tabes in the course of general paresis.

2. The occurrence of symptoms in the course of tabes, which are often due to syphilis; the ocular palsies, loss of pupillary reflexes, and even the lightning pains.

3. The effect of mercurial and iodide treatment upon many of the symptoms of tabes.

The writer attempted a clinical differentiation of cases of tabes which are due to an active syphilitic process; among these he considers those which exhibit complete loss of reflex contractility of one or both pupils, and ocular palsies. He reported in extenso a case of typical tabes, in which, on post-mortem examination, a more recent syphilitic process was super-imposed upon an old typical sclerosis. He next referred to the way in which syphilis might cause a spinal sclerosis. He gave reasons for thinking that this was largely due to degeneration brought about by syphilitic disease of the blood vessels to the spinal cord.

Altered states of the blood might be the prime cause of the change in the blood vessels.

DISCUSSION.

Dr. PRESTON regarded the syphilitic process as an arterio-sclerosis. Rarely is there hyperplasia of neuroglia, without changes in the cells or nerve fibres. The tabetic process probably begins in the blood vessels.

Traumatism seemed to be an etiological factor of some importance. He had seen improvement and relief of pain from the use of nitro-glycerine.

Dr. MILLS looked upon the active lesions described by Dr. Sachs as probably causative of the sclerosis. Preceding the development of the sclerosis, there may be leptomeningitis and disease of the vessels, which, if attacked early, might be relieved or removed, but the sclerosis once established, recovery was impossible. Posterior sclerosis often advances at intervals by jumps, and these may be sometimes coincident with or may follow the revival of active syphilitic processes.

Dr. PARSONS referred to two cases of syphilis, followed by insanity and subsequent development of spinal symptoms in one of them.

Dr. SEGUIN still adheres to the idea that syphilis is only a predisposing cause, or a ground-work of tabes. Certain cases occur that are undoubtedly free from any history or evidence of syphilis.

Dr. KNAPP mentioned a case of probable syphilitic lesion of the cord being added to tabes of two or three years standing.

Dr. WALTON thought the frequency of trauma in the production of tabes was overestimated. The ascending degeneration resulting from transverse lesions of the cord, or from fracture, can hardly be regarded as a typical tabes. If we could get at the real facts in all cases, the cases in which syphilis existed, without our being able to elicit the history, would more than counterbalance those in which we may mistake a chancroid for a sign of syphilitic infection.

Dr. GRAY said there was an anatomical explanation for every symptom in tabes. In all cases he had seen he had been able to distinguish between spinal syphilis and tabes.

Dr. SACHS did not claim that spinal syphilis is the same as tabes, or vice versa. We should never omit prescribing the most active anti-syphilitic treatment in the early stages of tabes. He does not believe every case is due to syphilis. In the large majority of cases, syphilis is the most prominent factor.

Dr. LEONARD WEBER, of New York, presented a paper on

SPINAL NEURASTHENIA.

ABSTRACT.

He objected to any single plan of treatment as too much routine, and not likely to be of permanent service to the patient, while a proper combination of the well known methods based upon careful individualization were apt to be of greater benefit.

In the grave forms of neurasthenia, caused by mental and physical overwork, the prognosis so far has not been good, even as to relative recovery. If the reports can be trusted, it would seem that we have in *hypnotic suggestion* a remedy of extraordinary power in some of these cases.

In conclusion, he related the history of some cases of severe neurasthenia, brought about by protracted mercurial inunction, and another caused by prolonged daily use of small doses of Carlsbad Salts. Both recovered at the end of about a year.

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Original Articles.

ON ACROMEGALY AND GIGANTISM, WITH UNILATERAL FACIAL HYPERTROPHY;—CASES WITH AUTOPSY.[1]

BY CHARLES L. DANA, A.M., M.D.,

Professor of Nervous and Mental Diseases New York, Post-Graduate Medical School.

IN the present paper I have placed together the report of a case of acromegaly occurring in a professional "giant," and the history of another giant with some symptoms of acromegaly, and a very striking form of progressive unilateral facial hypertrophy.

CASE I.—GIGANTISM AND ACROMEGALY.

The first patient, Santos Mamai, was a Bolivian Indian, a man thirty years of age, who was exhibited in this city under the name of the Peruvian giant. He was advertised to be seven feet eight inches high and to weigh 330 pounds; in fact his height was six feet seven inches, and his weight about 300 pounds. Absolutely nothing could be learned by me regarding the history of the patient, except that he came to this country last fall with a troupe of other Bolivian Indians who all claimed to be lineal descendants of the Incas. Their object was to exhibit themselves; but they did not succeed, and becoming

[1] Read at a meeting of the American Neurological Association, July 26, 1893.

"stranded," the troupe was brought to this city, where Santos was taken ill. He was said to have been a person of very quiet and even melancholy temperament, reticent, rather feeble in mind, and perhaps very homesick. Although of gigantic proportions, he was not very strong, nor was his muscular development great. Without any known cause, he was suddenly taken very ill and brought into my wards at Bellevue Hospital.

On admission he was unable to stand or sit, owing to excessive weakness. His mind was very dull and irresponsive. His pulse was feeble and rather rapid, 108. Respiration loud, 24 per minute, harsh and labored. There were some physical signs of a bronchitis. The temperature was normal. He apparently was suffering from no pain, and presented no evidence of any paralysis or any manifestly acute disease; he simply seemed to be in a state of collapse. In spite of stimulants this collapse increased, and he, in the course of four or five hours, passed into a state of coma and remained so until death, about twelve hours after admission.

The physiognomy of the man, when first seen by me, suggested at once the possibility of his being a case of acromegaly, and measurements of the body were taken accordingly. These measurements, with a description of the person and the post-mortem findings, convinced me that the diagnosis is correct. His height was, as stated, six feet seven inches, and the weight 300 pounds. The most striking appearance, however, was the very large under jaw and the enormous thorax. The measurement from the angle of the lower jaw to its symphysis was $14\frac{1}{2}$ cm. or $5\frac{3}{4}$ inches; the average measurement of an adult man being not over 10 cm. or $3\frac{3}{4}$ inches. The length of the face from the root of the hair to the chin was 34 cm. or $13\frac{1}{2}$ inches; from the crown of lower incisors to the point of the chin 7 cm. or $2\frac{3}{4}$ inches. These measurements indicate that the man had a disproportionately developed face, the enlargement affecting particularly the lower jaw. The malar bones were very prominent, as is usual with the Indian. The circumference of the head was 56 cm., not being very greatly in excess of the average. The circumference of the thorax was 50 inches, as against the average for the adult man of 34. This enormous development of the thorax was, together with the enormous enlargement of the face, the striking feature of the case. The man had large hands

and large feet, somewhat in excess proportionately of what they should be. The nails were normal. The ears and tongue were of normal size. There was some kyphosis. On making the autopsy, the scalp was found to be excessively thick and lying in folds as though the skin had grown and was intended for a much larger skull. The hair was excessively coarse and thick. The special measurements of the different parts of the body are given below.

AUTOPSY.

The autopsy was made by my house physician, Dr. C. J. Strong, and I am indebted to him and to Dr. McAlpin for the notes as to the condition of the body. Unfortunately the autopsy was not made with reference to the possibility of the case being one of acromegaly, and some details were therefore incomplete.

Muscular development very poor.

Heart.—Weight, 23 oz. Thickened patch on pericardium. Mitral valve admits two fingers; aortic valves normal. Muscular fibres coarse, with considerable connective tissue between them. Tricuspid valves normal. Hypertrophy more marked in right heart.

Lungs.—Left, weight 20 oz. Pleural congestion, slight interlobar pleurisy, some emphysema. Moderate amount of passive congestion. Right, weight 27 oz. Pleura adherent to diaphragm. Considerable thickening of the interstitial tissue. Both very light in color. Almost total absence of anthrakosis.

Spleen.—Weight, 7 oz. Passive congestion. Substance fine dark chocolate color.

Kidneys.—Weight, left 14 oz., right 13 oz. Left cortex swollen, somewhat cloudy. Markings coarse and irregular. Capsule very thin and strips off easily. Malpighian bodies show plainly on account of congestion. Right same as left.

Liver.—Weight 8 lbs. 3 oz. Large and fatty. Margin sharp and well defined; substance pale yellow. Lobules hard to make out; soft; opaque color; cloudy swelling of epithelium of lobules.

The thyroid gland weighed 4 oz. and had a perfectly normal appearance.

The brain was dry, pale and firm; its weight was 53 oz. There were no evidences of exudation or inflammation. The blood-vessels were normal. On removing the brain it was noticed that the *pituitary gland* was

very much enlarged, and in dissecting it out of the sella turcica a part of it which seemed to be firmly attached to the bone was torn, a slight amount of blood and serous fluid exuding. It was somewhat spherical in shape, and showed at its inferior surface the line defining anterior and posterior parts. The transverse and antero-posterior diameters are each about 3 cm. The weight of the gland was 4.5 grammes. It was attached to a pedicle that was 1.5 cm. long. The gland was of rather soft consistency and apparently somewhat cystic. The tear in the

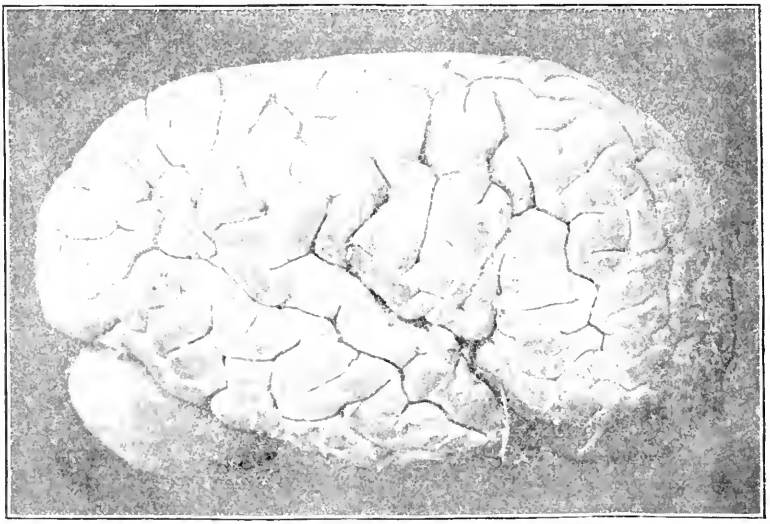

FIGURE 1. Brain of Peruvian Giant, one-half actual size. Left Hemisphere.

anterior portion had reduced somewhat its bulk by reason of the loss of hemorrhagic contents. All other parts of the brain appeared perfectly normal.

A study of the convolutional development was made, and some measurements and notes taken. These have only an anatomical and anthropological interest; they will be given in a later paper in connection with the photographs. The special measurements of the body were made by me with the help of Dr. Stivers, who has furnished me with a copy of the notes.

BODY MEASUREMENTS OF GIANT.

Height, 6 feet 10 inches. Supposed weight, 300 pounds.

HEAD.—Greatest circumference at level of glabella,	55	cm.	22 in.
Distance between external orbital processes,	21.5	cm.	
Width of face at level of zygomas,	17	cm.	$6\frac{3}{4}$ in.
Root of hair to point of chin,	24	cm.	$9\frac{1}{2}$ in.
Angle of inferior maxilla to its symphysis,	14.5	cm.	$5\frac{3}{4}$ in.
Width of mouth,	7.7	cm.	
Thickness of lower lip,	1.75	cm.	
From crown of lower incisors to point of chin,	7	cm.	$2\frac{3}{4}$ in.
Length of nose,	7	cm.	

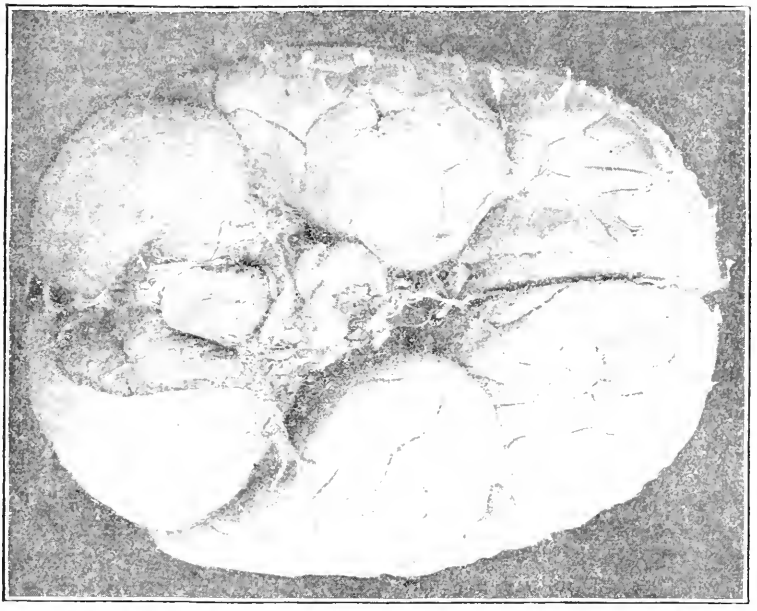

FIGURE 2 Same, showing enlarged pituitary body.

BODY.—Circumference of chest,	126	cm.	50 in.
Circumference of waist,	104	cm.	
UPPER EXTREMITIES.—From tip of acromion process to olecranon (upper arm),	41	cm.	
From olecranon to styloid process of radius (lower arm),	34	cm.	
Length of hand from tip of middle finger to wrist,	22	cm.	$8\frac{3}{4}$ in.
Length of first finger,	13	cm.	

Length of second finger,	15	cm.
Length of third finger,	14	cm.
Length of fourth finger,	12	cm.
Circumference of fingers (first joint) ranges from 7.5 to	8.5	cm.
Circumference of wrist,	21	cm.
The fingers were not spade-like		
LOWER EXTREMITIES.—From crest of ilium to upper edge of patella,	51.5	cm.
From upper edge of patella to sole of foot,	63	cm.
Total length of foot,	29	cm. 11½ in.

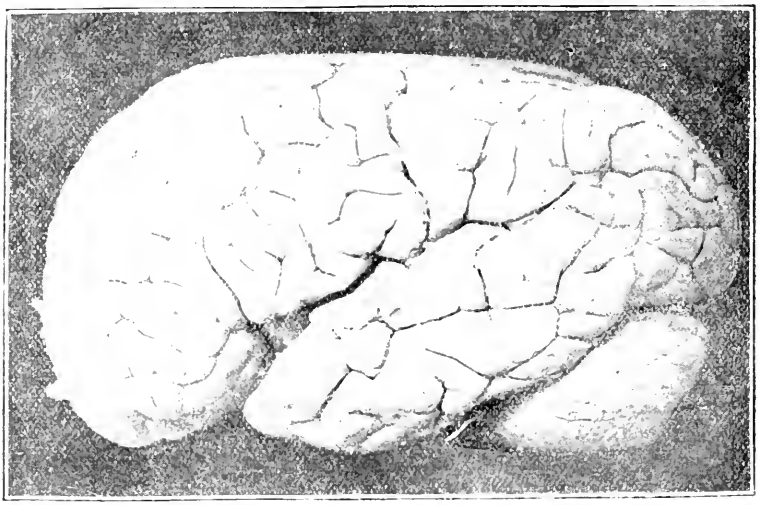

FIGURE 3. Same, right hemisphere.

Length of toes range from 5.5 to	7.5	cm.
Circumference of ankle,	25	cm.
Circumference of foot at instep,	33	cm. 13 in.
Circumference of foot at ball of foot,	30 5	cm.
There is a considerable cushion or pad of flesh on the outer side of each foot.		
Distance between anterior superior spinous processes of the ilia,	37	cm.
The penis was extremely small, measuring 3 in. in length.		

REMARKS.

The diagnosis of this case is based upon the enormous development of the face, particularly of the lower part; the enormous development of the thorax; the hypertrophy of the skin of the scalp; the somewhat disproportionately enlarged extremities; the cushion of flesh on the outer side of the soles of the feet; and consequent thickness of the feet; the history of the patient, which shows a person of enormous size and very deficient

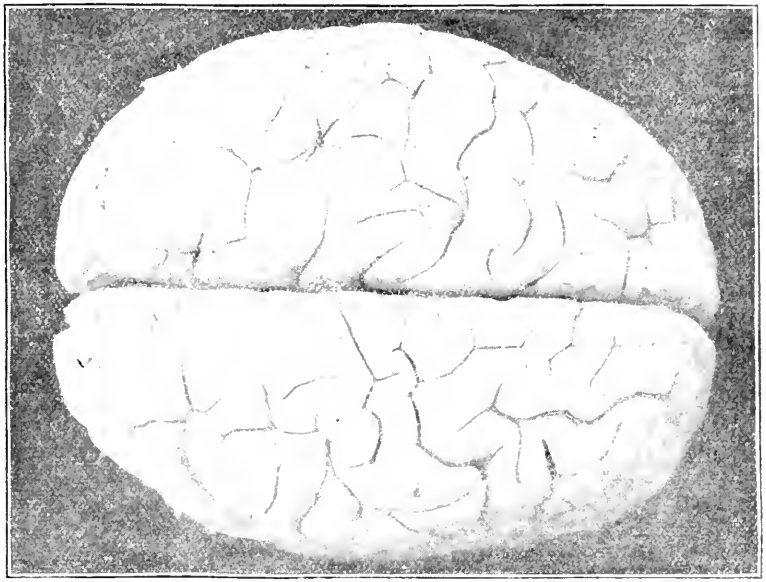

FIGURE 4. Same.

muscular strength, with some mental weakness; and finally the existence of an enlargement of the pituitary gland. Whether the pituitary gland is the cause of the disease or not I am unable to say, and shall not venture upon an opinion. The evidence, however, which places an enlargement of this gland into relationship with the condition known as acromegaly is certainly increasing. There have been, so far as I can find, only eleven autopsies made among the eighty odd cases reported.

In nine of these an enlargement of the pituitary body was found. This enlargement was very much like that in my case, in four cases, viz.:

In Holsti's case the measurement was 2.5 x 3.0 cm.; Hensot, 3.0 x 4.2; Brigidi, 2.8 x 3.8; Heron, 3.2 x 3.8. In Taruffi's skeleton, and in one of Marie's cases, the enlargement was greater. In the two cases in which there was no enlargement, the symptoms ran an acute and peculiar course. In one of them there was atrophy and paralysis of the arms, with symptoms of bulbar palsy. Post-mortem: several softened cavities were found in the brain. This may have been a case of glomatosis (*Brit. Med. Journal*, Vol. 1890, p. 662). In the second case there was a sarcoma found in the lungs (*Illustrated Med. News*, 1889, Vol. II, p. 195). The fact that the gland sometimes does become enlarged or diseased without producing acromegaly does not necessarily militate against the theory of its relationship to acromegaly, for it may be only a peculiar perversion of the function of the gland which can produce symptoms of the disorder. Furthermore, it is extremely probable that the pituitary gland, if it has any functions, has them in connection with other glands, and that when its function is abolished other glands can in some cases take its place. Thus we find that adults can live very well for a considerable period without any spleen. In my case, the actual note with regard to the condition of the thymus was not made; but the autopsy was a very careful one, and I am sure if that gland had been present it would have been noticed. The thyroid gland appears to have been normal in size and in anatomical structure; it does not seem to me that there is any evidence whatever that this gland has a relation to acromegaly.

The discovery and description of acromegaly, and pathological studies that have been made upon it, have done at least this good: they have brought into evidence the pituitary body and have led to much careful investigation of its functions. This is a body which has before been considered vestigeal in character, but it is now

coming to be regarded as an organ of some importance. In a very careful study of it by Dr. Boyce (*Journal of Bacteriology and Pathology*) a number of interesting facts with regard to it have been collected. Dr. Boyce examined and weighed the pituitary gland in over 100 cases. The patients were insane and had died from intercurrent diseases. He found the average weight to be from 0.3 to 0.6 gm., the average being 0.5 gm. He found that this weight bore no relation to age and none particularly to sex or to general nutrition or to the size of the brain. He reports one case in which the gland was absent in a person who died from phthisis. He gives a summary of the anatomical studies of the gland and also of the pathological changes which affect it. It is known that the gland is composed of an anterior portion which is related to the alimentary tract and a posterior portion relating to the central canal of the spinal cord. The nervous or posterior portion is decidedly atrophied, and is unquestionably vestigeal or rudimentary; but the anterior portion or glandular part may have some special function, and it is this part which seems to be specially subject to disease. It is this part also which was especially diseased in my own case. The gland seems to be somewhat enlarged after extirpation of the thyroid, at least in animals. It is somewhat enlarged in myxœdema and in cretinism; but the enlargement in all these cases seems to be slight and of little consequence. The only disease in which the gland is markedly and strikingly enlarged is acromegaly.

Another point of interest in connection with my case is the question of acromegaly in its relation to giant development. There have been several other cases of acromegaly in which the general stature and size of the person were gigantic. Three of the cases reported by American observers were of persons who were over six feet high.

There is one case like mine reported by Taruffi. The man died in 1808. The skeleton measures 1.8 (six feet in height), and had all the marks of acromegaly.

Furthermore, the sella turcica was so enlarged that it must be assumed that the pituitary body was hypertrophied.

Virchow also reported a case of acromegaly in a man of enormous size and muscular strength. His height was 1.838 (6.1½).

In several other instances the patients have been very large men as shown here:

Cohen's case,	6 feet 2½ inches.	Weight, 238 pounds
Barclay and Sommers,	6 " 2 "	" 280 "
Packard,	6 " 1½ "	" 210 "
Sommers,	5 " 11 "	" 225 "
Long,	5 " 9½ "	" 262 "
Osborne,	5 " 9 "	" 225
Alfieri,	6 " 4 "	

My own case was one in which the individual was of usual stature, and it seems to me that it is not unlikely that many of the cases of giant growth on exhibition as such may be cases of peculiar and aborted types of acromegaly. I have made some attempts to study dime museum giants since my case came under observation, but the giant business has been at a low ebb in New York of late, and I have had only one opportunity for observation.

The following case seems to be very apposite in this connection, because together with a gigantic general growth, there is a special hypertrophy of part of one extremity. It might be called a case of *somatomegaly*, a name suggested to me by Dr. Frank P. Foster, with a hemiacromegaly of the head. In plainer language, the individual is a professional giant with an enormous special development of one-half the face.

Case II.—Lewis Wilkin, aged 19; single; occupation freak; was born in Minnesota. His father was a native of New York, his mother of Canada, of English stock. His parents were healthy people, of average size. He has six brothers and sisters, all of ordinary height. He was the second child. He was always large for his age, though not remarkably so. He grew steadily, however,

until by the age of 17, he was over seven feet. He is now nearly 20 years old, and has grown one and a half inches in the last year. His present height is seven feet four inches. His weight 325 pounds. His general proportions are for the most part good, but his feet and hands are particularly enormous, and the left side of the face shows a remarkable osseous hypertrophy, involving the frontal bone, upper and lower jaws. The hyper-

FIGURE 5. Gigantism with facial hemihypertrophy.

trophy corresponds closely with the distribution of the left trigeminal nerve. It gives his face a curious twisted and symmetrical look, which is shown imperfectly in the photograph. The first impression is that he has a right hemiatrophy of the face. Closer inspection reveals, however, an enormous thickening of the left upper alveolar processes. The bone bulges out above the teeth as though he had a gum boil. The palatal arch is

also greatly enlarged on the left side. The lower jaw is less affected, but is larger and longer on the left side. The teeth are white and even, and are not enlarged. The orbits are alike, but the left brow, and indeed the whole frontal bone, bulges out so as to give a curious deformity to the skull.

I could not get an exact outline, but it is shown approximately here. The thickening reaches back as far

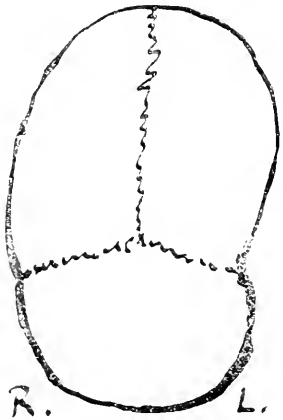

FIGURE 6. Gigantism with hemihypertrophy, showing outline of skull.

as the coronal suture and stops there. The head in brief is large, measuring 65.5 cm. in its greatest circumference. The osseous hypertrophy makes the naso-bregmatic arc very large, viz., 18.5, while the binaurieular arc, measured through the bregena, is relatively smaller, as it does not go over the hypertrophied area. The measurements are:

Greatest circumference of head,	65.5 cm.	$25\frac{3}{4}$ in.
Naso-occipital arc,	43. "	17 "
" bregmatic "	18. "	$7\frac{1}{8}$ "
Binauricular "	37. "	$14\frac{1}{2}$ "

From angle of jaw to symphysis of chin, right side, 13. ($5\frac{1}{2}$), left side 18. ($7\frac{1}{4}$), a difference of two inches.

The circumference of the chest, at the mammary line, was $47\frac{1}{2}$ inches, and the expansion three inches. This shows that he has a thorax of not excessive size proportionately. It is a good deal smaller than that of the Indian giant, whose height was 6 feet 7 inches, and whose chest measured 50 inches.

The hands were enormous, measuring 26 cm. or 10¼ inches from the tip of the middle finger to the process of the ulnar, the circumference of the open hand around the middle of the palm, 27 cm.

The feet are relatively still larger. He wears a shoe just a foot and a half long, while the actual total length of each foot is 14 inches, 35.5 cm., and the circumference around the instep is 11½ inches (29.2).

There is no especial asymmetry of physique except in respect to the face, as described. The left shoulder is, however, a little higher; he is decidedly round-shouldered, and there is a slight dorsolumbar lateral curvature of the spine.

FIGURE 7. Same, showing facial hemihypertrophy.

He has no cutaneous eruptions, no pigmentation or discoloration. He has thick, coarse hair, but no beard. His muscular system is but moderately developed; the grasp of his hand is weak; he does not like to climb stairs; he has not much strength. He has good co-ordination; is a good shot. His knee-jerks are slow and feeble.

Vision is good in both eyes, and he has no contraction of the visual field. The pupils react normally.

The eyes are small, the palpetral fissure measuring 3 cm.

His intelligence is good. He sleeps well and eats well. He has a prodigious appetite, and on one occasion ate 27 plates of ice cream at one sitting, thereby winning a wager that he could eat more than two men. No unpleasant after-effects were reported. He has slight headaches at times.

His pulse beat and respiration and his heart action were normal.

I could not say whether the thyroid was changed in size. It is certainly present.

REMARKS.

The interest of this case lies first in the giant growth, and next in the progressive facial hemihypertrophy.

That gigantism is sometimes associated with acromegaly, has been shown by my own case and that of others cited.

This patient has some symptoms belonging to acromegaly, viz.: The enlargement of the bones of the left side of the face, beginning at about puberty, the kyphosis and sclerosis, the enormous feet, the coarse hair, feeble muscular development and prodigious appetite.

The progressive facial hypertrophy is very interesting on account of its rarity and its association with the gigantism.

Dr. D. W. Montgomery recently reported a case of this disease (*Medical News*, July 15, 1893,) and collected the literature of the subject.

He finds only nine cases on record, his own case and mine making eleven. In seven of them the disorder was congenital. Those which are not congenital develop at about the time of puberty or earlier. None of them occurred inpersons of great size, or in acromegaly.

None of the cases resemble, in any way, those of symmetrical or irregular osseous overgrowth, and none of them were cases of leontiasis ossea. Still it seems to me that in Dr. Montgomery's case the question of leprosy might be raised. My case differs from Dr. Montgomery's, and most if not all others in the absence of involvement directly of the skin and soft tissues. Ordinary cases of unilateral facial hypertrophy have some resemblance to facial atrophy.

It is this bringing together of diseases which seem to touch each other, that I think is most instructive in giving broader ideas of pathology and enabling us to unify and simplify our conceptions of morbid processes. Hence it seems to me that the cases I present have practical interest and value.

FOUR CASES OF PARANOIA APPEARING IN FOUR SUCCESSIVE GENERATIONS.

By ELIZABETH C. MALLISON, M.D.,
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THE material for this article was obtained from Miss Le Blanc, the last member of the paranoiac line, and from her mother who kindly gave all desired information.

Miss Le Blanc had in her possession the letters and other documents of three generations. These papers, yellow with age and with the writing so faded as to be almost illegible, were systematically arranged in chronological order, and carefully wrapped in pieces of silk. Miss Le Blanc was very cautious about confiding in strangers; it was only after several months' acquaintance, and through her pride in their supposed importance, that she would allow these documents to be examined. To her they were very precious, for through them she hoped to establish her claim to the British throne; from which inheritance her family had for many years been kept by the machinations of their enemies. The story of this family, except the names, is given exactly as it appears in its documents. A few of the extracts, the verses and the letter of Mrs. Le Blanc are quoted verbatim.

The first letter was written in 1801, by Miss Le Blanc's great-grandfather, to the daughter of an English squire, urging her to elope to America. The English was imperfect, and many French words were employed. The lover lamented slightly his lack of wealth and rank, considering that of minor importance in comparison with his great talents as an artist. His egotism, selfishness; his want of principle and utter disregard of consequences appeared in every line. He even hinted that, if his sweetheart could bring a little of her father's money

with her, it would facilitate matters. He writes that he hears her voice in the winds and sees her face in the clouds. Whether this statement is simply a lover's rhapsody, or due to auditory and visual hallucinations, it would be difficult to decide. In his next letter he threatens to poison himself if she will not marry him.

Then comes a letter written by the old squire, and sent by an emigrant neighbor to his daughter at Jamestown, Va. He denounces her roundly for leaving her home for Le Blanc, "a daft French painter, without a sou and without brains enough to keep it if he had it."

Next, chronologically, is a little diary, written by Mrs. Le Blanc, made of pieces of coarse paper, and tied together with leather strings. The young wife writes as though her matrimonial venture had not proved a success. Her artist husband is subject to alternate periods of depression and exaltation; during the former he wanders into the forests and remains away from home for weeks at a time; while in the latter state he is full of impossible and impracticable schemes for making money.

He tells his wife of some secret enemy who continually thwarts him and prevents the success of his most carefully laid plans. Over the mantel he always keeps a loaded gun as a defense against his persecutor. His queer actions and conversation trouble her; and a suspicion as to his sanity seems to creep gradually into his wife's mind. Later he begins to have trouble in mixing his colors properly, especially the blues and greens. Mrs. Le Blanc writes of his painting a portrait in which the subject was unconsciously depicted in a green coat, while the background was filled in with blue grass and shrubs. Suspicion and distrust of those about him constantly grew upon him, and lead to frequent quarrels with his neighbors. In the most ordinary and innocent remark he sees a hidden meaning, an allusion to his secret plans, which he accordingly resents.

Under the date of 1807 is mentioned the birth of her first child, a boy, whom she names Paul. Six months after this event occurs the death of her husband "in a fit."

At intervals wider and wider apart, Mrs. Le Blanc records unimportant domestic occurrences.

The last note in her diary is made in 1829. She writes of her son Paul's fondness for music and of his skill on the violin. She expresses regret that he "is so odd and unlike the other lads." She describes him as an effeminate youth, indolent, and delighting in nothing so much as to dress in her clothing and promenade the streets to the indignation of the staid citizens of the town.

With this description of her son's character, Mrs. Le Blanc's diary ends, and the history is continued in the literary remains of Paul Le Blanc. A large bundle of letters, scraps of music and unfinished manuscripts upon musical topics, written by Paul Le Blanc, next appear.

Some of the letters are copies of those he has written to titled ladies in England, making violent protestations of love and imploring them to marry him.

Occasionally he pours forth his passion in verse. The following is a fair specimen of his poetry:

"Oh lady fair, with golden hair,
My soul to thee I speed.
I care not for fame. "What's in a name?"
Thy love is all I need.

"When thou dost smile, I think the while
That an angel's stepped from paradise.
Thy voice, so sweet, makes music meet
To drown with tears the devil's eyes.

"In sleep I seem to catch the gleam
Of thy white wings above me.
These words I hear, in cadence clear,
'Dear heart, fear not, I love thee.'

"May dreams of you, my sweet, be true,
And thy dear love forever bless me;
And this life o'er, for ever more,
To love thee and possess thee."

His amorous proclivities seem to have gotten him into trouble from time to time, for in several letters he complains of the harsh treatment he has received at the hands of the fathers and brothers of the objects of his adoration. Some of the women to whom he writes he

has never seen, and others he has seen but once or twice; but all are evidently far above him in wealth and social position.

In one letter he writes: "My angel love, we have never met in the flesh, but before we were created in the semblance of man and woman, our souls wandered through the realms of space, listening to the music of the spheres and watching the glory of the planets. Dost thou not remember the agony of that moment when we were torn apart and made to inhabit these frail tenements of clay?"

Among the little scraps of music were some quaint, pretty airs, but others seemed incoherent, if such a term could be applied to music; one theme running into another without proper musical connection.

Under the date of 1835, there is a letter from a friend congratulating him upon his marriage with the daughter of a Virginia planter. One year after there are some verses written by Le Blanc upon the death of his wife at the birth of his son:

> "O life! O death! Thou mysterious ones!
> Whence comest thou and whither dost thou go?
> Art thou reconvertable, like steam and snow?
> Warm life congealing into the iciness of death,
> Chill Mors melting under the Creator's breath
> And assuming the transient vapor we call life?"

in the habit of holding familiar converse with disembodied spirits, these questions seem superfluous.

A number of business letters written between 1837 and 1850, by orchestra leaders, indicate that he is a vacillating man, never remaining in any place but a short time, and, as a rule, proving unsatisfactory to his employers. Nearly all the letters are either in answer to his application for a position, or else informing him that his services are no longer required. It would seem that most of his difficulties arose from his inability to live amicably with his brother musicians, because of his jealousy of them, and his suspicion that they slandered him and prevented him from enjoying the deserved distinction of being the greatest violinist of the age.

The last letter of the series, written in 1856, by the manager of a New York theatre, discharges him for breaking a violin bow over the head of his orchestra leader, and advises him, for the sake of his son, Louis Le Blanc, now a young man of twenty, to go to an Insane Asylum for treatment.

The remainder of the history of this unfortunate family is given by the wife and daughter of Louis Le Blanc.

Paul Le Blanc, after a series of assaults upon different individuals, was committed to the Bloomingdale Asylum, where he died, after being, as his granddaughter expressed it, "persecuted, cheated out of his inheritance, imprisoned and hunted to his death by emissaries of Queen Victoria."

Louis Le Blanc, unlike his father and grandfather, was of a religious temperament, and had no taste for either art or music. He was a dreamer and a book-worm. Having turned his attention to theology, he joined a Methodist Conference, and went to Indiana as a circuit preacher. In 1860 he married a Boston girl who was preaching in his parish.

At the outbreak of the Civil War, he was one of the first to join the Indiana volunteers and march to the South. He served during the entire Rebellion, and returned home without having received a scratch. The excitement, the fatigue, and the deprivations incident to army life, were, however, more than his defective nervous organization could endure, and he soon began to show signs of mental dissolution.

"He was never the same after the war," his wife writes. "Previous to that, although a quiet, thoughtful man, he was always cheerful, and was a kind, affectionate husband."

After his return from the war, he became nervous, suspicious and irritable to a degree that made life a burden to me.

I know now that he inherited his insanity from his father and grandfather, but I did not know it when I married him. Neither did he know that my mother became insane while pregnant with me, and that after my birth she was taken to an asylum, where she soon died. I never thought about my mother's fate when I married

Mr. Le Blanc, any more than he thought of his father. We were both young, and life's possibilities never presented themselves to us in so serious a light.

With such a taint in the blood of both father and mother, is there any hope that my poor child can recover her reason? To have my mother, my husband, and my child die in a hospital for the insane, is sad, sad.

You write me that if you knew her father's history and her own history, previous to coming to your hospital, it might help you to understand her case, and enable you to give me some idea as to the chances for her ultimate recovery.

I will open my heart to you and keep nothing back.

Her poor father preached for a while after he came from the war, but became so excited every time he entered the pulpit, that it was thought best to have him put into an asylum where he could be treated for his infirmity.

He believed that he was inspired, and that the Holy Ghost stood at his right hand and told him what to preach. He thought that it was his mission to save the people from their sins, and when the congregation grew tired of listening to his violent and often profane upbraidings, and assisted me in getting him into an asylum, he thought that we were conspiring to kill him. As they were taking him to the carriage, he said, "What better can I expect? Thus did they persecute and crucify the One who sent me, but know you that it is in my power to call down the fire of heaven, kindled by the wrath of the Father, whom you have insulted through me, to consume you? But I spare you. Turn you from your evil ways. You put a Sodomite to the blush by your vileness. Weep, scourge your hypocritical hearts. Repent."

After six months' residence at the asylum the doctors sent him home, as they said, fully restored.

He did seem perfectly well, and commenced to preach again. During the next year my daughter was born, and a year and a half after that Mr. Le Blanc began to act strangely again.

He made queer marks on the walls of the house with charcoal. These, he said, were the writings of the Holy Ghost. He also made pictures of angels and of queer looking beasts and birds. The drawings were well done, which surprised me, as I had never known him to sketch anything. The pictures, he said, were of the heavenly visions that he saw; that the beasts were those of the

Revelations. Every figure and character had its significance, which he would explain by the hour if any one would listen to him.

At length his moral nature became affected, and he talked and acted in such an unseemly manner that the ladies of the town became afraid of him. The pictures that he now drew upon the walls were so obscene, that I was in constant terror lest the neighbors should see them.

We had to send him away again, and in two years God had mercy on him and took him home.

My daughter was never strong, and as a child the slightest shock would send her into convulsions. She was so bright that I had to keep her out of school a great deal, fearing that she would overtax her brain. She was always far ahead of those of her age, and her memory was marvellous. She was passionately fond of music and never forgot any tune she ever heard or played. I used to lock the piano several hours a day to keep her away from it. She also painted and sketched fairly well.

She was for several years so self-conscious and sensitive that she rather avoided society, and if I had not prevented it, would have lived the life of a recluse.

At length she began to take an interest in the world around her and went to the opposite extreme. She was constantly on the go, and took up every new fad that came along. Faith cure, Christian science, hypnotism, mind-reading and the Delsarte craze, each had its turn. She was extremely vacillating and never stuck to one thing long.

She opened a studio and commenced to teach painting; and, although fairly successful, she soon gave that up and advertised for music pupils. The Woman's Rights movement interested her for a time, and after hearing one woman speak upon the subject of Social Purity, she conceived the idea of becoming a public lecturer. I generally allowed her to do as she pleased, but when she went down into the slums of Boston and delivered a lecture on Social Purity to a mixed audience, I thought that the thing had gone far enough, and I put my foot down. We had a stormy scene and I was sick for a week after it, but I heard no more about lecturing.

Up to this time she had never manifested an interest in young men, but after going to the theatre one night and seeing a popular young actor, like a good many other silly women that year, she fell in love with him

and would have joined his company if I had not interfered. I began to lose my patience, and, failing to recognize the fact that she was not responsible for her foolish conduct, I scolded her severely and threatened to put her into a convent. That afternoon she left home saying that she was going to pay some calls. In about three hours after she left the house she came back in a hack, accompanied by a policeman. She was dripping wet and nearly dead from fright and exposure.

It seems that she had gone for a sail on a bay excursion boat, and when it was well out she deliberately jumped overboard. She was rescued without much difficulty, and through the intervention of friends was brought home instead of being taken to the station-house. Not caring to endure the notoriety that her reckless act had created, and hoping that a change would benefit her, I moved to this city.

She grew rapidly worse, and as I could not prevent her foolish schemes, nor control her extravagant expenditure of money, acting under the advice of a nerve specialist, I had her taken to your hospital.

The papers that you wrote me about were some that had been preserved by my husband's father, and, with his violin, were packed in an old trunk in the garret. My daughter found them, and having some romantic notion in regard to them, has carefully put them into parcels and never allows them to leave her possession.

I have never taken the trouble to read them, so cannot tell you what they are about, but if you can get on the right side of her she will let you read them. This is a long letter, and has probably wearied you, but I wanted to give you all the facts as fully and as accurately as possible. If you think best you can tell my daughter that I will be up to see her next week.

Respectfully yours,

MARY LE BLANC.

The above is a verbatim copy of a letter I received from Mrs. Le Blanc a short time ago. She seems perfectly sound mentally and physically, and although having had a great deal of trouble and anxiety, she takes a cheerful and sensible view of her misfortunes. She tells me that, as far as she knows, her mother is the only member of her family that had ever been insane.

She had reared her daughter in a more sensible man-

ner than many mothers would have done under the circumstances, but in spite of advantageous environment, careful training, and a life of comparative ease, Miss Le Blanc had succumbed to the overwhelming force of inherited neurosis. Occasionally she seems to recognize her morbid fancies as the fruit of a diseased brain, though she generally conceals her delusions, and will talk freely only with one who has gained her confidence.

She amused herself recently with sketching the other patients, but she had to give up the diversion because when she looked intently at a face it seemed to elongate and then to widen, like the alternate reflection in a convex and concave mirror. At times, her models appear to increase to gigantic stature and then to dwindle to pigmies before her eyes. She says, "I know that I am the victim of optical illusions, but it is very uncomfortable, nevertheless."

She is also governed by morbid impulses. An irresistible power forces her, as soon as she rises in the morning, to step on certain figures in the carpet. In handing an article to any one she will sometimes draw it back again, because "the force within" compels her to do so. She often makes a desperate effort to restrain her morbid impulses, but the fight against them seems to exhaust her.

In a burst of confidence she once told me that, several weeks previous, she had had a strong desire to kill me, not that she did not like me or that I had ever harmed her, "but a something within her," as she expressed it, said, "kill the doctor, steal a knife and kill her." She caused her nurse to lock her in her room at the hours at which I made my rounds, and she refused to see me or talk to me through the closed door. I remembered the circumstance, but I had not the least idea of the reason for her avoidance.

She had always been most pleasant and courteous in her treatment of me, and although I knew that she had auditory hallucinations and was a victim of morbid impulse, I did not think that she had yet developed homi-

cidal tendencies. She stayed in her room for a week, and at the end of that time she came to me and said that the fight was over and that she was victorious. I congratulated her on her victory, little dreaming how much that victory had meant to me.

She is a devout believer in telepathy, and complains of the evil and vulgar thoughts that people make her think. All her plans and aspirations are based upon the idea that she will one day rule Great Britain.

Some of her plans for benefitting and elevating the lower classes are quite sensible, while others are extremely Utopian.

She has designed a school in which the pupils shall receive such religious and moral training as will lead to the abolition of legislation. "Conscience and the love of right will be developed in my people to such an extent that crime will be an impossibility." As she cannot hope to raise the fathers of her pupils to this lofty standard, she is going to inaugurate her reform by enacting a law compelling employers to divide all earnings above a certain per cent. with their workmen. She takes an interest in the great questions of the day, and weaves them into the web of her future empire.

To the superficial observer there is nothing about Miss Le Blanc to suggest mental alienation. Her face indicates an intelligence rather above the average, and her manner at all times is pleasant and lady-like. Owing to the arrangement of her hair, her cranial asymmetry is not noticeable. There is, however, a marked bulging in the left parietal region, the eminence being as prominent as that observed in some old cases of hydrocephalus. The right parietal bone is flattened. Extending from the upper border of the occipital protuberance to the occipito-parietal articulation, is a depression measuring one-eighth of an inch in depth and two and a half inches laterally. There is no history of an instrumental delivery or of any subsequent injury.

The circumferential measurement of Miss Le Blanc's head is that of about the average woman,—twenty-one

and a quarter inches. From the left external auditory meatus over the vertex to the same point on the right she measures thirteen and one-third inches.

Her occipito-mental or "paranoiac measurement," taken from the point of the chin over the right side of the face and head to the occipital protuberance and back on the left side of head and face to the chin is twenty-six inches, the longest I have ever found, though I have measured the heads of over fifteen hundred women, both sane and insane. She has no deformity of the eyes, ears, nose or mouth, and her general physique is fully up to the average.

Her delusions of persecution are not yet well developed. She thinks that every one misunderstands her and her motives, and through their lack of comprehension, ill-treat her. She hopes that friends will one day see in her the "signs of royal descent," and will assist her in obtaining possession of her throne.

At the present time she is gentle and tractable, but what her future will be, when her "subjects" still fail to appreciate her and recognize her royal prerogatives, it does not take much of a prophet to predict.

A STUDY OF THE TEMPERATURE IN TWENTY-FIVE CASES OF GENERAL PARALYSIS OF THE INSANE.

BY FREDERICK PETERSON, M.D.,

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AND

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IT has long been a matter noted by alienists that there are great oscillations of temperature in general paretics. Diurnal oscillations, variations from day to day, asymmetrical axillary temperature and general subnormal or hyper-normal temperature have been ascribed to these cases by some authors. Thus Clouston, in Tuke's "Dictionary of Psychological Medicine," states that the general temperature is highest in general paresis, of all insanities. Kiernan (JOURNAL NERV. AND MENT. DIS., April, 1878, article by A. E. Macdonald, *Am. Jour. Insanity*, April, 1877, and also in a recent article on the diagnosis of different forms of general paresis) claims that a prominent clinical feature of such cases is the temperature; that it is usually subnormal, with extraordinary daily variations (agreeing with Rottenbiller, whom he quotes), and that there is asymmetry of the axillary temperature. Rottenbiller (*Allg. Zeitschr. f. Psych.*, 1885) gives similar testimony and cites instances of remarkable daily oscillations, in one case of nearly six degrees. Kroemer (Halle) in the *Allg. Zeitschr. f. Psych.*, XXXVI, 2te and 3te Heft, in an analysis of observations in thirty-four cases, claims that the average general bodily temperature in general paresis is lower than normal; that in the last stages there are great variations daily; and that paralytic accidents are accompanied by a rise of temperature.

It occurred to us that if these observations were correct, it might be well worth while to study the matter more fully, in order, if possible, to throw some light upon the origin of such remarkable variations from the normal. Theoretically it seemed that the facts being what they are stated to be, and the pathological changes being chiefly of a cortical nature, there might be some relation between the morbid changes and certain supposed thermo-taxic centres in the cortex. These thermo-taxic cortical centres have been located chiefly in the anterior lobes of the brain in lower animals, about the cruciate and Sylvian fissures (Eulenburg and Landois, Isaac Ott, etc., vide "Modern Antipyretics," by Ott, 1892). The question is then, are the supposed variations of temperature of general paresis explicable upon the grounds of a meningo-encephalitis affecting thermo-taxic cortical centres?

The authorities quoted above would seem almost sufficient to establish as facts these temperature variations. At the same time we thought it most important to carry out thoroughly a series of observations upon a considerable number of cases, thus enabling us to base any conclusions we might reach upon wholly original facts. To this end we selected twenty-five suitable cases of general paresis from among the large numbers of such in the Hudson River State Hospital for the Insane, and in each case made careful thermometric observations every two hours for one week. In ten of the cases, additional observations were made for the same length of time, every two to four hours, with thermometers in both axillæ, in order to determine the question of axillary asymmetry. The temperatures were taken in the axilla, and with carefully selected thermometers of the most approved type.

The following are the exact figures in all of these cases, each case being accompanied by a brief note of the clinical condition of the patient.

CASE I.—V. C.; age 46; male; married; clerk. Good habits. Born in New York. Duration of insanity five years. Has been confined to bed for the past three

months. Gait tottering and staggering. Is very tremulous. Both pupils are contracted, but r > l. Knee-jerk absent on both sides. Articulation and deglutition difficult. Has had delusions of wealth and grandeur, but mind is now almost a complete blank. Is profoundly demented. Is in the last stages of general paresis.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1 P.M.	99.4	98.8	97.8	98.6	98.4	98.8	98.4
3 "	99	98.8	98	98.2	98.4	98	98
5 "	98.8	97.6	98.2	98.8	98	98.4	98
7 "	98.8	98.2	97.8	98.2	98.4	98.4	98
9 "	98.4	98.2	98.4	98	98.6	98.4	98.2
11 "	97.6	98.2	98	97.6	98.4	98.2	98.2
1 A.M.	98	98	97.8	97.8	98.2	98.2	98
3 "	98	97.8	98.2	97.8	98	98	98.2
5 "	97.6	97.8	98	97.2	98	98	98
7 "	97.4	97.4	97.2	97.4	98	97.6	98
9 "	97.6	97.6	97.6	97.4	97.4	98 2	98.2
11 "	97.6	97.4	97.8	97.8	98.6	98.2	98.2
Widest daily variation.	2.	1.4	1.2	1.6	1.2	1.2	.4

CASE I.—V. C. The following observations were taken about six weeks after the preceeding ones; no very special change occurring in the patient's condition during this time.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES.

CASE I.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1 P.M.		R 98.4 L 98.2					
3 "		R 98.6 L 98.4	R 98.2 L 98.2	R 98.4 L 98.3	R 98.2 L 98	R 98.2 L 98 1	R 98 L 98
5 "		R 98.5 L 98.8					
7 "		R 98.8 L 99	R 98.2 L 98.2	R 98.2 L 98.4	R 98.2 L 98.2	R 98.2 L 98	R 98 L 98
9 "		R 97.8 L 97.9					
11 "		R 98.2 L 98.4	R 97.9 L 97	R 98 L 97.9	R 97.6 L 97.6	R 97.8 L 97.7	
1 A.M.		R 98.9 L 98.6					
3 "		R 98.6 L 98.4	R 98.6 L 98.4	R 97.6 L 97.9	R 97.4 L 97.2	R 97.7 L 97.7	
5 "		R 97.8 L 97.6					
7 "		R 97.8 L 97.8	R 98.6 L 98.2	R 97.8 L 98	R 97.4 L 97.2	R 97.8 L 97.8	
9 "		R 98 L 98					
11 "	R 98.4 L 98 2	R 98 L 98.2	R 98.4 L 98.2	R 98.2 L 98	R 98 L 97.9	R 97.8 L 97.8	

Widest axillary asymmetry = .9

Average axillary asymmetry = .15

CASE II.—I. B.; age 52; male; married; carpenter, born in Canada; intemperate habits. Duration of insanity nearly five years. Is in the last stages of general paresis. Is in bed; cannot stand. Is very tremulous. Knee-jerks slightly exaggerated on both sides, but more so on the left than on the right; pupils unequal l > r.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1 P.M.	99.2	99.4	98.8	98.6	98.8	98.4	98.8
3 "	98.8	99.4	99	97.8	98.8	98.8	98.6
5 "	98.8	99.2	98 8	98	99.6	98.4	98.6
7 "	98.6	98.6	99 4	97.8	99.6	98.6	99.4
9 "	98.8	99	98.6	97.8	98.4	99.6	98.2
11 "	98.4	98.6	98.6	97.8	99	98.4	99
1 A.M.	98 4	98.2	98.4	98	98.2	98.4	98.6
3 "	98.6	98.4	98	98	98.2	98.2	99
5 "	98.2	98.2	98.2	98	98	98.2	98.6
7 "	98.6	98.8	98	97.8	98	98	98.4
9 "	99	98.4	98.2	97.8	98	98.6	98.4
11 "	99.2	98.8	98.8	98	97.8	98.6	98.6
Widest daily variation.	1.	1.2	1.4	.8	1.8	1.6	1.2

CASE II.—I. B. About two weeks after the preceding observations were taken, patient had paretic convulsions followed by paralysis of the right side. At that time the temperatures were R 102.8, L 102.4.

About six weeks intervened between the preceding observations and the following. The patient is in bed and quite feeble.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES. CASE II.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	*6th day.
2 P.M.		R 101	R 102.3	R 102.8	R 104	L 103.8
		L 100.6	L 102	L 102.2	L 103.8	L 103.4
4 "		R 101.4				
		L 101.4				
6 "		R 100.2	R 101.4	R 103.8	R 103.8	
		L 100	L 101.2	L 103	L 103.4	
8 "		R 101.4				
		L 101.3				
10 "		R 101	R 102.6	R 102.2	R 102.8	
		L 100.9	L 102.4	L 102	L 102.7	
12 "		R 100.6				
		L 100.4				
2 A.M.		R 100	R 99.4	R 100 2	R 102.8	
		L 99.7	L 99	L 100	L 102.7	
4 "		R 100				
		L 99.8				
6 "		R 99.8	R 99.8	R 100.4	R 102.6	
		L 99.8	L 99.2	L 100.2	L 102.4	
8 "		R 101.6				
		L 101.1				

10 "	R 100.4	R 101.8	R 102.4	R 100.8	R 103.7
	L 100 3	L 101.8	L 102	L 100.4	L 103.8
12 "	R 100.4				
	L 100.2				

* Pneumonia developing, died in the evening of the sixth day.

Widest axillary asymmetry = .8

Average axillary asymmetry = .24

CASE III.—J. O. C.; age 50; male; single; farmer; temperate habits; born in New York. Hereditary history unknown. Duration of insanity five years. Is now confined to his bed. Is in the very last stages of general paresis. Mind is now a complete blank, but has had delusions of the greatest wealth and exaltation. Pupils contracted, l > r. Knee-jerk absent on both sides.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1 P.M.	97	97.4	97.2	96.8	99.6	98.2	98.4
3 "	97.6	97.2	97.2	97.2	98.8	98.6	97.8
5 "	97	97.2	97	97.2	100.4	99	97.6
7 "	97.2	97.2	97.2	98	100	98.8	97.8
9 "	97.8	96.8	97	97.8	99	98.6	97.8
11 "	97.2	96.8	97	97.4	99	98 2	98
1 A.M.	97	96.8	97	97.2	98.2	98.2	97.8
3 "	97.2	96.8	97	97.2	98	98	98
5 "	98	96.8	97.2	97.2	98	98.2	98.2
7 "	97.4	97.2	97.2	96.8	98.2	98.4	98.2
9 "	97.6	97	97.2	97.2	98.4	98.4	98.2
11 "	97.4	97.2	97	98.6	98.6	98.6	98.4
Widest daily variation.	1.	.6	.2	1.8	2.4	1.	.8

Twelve days after the above examination the patient died.

CASE IV.—A. F. L.; male; age 39; single; baker; good habits; born in New York. Duration of insanity about three years. Now in the advanced stages of general paresis. Articulation very difficult. Is hardly able to say a word intelligibly. Gait staggering. Past few months has been losing control of his sphincters. Is very demented but happy. Pupils unequal r > l. Knee-jerk greatly diminished on both sides, but is less diminished on the right side than on the left side.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.30 P. M.	98	98	98.4	97.4	98.8	98	98.4
3.30 "	98 2	97.8	98	98	98.2	98.4	98.6
5.30 "	98.2	99.2	97.6	98.2	100	99	98.4
7.30 "	98	98.4	97.8	97.8	98.4	98.4	98
9.30 "	98.2	97.8	97.6	97.8	98.2	98.2	98.2
11.30 "	98	97.6	97.2	97.8	98.2	98.4	98.2
1.30 A. M.	98.2	97.6	97.2	97.8	97.8	98.2	98
3.30 "	98	97.4	97.2	97 8	97.8	98.2	98.2
5.30 "	98	97.4	97.2	97.2	97.6	98	98
7.30 "	97.4	98.4	97	97.8	97.8	98.2	98.2
9.30 "	97.8	98 4	97.8	97.8	97.8	98.2	98.4
11.30 "	97	98	97.6	98.4	98	98.2	98.4
Widest daily variation.	1.2	1.8	1.4	1.2	2.4	1.	.6

CASE IV.—A. F. L. The following observations were taken about six weeks after the preceding ones, no very special change occurring in the patient's condition during this time.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES.

CASE IV.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2.30 P.M.		R 100.6	R 98.2	R 98.3	R 98	R 99.3	R 98.1
		L 100.4	L 98.2	L 98.2	L 97.8	L 99	L 98
4.30 "		R 100 4					
		L 100.2					
6.30 "		R 100.4	R 98.6	R 98.8	R 98	R 98.2	R 98
		L 100.3	L 98.6	L 98.6	L 97 9	L 98	L 97.9
8.30 "		R 98.4					
		L 98.6					
10.30 "		R 100	R 98	R 98.4	R 97.3	R 98.4	
		L 99	L 98	L 98.4	L 97.4	L 98.4	
12.30 "		R 99					
		L 99					
2.30 A.M.		R 99.2	R 99	R 98.2	R 98.4	R 97.8	
		L 99	L 97.8	L 98	L 98.4	L 97.8	
4 30 "		R 97.9					
		L 97.6					
6.30 "		R 98	R 98.2	R 98.2	R 98.1	R 97.8	
		L 97.6	L 98.2	L 98	L 98.2	L 97.8	
8.30 "		R 98.2					
		L 98					
10.30 "	R 98.8	R 97.4	R 98.2	R 98.4	R 98.4	R 98	
	L 98 8	L 97.4	L 98.2	L 98.3	L 98.3	L 98	
12.30 "	R 99.8						
	L 99.6						

Widest axillary variation = 1.
Average axillary variation = .13

CASE V.—W. L.; male; age 42; married; two children; civil engineer; temperate habits. Academic education. Duration of insanity three years. Has had delusions of the greatest wealth and exaltation, some of which he still has. For the past six months has been very much demented. Is filthy and destructive in habits. Gait somewhat staggering. Tongue, lips and fingers tremulous. Pupils unequal, r > l. Knee-jerk more marked on the left side than on the right.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.45 P.M	97.8	98	98	97.8	99	98.2	98.4
3.45 "	97.8	98.2	97.6	98	98.4	98.4	98.6
5.45 "	97.8	98.4	98.2	98.4	100	98.6	98.4
7.45 "	98.6	98	98.2	98.2	98.4	98.4	98.6
9.45 "	98.6	98.6	98.4	98	98.4	98.4	98.4
11.45 "	98.4	98.4	98.4	98.4	98.6	98.2	98.4

1.45	A.M.	98.2	98.2	98.2	98.4	98.4	98	98 4
3.45	"	98.4	98.2	98.2	98	98.2	98.2	98.4
5.45	"	97.2	97.4	98	98	97.8	98	98.
7.45	"	97.6	98.6	98	97.8	98	98	98.2
9.45	"	98.2	98	98.6	99	98	98	98.2
11.45	"	97.8	97.8	98	98.2	98	98.4	98.4
Widest daily variation.		1.4	1.2	1.	1.2	2.2	.6	.6

CASE V.—W. L. The following observations were taken about six weeks after the preceding ones, no very special change occurring in the patient's condition during this time.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES.

CASE V.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day
2.50	P.M.		R 98.8	R 98.2	R 98.4	R 99.2	R 98.6	R 99.6
			L 98.4	L 98.4	L 98.2	L 99.4	L 98.5	L 99.4
4.50	"		R 98.8					
			L 98.7					
6.50	"		R 99.6	R 99.6	R 98.8	R 100	R 100.2	R 99.4
			L 99	L 99.5	L 99	L 97.6	L 100	L 99.2
8.50	"		R 98.7					
			L 98.5					
10.50	"		R 98 6	R 98.4	R 98.6	R 99.6	R 98.7	
			L 98.5	L 98.6	L 98.4	L 99.2	L 98.5	
12.50	"		R 99					
			L 98.8					
2.50	A.M.		R 97.9	R 98.4	R 97.8	R 98.4	R 98.4	
			L 98	L 98.4	L 97.9	L 98.5	L 98.4	
4.50	"		R 97.2					
			L 97.6					
6.50	"		R 97.8	R 98.6	R 98	R 98	R 98.2	
			L 97.8	L 98.6	L 98	L 97.8	L 98.2	
8.50	"		R 98					
			L 97.8					
10.50	"	R 98.8	R 97.8	R 98.4	R 98.8	R 98.6	R 99.6	
		L 98.6	L 98	L 98.2	L 98.8	L 98.4	L 99.2	
12.50	"	R 98.8						
		L 98.6						

Widest axillary variation = 2.4
Average axillary variation = .22

CASE VI.—W. P.; male; age 39; married; three children; laborer; habits very intemperate; common school education; born in Ireland. Duration of insanity about three years. Patient is in the last stages of general paresis. Speech thick and articulation is almost impossible; destructive and filthy in habits; very tremulous and paretic; very demented; mind almost a com-

plete blank. Staggers in walking and is now in bed much of the time. Pupils unequal l > r. Knee-jerk somewhat exaggerated on both sides, but more so on the left than on the right.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.45	P.M.	98.2	98.4	99.4	99	98.8	98.6	98.8
3.45	"	98.6	98.6	98.6	98.8	98.6	98.6	99
5.45	"	98.6	98.4	98.2	98.4	99	98.6	99
7.45	"	98.4	97.8	99	98.8	98	98.6	99
9.45	"	98.8	98.4	99	98.2	98.2	98.4	98.8
11.45	"	98	98.2	98.4	98	98	98.2	98.6
1.45	A.M.	98	98	98	98.2	98	98.2	98.4
3.45	"	97.6	98	98	98.4	98	98	98.2
5.45	"	97.6	98.6	98.4	97.8	98.2	97.8	98.4
7.45	"	98.2	98.2	98.4	97.4	98.2	98.4	98.6
9.45	"	97.6	98.8	99	97.6	98.2	98.8	98.6
11.45	"	98.6	99.2	98.6	98.6	98.4	98.8	98.8
Widest daily variation		1.2	1.4	1.2	1.6	1.	1.	.8

CASE VI.—W. P. The following observations were taken about six weeks after the preceding ones, no very special change occurring in the patient's condition during this time.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES.

CASE VI.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2.20	P.M.		R 101.1	R 100 4	R 100.4	R 99.8	R 99.3	R 99
			L 101	L 100	L 100	L 99.2	L 99	L 98.9
4.20	"		R 100.8					
			L 100.6					
6.20	"		R 100.4	R 99.6	R 100.6	R 99.6	R 99.4	R 98.9
			L 100.2	L 99.4	L 100.4	L 99 2	L 98.6	L 98.8
8 20	"		R 100.4					
			L 100.2					
10.20	"		R 100	R 99.4	R 99	R 98.8	R 99.4	
			L 98.8	L 99 2	L 99.1	L 99.5	L 99.1	
12.20	A.M.		R 98.8					
			L 99.4					
2.20	"		R 99.8	R 98 6	R 98.8	R 99.4	R 98.9	
			L 99.9	L 98.2	L 98.9	L 99.2	L 98.8	
4.20	"		R 99.6					
			L 99.2					
6.20	"		R 99.6	R 98.6	R 99	R 99.4	R 99	
			L 99.4	L 98.2	L 99	L 99.3	L 98.9	
8.20	"		R 99.8					
			L 99.4					
10.20	"	R 100.8	R 100.6	R 100.2	R 99.2	R 99	R 98.8	
		L 99.4	L 98.8	L 100	L 99.2	L 98 9	L 98.8	
12.20	P.M.	R 100.4						
		L 100 3						

Widest axillary variation = 1.8

Average axillary variation = .34

CASE VII.—J. R.; male; age 34; married; two children; horse jockey; very intemperate habits. Born in New York. Duration of insanity about three years. Patient is now very demented. Speech thick and hesitating. Tongue and lips tremulous. Has delusions of wealth and exaltation. Always happy. Mind is almost a complete blank. Staggers when walking. Is generally paretic. Pupils unequal, r > l. No patella reflex on the right side, and much diminished on the left.

Hours.	1st. day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2 P.M.	99.4	98	98.6	98.8	98.6	99	99.2
4 "	99	98.6	98	98.6	98.4	98.8	98.8
6 "	99.2	100 6	98.4	98.4	100	100	99.6
8 "	99	98.6	99	98.4	98.8	99.2	99
10 "	98.6	98.4	99	98.4	98.8	99 2	99
12 "	99	98.4	98.8	98.2	98.6	99	99
2 A.M.	98.8	98.2	99	98.2	98.2	99	98.8
4 "	98.2	98.4	98.4	98	98	98.8	98.8
6 "	97.8	98.4	97.8	98.4	98	98.2	98.2
8 "	97.8	98.8	99	98.4	98.8	98.6	98.8
10 "	99	98.4	99	99	98.6	98.8	98.8
12 "	98 4	98 4	99	98.8	98.6	99	98.8
Widest daily variation.	1.6	2.6	1 2	1.4	2.	1.8	1.4

CASE VIII.—C. S.; age 50; married; two children; reads and writes. Intemperate habits. Carpenter. Born in England. Duration of insanity nearly four years. Is very demented, but still has delusions of wealth and importance. Dirty in habits. Speech slow and difficult. Very paretic and tremulous. Gait unsteady and tottering. Has mitral insufficiency murmur. Has had several paretic attacks.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2 P.M	98.4	98.4	98.4	99 2	9 88	98.6	99
4 "	98.2	99	97.6	98.8	98.2	98.8	99 2
6 "	98 4	99.8	98	98.8	98.4	98.2	99.8
8 "	98.2	97.8	98.6	97.8	97.8	98.4	98.4
10 "	98.2	98.2	98 4	97 8	97.8	98 2	98.2
12 "	98.2	98	98 2	97 8	97.8	98.2	98.2
2 A.M.	98	98.2	98	97.8	98	98.2	98.2
4 "	98 2	98	98	97.8	97.8	98	98.4
6 "	97.6	97.4	97 6	97.8	98.2	98	98.4
8 "	97.6	98	98.6	98.8	98.4	98.8	98.6
10 "	98.6	97.6	98.8	97.8	98.2	99	98.8
12 "	98.4	98	98.8	98.2	98.4	99	99
Widest daily variation.	1.	2.4	1.2	1.4	1.	1.	1.6

CASE VIII.—C. S. The following observations were taken about six weeks after the preceding ones, no very special change occurring in the patient's condition during this time.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES.
CASE VIII.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.20	P.M.		R 98.6 L 98.4					
3.20	"		R 98.6 L 98.4	R 99.2 L 99.2	R 98.8 L 98.6	R 98.4 L 99	R 99.2 L 98.9	R 98.8 L 98.6
5.20	"		R 98.6 L 98.6					
7.20	"		R 99 L 98.6	R 99.4 L 99	R 99 L 98.6	R 98.4 L 98.3	R 99 L 98.6	R 98.8 L 98.7
9.20	"		R 99 L 99.2					
11.20	"		R 99.2 L 99	R 98 L 97.6	R 97.8 L 97.5	R 98.5 L 98.6	R 99.2 L 99	
1.20	A.M.		R 99 L 99					
3.20	"		R 99.2 L 99.4	R 97.9 L 97.8	R 98 L 97.8	R 98 L 98.1	R 98.7 L 98.6	
5.20	"		R 97.4 L 97.4					
7.20	"		R 97.8 L 97.6	R 98.2 L 98.2	R 98.3 L 98.2	R 98 L 98	R 98.9 L 98.6	
9.20	"		R 98.2 L 98					
11.20	"	R 98.2 L 98.2	R 98.6 L 98.6	R 98.4 L 98.4	R 98.4 L 98.4	R 98.2 L 98.2	R 99 L 98.8	

Widest axillary variation = .6.
Average axillary variation = .16.

CASE IX.—A. M.; age 62; male; married; father of ten children; painter; common school education. Born in Germany. Duration of insanity about three years. Is in the last stages of general paresis. Is in bed. Very demented. Has no control over sphincters of bladder and rectum. No knee-jerk on right side; on the left it is slightly exaggerated but in a few minutes disappears, the centre becoming exhausted, but after a few minutes rest is again present for a short time.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2.15	P.M.	97.4	98.4	99	98	98.4	98.6	98.4
4.15	"	98	97.8	98.4	97.4	99.2	97.8	98.4
6.15	"	98	97.8	98.8	98.4	98.6	99	97.8
8.15	"	98.2	98	98.8	98.4	98.6	99.2	98.8
10.15	"	97.6	98	98.6	98.2	98.2	99	98.8
12.15	"	98.6	97.8	98	98.2	98.2	99	98.4
2.15	A.M.	98.2	97.8	98.2	98	98.2	98.8	98.4
4.15	"	98.2	97.6	98	98	98	98	98.4
6.15	"	96.6	97.8	97.8	97.4	97.8	98	98.4
8.15	"	98	98.6	98	98	97.8	98.4	98.6
10.15	"	98	97.8	98.2	98	98	98.4	98.4
12.15	"	97.8	98	98.2	98.6	97.8	98.6	98.4
Widest daily variation.		1.2	1.	1.2	1.2	1.4	1.4	1.

CASE X.—H.; age 41; male; single; salesman; academic education; good habits. Born in New York. Duration of insanity three and one half years. Pupils irregular and unequal. Knee-jerk subnormal. Is in bed. Very tremulous and paretic. Has had delusions of the greatest wealth and exaltation. Is extremely demented and mind is now a complete blank. Has no control over his sphincters. Has trophic changes in skin over trochanters and heels; has also a bed sore over the sacrum. Is in the last stages of general paresis.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2.15	P.M	99.6	98.6	99.4	98.4	99 4	101.2	100 2
4.15	"	99.2	98.6	99	98.4	100.4	101.8	100 8
6.15	"	99	99.2	99.2	99.2	100.2	101.4	100.2
8.15	"	98.8	98.8	99 4	99	100	100.8	99.8
10.15	"	98.6	98.4	98.4	99	99.4	100.2	99.8
12.15	"	98.2	98.4	98.6	98.6	98.4	99.6	99.6
2.15	A.M.	98	98.6	98	98.4	98.6	99 2	99.6
4.15	"	97.6	98.2	98.8	98.2	98.4	99.8	99.4
6.15	"	98	97.6	97.8	97.8	98.4	98.4	99.4
8.15	"	98.2	99	98.2	98.2	99 4	99 8	98.4
10.15	"	98.6	98.4	98.6	99 2	100 6	99.4	98.8
12.15	"	99	100.2	98.6	98.2	101	100.2	99.4
Widest daily variation.		2.	2.6	1.6	1.4	2.2	3.4	2.4

About three weeks after these observations the patient died at his home.

CASE XI.—E. M. C.; male; age 44; married; father of six children; common school education; carpenter; intemperate habits; has had syphilis. Born in New York. Duration of insanity about twenty months. Is tremulous, paretic. Gait somewhat feeble. Has hallucinations of hearing. Is demented. Pupils unequal, l < r. Both knee-jerks exaggerated, but the left more so than the right.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2.30	P.M.	98 2	98.6	98.2	97.8	98		98.4
4.30	"	98.2	98	98	98	99.6	98.6	98 8
6 30	"	98.4	98	98.4	98	99	99	98.4
8.30	"		98.6	98.8	98.4	99	99.4	99
10.30	"	98.8	98.4	98.8	98.4	98.8	99.2	98.6
12.30	"	99	98.4	98.4	98	98.2	98.8	98.8
2.30	A.M.	98.8	98.4	98.2	98.2	98.2	98.6	98.6
4 30	"	98.4	98	98.2	98	98.2	98.4	98.4
6 30	"	97.6	98 8	97.8	97.8	98.2	97.8	98.4
8.30	"	98	99	97.8	98.4	98.4	98.4	98.4
10.30	"	97.4	98.2	97.6	98.4	98.8	98 2	98.4
12.30	"	98.4	97 8	98	98.4	98.4	98 4	98.4
Widest daily variation.		1.9	1.2	1.2	.6	1.6	1.8	.6

CASE XII.—C. J. H.; male; age 40; married; six children; hack driver; common school education; habits always very intemperate. Has probably been given to sexual excess. Born in New York. Father died insane. Duration of insanity about one year. Is now very demented. Pupils dilated, but irregular and unequal, 1 > r. Knee-jerks subnormal. Has lost control of his sphincters. Is very tremulous and paretic. Gait staggering.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2 30 P.M.	98.6	99.8	98 4	98.2	98.8	98 4	98.8
4 30 "	98.6	98.4	98.4	98.4	98.8	98.6	99
6.30 "	98.8	98.4	98.8	98 8	98.4	98.8	98.6
8 30 "	98.2	97.6	98.2	98.4	98.2	98.6	98.6
10 30 "	98	98	98	98.2	98.2	98.6	98.6
12.30 "	98 2	97.6	98	98.4	98	98.4	98.4
2 30 A M.	98	97.8	97.6	98	98	98.4	98.2
4 30 "	98.4	97.8	97.6	97.6	98	98.2	98.2
6 30 "	97.2	97.6	98.6	98.6	98	98	99.2
8.30 "	97.4	97.8	98.4	98.6	98.6	98.6	99 2
10 30 "	98.8	97.8	98.4	99	98.6	98.6	99.4
12.30 "	98 2	98.6	98.6	99.2	98.4	99.2	99 4
Widest daily variation	1.6	2 2	1.2	1.6	.8	1 2	1.2

CASE XIII.—C. B. L.; male; age 44; married; boatman; no education; intemperate habits. Born in New York. Duration of insanity three years. Is now very demented, but happy. Is tremulous and paretic. Gait staggering. Pupils unequal, 1 > r. Knee-jerks slightly exaggerated, left more so than the right.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2.45 P.M.	98	97 4	97.6	98	98.4	98.2	98.4
4 45 "	98.2	97 4	97.4	98 4	97.8	98	98.2
6.45 "	98.2	97.2	97.4	97.6	97.8	98.2	99
8.45 "	98	97.4	98	97.8	98	98.2	98.8
10.45 "	98	97.8	97.8	97.8	98	98	98.4
12 45 "	97.8	97.8	98	97.8	98	98.8	98.2
2.45 A.M.	97.6	97.8	97.6	97.4	97.8	98	98.4
4.45 "	97.6	97.6	97.4	97.4	97.6	98	98.4
6.45 "	97.4	97.4	97.2	97.8	97.8	97.8	98.4
8.45 "	97.6	97.4	97.8	98.4	97.8	98 4	98.4
10.45 "	97.8	97 2	97.4	98	98	98.2	98.4
12 45 "	97 4	97.4	97.6	98.4	98	98.4	98.4
Widest daily variation.	.8	.6	.8	1.	.8	1.	.8

CASE XIV.—J. H.; male; age 48; married; father of six children; clerk; temperate habits, but has had syphilis. Common school education. Born in Ireland.

Duration of insanity about eighteen months. Is now quiet, but has delusions of wealth and grandeur; is becoming demented. Mentalization slow. Is dull, confused, but at times very emotional. Pupils are irregular, sluggish and unequal, r > l. Speech is indistinct, hesitating and stuttering. Gait is unsteady. Has general muscular tremors. Both knee-jerks very much exaggerated.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.30	P.M.	97.8	97.8	97.6	98	98.4	99	98.8
3.30	"	98.2	97.6	98.6	98.4	99	98.4	99
5.30	"	97.8	97.8	98.4	98.6	98	99.4	99
7.30	"	97.8	98	98.8	98.4	98.6	99	99.6
9.30	"	97.8	98	98	98	97.8	99	98.8
11.30	"	97.8	97.6	98	98	98	99	98.8
1.30	A.M.	97.6	97.8	98	98.2	98	99.6	99
3.30	"	97.4	98	98.4	98	97.8	99.4	99
5.30	"	97.8	97.6	97.8	97.8	98	99.2	99
7.30	"	97.8	97.6	97.6	97.8	97.8	97.8	97.4
9.30	"	97.6	97.8	98.2	98.2	98.4	98	98
11.30	"	97.8	97.8	97.8	97.8	98.4	98	97.6
Widest daily variation.		.8	.4	1.2	.8	1.2	1.8	2.2

CASE XV.—T. P.; male; age 37; single; carpenter; habits temperate. Common school education. Born in Massachusetts. Is in the third stage of general paresis. Has delusions of the greatest wealth and exaltation, but is demented. Dirty in habits. Is very tremulous. Gait unsteady. Articulation slow and difficult. At times emotional. Pupils unequal, l > r. Knee-jerks and ankle clonus exaggerated on both sides.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.45	P.M.	98.2	98.6	99	98.8	100.2	98.6	99
3.45	"	100	97.8	99.4	99	100.8	99	99.
5.45	"	99.8	98.4	100	99.4	101	100	99.4
7.45	"	99	98.8	99	100.2	99	99.2	99.8
9.45	"	99	97.8	98	100.2	98	98	99
11.45	"	98	98.8	97.8	99.2	99.4	98.4	99.2
1.45	A.M.	98.4	99	98	98	99.2	99.4	99.4
3.45	"	98	98	97.6	98.6	99	99.2	98.4
5.45	"	98	98	97.6	98.8	99	99.2	98
7.45	"	97.8	100	98.4	98.6	99.2	98.6	97.8
9.45	"	98.8	98.4	98.8	98.4	99.2	99	98.4
11.45	"	98	98.6	99	99	99	98.6	98
Widest daily variation.		2.2	2.2	2.4	2.2	3.	1.6	2.

CASE XV.—T. P. The following observations were taken about six weeks after the preceding ones, no very special change occurring in the patient's condition during this time.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES.

CASE XV.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2.40	P.M.		R 99.2	R 99	R 99.8	R 98.4	R 99.4	R 99
			L 99.4	L 98.6	L 99.6	L 98.4	L 99.3	L 98.8
4.40	"		R 99.4					
			L 99.4					
6.40	"		R 99	R 99 7	R 99	R 99.4	R 98.2	R 98.4
			L 99 2	L 99.4	L 99 2	L 99.2	L 98.2	L 98.8
8.40	"		R 98.4					
			L 99.2					
10.40	"		R 99	R 100.4	R 99.6	R 98.9	R 99.5	
			L 99	R 100.1	L 99.8	L 98.6	L 99.6	
12.40	"		R 98 4					
			L 99.5					
2.40	A.M.		R 98.4	R 99.8	R 99	R 98.9	R 99	
			L 98.4	L 99.7	L 98.7	L 98.7	L 98.9	
4.40	"		R 99					
			L 99.2					
6.40	"		R 99	R 99.8	R 99	R 98.6	R 98.8	
			L 99	L 99.6	L 98.8	L 98.5	L 98.6	
8.40	"		R 99.2					
			L 99.2					
10.40	"	R 98 4	R 99.8	R 99.8	R 99.2	R 99.2	R 98.8	
		L 98.6	L 98.4	L 99.6	L 99	L 99	L 98.6	
12.40	"	R 99.2						
		L 99.4						

Widest axillary variation = 1.9.
Average axillary variation = .23.

CASE XVI.—M. L. P.; male; aged forty-one; married; two children; farm laborer; common school education. Intemperate habits. Born in New York. Duration of insanity about twenty months. Has delusions of the greatest wealth and importance. Has auditory hallucinations. Is very emotional. Stammers and hesitates in speech. Gait very unsteady. Is quite demented. Of late has gained considerable in flesh. Pupils are unequal, $r > l$. Knee-jerk diminished on both sides, but less on the left than on the right.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2	P.M.	98.8	98	98.4	98.4	98.8	99.6	98.8
4	"	98	98.8	99	97.8	98	98.4	98
6	"	98	98	98.2	99	98	98 4	98
8	"	97.6	98	97.8	99	97.8	98	97.8
10	"	97.6	97.8	97.6	98.4	97.6	98.2	97.8
12	"	97.6	97.6	97.6	97.8	97.6	98	97.8
2	A.M.	98.2	97.6	98	97.8	97 6	97.6	97.4
4	"	97.8	97 6	97.6	97.8	97 8	97.6	97.4
6	"	97.6	98	97.6	98	97.6	97.8	97.6
8	"	98	98	97 8	98	98.4	98.4	98.4
10	"	96	98	98.2	98.2	98.2	99.2	99
12	"	98.8	99	98	98 2	90	98 4	98.4
Widest daily variation.		1 4	1.4	1.4	1.2	1 4	2.	1 6

CASE XVII.—J. E. C.; male; age 43; married; two children; book-keeper; good habits. Born in New York. Father was insane. Duration of insanity about four years, there being a partial remission of a few months after the first two years of insanity. The patient is now very much elated and has delusions of the greatest wealth and importance. Pupils are dilated, irregular and unequal, r > l. Tongue and lips tremulous. Articulation much impaired. Gait staggering and unsteady. Is very emotional. Knee-jerk absent on both sides.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.45	P.M.	100.6	98	98 4	99	98 4	98.8	98.4
3.45	"	101.2	98.8	98.4	99	98.4	97.6	99.4
5.45	"	100.4	100	98.8	99.2	99	99.2	101.6
7.45	"	101	99.8	98.4	99	98	98 4	98 4
9.45	"	101.2	99	97 8	99.2	99	98 6	99
11.45	"	100.6	98	97 8	98.8	97.8	98.2	98
1.45	A.M.	99	97 8	97.8	97 8	97.8	97.8	98
3 45	"	99	97.4	97.8	98	97.8	97.8	98
5 45	"	98 2	97.8	97.8	98.4	98	98.4	98
7.45	"	98	98.4	98.8	98.4	98 8	98.4	98.8
9 45	"	98.4	98 6	99	98.4	98.4	97.6	98.4
11.45	"	98 4	98.4	98	98.8	98.2	98.8	97.8
Widest daily variation.		3.2	2.6	1.4	1.4	1.4	1.6	3.8

CASE XVII.—J. E. C. The following observations were taken about six weeks after the preceding ones, no very special change occurring in the patient's condition during this time.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES.

CASE XVII.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1	P.M.		R 99					
			L 99.2					
3	"		R 98	R 98 8	R 99.8	R 99.4	R 98.6	R 98.2
			L 98.5	L 98.8	L 99.8	L 99	L 98.3	L 98
5	"		R 98 2					
			L 98.4					
7	"		R 98 4	R 98.4	R 99 2	R 99 6	R 98.2	R 98.3
			L 98 5	L 98 8	L 98.4	L 99.6	L 98.9	L 98.1
9	"		R 98.4					
			L 98 4					
11	"		R 97.8	R 100	R 98.9	R 98.9	R 98	
			L 98.2	L 98 7	L 98 6	L 98.8	L 98 1	
1	A.M.		R 98.6					
			L 98 2					
3	"		R 99	R 98.9	R 98	R 98.6	R 97.8	
			L 99	L 99	L 98	L 98.4	L 97.9	
5	"		R 97.6					
			L 97.5					

7	"	R 98 L 98	R 98.8 L 98.8	R 99.4 L 99.2	R 98.2 L 98	R 98 L 98
9	"	R 98.2 L 98				
11	"	R 98.4 L 98.4	R 98.4 L 98.2	R 98.8 L 98.8	R 99.6 L 99.4	R 98.6 L 98.4	R 98.2 L 98

Widest axillary variation = 1.3
Average axillary variation = .21

CASE XVIII.—W. F. V.; male; age 40; married; father of two children; salesman; common school education; habits temperate. Born in England. Duration of insanity about eighteen months. The patient is now having a partial remission and has become quite fleshy. At one time was quite noisy, loquacious, exalted, had delusions of the greatest wealth and importance. For the past six months has been quiet, but somewhat demented. Is happy. Tongue, lips and fingers tremulous. Articulation impaired. Pupils unequal, irregular and contracted, but l > r. Knee-jerk exaggerated. Has a hæmatoma auris.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.30	P.M.	98	98	98	98.2	98.8	98	98.8
3.30	"	98.4	97.4	97.8	98.8	99.4	98	98.8
5.30	"	98	97.6	98.2	98.6	98.4	99	99
7.30	"	97.6	98	98.2	98.6	98	98	98.2
9.30	"	97.8	97.8	97.8	98	98.4	98.2	98.4
11.30	"	97.8	97.8	98	97.6	98	98.2	98.4
1.30	A.M.	97.5	97.8	98	97.6	98.4	98.8	98
3.30	"	97.5	97.8	97.8	98	98	98	98
5.30	"	98.4	97.8	97.4	97.6	97.8	97.8	98
7.30	"	97.5	97.8	97.4	97.8	97.8	97.8	97.2
9.30	"	97.6	97.8	97.6	98	98.4	97.6	97.6
11.30	"	97.4	97.4		97.4	97.8	98	97.4
Widest daily variation.		1.	.6	.8	1.4	1.6	1.4	1.8

CASE XIX.—A. V.; male; age 39; married; two children; laborer; common school education; temperate habits. Born in Canada. Duration of insanity two years. Is now demented, but happy; is very forgetful, and frequently does not remember his own name. Hesitates in speech; staggers in walking. Both pupils are dilated, irregular and unequal, r > l. Knee-jerk greatly diminished on both sides; almost nil on the left.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.30 P.M.	99.2	98	98	98.4	97.8	97.8	98.2
3.30 "	98.2	97.8	97.4	98.8	98	97.6	98.4
5.30 "	98.6	98.4	98.6	97.8	98.4	99.8	98.4
7.30 "	98.8	97.6	97.6	97.4	98	98.4	97.4
9.30 "	98.6	97.8	97.8	97.4	97.4	97.6	97.8
11.30 "	97.8	97.8	97.4	98	97.4	97.6	97.8
1.30 A.M.	97.6	97.5	97.8	97.4	97.4	97.4	97.8
3.30 "	97.8	97.4	97.4	97.2	97.8	97.4	97.4
5.30 "	97.8	97.8	97.4	97.6	97.8	97.8	97.4
7.30 "	97.8	98.2	98	98	98	98.4	98.4
9.30 "	98	97.6	97.8	98	98.4	98	98
11.30 "	97.8	98.2	98.4	97.8	98.4	98.2	97.8
Widest daily variation.	1.6	1.	1.2	1.6	1.	2.4	1.

CASE XX.—E. P. C.; male; age 35; married; three children; tinsmith; intemperate habits. Born in New York. Duration of insanity fifteen months. Has been noisy, incoherent, homicidal; has had, and still has, delusions of the greatest wealth and exaltation, but is now becoming quieter and more demented. Gait unsteady and staggering. Articulation slow and difficult. Speech thick and hesitating. Tongue and lips tremulous. Pupils are somewhat contracted, irregular and unequal, $r > l$. Knee-jerk slightly diminished on both sides.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2 P.M.	98	97.4	97.6	98.6	98	98.6	98.6
4 "	98.4	97.6	98.4	98.4	98	98.8	97.8
6 "	99.2	97.4	98.8	100	98.6	99	98.8
8 "	98	98.2	98.6	99	98.4	98.8	98.6
10 "	97.8	98	98.6	98	98	98	98.4
12 "	97.8	98.4	98.6	98.4	98.4	98.6	99
2 A.M.	97.8	98.4	98	98.4	99	99	99
4 "	97.8	98.2	97.8	98	98	97.9	98.4
6 "	97.8	97.4	97.6	97.8	97.8	98	97.8
8 "	97.8	97.4	97.6	97.6	97.4	97.6	97.8
10 "	97.8	97.6	97.8	97.4	97.8	98	98
12 "	97.6	97.8	97.8	97.6	97.8	97.6	97.6
Widest daily variation.	1.6	1.	1.2	2.6	1.6	1.4	1.4

CASE XX.—E. P. C. The following observations were taken about six weeks after the preceding ones, no very special change occurring in the patient's condition during this time.

TABLE CONTRASTING BOTH AXILLARY TEMPERATURES.

CASE XX.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1.30 P.M.		R 98.6 L 98.5					
3.30 "		R 98.2 L 98	R 98.2 L 98	R 98.8 L 98.6	R 98.2 L 98	R 98.4 L 98.3	R 98.6 L 98.3

5.30	"		R 98.4					
			L 98.4					
7.30	"		R 99.2	R 98.8	R 98.4	R 98.2	R 99.2	R 98.5
			L 99.8	L 98.6	L 98.8	L 98	L 98.8	L 98.2
9.30	"		R 99					
			L 98.8					
11.30	"		R 97.8	R 98.8	R 98.4	R 98	R 98.6	
			L 97.6	L 99	L 98.4	L 99	L 98.5	
1.30	A.M.		R 98.6					
			L 98 4					
3.30	"		R 98.4	R 98	R 98 1	R 98 8	R 98.4	
			L 98 4	L 97.8	L 98.2	L 98 6	L 98.4	
5.30	"		R 98.2					
			L 98 4					
7.30	"		R 98 4	R 98 2	R 98.4	R 98.2	R 98.4	
			L 98 4	L 98	L 98 4	L 98	L 98.3	
9.30	"		R 98.6					
			L 98 4					
11 30	"	R 98.4	R 98 6	R 98.6	R 98 6	R 98.4	R 98 4	
		L 98.2	L 98 7	L 98.3	L 98.6	L 98.3	L 98.3	

Widest axillary variation = .6
Average axillary variation = .16

CASE XXI.—E. S.; male; age 40; single; collector; common school education. Good habits. Born in New York. Duration of insanity about four years and a half. Is now much demented, but has hallucinations of sight and hearing. Filthy and destructive in habits. Is tremulous and paretic, but is up and about. Pupils irregular and unequal, l > r. Knee-jerk diminished on both sides, but is slightly stronger on the left than on the right.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1 P.M.	99 4	99.6	99.8	99.6	98.4	99	99
3 "	99.8	99.2	100	99	98.6	99	99.2
5 "	99.8	99.2	100.2	99.2	99	99.8	99.2
7 "	99 4	99	99.8	99	99	99 8	99
9 "	99.2	99 4	99	98.4	98.4	98.2	99
11 "	99.2	99.2	98.8	98.2	98.4	98	98 6
1 A.M.	99	99	99	98 2	98	97.6	98.2
3 "	99.2	98.8	98	97.8	97.6	97.4	98.2
5 "	99	99	98.2	97.6	97 2	99.4	98
7 "	99.4	98.8	99.2	98	98.8	98.8	98.2
9 "	99.6	99	99.4	98.4	98.8	98.6	98.6
11 "	99.8	99 2	99	98.2	98.8	99	98 8
Widest daily variation.	.8	.8	2.2	2.	1.8	2.4	1 2

CASE XXII.—J. C. B.; male; age 52; married; father of five children; confectioner; common school education; intemperate habits. Born in England. Duration of insanity fifteen months. Is now demented but happy. Pupils contracted and do not respond to light. Tongue, lips and fingers tremulous. Gait un-

steady. Speech thick and hesitating. Articulation difficult. Patella reflex absent on both sides.

Hours.	1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2 P.M.	98	98	98.2	98.4	99.6	98	97.8
4 "	98.2	98	97.4	99	98,6	97.4	97.8
6 "	98.4	99	97.8	98.2	98.4	98.6	98
8 "	97.4	98.4	98.4	98.2	99	98 4	99.2
10 "	98.4	98.6	97.8	98.8	98.4	98.4	98 4
12 "	98 4	98	98	99.4	98	98.4	98 4
2 A M.	97.8	98.6	98	99	99	98.8	98
4 "	98	99.2	98.4	98.8	98 4	98.8	98 4
6 "	98	98	99	97.6	98 4	98	98
8 "	97 8	98.2	98	98 6	98.2	98.4	98
10 "	97 8	97.8	97.6	97.8	97.6	98.4	98.2
12 "	97.8	97 8	98.2	98	98 4	98.6	98
Widest daily variation.	1.	1.4	1 6	1 8	2.	1.4	1 4

Case XXIII.—E. P. B.; male; age 32; divorced; clerk; common school education. Intemperate habits. Born in New York. Heredity; father insane. Duration of insanity probably between four and six months. Is now restless, noisy, very talkative; has delusions of the greatest wealth and importance; extremely emotional; hesitates in speech; tongue and lips tremulous; reflexes exaggerated.

Hours.	1st day.	2d day	3d day.	4th day.	5th day.	6th day.	7th day.
1.30 P.M		97.8	98	98 8	98 8	98	98.8
3 30 "	99 4	98.4	98.2	98.2	98 6	98.6	98.6
5 30 "	99 6	99 2	99 4	98.6	100	99.4	100 2
7.30 "	99	99.8	99 6	98 4	99 8	98.8	99.8
9.30 "	98 6	99.2	98.8	98	98.2	98.8	99
11 30 "	97.8	99.4	97 8	98	98 4	98 4	99.8
1 30 A M	97.8	98 8	98	97.8	98.4	97 8	98.2
3 30 "	98.2	97 8	97.8	97.6	98	98	97 8
5 30 "	97.8	97.8	97.6	97 8	98 2	98 2	97 8
7.30 "	97 8	98 6	97.8	97 8	98 8	97 8	98 2
9.30 "	97.8	99 2	98 4	98 8	99.2	97 8	97.8
11.30 "	97 8	99.4	98.2	98.6	98.2	98.6	97.8
Widest daily variation.	1.8	2.	2.	1.2	2.	1.6	2 4

Case XXIV.—E. A. D.; male; age 48; married; father of three children; carpenter; common school education; temperate habits but has had syphilis. Born in New York. Duration of insanity eighteen months. Has been exceedingly violent and excited, but is now becoming quieter and demented. Has delusions of the most enormous wealth and importance, e. g., that he is building houses and decorating them with diamonds, that he is sending many ships to California to be loaded with gold, etc., etc. Is now untidy and slovenly. Appetite enormous. Tongue, lips and fingers tremulous. Gait tottering and feeble. Both

pupils are contracted and irregular, but unequal, r > l; no patella reflex.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
1 45	P.M	98 4	98 2	97.8	98.8	98 2	98 8	98.8
3.45	"	98	98 2	98 6	98	98.2	98 8	98.4
5.45	"	98.4	98 2	99	98 2	98 4	99	98.8
7 45	"	99	98.2	98.4	98	98.4	98 4	98
9.45	"	99	98	97 8	99	98.8	98.2	98.8
11 45	"	98	98	98	99	98 2	98.2	98.4
1 45	A.M.	97.8	98	97 6	98	98.4	98	98
3 45	"	99	97.8	98	98.4	98	98	98
5.45	"	98.6	97.8	97.8	97 8	98	98	97.8
7 45	"	97.8	98	97.8	97 8	98	98	97.8
9.45	"	99	98.4	98	98	97.8	98 2	97 8
11 45	"	98.8	98.8	98.2	97.8	97.8	98.6	98.4
Widest daily variation.		1.2	1.	1.4	1.2	1.	1.	1.

CASE XXV.—W. C. W.; male; age 40; married; six children; machinist; common education. Intemperate habits. Born in New York. Duration of insanity between two and three years. Is now very demented; happy. Has all the physical symptoms of the last stages of general paresis. About three weeks ago had a paretic attack, and has been in bed since, but is now rallying. Somewhat more paralyzed on the left side than on the right. Is very tremulous. Speech thick and indistinct; articulation difficult. Pupils irregular and unequal. Patella reflex exaggerated.

Hours.		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.
2	P.M.		R 99.6	R 98 2	R 98.6	R 98 6	R 98.6	R 98 4
			L 99 4	L 98 6	L 98 4	L 98.2	L 98 3	L 98.2
4	"		R 98.8					
			L 99.6					
6	"		R 98.8	R 98.8	R 99 5	R 98.6	R 98	R 98.4
			L 98 4	L 98.8	L 99 5	L 98.2	L 98.2	L 98 2
8	"		R 99					
			L 98.8					
10	"		R 98.6	R 98.2	R 98.6	R 97 8	R 98 7	
			L 98.8	L 97.9	L 98.6	L 97.6	L 98 6	
12	"		R 98.1					
			L 97.8					
2	A.M.		R 98.2	R 97.6	R 98.2	R 97.8	R 98.5	
			L 98	L 96 6	L 98 1	L 97.9	L 98 3	
4	"		R 97.8					
			L 97 6					
6	"		R 98.2	R 97.8	R 98.2	R 98 2	R 98.4	
			L 98	L 97.8	L 98	L 98	L 98 2	
8	"		R 98.4					
			L 98.2					
10	"	R 98.8	R 99.4	R 98.2	R 98 4	R 98.4	R 98 3	
		L 98.6	L 98.6	L 98.2	L 99 2	L 98.2	L 98.2	
12	"	R 99						
		L 98.8						

Widest axillary variation = 4
Average axillary variation = .18

As regards the average general bodily temperature of cases of general paresis, we have determined from this and previous studies that there is no variation from the normal. The following comparative table of temperatures in various forms of insanity made by one of us (L.), for the elder Seguin ("Medical Thermometry and Human Temperature," New York, 1876) shows that in acute mania only do we have any particular variation from the normal mean (slight hyperpyrexia):

Acute mania	99.02
Subacute mania	98.66
Chronic mania	98.68
Epileptic mania	98.70
Alcoholic Insanity	98.70
General paresis	98.45
Melancholia	98.37
Dementia	98.55

The following table is derived from the thermometric observations in our twenty-five cases, and shows the greatest single diurnal oscillations noted on some one day, the average of such oscillations for one week, and the axillary variations in our ten cases:

Cases.	Greatest oscillation on a single day.	Average daily oscillation for one week.	Greatest axillary asymmetry single observation.	Average axillary variation for one week.
	2.	1.2	.9	.15
	1.8	1.2	.8	.24
3	2.4	1.1		
	2.4	1.3	1.	.13
	2.2	1.1	2.4	.22
	.6	1.1	1.8	.34
	2.6	1.7		
	2.4	1.3	.6	.16
	1.4	1.2		
10	3.4	2.2		
11	1.8	1.2		
12	2.2	1.4		
13	1.	.8		
14	2.2	1.2		
15	3.	2.2	1.9	.23
16	2.	1.4		
17	3.8	2.2	1.3	.21
18	1.8	1.2		
19	2.4	1.4		
20	2.6	1.5	.6	.16
21	2.4	1.6		
22	2.	1.5		
23	2.4	1.8		
24	1.4	1.1		
			.4	.18
Averages.	2.3	1.4	1.17	.20

That there are marked oscillations of temperature will be seen in an examination of the table. These single day oscillations are quite marked, in cases ten and seventeen as high as 3.4 and 3.8 degrees. But it is perhaps fairer to contrast the average daily oscillation for the week in each case with the normal. Now Ogle gives the normal diurnal oscillation as 1.5° Fahr., and Alvarenga, Bärensprung, Jürgensen, Jäger and Huguenin place the figure at even more,—upwards of 2° Fahr. The lowest average diurnal oscillation in any one of our cases of general paresis was .8° ; the highest, 2.2°. The total average for all of the cases was 1.4, which we may consider, therefore, as not at all deviating from the normal. The following table will make the observations as to diurnal oscillations more clear:

No. of Cases.	Average daily oscillation for one week.
In 1 Case.	.8
" 4 "	1.1
" 6 "	1.2
" 2 "	1.3
" 3 "	1.4
" 2 "	1.5
" 1 "	1.6
" 1 "	1.7
" 1 "	1.8
" 3 "	2.2
" 24 "	average 1.4

The axillary temperatures of the two sides were taken simultaneously. The smallest average axillary asymmetry was .13°, the greatest .34, but among single observations there were many instances of exact correspondence ; while in one case, one observation showed a difference of 2.4°. The mean of greatest single axillary deviations in the ten cases was 1.17. We have been unable to find tables of normal axillary asymmetry, and thus cannot contrast our measurements with physiological tables, but it is a fact that under normal conditions there are variations between the two sides of the body; and as regards the head, for instance, the differences noted by various observers have been fully as appreciable as these observations of ours in the axillæ of paretics. There is then no good reason for supposing that there are remarkable and abnormal differences in axillary temperatures in paretics.

We would sum up our conclusions, after careful investigation of the bodily temperatures of paretics, as follows:

1. As regards the average bodily temperature, we find it to correspond to physiological normes. The statements of our predecessors as to hyperpyrexic or subnormal averages cannot be sustained.

2. The diurnal oscillations of temperature in paretics also correspond to physiological normes. The statements to be found in literature as to extraordinary daily variations being frequent in these cases are absolutely erroneous.

3. Asymmetrical axillary differences are so small that they cannot be considered as abnormal, and certainly not of any diagnostic significance.

4. When unusual variations of temperature occur in general paretics, their cause must be sought for in conditions not related to the pathological phenomena of paralytic dementia, but depending upon thermogenic features unrecognized by the physician, or "masked" by the mental state of the patient. Thus, in case two of our series, an increasing hyperpyrexia was noted during the second week's observations, but the pneumonia causing it was "masked" until the fifth or sixth day, the patient dying on the sixth day. Again in case ten, where the highest single daily oscillation was 3.4° and the average daily oscillation for the week 2.2°, the patient suffered from bed-sores which undoubtedly produced some septicæmia. That variations of temperature may take place in connection with the paralytic and convulsive seizures of these cases we do not gainsay, but have made no observations under such circumstances.

THE RELATION OF THE NERVOUS SYSTEM TO HEAT PRODUCTION.[1]

BY ISAAC OTT, M.D.

IN the *Journal of Nervous Diseases* I have classified the centres concerned in heat regulation as thermotaxic, whether concerned with thermogensis, thermolysis, or thermo-inhibition. In some experiments just made with atropin it was found to act upon the cerebral thermotaxic centres and not on the spinal. It occurred to me that perhaps the heat was nearly all generated in the tissues. To determine this, it would be necessary to remove so much of the nervous system as possible and then determine the amount of heat produced. Cats were selected for this purpose. They were put into the calorimeter for two hours, when they were removed, etherized and portions of the spinal cord destroyed. The calorimeter employed was the one improved by me, and whose error is only 5.4 per cent. After the animal was under the ether, an opening was made into the vertebral canal in the upper dorsal region and the cord destroyed downward by means of a stiff wire as far as the lumbar vertebræ, where a second opening was made in the vertebra canal and the remainder of the cord destroyed. Then the animal was immediately returned to the calorimeter and the heat production studied for four more hours. After this he was killed with chloroform. It was found that sections below the fifth dorsal were nearly always followed by recovery. If above, near the last cervical vertebra, there was often arrest of the heart and death. It was found that after sections above the fifth dorsal that the heat production fell to nearly one or two units, but afterwards rose to about one-third to one-half of the normal output (Exp. 1). If, however, the section was just at the fifth dorsal, then nearly always the heat pro-

[1] Read before the Physiological Section, Pan-American Congress.

duction remained but little below the normal amount (Exp. 2). In one case (Exp. 3) it exceeded the normal amount. Eleven experiments were made and they confirmed the preceeding statements. The inquiry now arises, how are they to be explained? It is known if you divide the spinal cord between the fifth and sixth dorsal nerves, that is, where the splanchnics fibres divide from the cord, then the blood vessels of the skin and of the abdomen dilate and the blood-pressure falls greatly. If the section is made above the level of the second dorsal nerve, then in addition to the above vaso-motor paralysis there is a dilation of the vessels of the face and head which still further reduces the arterial tension. The cardiac accelerator nerves also leave the spinal cord by the second and third dorsal nerves and possibly to some extent by the fourth and fifth. While the vaso-constructor centres of the body are in the dorsal cord, the vaso-dilators centres are spread throughout the cord. When I destroy the cord below the fifth dorsal vertebra, I cut off vaso-constrictors, the splanchnics, and also annihilate the vaso-dilators, mainly going to the muscles below this point. This section causes a loss of muscular tanos and a great fall of arterial tension. If I destroy the cord about the first or second dorsal, then all the vaso-constrictors are destroyed and nearly all the vaso-dilators. The animals who died seemed to be shocked, probably by the reflex cardiac inhibition and partly by the great vaso-motor paralysis. In cats I made some blood-pressure experiments, and found that the above-mentioned sections and destructions of the cord greatly reduced the blood-pressure. Now, it seems to me, that spinal thermogenic centres play but a small part in the heat production of these experiments. In an animal, after death, I made a transverse section of the whole body at the fifth dorsal vertebra, and the weight of the body anterior to this section was three pounds, while the body weight posterior to the division was a little over five pounds. In this case there could be no spinal thermogenic centres connected with the posterior part of the body, hence we can only

have their effect upon the anterior part of the body—that is, the three pounds or three-eighths—while the five-eighths have only the tissue-heat without any nervous action. Now, if we assume for the sake of argument that the heat produced after a section at the fifth dorsal is greatly due to spinal centres, then we must assume that the normal three-eighths of the body can produce as much heat as the normal eight-eighths of the body with an intact nervous system. This, to my view, is an absurdity. It seems to me much more rational to assume that the heat is nearly all produced in the tissues of the body and that the spinal thermogenic centres are of small value. That after the animal is greatly shocked by the section above the fifth dorsal it is easily understood that thermogenesis is greatly arrested. Admitting these facts, it is readily seen that the heat is mainly produced in the tissues, and that the whole nervous system concerned in heat regulation is thermotaxic. If the temperature falls below $98\frac{4}{10}^{\circ}$ F., then impulses are sent by the cerebral centres to the spinal centres and more heat is generated. If the temperature is above $98\frac{4}{10}^{\circ}$ F., then the thermo-inhibitory centres of the cortex act or the tuber cinereum may be stirred up, and thermolysis be increased by augmenting the rate of respiration.

Dr. B. Baculo, of Naples, holds that the thermo-inhibitory centres act directly upon the basal thermogenic. While I have published experiments supporting this view, I think there is little doubt but that they also act directly upon the spinal thermogenic centres.

Dr. E. T. Reichert believes the spinal thermogenic centres to be of a high value, and played upon by cerebral centres, like the heart is played upon by the cerebral nerves. But these experiments show that the cerebral centres are of high value and the spinal thermogenic, *per se*, are of little value.

Dr. Baculo, of Naples, noted an increase of temperature after the injection of an irritant into the corpora quadrigemina. Baculo believes these bodies contain thermogenic centres like the tuber cinereum of the mid-

brain. The experiments in this paper show that the arterial tension can be greatly lowered and heat production be not affected. In a previous paper I explained this rise of temperature after injury of the corpora quadrigemina as due to lessened tension and changed rate of respiration, but these spinal experiments have changed my mind. What the correct explanation is of this rise after an injury to the corpora quadrigemina remains to be worked out. That the tuber cinereum contains thermogenic centres is shown by the experiment where, with a fine dental drill, I punctured the tuber through the mouth and obtained a temperature of 109° F. It should be remembered that what I have described as the thalamice heat centre and the heat centre about Schiff's expiration crying centre, as well as the thermo-polypnœic centre are all seated in the tuber cinereum. One of the most certain signs that you have punctured the tuber is the accelerated respiration accompanied with a considerable and rapid rise of temperature. In puncturing through the mouth the fibre theory of some writers is demolished, as you injure no fibres in this operation. That transverse sections in front of the caudate nucleus, or of the caudate nucleus itself producing a rise of temperature and increased heat production, will show the presence of heat centres is conceded. But posterior to the corpus striatum no transverse section, even if accompanied with rise of temperature and increased heat production, will localize any heat centre in the pons or medulla, as you have removed part of the heat regulating apparatus anterior to the section and very naturally the temperature rises and heat production is increased. It is only by well localized punctures into grey matter, producing considerable rise of temperature and augmentation of heat production that you can infer the presence of a thermogenic centre at the base of the brain. That injury of the crura will cause a rise of temperature is true, but here you may by puncture injure both thermo-inhibitory and thermogenic fibres, so that no localization of a thermogenic centre can be inferred.

It seems to me that in the cortex the cruciate centre of Eulenberg and Landois, and the Sylvian, are thermo-inhibitory; that the basal thermogenic centres are located (1) in the caudate nucleus, (2) in the grey matter beneath and in front of the corpus striatum, (3) in the tuber cinereum, and that these centres act upon the tissues through spinal centres when the metabolism needs to be accelerated or retarded in activity, to develop the amount of heat necessary to keep the temperature at 98.4° F., and this is an act of thermotaxis. Therefore I believe the function of all these centres, thermogenic and thermolytic, to be heat regulating or thermotaxic.

EXPERIMENT I.—CAT; WEIGHT, 3.34 LBS., SECTION OF CORD AT SEVENTH CERVICAL AND DESTRUCTION BELOW THIS POINT.

	H. P.	H. D.	R. T. Beginning of hour.	R. T. Ending of hour.
1st period before section.	30.88	30.34	102.3	102.8
2d " " "	22.35	22.35	102.8	102.8
1st period after section.	1.36	19.03	96.6	90.2
2d " " "	10.54	13.34	90.2	89.0
3d " " "	12.42	12.96	89.0	87.0
4th " " "	92.1	11.93	87.0	86.0
5th " " "	10.53	13.57	86.0	84.9

EXPERIMENT II.—CAT; WEIGHT, 7.28 LBS.; SECTION OF CORD AT FIFTH DORSAL AND DESTRUCTION OF CORD BELOW THIS POINT.

	H. P.	H. D.	R. T. Beginning of hour.	R. T. Ending of hour.
1st period before section.	24.99	27.89	101.1	100.5
2d " " "	28.26	32.25	100.5	99.8
1st period after section	20.56	26.86	99.5	98.4
2d " " "	26.44	31.42	98.4	97.5
3d " " "	22.38	24.04	97.5	97.2
4th " " "	17.03	22.75	97.2	96.2

EXPERIMENT III.—CAT; WEIGHT, 5.52 LBS.; SECTION AT FIFTH DORSAL AND DESTRUCTION OF CORD BELOW THIS POINT.

	H. P.	H. D.	R. T. Beginning of hour.	R. T. Ending of hour.
1st period before section.	23.53	26.68	104.6	103.9
2d " " "	23.53	26.68	103.9	103.2
1st period after section.	26.34	32.70	103.0	101.6
2d " " "	32.00	34.73	101.6	101.0
3d " " "	22.33	25.06	101.0	100.4
4th " " "	25.49	24.94	100.4	100.5

EXPERIMENT IV.—CAT; WEIGHT, 4.68 LBS.; SECTION OF CORD AT FIFTH DORSAL AND DESTRUCTION OF CORD BELOW THIS POINT.

	H. P.	H. D.	R. T. Beginning of hour.	R. T. Ending of hour.
1st period before section.	27.30	28.81	101.2	101.6
1st " " "	28.90	29.77	101.6	101.4
1st period after section.	24.20	26.10	96.5	96.2
" " " "	25.23	24.46	96.0	96.2
" " " "	20.20	22.85	95.2	95.5
" " " "	24.96	26.80	95.5	95.0
" " " "	24.28	28.29	95.0	94.0

HOW DOES ATROPIN ELEVATE THE TEMPERATURE OF THE BODY?[1]

By ISAAC OTT, M.D.

IF atropin is given to an animal it will cause a rise of temperature varying from 1½° F. to 6.8° F., provided the temperature of the ambient air is elevated. If, during the elevation of temperature, the sciatic is electrically irritated, a greater rise ensues. This rise after sciatic irritation is not sudden as normally takes place, but rises gradually and continues after the irritation for two hours, after which it gradually falls. It was found that while the temperature was rising the arterial tension was falling. When it was determined by the calorimeter, it was found that the increase of temperature was accompanied by an increased production and augmented dissipation of heat. I have heretofore, on account of the spinal stimulant action of atropin, inferred that the elevation of the temperature was due to spinal stimulation. To experimentally determine the seat of action I have used cats who are well suited to show the elevation of temperature. Thirteen experiments were performed. When the cord was cut at the atlas and atropin injected per jugular there was no rise of temperature. Several repeated experiments demonstrated that the rise was not spinal.

The next experiment was made after a transverse section, just in front of the medulla oblongata, the carotids being previously ligated; then a rise of temperature ensued, after the use of atropin, of about one degree. But normally a rise of temperature ensues after section in front of the medulla, because the great regulating centres of the brain have been cut off. How are we now to differentiate between the normal rise and that rise after the drug? After the atropin the rise is only one degree, but when the animal's nervous system is intact the rise

[1] Read before Physiological Section, Pan-American Congress.

is often 6.8° F. I have also made some sections in front of the pons varolii and given atropin. Here we also have a rise of temperature without atropin. With the atropin the highest rise was 2.2° F., after section in front of the pons, which is not more than would be expected normally. After careful consideration of the results, it seems to me difficult to speak accurately as to the cerebral centre affected. The slight rise of temperature after puncture of the medulla or pons varolii in the rabbit have not led me to believe in the existence of thermogenic centres in these bodies. Until we have definitely determined the existence of heat centres in these organs it seems to me useless to assume that atropin acts upon them. Although not directly connected with this subject, yet I hope it will not be amiss to speak of the value of atropin in shock, as in the preceding paper I have demonstrated that during the first hour of shock heat production is nearly zero, and as atropin is an augmentor of heat production we have an additional proof of what is practically known, that atropin is of great value in shock. Cocaine is also an accelerator of heat production and would without doubt be of great utility.

EXPERIMENT I. CAT; TRACHEOTOMY, SPINAL CORD CUT JUST BELOW ATLAS.

P.M.	R. T.	A. T.
2.55	103	90
3.00	102	
3.05 $\frac{1}{20}$ gr. of atropin per jugular.		
3.08	101.8	90
3.25	101.0	
3.20 $\frac{1}{20}$ gr. of atropin per jugular.		
3.34	101	
4 03	100.4	
4.05 $\frac{1}{20}$ gr. of atropin per jugular.	100.4	
4.45	99	

EXPERIMENT II. CAT; TRACHEOTOMY, SPINAL CORD CUT AT SECOND CERVICAL VERTEBRA

P.M.		R. T.	A. T.
1.15		103	98
1.40		103.2	
1.58		103 6	
2.07	$\frac{1}{40}$ gr. of atropin per jugular.		
2.20		104.5	
2.26		104 5	
2.33	$\frac{1}{40}$ gr. of atropin.	103.6	
2.43		102.7	
2.53		102.7	
3.23		100.1	

EXPERIMENT III. CAT; CAROTIDS LIGATED, TRACHEOTOMY, TRANSVERSE SECTION OF BRAIN JUST IN FRONT OF MEDULLA OBLONGATA.

P.M.		R T.	A. T.
2.53		$103\frac{2}{5}$	81
2.54	$\frac{1}{20}$ gr. atropin per jugular.		
3 00		103.6	82
3.11		104.2	
3.19		103.8	82
3.20	$\frac{1}{20}$ gr. atropin per jugular.		
3.27		103.2	
3.37		102.1	
3.47		102.1	
4.15		100.6	
4.33		100.1	
4.55		99	

EXPERIMENT IV. CAT; CAROTIDS LIGATED, TRACHEOTOMY, SECTION JUST IN FRONT OF MEDULLA OBLONGATA.

A.M.		R. T.	A. T.
10.17		104.6	90
10.18	$\frac{1}{40}$ gr. of atropin per jugular.		
10.22		104.7	92
10.27		105.1	94
10.33		104.8	
10.44		105	95
10.57		104.9	
11.07		105 2	
11.18		104.6	96
11.19	$\frac{1}{40}$ gr. per jugular.		
11.25		104	
11.30		103.4	
11.35		103.5	96

EXPERIMENT V. CAT; CAROTIDS LIGATED, TRACHEOTOMY, TRANSVERSE SECTION OF BRAIN JUST IN FRONT OF MEDULLA OBLONGATA.

P.M.		R. T.	A. T.
2.00	Before section.	102	80
2.25	After section.	$103\frac{1}{10}$	80
2.34		103	
2.45		$103\frac{1}{5}$	
2.54		$103\frac{1}{5}$	81

EXPERIMENT VI. CAT; CAROTIDS LIGATED, TRACHEOTOMY, TRANSVERSE SECTION OF BRAIN JUST IN FRONT OF MEDULLA OBLONGATA.

A.M.	R. T.	A. T.
9.50	$104\frac{2}{10}$	90
9.57	$103\frac{4}{5}$	
10.03	$103\frac{8}{10}$	
10 13	104.6	
10.17	104.6	90

EXPERIMENT VII. CAT; CAROTIDS LIGATED, TRACHEOTOMY, TRANSVERSE SECTION AT ANTERIOR EDGE OF PONS VAROLII.

A.M.		R. T.	A. T.
9.28	Before section.	102.4	75
9.37	After section.	101 6	
10.24		100.4	83
10.31		100.2	85
10.32	$\frac{1}{40}$ gr. atropin per jugular.		
10 37		100.4	86
10 43		100.3	
11 10		100.7	90
11.30		100	88
11.40		100 5	86

EXPERIMENT VIII. CAT; CAROTIDS LIGATED, TRACHEOTOMY, TRANSVERSE SECTION AT ANTERIOR EDGE OF THE PONS VAROLII.

P.M.		R. T.	A. T.
1.30		102	97
2.13		102.2	97
2.20		102.6	95
2.27		102.8	94
2.28	$\frac{1}{40}$ gr. atropin per jugular.		
2.30		102.8	93
2.35		103.2	92
2.44		103.2	
2.53		104.2	90
3.20		105	90
3.27		105	
3.30		105	94

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

PATHOLOGICAL.

Insanity Among Convicts.—In a paper read by Dr. M. V. Ball before the Neurological Section of the American Medical Association, on the above subject, the clinical history of some twenty cases was given. The author dwelt on the fact that since the lowest, most degraded and half-witted criminals were the ones usually caught, while the more shrewd and better class evade detection and arrest, a prison population will have more than its due proportion of cranks and fools, but not more than among an equal number of persons taken from a similar strata of society not criminal.

Crime is not a definite thing; much that now is considered upright was once thought criminal, and much that the law allows is ethically just as criminal as much that the law condemns.

Therefore, until we can speak of an honest type of non-criminal, we can not justly speak of a criminal type.

The insanity found in prisons may be that or the ordinary kind—manias, dementias, etc.—which may arise during confinement, or were first discovered on entrance. A peculiar form often occurs among prisoners which some have designated as a special type. The delusions of persecution are most prominent in it.

It usually develops in one known as cranky by his friends or keeper.

The prisoner sends for the doctor or overseer and asks them not to put any more poison in his food. The persons next door are turning electrical machines on him. Hallucinations of hearing occur. Detectives are endeavoring to make him confess; his letters are being retained. The men on the outside are calling him obscene names. He usually eats his food and often keeps on with his work. His habits remain tidy. He seldom speaks much unless closely questioned.

Sometimes religious ideas are mixed in with this "Verfolgungs Wahn."

In a few weeks the convict returns to his normal state; he no longer speaks of the hallucinations or delusions.

Sixty per cent. of the insanities occurred in those convicted of crimes against person, while in the total prison population only thirty per cent. are sentenced for such crimes.

But usually the crimes have no apparent connection with the delusions. In a drunken quarrel a man is injured, or, while drunk, a rape is committed, etc.

These men are usually tricky, and when once favored by special diet or exercise, will endeavor to simulate a second time to obtain like favors.

It is very difficult even in prisons to detect simulation. How much more so when life and liberty is involved.

The insane are not devoid of reason, and are morally responsible for many of the crimes they commit.

Therefore, the *moral responsibility* test is fallacious.

A man's idea of right and wrong is derived from his education and environment. Nor have we any absolute test of what is right conduct.

Eliminate from the penal code the idea of vengeance

and punishment, and it no longer becomes necessary to know whether a man is morally responsible or not.

It is only necessary, then, to know if the person is *dangerous* to *society*. We deprive a cholera patient of his liberty, not to punish him, but to protect the community, and so we must treat criminals whether sane or insane.

We must cure them, if we can; if not, we must detain them for life in some way profitable to society and themselves.

This is the only basis for a just penal system, for that man is surely less responsible, who is brought up in ignorance and vice, than the one raised in luxury and well schooled; and yet our law recognizes no such distinction.

And when punishment is meted out, the bank president suffers probably more in one day than the foolish thief in six years; and the family of one feels the disgrace, and therefore is likewise and unjustly punished, while the other may not have any sensitive relatives. Justice can not be blind, and yet it is so represented.

All modern penologists urge the *social utility* test to take the place of the *moral responsibility*, a relic of theological days.

Hereditary Degenerative Stigmata.—Magnan (Arch. de Neurologie, May, 1892).

After a very painstaking and thorough consideration of the physical and psychical stigmata of degeneration, Dr. Magnan says in resumé: In certain subjects, in whom the intelligence is perfect, the moral state is defectious, while in others the moral state is perfect; but certain intellectual aptitudes, certain faculties are entirely faulty. In a third group may be placed individuals who, under ordinary circumstances, are well balanced, intellectually and morally, but who, under slight depressing or fatiguing influences, show loss of mental equilibrium and intellectual and moral defections.

The author cites a peculiar case of sexual perversion which illustrates the idea of degenerative heredity: A young man, twenty-one years old, who was observed one day, while sitting, to take from his pocket a scissors, and with them cut a large piece of skin from the left arm. When pressed for an explanation of this untoward procedure, he said that he had spent many pleasant hours in pursuit of a young girl who had beautiful white skin, and when he saw her he was filled with a desire to kill

her and eat her skin. In order to prevent himself from doing this he turned his passion against himself and cut his own skin. The act of mutilation was accompanied with sexual erethism, and following this a profound feeling of comfort and ease. In this case his antecedents were very bad. His paternal grandfather was an alcoholic, his father suffered from epilepsy and died from cerebral apoplexy.

A sister of the patient is mentally deranged. The patient himself had been incorrigible from infancy. At the age of six the sight of a young boy or girl with a fine delicate skin would provoke genital excitation. At nine years of age he began to masturbate and had ejaculations, and at the moment of ejaculation his habit was to prick deeply the abdomen with a pin, a knife or the point of a sword. When he resisted the temptation to slay a child with beautiful skin, he had peculiar sensations of innervation and of dying, with a sense of constriction and contraction in the epigastrium. When these sensations came he would cut himself. The disposition of the patient is extremely mobile, sometimes gay and happy, filled with good humor, although he is haunted with the idea of suicide. Physically, he has but few of the stigmata of degeneration. J. C.

A Contribution to the Study of Cerebral Localizations, derived from a Case of Injury to the Head with Consecutive Motor Aphasia, Verbal Deafness and Agraphia. —Dr. Francesco Borgiotti, of the University of Sienna, communicated to the *Gazetta degli Ospitali* (March 9, 1893), the history of a patient in whom a blow, not sufficiently severe to abrade the skin, upon the left side of the head, in the region corresponding to the scissure of Rolando, caused a series of temporary symptoms, identical in nature to those arising from a persistent pathological change of the same locality. The patient, Solferino Bartolozzi, a robust, well-developed and healthy young man, on receiving the blow, fell to the floor, and remained there senseless for some minutes. Recollections of the place and manner of the accident came back to him slowly, and the subsequent general muscular weakness disappeared but gradually. All attempts to speak were in vain, although after awhile his mental faculties regained their integrity, and permitted him to reason over the quality of his vertigo, which he himself compared to that pro-

duced by watching the objects of the wayside, from the window of a rapidly moving train. Throughout the night the patient was afflicted with painful vomiting and with a roaring sound in his ears, particularly accentuated in the left one. The vertigo passed away by morning, but the heaviness of the head and the motor aphasia (Bouilland-Broca type) persisted. The sense of one person's speech was readily understood, but the sounds of several voices speaking at once were confused for him. Slight right ptosis, double mydriases, more accentuated in the right eye, and right facial hemiparesis existed. The left labial angle was drawn upwards and outwards, while the right one was depressed. The tongue, while in the buccal cavity, was slightly deviated to the left, protruded; the deviation to the right was manifest. The general sensibility was not modified other than by a slight thermal hyperæsthesia of the right side of the face. Hypoacusia existed on the right side and cophosis on the left, although the otoscopic examination remained negative. The agensia of the right side of the tongue was more accentuated in the posterior half. Olfaction was normal. The ophthalmic examination demonstrated the visual field and the chromatic vision to be normal. The dynamometer showed 71 kilogrammes for the right hand and 59 for the left. The galvanic and faradic examinations proved there to be neither quantitative nor qualitative variations in the excitability. The reflexes were all normal, with the exception that the slight percussion of the left Rolandic zone produced the right facial reflex. The motility and muscular tonus of the limbs were normal. Chemical analysis demonstrated a slight phosphaturea. The pathognomonic symptom, the motor aphasia, was gradually converted into a slightly accentuated form of ataxic aphasia, but when the patient was fatigued the first form reappeared. If invited to read, the patient would constantly change the letter *e*, and pronounce *t* like *d*, and *r* like *l*. Three months later there persisted a lightly accentuated left hypoacusia, a hardly appreciable degree of right inferior facial hemiparesis, and a slight right myodriasis. The dynamometer indicated 73 kilogrammes for the right hand and 70 for the left. The patient could write and read fluently, and his psychic condition was perfect. From this return to the normal condition, Dr. Borgiotti argues, very plausibly, that there had been neither disintegration of the cerebral substance nor hemorrhage.

It, moreover, seems evident that the traumatism chiefly affected that part of the cerebral substance that was more immediately exposed to its influence; namely, the lower third of the left third frontal circumvolution, the centre of motor aphasia; the anterior part of the left first temporal, the centre of verbal deafness, and the foot of the left second frontal circumvolution, the graphic centre. The transitory symptoms, cophosis and hypoacusia showed that there had been some dynamic change in the base of the brain. The mobility of the right arm remaining constantly normal tends to prove the independence of the motor centres, as the arm centre is juxtaposed to the graphic. E. N. B.

THERAPEUTICAL.

Local Anæsthesia from Aristol.—Several observers have called attention to the soothing effects of Aristol when applied to painful, exposed surfaces. This has been especially noted when Aristol has been employed as a dressing for burns, bed-sores and discharged blisters, or for irritating ulcers. At the same time the analgesic action of Aristol does not interfere with the strong, healing power necessary to a prompt cicatrization of denuded areas, while it seems to favor the growth of normal, granulating surfaces. It is not easy to say just how far the power of Aristol, as a local anæsthetic, may be made useful in the operation of minor surgery, but some recent experiments point to a probable new field of usefulness for this remedy in the direction cited. The following paragraph from the *Kansas Medical Journal* is quite significant as showing that the advantages of Aristol as an analgesic have not passed unobserved: "Dr. S. M. Riggs, of Muscotah, has made some interesting experiments in the use of Aristol as a local anæsthetic. A hypodermic injection of a solution in glycerine was made on a kitten with the result of complete local anæsthesia. The animal made no resistance to a cutting operation, and was apparently unaware of being injured.

The advantages of using, as a local anæsthetic, the same drug which was afterward to be applied to the operation wound as a cicatrisant, would, of course, be very important.

Society Reports.

AMERICAN NEUROLOGICAL ASSOCIATION.

Nineteenth Annual Meeting, held at the West End Hotel, Long Branch, N.J., July, 25, 26 and 27, 1893.

Dr. FREDERICK PETERSON read a paper entitled

THE TEMPERATURE IN GENERAL PARALYSIS OF THE INSANE.

DISCUSSION.

Dr. GRAY, of New York, said that a large number of different pathological conditions were often included under the name of general paresis. He thought a number represented the terminal stages of intracranial syphilis.

Dr. ISAAC OTT, of Easton, Pa., did not believe that the heat centres could be located from the temperature changes of general paresis, as the lesion is too extensive.

Dr. B. SACHS, of New York, agreed with Dr. Gray as to the question of diagnosis. The results of his observations coincided with those of Dr. Peterson. He had recorded the rectal temperature. Elevations were often due to distinct organic disease. He inquired whether the heat centres had ever been made to assist in localizing cortical disease.

Dr. OTT, in reply, said that he knew of only two cases of pistol shot injury to the brain associated with immediate rise of temperature.

Dr. PARSONS remarked that in a case now under his care, the temperature was always normal.

Dr. CHAS. K. MILLS, of Philadelphia, regarded the manifestations of general paresis as so diverse in character that we can thus account for the differing experience of various observers.

Dr. J. J. PUTNAM read a paper entitled

THYROIDECTOMY IN THE TREATMENT OF GRAVES' DISEASE.

DISCUSSION.

Dr. DERCUM had observed the case of a man with all the symptoms of Graves' disease but the enlarged thyroid. The latter appeared excessively atrophied.

Dr. WEBER had noted recovery in a patient having all of the characteristic symptoms, under the persistent use of iodide of potassium. The dose had gradually been increased to three drachms daily.

Dr. E. D. FISHER thought it would hardly seem probable that in Graves' disease the enlarged thyroid can be considered as acting in a mechanical way in producing the symptoms. He had seen many cases of goitre in Canada, in whom apparently no symptoms were produced. These persons continued in their regular occupation without discomfort.

Dr. PUTNAM, in closing, said that although it was no doubt common to see goitre without nervous or cardiac symptoms, yet these occurred oftener than was ordinarily supposed. He referred especially to the investigations of Schrantz upon these points, who had shown how frequently unsuspected cardiac derangement is present among goitrous adults and children.

Dr. C. L. DANA read a paper entitled

ACROMEGALY, GIGANTISM AND FACIAL HEMI-HYPERTROPHY.

DISCUSSION.

Dr. DERCUM said that acromegaly is not associated with increase in the length of bones, but with increase in their width. He regarded Dr. Dana's case as one of gigantism with acromegaly superadded.

Dr. GRAY considered it a question whether acromegaly and gigantism were not identical. We were still in the dark as to the pathology of acromegaly. He thought the cases presented did not warrant Dr. Dana's conclusions.

Dr. COLLINS looked upon them as two separate dis-

eases. In gigantism the changes are in the cellular structure of the diaphyses and epiphyses, principally the former. In acromegaly the changes are confined to the epiphyses. Probably the disease of the pituitary gland stands in proper relation to acromegaly. Much depends on the method of examination. He had destroyed the gland in animals to see if acromegaly developed, but all died. He thought giants may suffer from acromegaly, and regards it as a degenerative disease.

Dr. BRILL, of New York, asked what structures in the brain were usually involved.

Dr. COLLINS answered, the glandular structure of the pre-hypophysis.

Dr. DERCUM expressed the view that as the other ductless glands are so often enlarged in acromegaly, to select a single gland as being the sole cause seemed unwarranted.

Dr. PUTNAM said that Vassali and Sacchi have succeeded in destroying the hypophysis through the mouth, in a large number of dogs, without causing death. The animals suffered from prostration, thirst, and polyuria, but not, so far as known, from acromegaly. Disease of the hypophysis has not always been confirmed by autopsy, and it may be an associated feature of the process, not a true and invariable cause. Other organs, especially the thymus and thyroid, are often affected.

Dr. SACHS was of the opinion that both conditions are related. Gigantism is a form of physiological excess, while acromegaly is a distinct morbid condition. He did not attach much importance to the influence of the pituitary body, but thought our knowledge of the exact etiology and pathology is still in abeyance.

Dr. WEBER, of New York, had seen two cases. One patient had had symptoms of myxœdema. He was inclined to believe gigantism to be excessive physiological growth.

Dr. MILLS had found at autopsy a tumor destroying the pituitary gland, but there was no acromegaly.

Dr. DANA, in closing the discussion, said we do not know the functions of the pituitary gland in its relation to acromegaly, but it is certainly of some importance. He still believes in the clinical relationship between gigantism and acromegaly, but looked upon gigantism as an irregular type. He regarded gigantism as a pathological condition. The thyroid was not enlarged in his case, but the pituitary gland was.

Dr. PHILLIP COOMBS KNAPP, of Boston, read a paper entitled

SIMULATION IN TRAUMATIC NERVOUS DISEASES.

ABSTRACT.

Dr. PHILLIP COOMBS KNAPP, of Boston, in reading a paper with this title, said, that although many men will simulate disease if it be to their advantage, we rarely find successful simulation of the various traumatic nervous affections.

Until recently few cases have been reported by neurologists: most of the old cases were reported by general practitioners whose knowledge of nervous diseases was limited.

In non-traumatic hysteria and neurasthenia we see many symptoms which would lead us to judge that the symptoms did not really exist. Many persons unjustly accuse the victims of these diseases of pretending to be ill, when really the malady is a serious one.

Contraction of the visual field, anæsthesia, tremor, disturbances of the reflexes, circulatory disturbances, and Mannkopf's symptom are to be regarded as important objective signs. Few simulators can have intelligence enough to withstand a searching examination by a skilled neurologist.

Furthermore, a man can keep his attention fixed on any subject only for a very brief time; and if he must be prepared to defend his simulation of half a dozen different symptoms, he will inevitably be tripped up by unexpected tests applied when his attention is diverted.

Three cases were cited in which the defence claimed that there was simulation, but in every case objective evidence proved the reality of the disease.

Out of fifty cases where claims for damages had been brought forward, only two could be regarded as simulating, and few as exaggerating, and in most of these there was little reason to suppose any deliberate attempt at fraud.

DISCUSSION.

Dr. MILLS believed absolute simulation was infrequent. The cumulative exaggeration of symptoms was comparatively frequent, however. A few people can

simulate a type of insanity or traumatic neurosis, but cannot easily simulate all the symptoms and signs. He was in favor of the convex lens test for amblyopia instead of prisms in these cases. He does not consider malingering of common occurrence.

Dr. GRAY thought many persons supposed to be simulating were simply offering to the trained eye symptoms indicative of possible simulation. He related a case of traumatic neurasthenia cured by $\frac{1}{125}$ of a grain of atropine taken for two days.

Dr. FIELD considered simulation rare. Gross exaggeration was common in these cases. In almost all there was some exaggeration of the symptoms.

Dr. LLOYD said there seems to be much confusion in the minds of some writers of the symptoms of hysteria and those of this so-called "traumatic neurasthenia." Certainly many of the symptoms to which Dr. Knapp alludes are well recognized inter-paroxysmal symptoms of hysteria. Why they should be appropriated for these cases of traumatic neuroses without acknowledgement is not clear. Such symptoms as contraction of the visual fields, tremor, and shifting areas of anæsthesia are among the best recognized stigmata of hysteria, and yet these symptoms are referred to by many writers as evidences of the "railroad" spine. There seems to be a great dread of the word hysteria among American and English writers. They almost refuse to recognize traumatic hysteria, and yet trauma is a very common cause of hysteria. The fact that a man develops hysteria after an accident is no reason to believe that he must be a simulator.

Dr. SEGUIN said that the influence of the attending physician is often pernicious to the patient. He may not actually coach him, but he suggests. Some patients take advantage of a pre-existing morbid affection. The non-employment of proper treatment in cases of traumatic neurosis, for what purpose the attending physician might explain, had been a prominent and singular fact in his experience. The cases had been allowed to grow or *ripen*, as it were. We should be allowed to examine these cases more often, unexpectedly and thoroughly, and not always when sympathetic physicians or counsel are present. He protested against Dr. Lloyd's remarks about the unity of hysteria and traumatic neuroses; some cases were hysteroid, but not all.

Dr. KNAPP, in conclusion, said that he sees cases with

slight exaggeration in contrast to Dr. Field's cases of the grossest exaggeration. He agreed with Dr. Seguin regarding the absence of treatment in many cases, but he has had a number of cases where treatment had been early and properly instituted. He could not agree with Dr. Lloyd's style of nomenclature in calling everything hysteria. There were many other traumatic nervous affections.

Dr. C. L. DANA, of New York, read an article givin the history of a case and autopsy.

THE MICROBIC ORIGIN OF CHOREA, WITH A CASE.

ABSTRACT.

Dr. C. L. DANA, of New York, read the history of a case of chorea, with autopsy.

The patient was a man of twenty-six; had had chorea since the age of fifteen. The attacks came exactly like those of ordinary chorea of Sydenham. At first there were intermissions, but the disease finally became chronic. The spasmodic movements were general and violent. There was no heart disease or rheumatism.

The patient died from exhaustion. Post mortem showed, microscopically, a conspicuous chronic leptomeningitis involving the vertex of the brain.

Microscopically this was found to be mainly a proliferation process, without exudation or much cell infiltration. In the superficial layer of the cortex there was cellular infiltration and degenerative changes. At this point a diplococcus was found. Full details were given of this by Dr. Brooks, the bacteriologist. The microorganisms were found only in the deep layer of the pia and the superficial part of the cortex.

In addition, there was found peculiar hyaline bodies in the three outer layers of the cortex, and less numerously in the basal ganglia. There were evidences of meningeal irritation, vascular disease (arteritis), and nerve root irritation in the medulla and upper part of the cord. The lower part of the cord was not examined.

Miscellany.

We have been informed the highest awards and medals at the World's Fair were given to Reed & Carnrick's Infant Foods and Kumysgen.

Alcoholic Excess.—N. H. Pierce, M.D., 43 Pontiac Street, Ann Arbor, Mich., says: "I have used Celerina as indicated, and am much pleased with the result. I prescribed it in a case of extreme nervous debility, bordering on tremens, through alcoholic excess, and it not only quieted the nervous excitement, but seems to have acted as an antidote to alcoholism, so that the patient, a young man, son of a widow, whose chief fault seems to have been a periodical craving for drink, has remained sober and industrious for many weeks. He was seldom sober more than a week at a time previous to this. I consider it one of the most valuable of medicines, also, for dyspepsia, headache, dysmenorrhea, hysteria, etc."

Celerina.—We have long been acquainted with the reputation of this fine pharmaceutical preparation. Celerina is a nerve tonic, stimulant and anti-spasmodic. It is prepared from celery, cocoa, kola, viburnum and aromatics, and is specially indicated in loss of nerve power, nervous headache, neuralgia, brain fag, neurasthenia, alcoholic excess, inebriety, drunkenness, opium habit, paralysis, dysmenorrhea, hysteria, sexual incapacity, spermatorrhea, impotency, and, in fact, in all languid and debilitated conditions of the system arising from excessive expenditure, or abuse, of the sexual functions, or over-indulgence in alcohol, and confirmed drunkenness. So far as our experience goes in the use of Celerina, we have found it an excellent and efficient nerve tonic, acting especially upon the organs of generation, giving tone to the nervous system and continence to the sexual organs, without the slightest irritation or increased excitement. In these cases Celerina is a remedy of marked therapeutic and curative value.—*Practitioner*, London, Eng.

Parke, Davis & Co. have just issued, for gratuitous distribution to inquiring physicians, two valuable brochures, one entitled "Acometric Syllabus" and the other "Biologic Therapeutics."

The first named work embraces forty-two closely printed pages giving diseases, and indications in each, which may be met by the use of Diurnules and Diurnal Tablet Triturates. It will be of much interest to practitioners requiring a system of medication involving the most certain remedies in the minuest form.

Under the head of "Biologic Therapeutics," are furnished reprints of the lecture of Hector W. G. Mackenzie, M.A., M.D., (England), on "The Treatment of Myxœdema and other Diseases by the use of certain Organic Extracts," also an illustrated paper by Edward Carmichael, M.D., Edinburgh, on "Cretinism treated by the Hypodermic Injection of Thyroid Extract and by Feeding," besides excerpts from prominent medical journals upon the use of the thyroid gland in therapeutics.

Either or both of these pamphlets will be mailed free to any physician applying to Parke, Davis & Company, Detroit, Mich.

American vs. Foreign Pharmaceutical Articles.—Inconsistency is probably the most common failing of mankind. We find a lot of doctors who are unwilling to use an American proprietary article, such as advertised in the journals, yet doctors and medical journals take up foreign articles, even when the formula is *secret* and *patented*, and use them.

Why can't an American pharmacist make as good a thing as a German, for instance? Further, the former doesn't talk about a trademark and *conceal his formula.*

This country is getting old enough to let go the leading strings and lead itself. If you can get a good non-secret preparation in America, what on earth is the use of importing some patented article from abroad? Be consistent.—*Atlanta Med. and Surg. Journal*, May, 1893.

Sanmetto *in Prostatic Disease—Vesical Catarrh—Spermatorrhea—Pre-Senility.*—I have been using *Sanmetto* for two years quite extensively, and, I am free to say, with unvarying good results. It is the most satisfactory agent I have ever tried in prostatic disease and vesical catarrh. I have had excellent results with *Sanmetto* in spermatorrhea and premature decline of the sexual power. It is certainly a valuable addition to a physician's armamentarium.—J. W. Holland, M.D., Osceola, Iowa.

New York City, Nov. 1, 1893.

Dear Sirs: It is our pleasure to inform you of a

change in our address, owing to removal from No. 132 South Fifth Avenue, to the new Scott & Bowne Building. Hereafter will you kindly send papers, and address all communications to us to the Scott & Bowne Building, New York City. Our new building is located on New Chambers, Pearl and Rose Streets. It is twelve stories high, and is considered the best building of its kind in this city.

It may interest you to know that this new and splendidly equipped building is the direct result of the public appreciation of Scott's Emulsion. You are, no doubt, well aware that we believe in advertising, and we are pleased to take this occasion of expressing our thanks to the newspapers and other periodicals of the country for their many courtesies, as well as to say a word about the importance of advertising any article of merit. While we naturally think that our great success would not have been possible unless Scott's Emulsion possessed superior merit, we do not underestimate the value of advertising, and we would suggest to every business man that in advertising he finds the best and quickest way to public favor.

You are at liberty to quote this expression of our faith in advertising, if you like, provided, of course, you also set forth the fact that the merit of an advertised article must, in the end, determine its success. The new home of Scott's Emulsion surely testifies to the value of advertising a praiseworthy preparation.

Yours, very truly,
SCOTT & BOWNE.

A. G. Cross, M.D., writes under date of June 12, 1893, from Waynesburgh, Pa., "I am free to say that I have derived more satisfaction and benefit, both to myself and patients, where a hypnotic and anodyne was indicated, from combining Codeine with Antikamnia, in the proportions of one-quarter to one-half grain of the former, with five to ten grains of the latter, than from anything else I have used in an experience of thirty-five years."

L. B. Grandy, M.D., Demonstrator of Anatomy and Microscopy, Southern Medical College, Atlanta, Ga., says: "Antikamnia has given me the most happy results in the headaches and other disagreeable head symptoms that have accompanied the late catarrhal

troubles prevailing in this section. In my practice it is now *the remedy* for Headache and Neuralgia, some cases yielding to it which had heretofore resisted everything else except morphine. I usually begin with a ten-grain dose, and then give five grains every fifteen minutes until relief is obtained. A refreshing sleep is often produced. There seem to be no disagreeable after-effects."

"Substitution." LEBANON, PA., Aug. 30, 1893.
MESSRS. WM. R. WARNER & CO., Philadelphia.

GENTLEMEN:—Some time ago I ordered *Ingluvin* through another house, knowing that your goods are widely distributed throughout the country, and apprehending no difficulty inprocuring the genuine preparation. When your representative called upon me, I informed him that I had been disappointed in securing the very satisfactory therapeutic results previously obtained in the administration of this remedy; and when I stated that I had been supplied with a preparation in bulk, was told it was put up only in one ounce bottles, and not in bulk, and that a substitution had been practiced upon me. This fully explained why I had failed to get the results anticipated, and such as I had always succeeded in obtaining. Thus, it seems, you are much interested, because my patient was not relieved, my anticipations not realized, and during the interim, I discontinued to prescribe Ingluvin.

This condition of affairs is likely to become prevalent, unless checked, and it is calling it an easy name to say that it is a crime against the doctor, patient, and the manufacturer.

Substitutions of medicines should be suppressed, and doctors should be observant and careful to specify, so as to insure the dispensing of the genuine article.

(Signed), G. L. WEISS, M.D.

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Original Articles.

THE TREATMENT OF GRAVES' DISEASE BY THYROIDECTOMY.[1]

By JAMES J. PUTNAM, M.D.,
Boston, Mass.

EVERY neurologist must have noticed with interest, within the past few years, the growth of a sentiment among the German surgeons in favor of partial removal of the thyroid in the treatment of Graves' disease, a measure which in most neurological text-books, even the most recent, is not spoken of with favor. The number of typical cases in which the operation has been done, is, to be sure, rather small, and the number of surgeons who have done them is smaller still, but the proportion of successful results is very large. Thus, Moebius, who was the first to bring strongly into prominence the idea that Graves' disease is a species of thyroid cachexia (*Zsch. f. Nkr.*, 1890), refers to a few cases in most of which a substantial cure was obtained through operation. Wette, in his admirable analysis of Riedel's operations on goitre in general (*Arch. f. Klin. Chir.* vol. xliv.), gives three new cases of partial thyroidectomy in Graves' disease, and a summary of thirty others. Only one of these ended fatally, while in all but one of the rest cure or great improvement was noted. To this collection a dozen typical cases and several analogous cases can now be added. In fact, the history of thyroidec-

[1] Read at the annual meeting of the American Neurological Asso-Association, July, 1893.

tomy in general is largely in point, since the symptoms which have made this operation at once desirable and dangreous have been similar, in the majority of cases, to the symptoms of Graves' disease. The literature of the subject is thoroughly summarized by Moebius in Schmidt's *Jahrb.*, for the past few years.

Woelfler, to be sure, in his exhaustive treatise on the surgical treatment of goitre, expresses some doubt as to whether thyroidectomy is really so very useful in true Graves' disease. He thinks that exophthalmus was not present in many of the cases cited in favor of the operation, and that cardiac and nervous symptoms are so common in cases of ordinary goitre that they ought not to count for much in support of the diagnosis.

In view of the cases which have accumulated within the past two years this criticism falls to the ground. Exophthalmus certainly has been cured by operation; and the nervous symptoms attending ordinary goitre cannot be separated by any sharp line from those of true Graves' disease.[2]

It is curious and interesting to note in this connection that Winckler (*Wiener. Med. Wochenschr.*, 1892, vol. xlii., p. 1521) in discussing the efficacy of nasal operations in Graves' disease, asserts that exophthalmus may be cured in this way, but that exophthalmus does not necessarily mean Graves' disease. The truth is that typical Graves' disease shades off in various directions into partial forms, often of special origins.

In spite of the attractive picture given by the summaries that I have quoted, there are still many questions for which we must find an answer before we can confidently recommend the operation to our patients as a matter of routine. We need to know how complete a cure is to be looked for; whether the severity of the operation is fairly measured by the death-rate; whether the probability of a favorable result is influenced by the manner in which the disease began, that is, whether the thyroid enlargement was the first, and apparently the

[2] This opinion is also endorsed by F. Müller in an excellent paper in the *Deutsches Arch. für Klin. Med.*, Vol. LI., 1893.

causal element; whether the character of the growth and its size make a difference as to the result; whether there is danger that tetany, myxœdema or other ills will make their appearance, and the like.

Before attempting an answer to these questions, I wish to report one additional case of operation for Graves' disease, done by Dr. J. C. Warren, partly at my suggestion, on a patient previously under treatment in the neurological department of the Massachusetts General Hospital.

The patient was an unmarried woman, twenty-nine years old. She had never been robust, and had had a number of attacks of protracted vomiting at different times in her life. This is noteworthy, because her present illness was ushered in by such an attack. She had the influenza three times within the four years of our visitation with the epidemic, and with each attack this tendency to protracted vomiting showed itself. The last attack of influenza occurred in April, 1892, and the subsequent vomiting continued more or less for several days, confining her to the house and causing great prostration. Immediately after this, the "lump in the neck" was noticed for the first time. It is possible that these attacks of vomiting either caused some irritability of the vagus centres or indicated that it was present. The prominence of the eyes and the palpitation were noticed a few months after the enlargement of the neck.

The patient first presented herself in the Out-Patient Department of the Massachusetts General Hospital in the autumn of 1892. She had already been under treatment at the private hospital of the Good Samaritan, but in spite of complete rest and good care she had failed to improve. While there her larynx was examined by Dr. Algernon Coolidge, and a lack of tension was found but no unilateral paralysis. All the symptoms of a moderately severe form of Graves' disease were present,—tachycardia, exophthalmus, tremor, nervous agitation, dyspnœa—and beside these there was an unusual amount of muscular twitching, of choreiform character. There was a systolic murmur in the mitral area, transmitted toward

the axilla; and the pulmonic second sound was accentuated. In the neck was a soft, non-pulsating tumor, descending slightly on swallowing, and this extended from the sternum to the thyroid cartilage, and laterally to the middle of the sterno-mastoid muscle. A loud vascular murmur was heard over the tumor when the stethoscope was applied.

After a fair trial of electricity and internal medication, thyroidectomy was proposed to her by both Dr. Coolidge and myself, and she entered the wards of the hospital. The operation was done by Dr. J. C. Warren, on February 2, 1893. There was a large amount of bleeding, but no more than is often met with in such cases. After a large plexus of superficial veins had been clamped and tied, the right lobe of the thyroid was shelled out with the fingers, the isthmus clamped, and the right lobe cut off with the scissors. A silk ligature was passed around the isthmus near the median line and tied. Then the isthmus was cut off close to the ligature. The arteries were tied with catgut and the wound washed with corrosive (1–5,000), and sewed with interrupted silk sutures, two drains being left hanging from the most dependent portion in front. The pulse and respiration were bad during the operation, and subcutaneous injections of brandy and strychnia were given. Wette's careful paper points out that this sort of occurrence is not uncommon, and that in all probability it is usually due to injury of the recurrent nerve, which sometimes happens even when the utmost pains are being taken to prevent it. During the operation the pulse ran up to between 180 and 200, and the prostration was extreme, though there was nothing in the operation itself to cause it. When the patient came out of the ether, much mucus was found to have collected in the throat and had to be swabbed out. This occurrence is worth mentioning, because Wolff speaks of it as probably an occasional cause of death. On the afternoon after the operation the pulse was 185, the temperature 104° F., and there was great difficulty in breathing. For the next four days she remained in what seemed to be a critical

condition. The voice was reduced to a faint whisper. There was great prostration, some vomiting and no desire for food. On the second day after the operation there was considerable cough, pain and dyspnœa, and some delirium. She once tried to tear off the dressing and to get out of bed. The sharp fever indicated by the chart was not to be explained by any septic condition of the wound. A low friction rub was heard below the seventh rib on the right side, in the axillary line, and above this, rales and tubular breathing and bubbling sounds transmitted from the large bronchi. It was difficult to examine thoroughly because she could not easily be moved, but Dr. F. C. Shattuck feared that pneumonia was threatening. These signs were less marked the next day and rapidly disappeared. The course of the case after this was steadily favorable. She remained in the hospital for two weeks, and after leaving it she came again under my care and I have seen her from time to time up to the present date. Up to a month ago she had improved slowly but steadily, and eventually felt better than at any time since first taken sick. The nervous twitching had disappeared. Her pulse had dropped to about a hundred and she felt stronger. Since then, perhaps on account of the hot weather, she has not felt so well, though still decidedly better than before the operation. The remaining portion of the tumor has at times been swelled, evidently from vascular engorgement, but of late it has been steadily diminishing in size. On the whole her prospects for eventual recovery seem to me to have been improved by the operation.

An examination of the larynx, made soon after the operation by Dr. Coolidge, showed a paralysis of the muscles supplied by the right recurrent nerve. Both abduction and adduction of the right cord are deficient, and during phonation the left cord crosses the median line. This paralysis still persists, and the voice is feeble, but clear and articulate.[3]

[3] Three months have passed since this statement was written. At present, the patient is much better than before the operation, but by

I examined the tumor immediately after it was removed, and found it to be of a firm consistency and homogeneous, somewhat granular in appearance. There were a few little cysts about the size of the head of a large pin or a little larger. A number of pieces were immediately placed in Müller's fluid, and were afterwards examined by Prof. Councilman. He reported the structure to be adenomatous in character and not at all like that of the normal thyroid. The arborescent, follicular-looking tufts were covered with a high, cubical epithelium, quite different from the characteristic flat epithelium of the normal gland. There was no colloid to be seen. In two of Müller's cases [l. c.] a similar condition was found.

This observation is important in several respects. In the first place, it was noticed during the first two or three days after the operation that a gelatinous sort of substance oozed out from the wound, which was supposed to come from the cut surface of the gland. It occurred to me at the time that the prostration and other nervous symptoms might have been due in part to the absorption of this material, though I finally abandoned the idea as improbable, for various reasons. I supposed at the time that this matter was colloid, and it is now an interesting subject for speculation what it may have been, and whether it did possess toxic properties. Certainly, where the large cut surface of a thyroid is exposed in this way in an open wound the best opportunity would seem to be furnished for poisoning from excess of thyroid secretion, if such a thing is possible. With a view to test this point, I made a quantity of glycerine extract from the extirpated tumor and injected a large dose under the skin of a cat. This was followed by vomiting and perhaps some prostration, but nothing more serious occurred, and I was unable to pursue the investigation further.

The change in histological structure is also interesting

no means well. The paralysis has almost disappeared, and the thyroid stump is smaller. The pulse has remained high until recently, but is now 108. The patient is very anæmic, but is gaining slowly.

jured thyroid. The only observations that I know of in regard to this point are two in number. The first are those of Halsted and Welch, which were originally communicated in a paper (not yet published) which was read at a meeting of the Association of American Physicians three years ago, and again referred to by Dr. Welch at because it would seem that it is characteristic of the in- the last meeting of the same society. These observers found that, with dogs, any injury of the thyroid, even a comparatively slight one, led to the transformation of the normal tissue into one of the same general kind with that which I have described.

The other set of experiments are by Canizzero of Catania (*Deutsche Med. Wochenschr.*, 1892, p. 184). He also found that when the thyroid was injured by being detached from its bed and sewed to the muscles in front, the tissuetook on what he calls an embryonic character, and the colloid disappeared.

The disappearance of the colloid is of some intrinsic interest in connection with the pathology of Graves' disease, and is also of importance as giving us some information, though of a negative character, with regard to the chemical nature of the efficient thyroid secretion.

Colloid has been hitherto considered to be a necessary element of the thyroid juice, but apparently this is not the case, for a gland altered in the way I have described, or even a small portion of it, is evidently abundantly able to ward off myxœdema.

It is worth noting in this connection that Vassale and Sacchi found that the removal of the hypophysis caused an increase in the colloid contents of the thyroid, and vice versa, but they concluded, on various grounds, that this did not betoken an increased functional activity.

IMMEDIATE EFFECTS OF OPERATION, AND THE SORTS OF CASES IN WHICH UNFAVORABLE RESULTS OCCUR.

There is some liability to sudden death after operation for Graves' disease as well as for other forms of goitre

(Strümpell, Wolff, Frank), and this danger is the more alarming because we do not fully understand the cause of the fatal result nor how to avoid it. Besides this, symptoms of the following kinds are not unlikely to occur: excessive prostration, dysnœa, tachycardia of high degree, vomiting, sleeplessness, pain (especially in the shoulder), pneumonia, pleurisy, laryngeal paresis.

The first few days after operation for goitre of any kind are liable to be a distressing period to the patient and an anxious one for the physician. Of the cases of Graves' disease of which I have notes, unpleasant symptoms occurred immediately after the operation in four—or about one out of eight—but it is to be remembered as regards many of the others, that no mention is made of this early period, and that perhaps the reporters of the cases have sometimes passed it over as immaterial when the final result was favorable.

The case which I have related above gives a good picture of several of these mischances. Fortunately, the patient's condition is often less serious than it seems, for the outbreaks of tachycardia and dyspnœa are probably only an exaggeration of those which occur in unoperated cases from time to time, and any one who has witnessed bad forms of these knows how alarming the patient's condition may become and yet eventually clear up entirely.

Of course, the essential thing is not the immediate but final result of the operation; but nevertheless the patient's friends, if not the patient herself, should be warned of what may occur during the earlier periods.

Can we judge beforehand, in any case, whether the operation will be well borne or not? It is probable, but not certain, that to a limited extent we can do so. The nervous centres of a patient with goitre are in a condition of very unstable equilibrium, and it is probably those that show the greatest instability which are most likely to suffer. Nevertheless this is not an invariable rule, since some very bad cases are reported to have done exceedingly well. The dangers present during and after operation are probably due, to a great extent, to the same

influences that make the condition of a goitrous patient at all times distressing and alarming, namely, a weakened or diseased heart and cardiac nerves; a similar condition of the respiratory apparatus; and irritation of the thyroid nerves or of the trunk of the recurrent. To these, the effect of etherization, mucus in a paralyzed larynx, change of shape and softening of the trachea are sometimes superadded. (Compare Wette and Wolff.)

In considering the liability to a fatal result, we ought not to confine ourselves to the cases of Graves' disease alone. Jankowski, in 1885, made a careful study of the published cases of all goitre operations as regards the ill effects of the operation, and found, as one might expect, that with improved surgical technique the mortality rate has been steadily falling. He considered it, however, to be still about 11.6 per cent. Wette's statistics of Riedel's operations in Jena, make, however, a much more favorable showing. Between 1882 and 1891 ninety-two operations were done, with but one death that could fairly be referred to the operation itself. One other patient died, however, apparently from the injury to the recurrent laryngeal nerve, from washing out the wound with a solution of carbolic acid. Nearly 90 per cent. of the remaining patients were nearly or quite relieved of the symptoms for which the operations were done, and it is noteworthy that these were, to a great extent, similar to those from which patients with Graves' disease suffer, namely, disorders of respiration and tachycardia.

Among these cases of goitre there were many which were more serious than those with which we, as neurologists, ordinarily have to deal.

Paresis or paralysis of some of the laryngeal muscles after thyroidectomy is very common. My patient presented them, and Jankowski observed them in 14.03 per cent. of 614 cases. Fortunately, this paralysis almost always passes away in time, though sometimes not for weeks or months. Jankowski calls attention to the importance of making a thorough examination of the larynx before operating, because what often happens is that the

operation only intensifies a pre-existing condition. It is also important to examine the heart carefully before operating, but we should be careful in interpreting the significance of what we find.

The investigations of Schranz have shown that the patients with ordinary goitre, even of the mildest type, are far more likely to show weakness and irritability of the heart, and eventually the structural changes to which this weakness leads, than non-goitrous persons; and this is but one of the many indications that the difference between simple goitre and Graves' disease is mainly one of degree. Schranz says that such patients are liable to bear etherization badly, but this is not invariably true. A patient with Graves' disease, for many years under my care, was recently obliged to undergo an operation for ovariotomy, and it was noteworthy that her pulse became slower and steadier under the ether. Again, attention has recently been called to the fact that chloroform is often of great use in tachycardia of acute "heat-stroke," just because it diminishes the irritability of the cardiac centres.

THE DEGREE AND PERSISTENCE OF IMPROVEMENT, AND PERIOD AT WHICH IT APPEARS AFTER OPERATION.

In some of the cases reported, the symptoms began to improve almost from the moment of the operation. This is especially true of the palpitation, less so of the exophthalmus, though this also occasionally improved early.[1] In other cases, again, the improvement began later and was very gradual, occupying many months. Recurrence of goitre or of nervous symptoms seems to have been very rare, although some of the cases were under observation for a number of years. A certain degree of nervousness and a liability to palpitation on exertion, not enough, however, to prevent even manual labor, remained in a good many instances. An interesting andimportant

[1] It is probable that when the exophthalmus is of acute or recent onset it is due to congestion, and may therefore quickly disappear. This sometimes occurs spontaneously, as in the cases observed by Gowers and by Coggeshall.

point concerns the liability of the goitre, orthat part of it left behind by the operation, to grow larger again. This liability is recognized by the surgeons, though generally overrated. Rose is often quoted as sayiing that so long as a bit of the gland remained behind the goitre is liable to return and plague you. On the other hand, Wolff, in a recent and careful review of the facts, insists that the shrinkage of the remaining portion is the almost invariable rule, and Wette reports but one case of second ary enlargement.

DOES THE RESULT VARY ACCORDING TO THE CHARACTER OF THE TUMOR?

If it is true that the goitre is a principal cause of the symptoms in some cases but not in others, as suggested by Wette and other observers, we might fairly expect to find that thyroidectomy would be more effective for good in some classes of cases than in others, and more effective where the goitre appeared first, than where it seemed to be secondary, in time of appearance and in prominence, as a symptom. As a matter of fact we do not find this to be the case. The same success seems to have attended the extirpation of vascular, parenchymatous, and cystic growths, and to have been seen in those cases which originated in fright (Lemke), or where the goitre was not the first sign of the disease, as in those of a different order. This fact suggests that we ought not to make too much of the favorable action of thyroidectomy as an argument for the thyroidal origin of Graves' disease. It would seem that however the disease is first initiated, we have to deal eventually with a vicious circle of morbid conditions, of which the enlargement of the thyroid is an important link. The enlarged thyroid evidently becomes, if it is not at first, a centre for the irritation—perhaps the chemical irritation—of important nerves, and it is by getting rid of these irritations that the cure is probably brought about.[1] In short, we have to deal

[1] This seems to me, at least, the best explanation now possible. Mœbius, Müller and others believe in the "Thyroidal Cachexia" theory, but it is by no means proved, or even made probable by the facts now at our command.

with a patient whose nervous system is, in certain respects, in a highly irritable state. Yet there is all the time a certain capacity for improvement, and if even partial rest can be secured for the nervous centres they have a chance to recover their tone, and of this chance they are able to avail themselves. It is only in this way that we can explain the remarkable effects occasionally produced by the treatment of diseases of the nasal cavity, (Hack, Musehold, Hopmann, Fraenkel, Stoker, Semon, Winckler, and others) or by öophorectomy (Jeuttner). We see something similar to this in the effect of operations for facial neuralgia, where great temporary relief is often gained if even a portion of the irritating impulses which fall upon the diseased nervous centre can be removed by the resection of a single one of several diseased nerves.

Not only is it true that among the successful cases of thyroidectomy for Graves' disease we have to deal with a variety of kinds of tumor, but we also find that even the enucleation of a cyst or the removal of a sarcoma may be effective in the same way (Tillaux, Rehn, Ollier). The probability is that the vascular goitres are not characteristic of all stages of Graves' disease, but only of the first stage, and not necessarily met with even in that. As I have already indicated, the tendency is for the gland to assume eventually some such structure as that which I have described, or else to undergo some form of degeneration.

In most of the cases where operation has been done hitherto, the goitre has been large and the symptoms urgent. We still need very much to know whether a good result may be expected where the goitre is small and indolent and the symptoms mild. I should, myself, be inclined to advise operation even in such cases as this, provided other means within the power of the patient had been fairly tried. It is possible that even a relatively slight operation would sometimes be sufficient to make the rest of the gland shrink. Even a division of the isthmus has been known to do this occasionally. It is prob-

able that the tendency to shrinkage is greater with some sorts of goitres than with others, and that it varies with the condition of the patient. (Horsley). The experiments of Beresowski upon dogs show that when a portion of the healthy thyroid is removed, short of the amount which would invite the occurrence of myxœdema, there is always a certain degree of regeneration, but that this ceases long before the original size of the gland has been reached. Halsted and Welch also found regeneration to occur, but, as I have said, with changes in histological structure.

CHARACTER OF THE OPERATION.

With regard to this point I am not prepared to give an expert opinion, and there are many points in regard to which we are still in the dark. It is not clear, for example, why the patient should improve after the removal of one-half or two-thirds of the gland, while the rest remains, for the part which is left is usually much larger than the whole of a normal gland. Wette believes that the benefit is mainly derived from getting rid of a part of the sum of irritations which the diseased nervous centres have had to sustain. Others have supposed that the good was done by diminishing the quantity of secretion. Wette's opinion seems to me the more probable of the two, though Rehn has reported a case where the opening and cleansing of a fistula containing detrital matter brought relief. Perhaps the irritation of the nerves is of chemical origin, or due to the local action of diseased secretion.

Mikulicz has advised an operation which is claimed to avoid the danger of injuring the recurrent laryngeal nerve, besides giving other advantages. This consists in transfixing the gland and resecting all but that which remains attached to the deep structures of the neck.

The operation of tying the four nutrient arteries has also been repeatedly done (Rudygier, Kocher, Dreesmann) with a view to making the gland shrink. The results, however, do not seem to be quite as brilliant as those obtained by thyroidectomy and the improvement comes on more slowly. Moreover, it is doubtful if the

operation itself is any easier (Lemke). One caution has been suggested by several surgeons (Lemke), namely, that iodine should never be injected if there is any probability that thyroidectomy may be performed later. It is attended with some risk, the results are rarely so effectual as those obtained with the knife, and it renders a subsequent operation more difficult.

More light is needed on the question of how much of the goitre should be removed. Now that we have an assured means of curing or preventing myxœdema, we can afford to be a little more bold than would formerly have been justifiable.

Finally, what shall we say as to the nature of Graves' disease and the relation of the goitre to the other symptoms? This is a question to which a satisfactory answer cannot be given, and fortunately the interests of the therapeutic's inquiry do not seem to make it necessary. The following points are, however, certainly significant. 1. Some of the characteristic symptoms of Graves' disease at least can be excited by irritations of the nerve-filaments in the nose, or by disturbances of the circulation there. It is a mooted topic whether the exophthalmus tachycardia, and thyroid enlargement occasionally induced in this way, and sometimes relieved by treatment of the nasal cavity, are fully equivalent to real Graves' disease or whether something must be superadded, and this question I will not attempt to discuss here. 2. Simple thyroid enlargement is apt to be associated with similar symptoms, and especially with disturbance of the heart's action. This is seen even in the case of animals, as for example, an interesting instance noticed, where a horse was obliged to run for a long distance. This fact naturally leads to the further question whether the relation between swelling of the thyroid and change in the heart's action may not rest on a physiological as well as a pathological basis.

The thyroid is, it seems to me, to be regarded as a body having a double function. In the universal amazement at the wonderful discoveries with regard to its im-

portance for nutrition, there has been a tendency to slight the arguments for its importance as an erectile organ, and as regulating the blood supply of the brain, and even to scoff at them as trivial.

One series of observations have been published, however, with regard to this point, which deserve more attention than they have received. They were made a few years ago by Stahel, a German physiologist, who has since died, and were reported and endorsed by Waldeyer at a meeting of the Berliner Med. Ges. in 1887. Stahel found that there is an inverse relation, as regards size, between the internal carotid artery and the superior thyroid artery. The internal carotid artery cannot expand in the bony canal of the skull, through which it passes, and the pressure of blood behind it, when excessive, leads to the formation of the carotid bulb, and also finds relief in the expansile circulation of the thyroid. A similar relation exists between the inferior thyroid artery and the vertebral. It is well known that the thyroid is capable of swelling rapidly and containing a very large amount of blood. It is also well known, and the fact is brought into special prominence by the investigations of Schranz, that goitre and functional—eventually organic—diseases of the heart are very apt to go hand and hand. Usually the pulse is more rapid in goitrous patients, and this, as Wette thinks, is either because the accelerator cardiac fibres are stimulated, or because the inhibitory fibres, always the first to suffer, are paralyzed.

Occasionally the influence of goitre seems to be to slow the pulse (Wette), and possibly in health this action is exerted oftener than in disease. Broadly speaking, it is probable that Graves' disease generally occurs only when the regulatory apparatus of the circulation is disturbed, and very frequently this disturbance is associated with emotional excitement. It can hardly be doubted that we shall eventually discover some physiological arrangement of which the symptom-complex of Graves' disease is a caricature.

If the appearance of a person be noted whose attention is suddenly fixed, it will generally be seen that the

eyelids open wide, the eyes get a staring look, the pulse beats perhaps more slowly at first, then faster. If the attention passes into fear, these phenomena may be intensified, and, in addition, the hand may be seen to tremble. If, instead of fear, shame or anger is present, the face may become suffused, and if I am not mistaken, the neck swells. Add to this the fact that emotions often cause a watery secretion in the bowels, and we have a tolerable picture of Graves' disease.

I do not care to insist too much upon the pertinacity of this simile, and certainly not to claim originality for it, but I think it does give us a hint why it is that the vascular apparatus of the orbit and the thyroid are liable to suffer more than other parts of the vasco-motor system. It is especially to be remembered that emotional excitement may give rise to the symptoms of Graves' disease in an acute form, which then pass away under the influence of rest. Gowers records a case of this sort, and my colleague, Dr. F. Coggeshall, has observed the case of a young girl who had acute Graves' disease in consequence of a whipping, but recovered in a few weeks. It seems evident that the anatomical changes—in the form in which we see them—are not the real cause of the symptoms. Neither does the thyroidal cachexia theory fully stand criticism. It is therefore safest to study the disease, provisionally, as a neurosis and to seek for its physiological analogies.

In conclusion, it seems to me clear enough that we are not obliged to assume that the goitre is the cause of the other symptoms in order to explain the favorable results of thyroidectomy. The thing which is needed for a cure in every case, and in every stage of the disease, is an adequate physiological rest for the disturbed nervous centres, and any influence may secure this which removes a good number of peripheral stimulations, or any influence which increases the stability of the central nervous system. That the diseased and engorged thyroid may be a centre for these abnormal stimuli cannot be doubted.

AUTHOR AND REFERENCE.	AGE.	SEX.	CHARACTER AND DURATION OF SYMPTOMS.	OPERATION AND IMMEDIATE EFFECTS	FINAL RESULT.
Audry. *Bull. Med.*, June 5, 1889.	43	F.	Eleven years' duration. Dyspnœa marked. Otherwise typical.	Excision. Immediate relief of dyspnœa. Death.	Death from operation.
Barker. *Lancet*, 1883, No. 24.	21	F.	Seven years' duration. Tumor small and movable, consisting of enlarged right lobe.	Removal of right lobe.	Cure, including relief from neuralgia and amenorrhœa.
Caird. Edinburgh Med. Chir. Soc., 1891, Vol. vi., p. 17.	. . .	. . .	. . . . .	Excision of right lobe	Great improvement, diminution in size of remaining lobe.
Determeyer. *Deutsche Med. Wochenschrift*, 1893, No. 11.	37	F.	Typical case.	Partial excision. Convelescence satisfactory.	Great improvement. Last seen five months after operation.
Dreesmann. *Deutsche Med. Wochenschr.*, 1892, Vol. xviii., p. 5.	47	F.	Typical case.	Ligature of the thyroid arteries Convalescence satisfactory. Gradual improvement	Substantially complete cure. Only slight exophthalmus remaining. Patient last seen two years after operation.
Ibid.	23	F.	Typical case.	Ligature of thyroid arteries in two operations. Moderate improvement after each.	Great improvement. Slight exophthalmus remains. Very slight remnant of goitre to be felt.
Ibid.	20	F.	Typical case.	Ligature of thyroid arteries. No change of symptoms at first. Finally gradual improvement.	Great improvement. Slight exophthalmus remains. Tremor and sweating no longer present. Pulse 80. Only a small remnant of goitre to be felt. Patient last seen six months after the operation

AUTHOR AND REFERENCE.	AGE.	SEX.	CHARACTER AND DURATION OF SYMPTOMS	OPERATION AND IMMEDIATE EFFECTS.	FINAL RESULT.
Dubrueil. *Gaz. Med.*, 1887, No. 34, p. 397.	22	M.	Typical case. Cystic goitre with calcareous degeneration of the walls.	Enucleation of cyst. Convalescence satisfactory.	Substantially complete cure.
Frank. *Berlin Kl. Wochenschr.*, 1888.	. . .	. . .	Details not given.	Details not given.	Death from operation.
Ibid.	. . .	. . .	" "	" "	Complete cure.
Ibid.	. . .	. . .	" "	" "	No improvement.
Ibid.	. . .	. . .	" "	" "	Result not stated.
Kummell. *Deutsche Med. Wochenschr.*, 1890, p. 438.	24	F.	Nutrition poor. Tumor of moderate size.	Removal of right lobe, and part of left. Convalescence satisfactory. Improvement began early.	Great improvement at time of writing. Six weeks after the operation all the symptoms had greatly abated. Pulse was 70 to 80.
Lemke. *Deutsche Med. Wochenschr.*, 1891, No. 2.	17	M.	Symptoms of two years' standing.	Removal of left lobe of goitre. Convalescence satisfactory. Improvement rapid.	Substantially complete cure. Diminution in size of remaining lobe, restoration of normal nutrition. Patient last seen at end of a year.
Lemke. *Deutsche Med. Wochenschr.*, 1892, No. 11.	47	M.	Excessive tachycardia, emaciation.	Removal of largest half of goitre. Convalescence satisfactory.	Substantially complete cure. Only slight nervousness remaining. Patient last seen after a year.
Lemke. Unpublished case communicated by letter.	39	F.	Symptoms apparently due to fright, mental symptoms.	Removal of greater part of goitre.	Great improvement. The only symptom present at time of writing is palpitation on exertion.

Lemke. *Deutsche Med. Wochenschr.*, 1892, No. 11.	46	F.	Uniform enlargement of the thyroid of moderately large amount. Excessive dyspnœa.	Tracheotomy; three weeks later, extirpation of the right half of the gland. Convalescence satisfactory.	The patient died from acute influenza two months later. Before her illness the exophthalmus had disappeared. The pulse was still irregular.
Ibid.	20	F.	Large goitre.	Extirpation of right half of goitre. Only moderate bleeding. Convalescence satisfactory, and rapid improvement in all the symptoms.	Great improvement, permitting regular work; diminution in size of the remnant of goitre. Patient under treatment at the Polyclinic at the end of nine months.
Lister. Cited by Fraser. *Edinburgh Med. Jour.*, 1887, Vol. xxxiii., p. 347.	young	girl	Typical case.	Removal with knife and curette. Convalescence satisfactory. Improvement began early.	Great improvement.
Mikulicz. *Centralb. f. Chir.*, 1885, No. 51. *Berlin Kl. Wochenschr.*, 1886, 4.	35	F.	Typical case. Cardiac enlargement.	"Resection" of tumor. Convalescence satisfactory.	Improvement in all the symptoms but not complete cure. Patient last seen at the end of a few months.
Ollier. Cited by Benard. *Ibid.*	21	F.	Typical case. Growth contains a large cyst.	Repeated injections of iodine. Temporary pain and prostration.	Great improvement. No enlargement of the thyroid to be felt.
Rehn. *Berlin Kl. Wochenschr.*, 1884.	22	F.	Soft vascular goitre of size of fist, of several years' duration. Severe nervous symptoms.	Extirpation of whole thyroid. Considerable bleeding. Paresis of recurrent nerve lasting four months	Recovery. Patient last seen one and a quarter years after operation.
Ibid.	36	F.	Hard tumor of right lobe, size of fist, eight years' standing; severe nervous symptoms of a year's standing.	Removal of diseased lobe. Temporary increase of tachycardia and dyspnœa. At end of week pulse normal.	Recovery. At end of a year doing hard work. Last seen after one year.

AUTHOR AND REFERENCE.	AGE.	SEX.	CHARACTER AND DURATION OF SYMPTOMS.	OPERATION AND IMMEDIATE EFFECTS.	FINAL RESULT.
Ibid. Cited by Wette. *Arch. f. Klin. Chir.*, 1892, Vol. xliv., p. 792.	. . .	M.	Severe case. Poor nutrition and bad hygienic influences.	Removal, except of left lobe. Slow but steady improvement.	Substantial recovery, permitting hard work. Patient last seen four and one-half months after operation.
Riedel. Cited by Wette. *Arch. f. Klin. Chir.*, 1892, Vol. xliv., p. 796.	20	F.	Goitre of many years' standing. Nervous and mental symptoms of high degree; nutrition greatly impaired; excessive exophthalmus; growth parenchymmatous; very vascular	Removal of largest half of goitre. No bad symptoms noted.	Substantially complete cure. Patient able to exert herself freely as in dancing. Exophthalmus gone. Increase in weight from 80 to 135 Patient last seen three years after operation.
Ibid.	23	M.	Goitre of right lobe of thyroid of ten years' standing, of about the size of fist, containing a large colloid cyst; symptoms moderately severe.	Removal of goitre. No bad symptoms noted.	Substantially complete cure. Patient last seen one year after operation.
Ibid.	49	F.	Large bilateral goitre of twenty-four years' standing. Symptoms severe Tumor contains parenchymatous nodules with fibres and calcareous degeneration; very vascular.	Enucleation of multiple nodules, some of very large size. "Resection" of subclavicular portion. Moderate fall of pulse; bronchitis and pleurisy; great prostration for weeks. Very gradual improvement.	Gradual but steady improvement, and at the end of a year again of forty pounds in weight and only slight nervousness remaining.
Rupprecht. *Jour. Ber. der Ges. f. Nat. und Heilkunde*, Dresden, 1890. p. 63.	35	M.	Goitre not noticed until three years after tachycardia and palpitation.	Enucleation of goitre. No bad symptoms noted. Rapid improvement.	Substantially complete cure.

Sprengel. *Schmidt's J. B.*, Vol. ccxxix., p. 138.	. . .	. . .	Symptoms said to be characteristic.	. . . . .	Cure complete, except exophthalmus unchanged.
Steltzner. Cited by Ganser. Abstract in *Schmidt's J. B.*, Vol. ccxxix., p. 138.	. . .	. . .	. . . . .	Removal of whole goitre.	Tetany and mental enfeeblement.
Ibid.	. . .	. . .	. . . . .	Partial removal of goitre.	Tetany. Symptoms said not to have improved.
Stierlein. *Beitr. z. Kl. Chir.*	28	F.	Slight goitre since childhood and tremor for several years; all conditions worse since the influenza in 1890. Growth "parenchymatous;" very vascular.	Removal of goitre (right lobe). No bad symptoms.	Substantially complete cure. Patient last seen one and a half year after operation.
Strümpell. Lehrbuch Vol. ii.	. . .	. . .	Details not given.	Removal of one-half of goitre.	Sudden death immediately after operation.
Tillaux. *Bull. de l'Acad. de Med.*, April 27, 1880. *Bull. de Soc. de Chir.*, August 3, 1881.	29	F.	Goitre hereditary in family Cardiac enlargement, mental depression, growth contains large hemorrhagic cysts.	Intra-capsula removal of goitre. Pain in right arm and shoulder; vomiting; secondary hemorrhage; suppuration. After twelve days gradual improvement.	Substantially complete cure. Patient last seen three years after operation.
Trzebichy. *Arch. f. Kl. Chir.*, 1888, Vol. xxxvii., p. 498.	. . .	. . .	. . . . .	. . . . .	Substantially complete cure.
Watson. *Edinburgh Med. Jour.*, Sept. 1873, p. 252.	young	F.	Typical case? Duration many years.	Removal of the gland. Excessive hemorrhage.	Good result.

AUTHOR AND REFERENCE.	AGE.	SEX.	CHARACTER AND DURATION OF SYMPTOMS.	OPERATION AND IMMEDIATE EFFECTS.	FINAL RESULT.
Watson. *Ibid.*	. . .	F.	Duration twenty-three years. Cystic goitre.	. . . . .	Good result.
Watson. *Ibid.*	. . .	F.	Multilocular cystic goitre.	. . . . .	Good result.
Wolff. *Berlin Kl. Wochenschr.*, 1887, No. 28.	30	F.	Symptoms due to fright. Exophthalmus and nervous symptoms first, then goitre; voice husky.	Removal of right lobe. Rapid improvement.	Substantially complete cure, permitting hard work.
Wolff. *Ibid.*	30	F.	One year's standing. Goitre came first, and was vascular in character.	Removal of one lobe, both diseased. Convalescence satisfactory.	Still under observation.
Wolff. *Deutsche Med. Wochenschr.*, 1893. McNaughton Jones reports a case of recovery after treatment of the goitre by a seton. *British Med. Journal*, Dec. 1874.	21	M.	Typical case.	Right lobe and isthmus removed. Immediately after operation irregular breathing and cyanosis, tracheotomy, death.	Death. Examination of wound showed nothing to account for it, and it is ascribed either to disturbance of heart action or to the accumulation of mucus in the throat.
Lenke. *Deutsche Med. Wochenschr.*, 1892, No. 11.	16	M.	Large goitre. Severe palpitation; no exophthalmus.	Extirpation of the right half. No bleeding of consequence. Convalescence entirely satisfactory.	Substantially complete cure.

Rehn. *Ibid.*	. . .	F.	Goitre since childhood, now of firm consistency. Moderate symptoms of three years' standing. No exophthalmus	Removal of right middle lobe. Large hemorrhage from rupture of brittle artery. Gradual improvement.	Great improvement. Still palpitation at time Last seen three years after operation.
Stierlein. *Beitr. z. Kl. Chir.*	25	. . .	Goitre of right lobe of thyroid. Palpitation; increase of cardiac dullness to the right; no exophthalmus.	Removal of right lobe. Suppuration; then rapid improvement.	Great improvement; palpitation only on violent exertion. Patient last seen one and a half years after operation.
Tillaux. Cited by Benard. *Contrib. a l'etude de Goitre. Exopthal*, 1882.	33	M.	Nervous symptoms but no exophthalmus Goitrous tendency hereditary. Sarcomatous degeneration of the growth.	Enucleation of diseased portion.	Great improvement.

There was no exophthalmus in the four last cases given. This list might be made very much larger by adding reports for ordinary goitre with nervous symptoms.

Roux [Remarques sur 115 operations du goitre. Weisbaden, Bergmann, 1891.] has reported five favorable cases which came to my notice too late to be incorporated in this list.

In all, the summary includes 51 cases. There were four deaths attibutable to the operation, but in almost all the rest, greater or less improvement, and often substantial cure, seems to have taken place. Of course these results are not to be placed entirely to the credit of the operation, since prolonged rest is almost always beneficial, and the influence of time is often of itself useful, and even curative. [See Müller, l. c]

ANOMALOUS CASES OF GENERAL PARESIS.[1]

By E. D. FISHER, M.D.

A GENERAL definition of general paresis may be given as a disease of the nervous system, especially of the brain, in which, pathologically, we find a diffuse inflammation of the membranes and cortex of the brain, and also of the membranes and systemic tracts of the cord. Clinically, the mental disorder manifests itself by a progressive dementia, preceded either, as a rule, by exaltation and expansiveness of ideas, or more rarely by depression. Associated with this psychical condition, we have motor, sensory and vasomotor disorders, which manifest themselves by tremor, ataxia and paresis.

Typical cases follow a more or less well-defined course, the somatic and psychical symptoms going on hand in hand, and finally terminating, in two or three years, in death.

Of late years, many cases have been reported which differ largely from this clinical picture just drawn. Savage, in his work on Insanity, (1884), refers to a type of case in which all the physical signs of the disease are present, but none of the mental or psychical; or, again, where only dementia of a simple character is present. He found that the course of the disease was often, in these cases, very protracted, extending over many years,—a doubtful diagnosis in the early stages frequently, however, being confirmed by characteristic symptoms in the later course and termination of the disease.

It seemed to me, in the light of the difficulties at times of diagnosis, in these irregular cases, of interest to bring the matter before the Society.

It is not an infrequent experience to have our diag-

[1] Read before the New York Neurological Society, Nov. 7, 1893.

nosis disputed, both by the friends and by the physician in attendance, in this form of the disease, especially as under proper care improvement takes place, and as, also, the duration of the disease is so long protracted.

In the future, as the symptomatology and pathology are more exactly understood, there may be made sub divisions of the general disease.

It has suggested itself to me that when either alcohol or syphilis seems to be a prominent or exceptional etiological factor, the so called somatic symptoms are usually the most marked. Another explanation of these cases may be that the prodromal stage is protracted. In fact, the disease, as a rule, long antedates its first recog nition by friends and physicians. On careful investigation, we often found that there had been evidence of some peculiarity or change in the character for some years past. In mental disease, the emotions are probably the first to show evidence of disease. This may express itself in undue exhilaration over a slight thing in itself, or depression on the other hand. Sudden outbursts of irritability may become frequent,—or, again, a disregard for the feelings or convenience of others entirely foreign to the usual character, may occur. Again, for a number of years carelessness in business affairs may show themselves. *Meum* and *tuum* may become confused, leading to legal complications, and yet at this period it may be difficult to make a positive diagnosis. On the somatic side we may notice evidence of motor disturbance, perhaps slight tremor, evidenced in the slowness or clumsiness in speech; or, again, a slight ataxic or spastic gait. Perhaps most marked of all is the lack of actual concern on the part of patient in regard to his health, or even his business affairs. While easily excited to an emotional state on discussing his affairs or conditions, still there is evidently no deep appreciation of it and where previously, he has brooded over them, fearing ruin, perhaps, now he has a species of self-satisfaction and contentment.

In other cases, again, the early symptoms may all in-

dicate hypochondria, only later to develop, with rapid strides, into a well-defined case of general paresis.

With these remarks, I will detail briefly a few cases which have recently been under my observation.

A. B.; age, 55; merchant. No previous history of syphilis. Habits temperate. Family history: insanity on maternal side.

The family first noticed, ten years before his death, that his speech was somewhat clumsy and unintelligible, and that he was uncertain in his walking, together with considerable unsteadiness in his hands, especially in holding his cup or knife and fork at table.

His statements as to his business were of the expansive order, and while not extravagant, there was less restraint in his use of money. He became very social, and had no anxiety in regard to anything.

The symptoms would not have been elicited or thought of except on careful examination. Two years later, a physician made the diagnosis of general paresis. The patient continued in business, and except that he began to lose interest and appreciation of his affairs, no further mental symptoms developed. The physical signs of the disease became more and more apparent.

Speech was jerky, and scarcely intelligible at times when excited. Movements of upper and lower extremities became very ataxic, so that he was scarcely able to feed himself or to walk without assistance.

The patient came under my care during the last five years of his life.

Examination showed excessive tremor of tongue and muscles of the face. Ataxia and tremor of the upper extremities, with ataxia and exaggerated reflexes in the lower extremities. Pupil changes not marked. Speech became still more unintelligible. Several times a year would have attacks of maniacal excitement or epileptic seizures. With the exception of a rather fatuous expression of well-being, in which, even to the last, he expressed himself as feeling well, no mental symptoms developed. The duration of this case was at least nine years, and in all probability much longer.

The evidence would indicate that we had here a chronic meningo encephalitis, with degenerative change in the lateral and posterior tracts of the cord.

The second case, C. D., is still under observation. Patient, male; age, 38. Family history negative. Duration of disease, between two and three years. Friends have noticed, for some time, that patient has been erratic, and subject to loss of control. Easily excited to anger or even violence. Except this, he is rather forgetful, and has lost interest in his personal affairs to a large extent; no mental symptoms are present. Physical signs: shows the peculiar fatuous expression common to the disease; some tremor of tongue, very slight of the face. Speech clumsy. Has had two or three attacks of aphasia, of short duration, lasting from several hours to a day. Physical condition good, and at times there seems to be great improvement in all the symptoms.

This will probably prove to be one of the prolonged type of cases.

A third case might be questionable as to diagnosis, but from the symptoms which I will detail, I feel certain that time will definitely settle the diagnosis as general paresis.

Patient, male; age, 45; occupation, tailor. Family history negative; syphilis. Patient first noticed some weakness in his left hand, which gradually developed into a paresis, rendering it impossible for him to carry on his work. Paresis gradually showed itself in his left leg. Examination shows left hemiplegia, with marked intention tremor, combined with paralysis agitans of left hand. Reflexes exceedingly exaggerated. Face has the characteristic blank expression of the disease. Marked fine tremor present in the muscles of the face and tongue. Speech slow and clumsy, with almost complete inability to pronounce certain expressions as "truly rural," etc. There never has been any mental symptoms, such as delusions of grandeur, etc., but there is present some slight dementia and the fatal contentment with his condition.

The last case I shall refer to is that of a negro, in which I obtained the autopsy, and which I have reported elsewhere.

E. P.; age, 42; colored; occupation, cook. Admitted to the city asylum September 1, 1892. Family history

negative. Patient said that his memory was defective, and had delusions of persecution. Examination showed marked tremor of the muscles of the face and of the tongue and hands. There was ataxia of the extremities, and the reflexes were exaggerated. Speech was very slow. This condition remained unchanged, except that he had frequent attacks of petit mal. There were no symptoms of delusions of grandeur, except that while scarcely able to walk, or to perform any complicated act with his hands, he insisted that he was perfectly well and able to resume his work. The patient died of pneumonia in January, 1893. Post mortem revealed a meningo-encephalites with an extensive meningeal hemorrhage, involving the right side. Microscopically, the cortex showed degeneration of the cells in many localities, with little or any affection of the blood vessels. Probably within the cord, had this been examined, degenerative changes would have been found.

Considering these cases, and many others that I could refer to, when the course of the disease seems to be almost arrested, or even does not commence in the usual manner, it would seem that general paresis, at least in cases where the patient is placed under good hygienic surroundings, and relieved from the excitement and worry attendant on life in general, may be much altered in its course, and to such an extent, indeed, as to make the diagnosis a question of doubt.

I think, however, we always will find some dementia present, even as in the early stages of a classical case, with exaggerated idea of wealth and ability; through it all we recognize the inconsequence of ideas and responsibilities essentially characteristic of dementia.

This latter condition becomes more apparent if these cases are allowed to engage in their ordinary avocation. It will be often seen when they are removed from hospital care, or permitted to resume their business, when improvement takes place physically and mentally, that the course of the disease becomes a rapid one towards physical exhaustion and dementia.

A CONTRIBUTION TO THE STUDY OF SYPHILIS OF THE NERVOUS SYSTEM.[1]

By Dr. RALPH L. PARSONS,
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A BRIEF history of the following cases is presented as a contribution to the study of syphilis of the nervous system; and, for the sake of brevity, the leading points only will be given, in consecutive order, from the initiation of the disease, without reference to the exact date at which points in diagnosis were made, and without mention of the dates at which the cases came under the care of different practitioners in charge or in consultation.

Seven years previous to her death, A. B. suffered an attack of hysteria, which continued, with some degree of severity, for about three months. She did not fully recover until the lapse of another three months. Patient was of a highly emotional temperament, and the attack of hysteria had been preceded by causes of emotional disturbance. But the attack had also been preceded by an ulcer of the lips, which was refractory to treatment, and was a long time in healing. The record of the case does not show whether or not a diagnosis of the nature of this ulcer was made at the time, but subsequent developments led to the inference that it was probably syphilitic.

Three years subsequent to the appearance of the ulcer, patient was treated for eruptions of the skin, which were diagnosed as syphilitic, and which disappeared under anti-syphilitic remedies. Psoriasis, which may or may not have been syphilitic, made its appearance at a subsequent period.

Five years subsequent to the first mentioned attack of hysteria, an attack of acute hysterical mania supervened. The immediate cause of this attack was supposed to be overwork and anxiety on account of the serious illness of various members of her family. Con-

[1] Read before the American Neurological Association, July 26, 1893.

stipation, faulty digestion, subinvolution of the uterus, and tenderness of the right ovary were physical concomitants. Nymphomania was also a concomitant.

Two days subsequent to coming under my care, and two years previous to her death, patient had an attack of hysteria, followed by aphasia and drowsiness, with apparent confusion of ideas. After a little time, perhaps an hour, she recovered from this condition. She became wakeful and intelligent, and expressed herself clearly and without difficulty. At the time, it was thought that the aphasic condition might be a reflex of her faulty digestion. But subsequent developments showed that the attack was one of petit mal, with a central cause. Many similar attacks were afterwards observed. Patient would suddenly become faint; would appear to be in a state of great anxiety and distress; would endeavor to speak, pointing to her tongue; and would sometimes articulate the word wine, or camphor. After recovering from the attack, she would explain that the faintness greatly distressed her, as though dissolution were impending, and that she felt the need of a stimulant. And a stimulant did give relief, when she suffered one of these attacks. Although her ideas were apparently confused, she did not lose consciousness, unless, possibly, for a moment of time.

Afterwards, attacks of grand mal occurred from time to time, perhaps a dozen in all, until she finally died in status epilepticus.

During the attacks of grand mal, the right arm was more especially convulsed, and the right hand was sometimes partially paralyzed after the attack. While in the status epilepticus the right pupil was dilated, but this symptom had not been previously observed. Temperature, 101° F. and 103° F.

The specific treatment, after the diagnosis of cerebral syphilis had been made, consisted of large doses of the iodides, the bromides, the bichloride of mercury, and the succus alterans, but without any obvious influence on the cause of the disease. Possibly the result might have been better if a thorough and sufficiently prolonged anti-syphilitic treatment had been carried out at an earlier day.

About a year and a half before coming under my

care, C. D. contracted syphilis. Had a large, indurated chancre on the dorsum of the penis. Was promptly treated, but syphilitic psoriasis and falling of the hair followed. The treatment consisted chiefly in the exhibition of biniodide of mercury, of which he took about eight hundred one-twenty-fifth grain pills. Was also treated by mercurial inunctions, fifteen or twenty in all. Iodide of potash was advised, but patient did not continue the potash beyond a few doses, as it caused headache, and because there were so few obvious symptoms that called for its use.

A year and a half after the appearance of the initial lesion, patient began to have neuralgic pains, at first in the left side, in the region of the heart, and afterwards in the dorsal and lumbar regions. Although the pain was not severe, it disturbed sleep, and was followed by an attack of simple melancholia, to which patient was predisposed. The lumbar pains continued about a month and then subsided.

Patient complained that he had little sensation in the lower part of the abdomen, and in the upper front region of the thighs, and that the sensation of his legs, throughout, was impaired. But his legs were really sensitive to touch, to heat and cold and to pain, and the conduction of sensation was prompt. The patellar reflex and the ankle clonus were normal, or slightly exaggerated. Also complained of a sensation of constriction, extending from the front of the thighs, especially the inner portion, the region of the perineum, the penis and scrotum; said it felt like an iron band, or like an unyielding pressure. Erections and the sexual appetite were unimpaired. Also said he could not feel the floor under his feet when he walked; but, although the ability to balance himself when standing, with his eyes closed, was somewhat impaired, there was little evidence of loss of sensation in the feet. He had probably been reading about locomotor ataxia, and imagined that he had the symptoms.

Locomotion was impaired. Walked rather hurriedly, stepping wide and throwing the legs forward in a rather jerky and irregular manner. But his normal locomotion was something of this sort.

While sensation remained without essential change, the paralysis of motion became rapidly worse, until patient required aid in walking on a level surface, and would fall if he made a sudden effort to turn. There

was also paralysis of the rectum and sphincter ani and of the bladder. There was a state of obstinate constipation, with an inability to retain the feces when the bowels were moved by means of laxatives. The bladder required to be evacuated by means of a catheter.

The paralysis of the left leg was much greater than that of the right. For a considerable period of time the left toe was dragged, and until recently the left heel was not fully raised while walking. The left leg is still weaker than the right.

The symptoms afterwards gradually improved for a year and a half, until, at the present time, locomotion is fairly good, and the bladder and bowels are in their normal condition. The melancholia has also nearly disappeared.

The specific treatment has consisted of the iodide of potash, in drachm doses three or four times a day, alternated with mercurial inundations and the biniodide of mercury. Part of the time the iodide and the mercury have been given simultaneously. Hot and cold baths, massage, and the constant and Faradaic currents of electricity have been administered as adjuncts.

The history and progress of this case would seem to show the advantage to be derived from thorough, persistent and prolonged anti-syphilitic treatment, when syphilis is a cause of the disease of nerve tissue, or of its annexa.

It may be thought worthy of mention that the last two cases of general paresis that have been under my care were the victims of syphilis, although the view that the syphilis was the cause of the paresis may be considered as unproved, and even problematical. Anti-syphilitic treatment certainly had no influence in arresting the course of the disease.

Asylum Notes.

By FRANK P. NORBURY, M.D.,
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Eightieth Annual Report of the Royal Edinburgh Asylum for the Insane, 1892.

T. S. Clouston, Physician, Superintendent. Admissions for the year exceed those of any previous year; a tendency to accumulation of chronic cases being noticed.

The increase of insanity in Scotland in the past ten years has been 11 per cent.; in England, 3 per cent.; in Ireland, 32.5 per cent. Ireland's increase is explained by reason of the gradual decreasing population. Clouston also suggests that more people are now counted insane than formerly, viz., the senile, the paralyzed and slightly imbecile.

Influenza still is a leading cause of insanity; the subtle malady undoubtedly having left seeds of weakness in the brain, which have developed into mental disease.

General paralysis is unduly and steadily increasing, due largely to city life, high wages, alcohol and riotous living. Clouston believes the scientific view of insanity; that is, the application of such scientific tests of physical disease in the structure and functions of that portion of the brain which is the vehicle of mind as would explain the phenomena, is destined to explain much regarding what insanity really is. Experimental physiological psychology, which is an attempt to explain accurately every human sensation in all its relationships with mental acts, and vice versa, has even in its initial results shown that sensation and reaction, speech and motion, are measurably affected in most kinds of insanity. It is unphilosophical and misleading to look on mental disease by itself. It is merely one of the very many conditions of departure of the human organism from an ideal of health and strength. In the treatment of insanity, Clouston finds encouragement in the advancement of therapeutics, manifested in use of thyroid glands in myxœdematous insanity, and hopes that this line of treatment, which puts to rights bodily health, may find further advancement in the future.

To alienists living in States controlled by "the political machine," the conclusion of Clouston's report seems to us of special interest; he says, "One most gratifying fact I am pleased to be able to record. We have thirty-seven attendants and nurses in charge of wards, or chief night attendants, and we have had only one change among them in a year." "The average period of service of sixty important officials on which the efficiency of the institution and comfort and cure of the patients so much depends, is over ten years, and among them there are eight who have each served the institution for over twenty years, the oldest having seen service over thirty-five years. Indeed, as he says, this is a record of experience and fidelity of which any institution of this kind might well be proud, etc.

Thirty-third Annual Report of the Medical Superintendent of the State Asylum for Insane Criminals, New York, 1892.

(Now the Matteawan State Hospital), H. E. Allison, M.D., Superintendent.

This is the First Annual Report issued from the new institution, which was created by act of the legislature for the relief of the overcrowded asylum at Auburn.

This new hospital structure of modern architecture, commandingly situated and furnished with every convenience for the care of its inmates, was occupied during the latter part of April, 1892, the first patients having been received from Auburn asylum, the entire population of which was transferred.

Other patients, who had been cared for in various State hospitals, were transferred, making in all treated during the year, 402.

The sources of admission throughout the year were about equally divided between the penal institutions and the various courts. In a majority of the cases admitted from the prisons, the insanity had primarily developed while the subject was undergoing sentence; but in others, it evidently was present at the time their various crimes were committed, and probably was the moving cause. Nevertheless, the fact of existing insanity did not make itself manifest at the time of trial; or, if so, failed as a plea. In no case among those admitted directly to the custody of the hospital, by order of the courts, has an error been committed concerning the patient's mental unsoundness.

Crimes against the person, or acts which were intended to inflict personal injuries, were largely in preponderance.

Delusions of persecution are very common among such patients; and the misdeeds, as shown by the following list, such as would naturally arise from a desire to avenge themselves for imaginary grievances, viz.: arson, assault, blackmail, destroying property, manslaughter, murder and malicious annoyance.

Such cases constitute a dangerous element to be at large.

(This institution stands foremost among the hospitals for insane criminals in the United States, and New York is to be congratulated upon its progressiveness in the care and treatment of its dependent classes.—F. P. N.)

A Case of Incontinence of Urine Treated by Electricity.—Dr. Aquilus Gareiso reports the following interesting case in the May, 1893, number of the *Anales del Circulo Medico Argentino.* The patient had been troubled the past ten years with enuresis, following an attack of typhoid fever. He further complained of pain over the pubis, on both sides of the vertebral column, and over the sacral region of the spine. There was no difficulty in urination, which occurred six or seven times daily, and the force of the flow was considerable. An endoscopic examination showed the bladder to be of normal size, admitting 420 grammes of fluid; not painful to touch, but at the neck of the bladder there was slight inflammation. The pupillary reflexas were normal, the patellar somewhat exaggerated, and the pharyngeal completely abolished. The treatment consisted in lavage of the bladder with a 1 to 500 solution of nitrate of silver. The Faradic current was employed as follows: the positive pole was placed over the genito-urinary centre in the spine, and the negative pole was introduced into the urethra as far as the neck of the bladder. The treatment lasted from three to fifteen minutes, and the incontinence disappeared entirely after twelve operations. W. C. K.

Periscope.

EXCERPTS WILL BE FURNISHED AS FOLLOWS:

From the Swedish, Danish, Norwegian and Finnish:
FREDERICK PETERSON, M.D., New York.

From the German:
WILLIAM M. LESZYNSKY, M.D., New York.
BELLE MACDONALD, M.D., N. Y.

From the French:
L. FISKE BRYSON, M.D., N. Y.
G. M. HAMMOND, M.D., N. Y.

From the French, German and Italian:
JOHN W. BRANNAN, M.D., N. Y.

From the Italian and Spanish:
WILLIAM C. KRAUSS, M.D., Buffalo, N. Y.

From the Italian and French:
E. P. HURD, M.D., Newburyport, Mass.

From the German, Italian, French and Russian:
ALBERT PICK, M.D., Boston, Mass.

From the English and American:
A. FREEMAN, M.D., New York.

From the French and German:
W. F. ROBINSON, M.D., Albany.

The Editor will not accept as ORIGINAL ARTICLES and CLINICAL CASES those that have appeared elsewhere.

Authors are requested to make none but typographical corrections on the proof sent to them. The manuscript must represent the final form in which the article is to be printed.

CLINICAL.

A Case of Diphtheric Hemiplegia (*Neurolog. Centrb.*, No. 14, 1893, Donath).—The patient, a boy eight years old, was taken with an attack of diphtheria on November 22, 1892. The disease lasted fourteen days. On the third day of convalescence, when he was beginning to go about, he suffered during the night, while asleep, with an attack of complete hemiplegia, affecting the whole right side of the body, which was accompanied by severe facial paralysis and complete aphasia of an ataxic nature. The paralysis of the face began to disappear after the third week, and the aphasia had quite disappeared after four weeks. When the patient first began to recover from the aphasia, he was able to speak only in a whisper; he *appeared* to have some paralysis of the vocal cords; there was no difficulty in swallowing. When the reporter first saw the patient, two months later, there were no indications of further improvement

in speech, face or limbs. Examination on the 22d of April, 1893, showed a large, well-developed child. Slight paresis of right side of face; more marked paresis of right side of body; speech strong, but rather stammering and indistinct. Considerable contracture of right upper extremity, and right leg was dragged in walking. Increased triceps and patellar reflex, and foot clonus on the right side. There was slight general wasting of the affected limbs, but the electrical reactions were normal, and there was no impairment of sensibility. After a month's treatment there was slight improvement, but the contracture gave no evidence of bettering.

(We have been at some pains to quote the clinical history of this case in full, as there is evidently a serious discrepancy between the title and the contents of the article. Dr. Donath, of Budapest, the writer, says in the beginning of his article, that most commonly the paralysis following diphtheria affects the palate and the muscles of accommodation, less frequently the extremities, and still less frequently the muscles of the buttocks, neck, larynx, etc., and most rarely is there any disturbance of innervation of the heart, bladder, rectum or sexual organs. He quotes from Gowers, Henoch and Mendel to show the rarity of hemiplegic paralysis diphtheritica. He says that Gowers states that the weakness of the extremities in this disease is gradual in its onset, seldom or never complete, and, as a rule, symmetrical, whilst distinct hemiplegic weakness is never observed. Dr. Donath cites his case to show that this statement of Gowers is at variance. It is generally conceded that so-called diphtheritic paralysis has for its pathological basis a multiple neuritis. Accidents occurring during convalescence from diphtheria, while they may have hemiplegia as a result, as did this one, should not be classed as causative of diphtheritic paralysis. Nor should the resulting paralysis be designated as diphtheritic. It would be as logical to call the hemiplegia that sometimes follows rheumatism, rheumatic hemiplegia. The hemiplegia in the case detailed by Dr. D. would seem to be embolic. The time of its occurrence, the abrupt onset, the motor aphasia, the early and persistent rigidity, the fact that it followed in the wake of an infectious disease which has endocarditis for one of its most common complications, all point to the probability of such a diagnosis. The history of the case is not an uncommon one, and in our opinion it is a mistake to describe it as diphtheritic hemiplegia—J. C.).

A Case of Mixed Opthalmoplegia.—In the July number of the *Anales del Circulo Medico Argentino*, Dr. O'Connor, of Buenos Ayres, describes a case of this affection in a man forty-five years of age. Face regular, the eyes similar without undue prominence or devia cion of the same. The patient was a heavy drinker, and a toxic neuritis was supposed to underlie the affection. He complained of severe pain over the right frontal and occipital regions, and photophobia. On examining him, all the external muscles are paralyzed, save the levator palpebrarum and oblique. All the internal muscles are paralyzed. There is neither ptosis nor lagophthalmus, but a hemiparesis of the right side of the face is present. The other organs of special sense, especially taste and hearing are impaired, but not to a great extent. An examination of the urine showed neither albumin nor sugar.

W. C. K.

Nocturnal Incontinence of Urine.—In the *Anales de la Real Academia de la Habana*, Aug. 15, 1893, Dr. F. Dominguez reports the case of a young man twenty-six years old, of good family history, who unconsciously urinates in bed every night, whereas during the day, unless he responds quickly to the desire, will urinate in his pantaloons. This state of affairs has been going on for the past eighteen months, and at the outset was preceded by retention. The early history reveals the fact that he had syphilis, with secondary manifestations. Nothing abnormal about his urinary apparatus could be found; his urine was of average quantity (specific gravity not given), and contained neither sugar nor albumin. Epilepsy, hysteria and febrile manifestations excluded. On examination, it is found that he has Romberg's symptom; patellar reflex is, however, exaggerated. The author quotes Fournier as having observed this phenomenon in cases of premature ataxia. The ataxic gait is quite pronounced; pupils contracted, but reacting to light and accommodation. Nothing of note in the fundus. Recapitulating, the author diagnoses the cases as the pre-ataxic period of locomotor ataxia due to syphilis. His treatment consisted in large doses of iodide of potash and mercurial inunctions; in a short time the symptoms began to disappear, and the nocturnal incontinence of urine disappeared entirely. W. C. K.

A Case of Heterotopia of the Gray Substance in Both Hemispheres of the Brain.—Matell (Archiv. f. Psych., u. Nervenkrank. Vol. xxv., p. 124, 1893). The patient, a female, twenty-five years old, of neuropathic heritage, had suffered since her sixth year from epilepsy. The attacks occurred about twice a month, and were of the grand mal type. The patient's head was small, forehead flat, skull not vaulted, and mentally she was very deficient. She could neither read nor write, nor could she remember her birthday or her age. Death occurred during status epilepticus.

Post mortem showed absence of asymmetry of head; projection of the coronary and lambdoidal sutures; weight of brain, 918 grms.; forebrain, very small; fissuration of the brain reduced and some of the fissures absent, while, on the other hand, the parieto-occipital fissure was very greatly developed on both hemispheres, externally. On frontal section the forebrain seemed but a miniature of the normal. From the centum semiovale there remained a portion of medullary substance, which lay internally, and which consisted of fibres belonging to the projection system, corpus callosum, and the long association system. Likewise belonging to this was a strip which ran under the margin of the cortex, and which took up the bundles of nerve fibres that radiate from the periphery of the medullary substance. The entire area is apparently that of ordinary cortical substance, and here and there it can be seen breaking through the sub-cortical substance, like little bridges, and joining with the cortical substance. Microscopically, it was apparent that the abnormal substance was a gray mass which corresponded in structure with the deepest layer of the cortex. The writer considers that there can be no doubt that the anomaly was a heterotopia of the gray matter, and dependent on a defective development of the brain, either an interception of its development or a complete standstill of its growth at an early period, say at the sixth month of fœtal life. The etiological source of the heterotopia of the gray substance, the writer attributes to defective development of nerve fibres, an opinion which he considers has corroborative evidence lent it by the general defective convolution formation and brain development. J. C.

Thomsen's Disease.—Drs. Degerine and Sottas, of Paris, presented before the Societè de Biologie, June 24, 1893, the results of an autopsy of a case of Thomsen's disease, which had been under their charge and observation for the past five years. They found the nerves going to all parts of the body to be perfectly healthy, the lesion being limited exclusively to the muscular fibres, the protoplasm being swollen and homogeneous. —*Le Progrès Medical*, July 1, 1893. W. C. K.

Craniotomy for Traumatic Epilepsy. Recovery.—Dr. Francesco Durante reports the following interesting case in the *Bulletino della Reale Accademia Medica di Roma*, Anno xviii, Fas. iv.

A countryman, of twenty-two years, who had always been in excellent health, was struck over the left parietal region by a heavy hoe. The evening following he had four or five epileptoid attacks. The wound healed nicely, and he felt perfectly well for a period of six months, when, following a general and prolonged malaise, another epileptoid attack appeared. The aura was felt, as a pain in the right side of the face, extending down the right arm, followed by unconsciousness. Several attacks appeared on this day. After a period of two months the attacks reappeared, and up to the day of the operation, they had been continually present.

An examination reveals a slight depression of the left fronto-parietal region, and a scar about four centimetres in length. The operation was performed January 30, 1892, under chloroform narcosis. A cavity was found in the cerebrum about the size of a nut, containing a serous fluid and small fragments of bone. Removing all foreign matter, and cleansing with boric acid, the wound healed by first intention.

The first two days after the operation, he experienced the auræ as described above, but the attacks did not appear. After a month in the hospital, the patient was discharged "completely cured."

(Whether the patient remained completely cured, considering the extent of the cerebral injury and the general treatment of the case since the accident, the translator has serious doubts).—W. C. K.

A Case of Unilateral Facial Atrophy in a Negro.—L. L. Williams, Passed Assistant Surgeon U. S. Marine Hospital Service (Annual Report Supervising Surgeon-General, 1892). The author says this rare dis-

ease has not before been noted in the negro race. The patient, S. A., aged twenty-three, negro, was admitted to the hospital, Memphis, Tenn., May 29, 1892, for treatment of the "mumps." A glance at his face revealed a marked difference in size between the right and left sides, and when, a few days later, the swelling of the parotids subsided, this difference became still more apparent. History: At the age of five years the patient was burned on the right cheek, and since then the right side of the face had been smaller. A slight scar is perceptible at the corner of the mouth. The entire right side of the face is smaller than the left; the skin is much thinner, the adipose tissue less in amount, the muscles wasted. The muscles of mastication, including the temporal, are especially affected, and chewing on that side is practically abolished. The most marked atrophy is shown in the right upper maxilla and molar bone, which are scarcely half as large as their fellows. The lips on the affected side are much thinner, and the mouth is drawn to the right. There is no indication of paralysis of the facial nerve. There is no atrophy of the right side of the tongue and of the right side of the soft palate. Sensation and secretion are normal, and the growth of hair is not interfered with. The patient experiences no inconvenience from his deformity, except that he cannot chew on the right side. The left temporal muscle is, for this reason, unusually well developed. F. P. N.

Temporal Resection of a Piece of the Cranium in a Case of Progressive Amaurosis.—Dr. Hahn (Berlin), Trans. German Congress of Surgery, Berlin, 1893. (*Medical Week*, Paris, May 5, 1893.)

The patient, a man twenty-seven years of age, operated upon eighteen months before, had come to the hospital with the diagnosis of cerebral tumor, a diagnosis which was, no doubt, in accordance with the symptoms. No history of syphilis, but patient had been a hard drinker previous to appearance of the first manifestations. On admission, was complaining of vague aches and pains, with a throbbing sensation in the left frontal region. There was deviation of the tongue to the left, blunted sense of smell, and impaired hearing on left side. Soon after admission, complete loss of sight in left eye was manifested. No heminopsia, no paralysis or convulsions, or other signs pointing to cortical involve-

ment. Symptoms of cerebral compression developed gradually; also impaired vision in right eye. A tumor in left frontal lobe was diagnosed and operation decided upon. A quadrangular piece was desected from the left frontal bone, temporarily. The skin was attached; the base of flesh was toward the temporal region. The bone was divided with a chisel. The exposed dura mater showed no pulsation. On the membranes being incised a mass of brain substance at once protruded through the opening. Reducation was attempted without success. It was excised, but another projection followed. Exploration of the brain with a trochar was attended with drawing off successfully about four ounces of clear fluid containing albumen. The patient rapidly recovered. Memory returned, pain disappeared, and sight improved on right side. Atrophy of the optic nerve on left side produced blindness in left eye. The case was of tolerably acute hydrocephalus, the cause and origin of which was obscure. F. P. N.

PATHOLOGICAL.

The Influence of Suspension on Disturbances of Vision Dependent on Affections of the Spinal Cord (Bechterew, *Neurologisches Centb.*, April 1, 1893).

The Importance of Suspension in Some Affections of the Spinal Cord (Bechterew, *Neurologisches Centb.*, September 5, 1893).

In these two recent communications, Bechterew attempts to stem the tide that has been ebbing away from suspension as a therapeutic factor during the last two years. His enthusiasm does not carry him so far in his claims for its efficacy as did its advocates of 1889 and 1890. At that time its virtues were proclaimed in locomotor ataxia alone. Bechterew, however, demands an increase for its field of usefulness, and claims beneficial results, not alone in tabes dorsalis, but likewise in other spinal cord affections, especially in compression of the spinal cord, compression myelitis, long standing cases of syphilis of the spinal cord, and in transverse myelitis. In compression of the spinal cord, and in compression myelitis, he has seen better results follow after one application of suspension than from treatment for months by the ordinary methods. The apparatus used for making the suspension was that described by Sprimon.

This apparatus consists of an upright about eight feet high, at the top of which is a grooved wheel; over this wheel runs a rope, to which, behind, are attached graduated weights, and in front a bar, to which are attached the straps that suspend the patient from the semi-flexed elbows and from the chin and occiput. On the front of the upright is fixed a seat, at a distance from the floor that will allow the patient to sit comfortably and naturally. Suspension is made, with the patient in the sitting posture, by increasing the weight at the other end of the rope. The duration of the suspension seance depends on the amount of weight used. In general, however, they vary from five to fifteen minutes. Bechterew has seen remarkable improvement from the use of suspension, in cases with partial loss of vision, dependent on spinal cord trouble. He details three cases. The first, a man forty-three years old, not syphilitic, who presented a complete picture of tabes dorsalis. The pupils were small and did not react to light; vision was greatly diminished; could not read, except with very strong glasses; first suspension with eighty-pound weight for ten minutes. During the suspension the patient was sleepy, but immediately after he spoke of a very pleasurable feeling of well-being. After the sixth sitting all the symptoms showed a great improvement, more especially the eye symptoms. The patient could read very easily without glasses. In all, he received twenty-seven suspensions. When seen, three months after the last sitting, the improvement previously noted still continued. Second case, twenty-nine years old; not syphilitic; symptoms of tabes dorsalis. Eyesight had been failing for four years, and during latter few months it had progressed very rapidly. Opthalmoscopic examination showed marked optic atrophy of right eye, and less in the left. Previously, under the influence of strychnia, the vision had improved, but it soon after failed again. This patient had twelve sittings of suspension. His vision improved after the first, the second and the third; after that it remained in statu quo ante. The third patient, a female, twenty-five years old, had, during the four previous years, ten attacks of convulsions, attended with loss of consciousness. After these she had right hemicrania, and an attack of facial paralysis. Opthalmoscopic examination showed an inflammatory hyperæmia of both optic nerves, especially the right. The patient suffered from tubercular caries

of the lower dorsal and upper lumbar vertebræ, and had, as a result, partial pressure paraplegia.

Vision of left eye, normal; of right eye, $\frac{15}{70}$—$\frac{4}{30}$. After the first suspension, V. R., $\frac{15}{40}$—$\frac{9}{20}$. Visual field of right eye considerably contracted before suspension, and nearly normal after. After three sittings, the vision in the right eye was improved to $\frac{17}{40}$—$\frac{9}{20}$.

The author reaches the conclusion that there is no doubt but that in certain cases suspension exercises an important and beneficial influence on the disturbances of vision attending such cases, even when the disturbance is dependent on organic change within the eyes. As to the way in which suspension acts beneficially, Bechterew accepts the conclusions of Bogrow and Slunin, which are as follows: [1]The blood pressure is raised during suspension. [2]As a result of suspension, hyperæmia of the central nervous system results.

Bechtererr insists on the discarding of the old method of suspension, on account of the danger associated with it and its inadequacy. The advantages of suspending the body from the elbows are that no pressure is exerted upon great blood vessels and nerve trunks, as there is when the shoulder-straps are used; that accidents are not liable to happen, and that the stretching of the back is more extensive.

In addition to the apparatus described above, a cut is given in the second article of a modification of Sprimon's apparatus, in which a bar is substituted for a wheel at the top of the perpendicual. This bar is placed horizontally to the upright, and fixed on its axis at the first one-third of the distance; that is, to the short end of the lever is attached the harness for the patient, and to the long end, behind, the weights. Its construction is exactly that of "old oaken bucket" water-drawing apparatus.

J. C.

Society Reports.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held at the New York Academy of Medicine, Tuesday evening, October 3d, 1893.

Dr. M. Allen Starr, President, in the Chair.

MEMORIAL OF PROF. CHARCOT.

This paper was read by the President. The author gave a brief sketch of Charcot's life, and reviewed the work of the great neurologist. Prof. Jean Marie Charcot was born in Paris, on the 29th of November, 1825. He was the son of a wagon maker, a man of such limited means that he was not able to give all his children an education. Jean Marie received his early education at the Lycée St. Louis, at that time the best academy in Paris. After his preliminary education was completed there, the choice of the medical profession was made, not without some hesitation, for the inclination of the young man was for the life of an artist, and it was possibly the lack of means which finally determined him to take up medicine. After passing through the medical school, and serving as an interne in la Salpétriere—an almshouse for old women, then almost unknown, but later to become famous as the seat of his wonderful activity—he took his doctorate degree in 1853. For the next three years he served as chief of the medical clinic in the medical school, supporting himself meantime by giving private lessons. He was then appointed physician to the Central Bureau of Paris, on a moderale salary. In 1860, after passing a rigid competitive examination, he became entitled to a hospital appointment, and, two years later, he was able to select the service at his old hospital, la Salpétriere. He found a large number of old people collected together in this poor-house, many of them suffering from chronic incurable diseases. He had the opportunity to watch the progress of disease, both acute and chronic, in old age, and, most important of all, he had unlimited pathological material to com-

plete his clinical observations. It is to this latter fact that he owed the beginning of his reputation, for at that time pathology was just beginning to reveal the true reasons for disease. By the careful study of his cases, by his power to seize upon salient features which gave points for differentiation, by his persistent following of cases from the ward to the autopsy room, and by the exhaustive study of the material collected there, he began to reach conclusions and to arrive at facts which were veritable discoveries in the medical world. The articles written by him between 1860 and 1870, each of which adds a distinct fact, observation or conclusion to the sum of medical science, soon began to attract attention, and the young physician found his rounds beginning to be attended by students who liked to watch his careful study of cases, or see him demonstrate the lesions which he found. In 1866 a small room in the hospital was set aside for the purpose of instruction, and he began to hold clinics and to lecture. The lectures were soon crowded by graduates in medicine, and the next year he was invited to give an open course of lectures at the Ecole Practique of the Medical School. Here he had an opportunity to cultivate the power of teaching, and soon showed that wonderful facility of clear, direct statement, and power of graphic illustration, which later made his lectures the most attractive in the world. His first open course had for its subject cerebral hæmorrhage and softening. In subsequent lectures he discussed the clinical and pathological difference between paralysis agitans and multiple sclerosis; the arthropathies, which have since been known as Charcot's joint disease, etc. Thus, within four years he had risen from the position of an unknown teacher, to the position of one of the best lecturers in the Paris school.

In the year 1870 all female epileptics who were not insane were transferred to la Salpétriere, and this afforded Charcot new material for study, and from 1872 the study of hysteria in its multiform manifestations became one of his duties. The same year he was appointed professor of pathological anatomy in the Faculty of Medicine in Paris, the highest prize in the French medical world. In 1882 a professorship of nervous diseases was founded in the Medical School, and Charcot received the appointment, with the establishment of a public clinic at la Salpétriere. From that time to the present year his annual courses of lectures have been

attended by students of medicine from every land, and it may be truly said that few men of eminence at present living and working in neurology have not drawn inspiration from his model clinics.

Charcot's collected works will fill fifteen large volumes. He was also instrumental in founding a number of medical journals. His three volumes of lectures, published from 1872 to 1880, have had an immense sale. Public recognition of Charcot's abilities and eminence was not wanting. He had been president of all the chief medical societies in Paris, was corresponding member of numerous societies abroad, among them being the New York Academy of Medicine and the New York Neurological Society. He was made a Member of the Institute of France in 1883, and Commander of the Legion of Honor in 1892.

Charcot's investigations in hypnotism have attracted much attention, both from the profession and from the laity. It is difficult for any one to enter upon the study of this subject, or to pursue it with any degree of thoroughness, without exposing oneself to adverse criticism and remark. It is difficult to estimate the true value of this department of Charcot's labor, but it cannot be denied that all through the years which he devoted to this study his mind has been imbued with the purest scientific motives, and that facts, not theories, were his aim.

Another criticism which has been offered is that in his scientific zeal he neglected therapeutics; that his interest in patients ceased with the diagnosis. Those who make these statements must surely forget that our best methods of treating functional and hysterical nervous diseases—namely, the electrical and hydrotherapeutic methods—were successively developed and successfully employed by Charcot.

Charcot was a man of great dignity, of calm, even temper, of slow thought and utterance, but of much reserve power. In appearance like Napoleon, and in manner reserved and observant, he was not the type of man to be popular. With patients suffering from trifling affections he showed no sympathy, probably no interest. With patients whose diseases were severe or obscure, or of a rare type, he was kind, attentive, interested, and was ready to spend valuable time in most careful investigation. His relation to his pupils was also one of mutual interest and affection. He was never familiar with them, yet he always respected and sought their

opinions, was never autocratic in the direction of their work, and was always the subject of their devoted admiration and respect. His family life was a delightful one. He was married early in life to a lady of considerable wealth, who was enthusiastic in his work, and by whose aid many scientific undertakings, otherwise impossible, were carried through. He had two children, one a boy, whom it was his fond desire to see succeeding him as a physician, and who gives promise of being worthy of the name. Charcot, like every man of eminence, has his enemies—critics in science—rivals in medicine; yet, after all their criticism is exhausted, we must admit that he remains the greatest French physician since Trousseau, and the greatest ornament of the medical profession of the present age.

At the conclusion of Dr. Starr's address, Dr. E. C. Seguin gave a few personal reminiscences of Prof. Charcot. He referred to the generosity of the great physician, in placing at the disposal of the students his abundant material and the use of his laboratories, and in allowing them to receive the full credit for their labors, instead of appropriating it to himself. Many of Charcot's pupils, Bourneville, Bouchard and others, have been helped by him in every possible way to attain honorable positions. In disposition, he was quite different from the popular idea of the Frenchman. He was not quick, nor hasty, nor mercurial. Every thought was carefully matured, and he collected his material for a long time before reaching or publishing his conclusions. He was averse to theorizing. He was a close analyist and a devoted follower of the induction method in reaching conclusions. Primarily, Charcot was a pathologist, and his reputation will always rest on his achievements in this field of medicine. His work in hypnotism, by which he was greatly fascinated in later years, can only be regarded as a mere fragment—a digression which in the future will count as nothing.

A CASE OF GENERALIZED PARESIS ENDING IN COMPLETE RECOVERY.

By Dr. E. C. Seguin. The history of the case is as follows: The patient was a boy aged 15 years, who was brought to Dr. Seguin in October, 1886, for an opinion as to the nature and prognosis of a singular condition of increasing muscular weakness, which had come on

during the preceding eighteen months. The boy's family history was fairly good. His mother was of a nervous temperament, and for a few months had been addicted to the chloral habit. Out of six children, only one other—a sister—had had a nervous trouble; namely, a mild chorea, extending over several years. There was no trace of muscular disease, atrophic or dystrophic, in the family. The patient's history, previous to the onset of the disease, was negative. At the age of six years he had a severe attack of albuminuria, which left no traces. In April, 1886, he had what seemed to be a mild attack of articular rheumatism. He was a very active and daring boy, and had numerous falls, none of which, however, were followed by serious symptoms. There was a history of masturbation, carried on for several years. There was no history or evidence of metallic intoxication, nor at any time was there any indication of hysteria. The only positive causative element in the case was the self-abuse. This practice, the boy stated, he had given up in the Spring of 1885, when he himself noticed that he had slight difficulty in articulating his words. Five months subsequent to this, the boy's symptoms were first brought to his father's attention by the fact that he twice fell out of the saddle, and by his suddenly dropping the oars in a boat and acting as if paralyzed for a few minutes. Even before that, it was recalled, he had become rather awkward in buttoning his clothes and in using the knife and fork, and that after reading aloud for a few minutes his articulation became thick. Very gradually he lost his energetic ways and became awkward in everything; his attitude had changed so that he stooped, the neck hanging down and the abdomen protruding. His facial muscles lost much of their expression, and his laugh was constrained and unnatural. All these symptoms developed and progressed very slowly during the years 1885 and 1886. The boy was subject to "sudden collapses," as his father called them, characterized by a sudden loss of control over many muscles, resulting in falls or in dropping objects from the hand. These last named symptoms suggested petit mal, but this affection was excluded after careful observation. The symptoms were of a motor order; no numbness, no anæsthesia, no neuralgia, no psychic or trophic symptoms. All his organic functions were normally performed; nutrition was good. The eyes were normal. The legs were apparently strong,

and the boy could rise from the dorsal recumbent position on a flat couch, and also from a squatting posture, but these acts were done feebly, slowly and with great effort. The spine was not tender, and presented no deviation, excepting an antero-posterior one. Local paresis of the muscles was demonstrable only in the extensor group of the right forearm. No muscles showed atrophy or hypertrophy. The knee jerk was normal. No sensory symptoms, excepting a sense of fatigue in the muscles of the lips and tongue, as well as those of the forearm, on exertion. On electrical examination, the reaction of the nerves and muscles to both currents was normal. The sexual organs showed no visible signs of masturbation. Grasp on dynamometer: right hand, 11; left hand, 16.

The above were the facts of main importance elicited at the first examination made by Dr. Seguin in October, 1866. The boy remained under his care from that time on for about two years, during which period he decidedly improved in motor power and skill, and his height increased by six inches. The treatment from the first, in the absence of any possible pathological diagnosis, consisted in the systematic, long-continued administration of tonics, such as the bichloride of mercury, phosphorous, arsenic and strychnia. At the same time, a mild Faradic current was applied systematically every day. Also, from the first, a cold sponge bath was ordered on rising, or at bed-time, followed by a thorough dry rubbing and a manipulation of all the muscles. Another part of the treatment consisted in gentle gymnastic movements of the hands, arms, trunk and legs.

The case was lost sight of by Dr. Seguin from the close of the year 1888 until September of the present year (1893), when, on inquiry, he received a letter from the boy's father stating that his son is now in the junior class at college, that he stands well in his class, and excels in wrestling and other athletic sports. The treatment advised by Dr. Seguin had been faithfully carried out for nearly three years longer by the father, followed by a gradual but continued improvement in the boy's condition. His weight at the present time is 166 pounds. Circumference of chest, expiration, 33 inches; full inspiration, 39 inches. Circumference of waist, 31 inches; of mid-thigh, 22 inches; of biceps, 13 inches. His endurance is good, and he is able to raise from the ground an iron rail weighing six hundred pounds. His

grasp on the dynamometer at present is: right hand, 72; left hand, 53. This, Dr. Seguin said, is the strongest grasp he has ever met with.

Dr. B. SACHS said that in listening to the first part of Dr. Seguin's paper—before it told of the boy's remarkable recovery—the case reminded him of a primary muscular dystrophy of the facial-scapular-humeral type, with perhaps some extension into the lower extremities. Such a case has recently come under his observation, with many symptoms very similar to those narrated by Dr. Seguin. In cases of progressive primary dystrophy, particularly in pseudo-hypertrophic conditions, has seen marked temporary improvement following treatment, although he has never observed a complete cure. Again, in Dr. Seguin's case there might possibly have been some nuclear trouble, with a mingling of symptoms pointing to the spinal cord or medulla. If the case was one of primary muscular dystrophy, the question arises whether the cure will be a lasting one. He has seen a number of cases with a condition of pseudo-hypertrophy, in which the muscular tissue first enlarges and then rapidly atrophies.

Dr. GEORGE W. JACOBY suggested that Dr. Seguin's case might have been one of poly-myositis, ending in complete recovery, and followed by a secondary hypertrophy of the muscles, which now exists.

Dr. J. F. TERRIBERRY stated that it was against the laws of pathology to assume that an inflammatory process in the muscular tissue is followed by hypertrophy of the muscle, with increased force.

Dr. E. D. FISHER said that when we take into consideration the fact that the boy grew six inches taller while he was under Dr. Seguin's care, the lesion was probably not a spinal one.

The discussion was then closed by Dr. SEGUIN. He stated that the suggestion made by Dr. Sachs with reference to the possibility of curing a case of muscular dystrophy in its early stage was an interesting one; he was not prepared, however, to advance the case as an instance of that disease. Neither did it resemble a case of myositis. There was no pain; there was a general weakness, which was sometimes so pronounced that the boy was unable to hold objects in his hands, or he would lose all control over his muscles and fall to the ground.

Stated Meeting, held at the New York Academy of Medicine, Tuesday evening, November 7th, 1893.

Dr. B. SACHS, Vice-president, in the Chair.

DEMONSTRATION OF THE NEW METHOD OF BEVAN LEWIS FOR STAINING THE CORTEX.

By Dr. IRA VAN GIESEN. The speaker stated that, notwithstanding our increased knowledge of the structure of the brain cortex, we are still very much in the dark as regards its finer pathology, for the simple reason that we have not had at our command a satisfactory method to show the finer details of the cortex, and especially the ganglion cells. The ordinary method of examining the brain by Müller's fluid, and subsequent staining by the various dyes, is open to many objections. By this method we gain no knowledge of the finer processes of the ganglion cells or their structure. We can very well imagine, in the light of the wonderful recent advances in cortical histology, due to Golgi's methods, the existence of a number of processes in the cortex of the greatest etiological importance that are entirely hidden from our view by the Müller fluid hardening and ordinary staining. Numerous artificial products arise, attending the hardening process. In staining, after Müller's fluid hardening, we have no view of the ramifications of the nerve cell; we merely see the cell body. It also induces a change in the volume of the ganglion cells, and, all things taken together, the method is crude when we are searching for any of the finer changes in the cortex, such as we would be led to expect in chorea, epilepsy, etc.

The new method of Bevan Lewis for staining the cortex is certainly free from these disadvantages. This excellent method has received a very tardy recognition It is quite simple, and does not require much time. Frozen sections of the fresh brain are placed for a few seconds in a solution of osmic acid (one-quarter of one per cent.); they are then rinsed in water and stained with aniline blue-black (one-quarter of one per cent. solution), and again rinsed; they are then allowed to dry on the slide over night. In a section prepared in this way the ganglion cells are free from artificial products, there is no shrinking, and we get a very much

better preserved picture than by Müller's process. The cells are very perfect. Within the past year or two the process of freezing the sections has been much facilitated by the use of carbonic acid gas and the freezing microtome. (See article by Dr. Frank B. Mallory, *Boston Medical and Surgical Journal*, January 26, 1893.) By this process we can freeze a convolution of the brain in three-quarters of a minute. The sections are cut off with an ordinary carpenter's plane.

Dr. VAN GIESEN exhibited a number of microscopical sections of the brain cortex, stained by the method of Bevan Lewis. He stated that the literature on this subject can be found in the *American Journal of Insanity* for July, 1892.

Dr. EDWARD D. FISHER read a paper on

ANOMALOUS CASES OF GENERAL PARESIS.

(See page 822.)

THE RELATION OF SYPHILIS TO GENERAL PARESIS.

DISCUSSION.

Dr. FREDERICK PETERSON opened the discussion by reading a paper on this subject. He stated that the question of the position taken by syphilis in the etiology of dementia paralytica is one that has been attracting great attention among syphilologists and alienists of late years. No fewer than seventy authors have contributed to the elucidation of this problem. The majority of these contributions treat of the subject from a statistical standpoint, and it would seem that sufficient data have been collected to fully satisfy all inquiries regarding that particular. Naturally, the first point upon which precise information was needed was as to the percentage of cases of general paralysis with a history of syphilis, and we are now in a position to supply it fully. Although these statistics differ very materially at times, yet the results in the main agree. The figures range from as low as 13 per cent. to as high as 88 per cent. Kjellberg has taken the stand that all cases of general paralysis are of syphilitic origin; that the cases are affected either congenitally or through acquisition. This author stands quite alone in his assertion, which is not justified by observation or facts.

Dr. Peterson said his own statistics on that point are rather questionable, as are all obtained from large

public asylums, to which patients are taken in stages of the disease too far advanced for them to give trustworthy information regarding themselves, and whither they are generally brought by relatives or officers unacquainted with such an etiological factor in their histories. There were admitted to the Hudson River State Hospital for the Insane 287 cases of general paresis. In 55 of these syphilis was definitely ascertained to have preceded the disorder. In the remaining 232 it was either absent or unascertainable. Actually, then, only 19 per cent. were found to be syphilitic; but, assuming that one-half the others were affected, the total ratio would be in the neighborhood of 60 per cent. of the cases. At public dispensaries we see these cases in the earliest stages, when histories may be more exactly obtained. At the Vanderbilt Clinic, 40 cases of general paresis were observed: definitely syphilitic, 10; definitely not syphilitic, 12; unascertained, 18. Taking the 22 cases in which the exact facts were obtained, we have 45.4 per cent. certainly syphilitic, and 54.5 per cent. certainly not syphilitic. From an examination of all the figures collected above, from various sources, it would perhaps be fair to assume that about 60 to 70 per cent. of all cases of general paralysis have a syphilitic history. The fact is thus established that syphilis is a striking etiological factor in general paresis, but that 30 to 40 per cent. of the cases are not syphilitic. A much more difficult problem is to determine the exact relationship between syphilis and general paresis. Is it a direct cause, or merely a contributing agent? Is it in syphilitic cases a post-syphilitic affection, or is foregone syphilis merely a predisposing factor? This problem may be examined from several standpoints. In the first place, we have the rather remarkable statistics of Lewin, of 20,000 cases of syphilis, one per cent. of which became insane, and in which not a single case of paresis developed. Then we have the further fact that among the native Egyptians, where syphilis is one of the most widespread disorders, no case of general paresis has as yet been reported. It is significant, by the way, that alcoholism is seldom or never observed among them. Again, from the pathological standpoint, it is well known that the direct invasion of the brain by syphilis is characterized by changes in the blood-vessels, by the formation of gummata, or by diffuse meningeal infiltration. The first and third of these processes is most frequent in and

about the base of the brain; the second is more common in cortical regions. On the other hand, in general paresis, we have a chronic meningitis of the convexity, with atrophy of the cortex, and the processes in this disease and in syphilis are quite distinct, although there are cases in which a syphilitic meningo-encephalitisa my closely simulate, symptomatically, dementia paralytica.

There are some who argue that tabes and general paresis are frequently associated, and that tabes, being a form of syphilitic disease, general paresis in consequence must owe its origin to syphilis. If the two diseases have the same etiological imprint, there ought to be a close correspondence in the percentages of syphilis in relation to each, but the concensus of opinion seems to be that a history of syphilis is found in only 60 to 70 per cent. of general paresis, whereas in tabes the percentage ranges, according to different authorities, from 80 to 98 per cent. At the Vanderbilt Clinic, in 83 cases of locomotor ataxia, 51 were syphilitic, 20 not syphilitic, and 12 unascertained. Of the 71 cases of tabes of whose history we have exact data, over 71 per cent. were syphilitic and over 28 per cent. not syphilitic. That is, then, among cases equally well studied and from the same sources, 45.4 per cent. of general paralytics were syphilitic, and 71 per cent. of tabetics. Dr. Peterson said he did not agree with the statement made by Dr. Sachs in a recent article, that there is a very frequent development of tabes after dementia paralytica, and of dementia paralytica after tabes. In cases of dementia paralytica with tabetic symptoms, the nerve fibres of the posterior columns are often little, if at all, implicated. One of the facts which has been employed against the opinion that general paresis is a late form of specific disease, is the absolute futility of anti-syphilitic treatment. In every form of cerebral syphilis proper we are often enabled to accomplish a great deal of good by vigorous and systematic treatment, whereas, in general paresis, even if the history of syphilis is clear, no appreciable effect is produced by anti-syphilitic remedies.

In concluding his paper, Dr. Peterson said that in his opinion dementia paralytica has no immediate or late relation to syphilis as a direct cause. Syphilis is a common etiological factor, but only in the sense of its being a predisposing cause. It prepares the soil in more than half of the cases for the development of dementia paralytica, this disorder having its direct causes in alco-

holism, sexual excesses and over-strain of the mental functions. The higher nervous elements are rendered prone to degeneration by the fore-running specific disease, which, as is well known, gives rise to a cachexia, with changes in the constitution of the blood.

Dr. GRANGER said that the question of a change in the character of the mental symptoms of paresis from the standard type of the disease, is one that has been very much debated and studied, and it looks as though the outcome of it might be that the disease known as general paralysis of the insane would be found to embrace more than one disease—possibly more than two—the distinction being based upon the clinical aspect and the pathological conditions present. The variations from the ordinary type of the disease, as he observed them, have not been so marked in this country as abroad. Two or three per cent. would probably cover the melancholic form of paresis in this country, while in England, in some of the largest asylums, the number has risen as high as 15 or 20 per cent. of the cases admitted. He has seen two forms of the melancholic type of paresis; in one of these the delusions of the patient, although they were those of depression in one sense, were of grand depression. For instance, a patient was very much depressed with the idea that he was the devil; he would constantly cover his face and head in order to hide his horns, and carry a newspaper behind him in order to prevent his tail from growing. But he was the biggest devil, the greatest and the wickedest devil, that could be imagined. On the other hand, there are cases of general paresis in which there is simply melancholia, with no grand delusions. Another anomalous type of paresis is that in which no special symptoms are present, excepting that of progressive dementia and a feeling of satisfaction; this type is becoming more and more common. The question whether the disease is lengthening or shortening in its course is very much discussed. Many think that its course is being shortened, while, on the other hand, according to some of the English asylum reports, it is being lengthened. In this country we still commonly see the typical form of general paresis, and death takes place about thirty months after the full development of the disease.

In regard to the relation of syphilis to general paresis, Dr. Granger said he agreed very closely with the views expressed by Dr. Peterson. Syphilis itself does

not cause the disease, and it is very difficult to tell what does cause it. That syphilis is very common in Egypt, and that venerial excess is also very common there, is acknowledged by all, and that general paresis is very uncommon there is also true, but other conditions exist there which the world over are favorable to the non-development of paresis. These natives possess neither energy nor ambition, and spend most of their time basking in the sun. In the coal regions in England, general paresis is quite common, the percentage in the asylums being from 30 to 40 per cent.; in the adjoining agricultural districts the percentage falls as low as 2 or 3 per cent., and yet, probably, syphilis and intemperance are very common in both of these communities. In this country, general paresis rises as high as 15 or 20 per cent. in the Eastern States, while in the Western and Northwestern States the percentage is very low indeed. Yet syphilis is undoubtedly very common in the latter localities; so is drunkenness. Still, general paresis is very infrequent there. It takes something besides syphilis or intemperance to produce the disease. In the cities we call it the strain due to high civilization. In the coaling regions we call it their laborious and peculiar life. Syphilis, while it does not cause paresis, is undoubtedly a strong factor in its production. As regards the value of statistics in this connection, the speaker thought it extremely difficult to get accurate statements from the patients who are sent to asylums, and upon these we are usually dependent for our statistics. The history of syphilis often dates back many years, and is extremely untrustworthy.

Dr. LYON said he has often been struck by the fact that when a history of syphilis is obtained in a case of general paresis, the former disease usually existed a long time ago. Most of the patients state that they were treated for the disease and cured, and that they have had no manifestation of it for many years. During the current year, 17 cases of general paresis were admitted into Bloomingdale Asylum; of these 12 have a pretty clear history of syphilis. In only one of these was the syphilis as recent as four years previous to the development of general paresis. In almost all the cases the patients had probably received the modern treatment for syphilis, *i. e.*, mercury and the iodides.

Dr. Lyon said he agreed with the previous speakers that, while syphilis is not the immediate cause of gen-

eral paresis, it is one of its provoking causes. It produces instability of the brain, which then yields to other more immediate causes. These same patients who give a history of syphilis, have for many years led liberal lives. The course of the paresis in these cases seems to be more rapid than in those uncomplicated by syphilis. The speaker said that cases of paresis of long duration are not unknown—indeed, not very infrequent. He has met with one case in which the disease lasted over ten years. Its duration depends on the patient's constitution.

Dr. FIELD referred to the unreliability of statistics obtained from patients affected with general paresis. He has never seen a paretic in whom active syphilitic symptoms existed. The history of syphilis obtained is usually an old one. It is generally combined with a history of alcoholic and venereal excesses. He has made inquiries among those engaged in the treatment of venerial diseases, and who have followed up their syphilitic patients for many years, and they have informed him that general paresis is not common among such patients, although it does occur. Dr. Field said he regarded syphilis as a predisposing, rather than a precipitating cause of general paresis. This is also true of alcohol. Magnin says that chronic alcoholism always terminates in dementia or general paresis. The Chinese are well known to be syphilitic—at least, those in this country; still, he has only observed one case of paresis among them. That case was a typical one. The patient imagined he had thousands of acres of land, thousands of dollars, and thousands of wives—all white. The reports of the asylums in California show many cases of insanity among the Chinamen, but no form of paresis. In conclusion, Dr. Field referred to the change of type that seems to be occurring in dementia paralytica.

Dr. JOSEPH COLLINS inquired on what grounds Dr. Fisher based the statement that in general paresis due to alcoholism or syphilis, the somatic symptoms were supposed to be in the ascendency over the mental. If such a statement be well founded, it is in contradiction to the other diseases due to these poisons, wherein mental symptoms are well marked. At the Medical Congress in Washington, some years ago, Dr. Savage referred to a variety of paresis wherein the motor and somatic symptoms were apparently the only symptoms of the disease for quite a long time. Such a case, Dr.

Collins said, is now under his observation. As regards the statement made by Dr. Peterson that cases of paresis are unknown in Egypt, Otto has recently reported sixteen cases of the disease in that country. So far as the relationship between syphilis and general paresis is concerned, Dr. Collins said he was very much in accord with the statements made by Dr. Peterson. His statistics correspond very closely with those of Jacobson, taken from the St. Hans Asylum in Denmark, and it appeared to him that such statistics could be relied upon. The patients in that institution came from within the narrow confines of the state, and Jacobson, in making up the statistics, ferreted out every possible etiological factor by inquiry regarding the patient's antecedents, friends, etc. The statement made by the French syphilographers, and also by Sternberg, of St. Hans Asylum, that there can be no general paresis without a history of syphilis is no longer worthy of credence. We have statistics galore at our command, and it is now time to draw such conclusions as can be drawn from figures. Dr. Peterson's statistics, taken from the Vanderbilt Clinic, are very valuable; the cases were seen early, they were apparently carefully studied, and are sufficient in number to draw conclusions from. We all admit that in about sixty per cent. of all cases of general paresis, a history of syphilis dating back from one to twenty years can be obtained. What we want to know is the way in which syphilis causes general paresis. In one of the specimens presented by Dr. Van Giesen this evening, a section taken from the brain of a general paretic, the microscope shows a large number of cells collected around a blood vessel, with some of their protoplasmic prolongations destroyed or atrophied. In the early stages of general paresis there is vasomotor disturbance, not only in the cortex of the brain, but throughout the whole body. Syphilis may act through its sinister manifestations on the blood vessels. It causes a pathological condition that is favorable to the development of general paresis. If there are other attributing factors—and in nearly all cases there are—they act as the torch to the pile that has already been prepared.

Dr. PARSONS, in referring to the possible relationship between syphilis and general paresis, stated that so far as his observation and reading went, the tissue changes that occur in general paresis do not correspond with those that are produced by syphilis. Furthermore, we

know that general paresis occurs in a certain number of cases in which there is no history of syphilis. His own studies of dementia paralytica have led him to think that the more immediate causes of the disease depend upon emotional conditions, or one might say congestion of the capillaries of the cortex due to over-exertion or over-stimulation of the nerve cells of the cortex. Syphilis sometimes causes a degeneration of the nerve tissue; but, in opposition to this, we observe that general paresis occurs usually during the most vigorous period of life. Dr. Parsons said that while he felt unwilling to make the statement that there is no possible relationship between syphilis and paresis, as cause and effect, such causative relation has not yet been proven.

Dr. WILLIAM M. LESZYNSKY said that in those patients who have died from general paresis, it seemed to him that the pathological changes found in the brain were very much the same in those who gave a history of syphilis, and those in whom a specific history could be positively excluded. Dr. Hinckley, of the Essex County Asylum, at Newark, New Jersey, recently sent him some statistics in connection with this subject. The asylum has about 500 inmates. During the past 8 or 10 years, 15 cases of general paresis were received there. Of these, 13 were males; 2, females. In only 2 of these cases was a history of syphilis obtained, and in those there were no somatic manifestations of the disease. The causes given in the remaining 13 cases were alcoholism, overwork, anxiety, etc. In conclusion, Dr. Leszynsky said he agreed with Dr. Peterson in considering syphilis only as a predisposing factor in the production of general paresis.

Dr. A. D. ROCKWELL referred to certain cases of general paresis that have come under his observation, in which the patients for temporary periods were extremely wretched, utterly disregarding all rules of tidiness and decency. These manifestations, after a number of weeks, passed away, and the patients became quite reasonable again.

Dr. C. H. BROWN said he regarded general paresis as a disease of evolution. Syphilis, alcoholism, sexual excesses, etc., are merely complications or predisposing factors. He also referred to the difficulty of getting a reliable history of syphilis in these cases.

Dr. E. D. FISHER, in reply to Dr. Collins' question as to the ascendency of the somatic over the mental symp-

toms in certain cases of general paresis, said he referred to those cases where we have extreme alcoholism or a recent history of syphilis. In such cases, too, we frequently have a more rapid response to treatment; however, they do not, as a rule, go on to complete recovery. These, perhaps, in the past, would not have been classed as general paresis. He agreed with Dr. Peterson in regarding syphilis simply as a predisposing factor. In cerebral syphilis we have many symptoms similar to those of general paresis, but the disease does not run a similar course. Asylum reports on this subject must always be regarded with more or less suspicion. In conclusion, Dr. Fisher referred to the futility of specific treatment in dementia paralytica.

Dr. J. F. TERRIBERRY referred to the difficulty of properly classifying certain cases in which there is dementia and other symptoms of cortical degeneration.

Dr. SACHS said that too much reliance should not be placed upon the value of statistics in connection with this subject. A few years ago, the number of cases of tabes with a syphilitic history was placed at 87 per cent., and much lower than this by some authorities. Now, every one is agreed that the figures should have been as high as 92 per cent. We all admit the frequency of syphilis in general paresis, but the majority of the speakers have laid too little stress upon it as a predisposing cause; they refer to it as the lesser cause. The speaker said he did not agree with them in this. In other mental diseases in which heredity plays an important part, that factor is regarded as a predisposing cause, while an emotional element is regarded as the exciting cause, but the hereditary taint is certainly one hundred fold more important than the latter element. He is of the opinion that syphilis plays a more important role in general paresis than any other etiological factor. Other facts go to prove that syphilis plays a very important part in dementia paralytica. In probably every case of general paresis that has occurred in early life—that is, between the ages of 15 and 25 years—there is a history of syphilis. The general impression seems to be that the specific history is one of long standing. While this is true in the majority of cases, it is not so always. A striking instance of this recently came under his observation. A young man of 22, while a student at Heidelberg, contracted syphilis, and six months after infection he developed a typical general paresis, from which he is still suffering.

As regards the possible relationship between tabes and general paresis, Dr. Sachs said he has seen a number of cases in which the development of the two diseases rapidly followed each other. In one case, the tabes developed nine months previous to the general paresis; in that case there was an undoubted history of syphilis. In one class of paretic patients the knee-jerks are much exaggerated, while in another they are below the normal, or entirely absent. In these latter cases the probability is that changes in the posterior columns have occurred, closely related to the changes that are found there in posterior spinal sclerosis.

Dr. PETERSON then closed the discussion. As regards the statement made by Dr. Collins about the cases of general paresis found in Egypt, Dr. Peterson said he has not seen the article by Otto, referred to. Dr. Sandworth, the physician in charge of the asylum at Cairo, informed him that he had never seen a case of general paresis in a native Egyptian, nor had his predecessor, who was there for many years. The disease does occur among the Turkish officials in Egypt, but not among the natives.

With regard to Dr. Sachs' statement as to the relationship between tabes and general paresis, it is, of course, true that there are often tabetic symptoms in general paresis, and that the knee-jerks may be absent. In the majority of cases, however, in which the knee-jerks are absent in the early stage of the disease, they subsequently return and become exaggerated. Furthermore, no changes are found in the posterior columns after death from general paresis.

AMERICAN NEUROLOGICAL ASSOCIATION.

Nineteenth Annual Meeting, held at the West End Hotel, Long Branch, N.J., July 25, 26 and 26, 1893.

THE ANATOMICAL CHANGES IN THE SPINAL CORD IN AN OLD CASE OF INFANTILE PARALYSIS.

Dr. JOSEPH COLLINS, of New York, presented numerous sections of the spinal cord, and reported the history of a case of infantile paralysis of long standing.

PROGRESSIVE MUSCULAR ATROPHY.

ABSTRACT.

Dr. G. M. HAMMOND, of New York, exhibited microscopical specimens and gave the pathological report of two cases of progressive muscular atrophy, and referred to the fact that considerable confusion is occasioned by the misapplication of the tenux "peroneal type" to a disease totally dissimilar to the one under consideration.

The first patient was a woman, forty-six years of age, without history of gout, rheumatism or syhpilis. In the fall of 1889, she stumbled over a chair, bruising the right shin slightly, and a few days afterward she was unable to walk as well as formerly. Soon after, there was marked weakness of the flexors of the foot and the extensors of the toes.

By October, 1890, there was complete paralysis of the entire right side, with reaction of degeneration, loss of power and electrical contractility of the anterior tibial muscles of the left leg, and atrophy and loss of power of the thenar and hypothenar musclus of the right hand.

Gradually, but rapidly, the other extremities became involved and ultimately the abdominal and intercostal muscles were affected. She died suddenly from either cardiac or respiratory paralysis.

The sections of the cord showed sclerosis of the pyramidal tracts and atrophy of cells in the anterior horns, and degeneration of Gowers' column throughout its en-

tire extent. The conclusion to be drawn from the clinico-pathological study of this case would be that the muscles of the hand were supplied by the mesial group and the muscles of the forearm from the anterior group of cells in the anterior horn.

In the second case, first seen in 1882, the disease began in the muscles of the left thumb. He had the opportunity to watch the case to its termination, in 1893. It ran the usual course and was in every way typical. At the time of death all of the muscles from the level of the arm-pits upwards, except the facial muscles were atrophied, as well as those of the upper extremities. She became maniacal and finally died from exhaustion.

The cord and medulla were examined and the changes were identical with those described in the preceding case.

He concluded that these cases demonstrate that progressive muscular atrophy is due to a degeneration of the cells in the anterior gray masses and the nerve tubes in the antero-lateral white columns. Also, that it is superfluous to divide progressive muscular atrophy into different types because the disease happens to begin in different groups of muscles.

DISCUSSION.

The last two papers were discussed together.

Dr. MILLS agreed with Dr. Collins' views as to the arrangement of cells presiding over the flexors and extensors. He suggested examination of the nerve roots at the extreme limit of the lesions.

Dr. SACHS thought that careful pathological study such as Dr. Collins contributed, will ultimately lead to better results than the usual clinical methods. That the Aran-Duchenne type was of spinal origin there could be no doubt. He was not certain that the case of Dr. Hammond represented the peroneal form of progressive muscular atrophy as described by Charcot, Tooth, Hoffman and himself. If the case were such, the findings in the spinal cord would have been of great importance. He was not yet certain whether the peroneal forms represents a spinal disease or a peripheral affection.

Dr. PUTNAM had a case in an adult where there was rapid destruction of gray matter throughout the cord. Despite the violence of the process portions of the anterior and lateral cell groups were preserved.

Dr. PRESTON inquired as to alterations in the blood-vessels. He believed this alteration preceded the pathological changes. He also asked if Dr. Collins had examined cross sections of the mixed nerves.

Dr. GRAY thought it very difficult to make a positive clinical diagnosis between the central and periphal portions of the lesion. This was often illustrated in the class of cases reported by Dr. Hammond.

Dr. COLLINS, in closing the discussion, said that his investigations extended over greater ground than his paper suggested. There was diminution in the size of the vessels, but no evidence of atheroma. The mixed nerves were not examined. He thought the hæmotoxylon stain useless for a study of the cellular structure.

Dr. HAMMOND concluded with the statement that the "peroneal type," as described by Tooth, Charcot and Marie, and which was the type referred to by Dr. Sachs, was not progressive muscular atrophy at all, and was entirely different from his own case. His case was an example of progressive muscular atrophy, beginning in the peroneal muscles, and was, therefore, true peroneal progressive muscular atrophy, while the so-called "peroneal type," is a misnomer, as the disease is not progressive muscular atrophy at all.

Dr. SEGUIN exhibited a thin trans-section of the whole brain, stained with 1 to 2,000 aniline blue-black, a method he had devised in 1883, but neglected to publish. One of the advantages was that specimens may be safely left in the solution for twenty-four hours, and then cleared up in the usual manner. The ganglion cells and their processes are especially well brought out.

DR. JAMES J. PUTNAM read an article entitled

THE TREATMENT OF GRAVES' DISEASE BY THROIDECTOMY. [See Page 799.]

DR. RALPH L. PARSONS read a paper entitled

A CONTRIBUTION TO THE STUDY OF SYPHILIS OF THE NERVOUS SYSTEM. [See Page 822.]

ELECTION OF MEMBERS.

The following named gentlemen were elected to

active membership: Dr. Brower, of Chicago; Dr. Burr, of Philadelphia; and Dr. Diller, of Pittsburg. Dr. Arnold Pick, of Prague, was elected an associate member.

PAPERS READ BY TITLE.

"The Genesis of Hallucination, Illusion and Delusion," by Dr. H. A. Tomlinson, of St. Paul, Minn.

"The Diagnosis of General Paresis," by Dr. L. C. Gray, of New York.

"A Report of Two Cases of Friedreich's Disease," by Dr. Frank R. Fry, of St. Louis.

"The Metapore, or Foremen of Magendie, in Man and in the Orang," by Dr. Burt G. Wilder, of Ithaca.

"Observations on the Relation of Chorea to Rheumatism," by Dr. C. Eugene Riggs, of St. Paul.

"Experiences in the Use of Testiculine and Cerebrine, by Dr. J. J. Putnam, of Boston.

"Peripheral Paralysis After Surgical Operations," by Dr. V. P. Gibney, of New York.

"Traumatic Brachial Plexus Paralysis in Infants," by Dr. Wm. M. Leszynsky, of New York.

ELECTION OF OFFICERS.

The officers elected for the ensuing year were: President, Dr. B. Sachs, of New York. Vice-Presidents, Dr. F. X. Dercum, of Philadelphia and Dr. P. C. Knapp, of Boston. Secretary and Treasurer, Dr. G. M. Hammond, of New York. Councilors, Dr. E. C. Seguin, of New York and Dr. J. H. Lloyd, of Philadelphia.

In the evening a banquet was given by the Association, at which nearly thirty members were present.

Miscellany.

An article appearing elsewhere in this number entitled "A Too Common Affront to the Profession" is of more than ordinary interest to practitioners, and we commend it to their attention.